(5) The Entity with decision making authority, as more fully described in Section 3.19.1, Constraint Competitiveness Test Definitions, over how a Resource or Split Generation Resource is offered or scheduled, shall be responsible for all offers associated with each Resource, including offers represented by a proxy Energy Offer Curve.

(6) For a CLR whose QSE has submitted an RTM Energy Bid that does not cover the full range of the Resource's available Demand response capability, consistent with the CLR's telemetered quantities, ERCOT shall create a proxy energy bid as described below:

MW	Price (per MWh)
LPC to MPC **minus maximum** MW of RTM Energy Bid	Price associated with the lowest MW in submitted RTM Energy Bid curve
MPC **minus** maximum MW of RTM Energy Bid to MPC	RTM Energy Bid curve
MPC	Right-most point (lowest price) on RTM Energy Bid curve

(7) ERCOT shall ensure that any RTM Energy Bid is monotonically non-increasing. The QSE representing the CLR shall be responsible for all RTM Energy Bids, including bids updated by ERCOT as described above.

(8) If a CLR telemeters a status of OUTL, it is not considered as dispatchable capacity by SCED. A QSE may use this function to inform ERCOT of instances when the CLR is unable to follow SCED Dispatch Instructions. Under all telemetered statuses including OUTL, the remaining telemetry quantities submitted by the QSE shall represent the operating conditions of the CLR that can be verified by ERCOT. A QSE representing a CLR with a telemetered status of OUTL is still obligated to provide any applicable Ancillary Service Resource Responsibilities previously awarded to that CLR. This paragraph does not apply to ESRs.

(9) Energy Offer Curves that were constructed in whole or in part with proxy Energy Offer Curves shall be so marked in all ERCOT postings or references to the energy offer.

(10) The two-step SCED methodology referenced in paragraph (1) above is:

(a) The first step is to execute the SCED process to determine Reference LMPs. In this step, ERCOT executes SCED using the full Network Operations Model while only observing limits of Competitive Constraints. Energy Offer Curves for all On-Line Generation Resources and RTM Energy Bids from available CLRs, whether submitted by QSEs or created by ERCOT under this Section, are used in the SCED to determine "Reference LMPs."

(b) The second step is to execute the SCED process to produce Base Points, Shadow Prices, and LMPs, subject to security constraints (including Competitive and Non-Competitive Constraints) and other Resource constraints. The second step must:

(i) Use Energy Offer Curves for all On-Line Generation Resources, whether submitted by QSEs or created by ERCOT. Each Energy Offer Curve must be bounded at the lesser of the Reference LMP (from Step 1) or the appropriate Mitigated Offer Floor. In addition, each Energy Offer Curve subject to mitigation under the criteria described in Section 3.19.4, Security-Constrained Economic Dispatch Constraint Competitiveness Test, must be capped at the greater of the Reference LMP (from Step 1) at the Resource Node plus a variable not to exceed 0.01 multiplied by the value of the Resource's Mitigated Offer Cap (MOC) curve at the LSL or the appropriate MOC;

(ii) Use RTM Energy Bid curves for all available CLRs, whether submitted by QSEs or created by ERCOT. There is no mitigation of RTM Energy Bids. An RTM Energy Bid from a CLR represents the bid for energy distributed across all nodes in the Load Zone in which the CLR is located. For an ESR, an RTM Energy Bid represents a bid for energy at the ESR's Resource Node; and

(iii) Observe all Competitive and Non-Competitive Constraints.

(c) ERCOT shall archive information and provide monthly summaries of security violations and any binding transmission constraints identified in Step 2 of the SCED process. The summary must describe the limiting element (or identified operator-entered constraint with operator's comments describing the reason and the Resource-specific impacts for any manual overrides). ERCOT shall provide the summary to Market Participants on the MIS Secure Area and to the Independent Market Monitor (IMM).

(11) For each SCED process, in addition to the binding Base Points and LMPs, ERCOT shall calculate a non-binding projection of the Base Points and Resource Node LMPs, Real-Time Reliability Deployment Price Adders, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders, Hub LMPs and Load Zone LMPs at a frequency of every five minutes for at least 15 minutes into the future based on the same inputs to the SCED process as described in this Section, except that the Resource's HDL and LDL and the total generation requirement will be as estimated at future intervals. The Resource's HDL and LDL will be calculated for each interval of the projection based on the ramp rate capability over the study period. ERCOT shall estimate the projected total generation requirement by calculating a Load forecast for the study period. In lieu of the steps described in Section 6.5.7.3.1, Determination of Real-Time On-Line Reliability Deployment Price Adder, the non-binding projection of Real-Time Reliability Deployment Price Adders shall be estimated based on GTBD, reliability deployments MWs, and aggregated offers. The Energy Offer Curve from SCED Step 2, the virtual offers for Load Resources deployed and the power balance penalty curve will be compared against the updated GTBD to get an estimate of the System Lambda from paragraph (2)(m) of Section 6.5.7.3.1. ERCOT shall post the projected non-binding Base Points for each Resource for each interval study period on the MIS Certified Area and the projected non-binding LMPs for Resource Nodes, Real-Time Reliability Deployment

Price Adders, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders, Hub LMPs and Load Zone LMPs on the ERCOT website pursuant to Section 6.3.2, Activities for Real-Time Operations.

(12) For each SCED process, ERCOT shall calculate a Real-Time On-Line Reserve Price Adder and a Real-Time Off-Line Reserve Price Adder based on the On-Line and Off-Line available reserves in the ERCOT System and the Operating Reserve Demand Curve (ORDC). The Real-Time Off-Line available reserves shall be administratively set to zero when the SCED snapshot of the Physical Responsive Capability (PRC) is equal to or below the PRC MW at which Energy Emergency Alert (EEA) Level 1 is initiated. In addition, for each SCED process, ERCOT shall calculate a Real-Time On-Line Reliability Deployment Price Adder. The sum of the Real-Time Reliability Deployment Price Adder and the Real-Time On-Line Reserve Price Adder shall be averaged over the 15-minute Settlement Interval and added to the Real-Time LMPs to determine the Real-Time Settlement Point Prices. The price after the addition of the sum of the Real-Time On-Line Reliability Deployment Price Adder and the Real-Time On-Line Reserve Price Adder to LMPs approximates the pricing outcome of the impact to energy prices from reliability deployments and the Real-Time energy and Ancillary Service co-optimization since the Real-Time On-Line Reserve Price Adder captures the value of the opportunity cost of reserves based on the defined ORDC. An Ancillary Service imbalance Settlement shall be performed pursuant to Section 6.7.5, Real-Time Ancillary Service Imbalance Payment or Charge, to make Resources indifferent to the utilization of their capacity for energy or Ancillary Service reserves.

(13) ERCOT shall determine the methodology for implementing the ORDC to calculate the Real-Time On-Line Reserve Price Adder and Real-Time Off-Line Reserve Price Adder. Following review by TAC, the ERCOT Board shall review the recommendation and approve a final methodology. Within two Business Days following approval by the ERCOT Board, ERCOT shall post the methodology on the ERCOT website.

(14) At the end of each season, ERCOT shall determine the ORDC for the same season in the upcoming year, based on historic data using the ERCOT Board-approved methodology for implementing the ORDC. Annually, ERCOT shall verify that the ORDC is adequately representative of the loss of Load probability for varying levels of reserves. Twenty days after the end of the Season, ERCOT shall post the ORDC for the same season of the upcoming year on the ERCOT website.

(15) ERCOT may override one or more of a CLR's parameters in SCED if ERCOT determines that the CLR's participation is having an adverse impact on the reliability of the ERCOT System.

(16) The QSE representing an ESR, in order to charge the ESR, must submit RTM Energy Bids, and the ESR may withdraw energy from the ERCOT System only when dispatched by SCED to do so. An ESR may telemeter a status of OUTL only if the ESR is in Outage status.

[NPRR930, NPRR1000, NPRR1010, NPRR1014, NPRR1019, NPRR1188, and NPRR1204: Replace applicable portions of Section 6.5.7.3 above with the following upon system implementation for NPRR930, NPRR1000, NPRR1014, NPRR1019, or NPRR1188; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010 and NPRR1204:]

6.5.7.3 Security Constrained Economic Dispatch

(1) The SCED process is designed to simultaneously manage energy, Ancillary Services, the system power balance and network congestion through Resource Base Points, Ancillary Service awards, and the calculation of LMPs and Real-Time MCPCs approximately every five minutes, or more frequently if necessary. The SCED process uses a two-step methodology that applies mitigation to offers for energy prospectively to resolve Non-Competitive Constraints for the current Operating Hour. The SCED process evaluates Energy Offer Curves, Energy Bid/Offer Curves, Ancillary Service Offers, Output Schedules, and Energy Bid Curves to determine Resource Dispatch Instructions and Ancillary Service awards by maximizing bid-based revenues minus offer-based costs, subject to power balance, Ancillary Service Demand Curves (ASDCs), and network constraints. The SCED process uses the Resource Status provided by SCADA telemetry under Section 6.5.5.2, Operational Data Requirements, and validated by the Real-Time Sequence, instead of the Resource Status provided by the COP. In addition, the SCED process accounts for each ESR's State of Charge (SOC) and SOC operating limits. This is to ensure that the SCED process will issue ESR Base Points and Ancillary Services that are feasible taking into account SCED duration requirements for energy and Ancillary Services and also that do not violate the ESR's Minimum State of Charge (MinSOC) and Maximum State of Charge (MaxSOC) limits.

(2) The SCED solution must monitor cumulative deployment of Regulation Services and ensure that Regulation Services deployment is minimized over time.

(3) In the Generation To Be Dispatched (GTBD) determined by LFC, ERCOT shall subtract the sum of the telemetered net real power consumption from all CLRs available to SCED.

(4) For use as SCED inputs for determining energy dispatch and Ancillary Service awards, ERCOT shall use the available capacity of all committed Generation Resources by creating proxy Energy Offer Curves for certain Resources as follows:

(a) Non-IRRs without Energy Offer Curves

(i) ERCOT shall create a monotonically increasing proxy Energy Offer Curve as described below for:

(A) Each non-IRR for which its QSE has submitted an Output Schedule instead of an Energy Offer Curve.

MW	Price (per MWh)
HSL	RTSWCAP
Output Schedule MW plus 1 MW	RTSWCAP minus $0.01
Output Schedule MW	-$249.99
LSL	-$250.00

(b) Non-IRRs without full-range Energy Offer Curves

(i) For each non-IRR for which its QSE has submitted an Energy Offer Curve that does not cover the full range of the Resource's available capacity, ERCOT shall create a proxy Energy Offer Curve that extends the submitted Energy Offer Curve to use the entire available capacity of the Resource above the highest point on the Energy Offer Curve to the Resource's HSL and the offer floor from the lowest point on the Energy Offer Curve to its LSL, using these points:

MW	Price (per MWh)
HSL (if more than highest MW in submitted Energy Offer Curve)	Price associated with highest MW in submitted Energy Offer Curve
Energy Offer Curve	Energy Offer Curve
1 MW below lowest MW in Energy Offer Curve (if more than LSL)	-$249.99
LSL (if less than lowest MW in Energy Offer Curve)	-$250.00

(c) IRRs

(i) For each IRR that has not submitted an Energy Offer Curve, ERCOT shall create a monotonically increasing proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL	$1,500
HSL minus 1 MW	-$249.99
LSL	-$250.00

(ii) For each IRR for which its QSE has submitted an Energy Offer Curve that does not cover the full range of the IRR's available capacity, ERCOT shall create a monotonically increasing proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL (if more than highest MW in submitted Energy Offer Curve)	Price associated with the highest MW in submitted Energy Offer Curve

Energy Offer Curve	Energy Offer Curve
1 MW below lowest MW in Energy Offer Curve (if more than LSL)	-$249.99
LSL (if less than lowest MW in Energy Offer Curve)	-$250.00

(d) RUC-committed Resources

(i) For each RUC-committed Resource that has not submitted an Energy Offer Curve, ERCOT shall create a proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL	$250
Zero	$250

(ii) For each RUC-committed Resource that has submitted an Energy Offer Curve, ERCOT shall create a monotonically increasing proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL (if more than highest MW in Energy Offer Curve)	Greater of $250 or price associated with the highest MW in QSE submitted Energy Offer Curve
Energy Offer Curve	Greater of $250 or the QSE submitted Energy Offer Curve
Zero	Greater of $250 or the first price point of the QSE submitted Energy Offer Curve

(iii) For each RUC-committed Resource during the time period stated in the Advance Action Notice (AAN) if any Resource received an Outage Schedule Adjustment, ERCOT shall create a proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL	$4,500 or the effective Value of Lost Load (VOLL), whichever is less.
Zero	$4,500 or the effective VOLL, whichever is less.

(iv) For each Combined Cycle Generation Resource that was RUC-committed from one On-Line configuration in order to transition to a

different configuration with additional capacity, as instructed by ERCOT, that has not submitted an Energy Offer Curve for the RUC-committed configuration, ERCOT shall create a proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL of RUC-committed configuration	$250
Zero	$250

(v) For each Combined Cycle Generation Resource that was RUC-committed from one On-Line configuration in order to transition to a different configuration with additional capacity, as instructed by ERCOT, that has submitted an Energy Offer Curve for the RUC-committed configuration, ERCOT shall create a monotonically increasing proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL of RUC-committed configuration (if more than highest MW in Energy Offer Curve)	Greater of $250 or price associated with the highest MW in QSE submitted Energy Offer Curve
Energy Offer Curve for MW at and above HSL of QSE-committed configuration	Greater of $250 or the QSE submitted Energy Offer Curve
HSL of QSE-committed configuration (if more than highest MW in Energy Offer Curve and price associated with highest MW in Energy Offer Curve is less than $250)	$250
HSL of QSE-committed configuration (if more than highest MW in Energy Offer Curve)	Price associated with the highest MW in QSE submitted Energy Offer Curve
Energy Offer Curve for MW at and below HSL of QSE-committed configuration	The QSE submitted Energy Offer Curve
1 MW below lowest MW in Energy Offer Curve (if more than LSL)	-$249.99
LSL (if less than lowest MW in Energy Offer Curve)	-$250.00

(vi) For each RUC-committed Switchable Generation Resource (SWGR) that is not part of a Combined Cycle Train already operating in ERCOT, that has not submitted an Energy Offer Curve, and that has a COP Resource Status of EMRSWGR for the instructed Operating Hour at the time of the RUC instruction, ERCOT shall create a proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL	$4,500 or the effective Value of Lost Load (VOLL), whichever is less
Zero	$4,500 or the effective VOLL, whichever is less

(vii) For each RUC-committed SWGR that is not part of a Combined Cycle Train already operating in ERCOT, that has submitted an Energy Offer Curve, and that has a COP Resource Status of EMRSWGR for the instructed Operating Hour at the time of the RUC instruction, ERCOT shall create a proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL (if more than highest MW in Energy Offer Curve)	Greater of: $4,500 or the effective VOLL, whichever is less; and the price associated with the highest MW in QSE-submitted Energy Offer Curve
Energy Offer Curve	Greater of: $4,500 or the effective VOLL, whichever is less; and the QSE-submitted Energy Offer Curve
Zero	Greater of: $4,500 or the effective VOLL, whichever is less; and the first price point of the QSE-submitted Energy Offer Curve

(viii) For each Combined Cycle Train configuration that includes at least one SWGR that is operating in a non-ERCOT Control Area as part of a configuration with a COP Resource Status of EMRSWGR for the instructed Operating Hour at the time of a RUC instruction requiring the switching of the SWGR into the ERCOT Control Area, if the QSE for the Combined Cycle Train has not submitted an Energy Offer Curve for the RUC-committed configuration, ERCOT shall create a proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL of RUC-committed configuration	$4,500 or the effective VOLL, whichever is less
Zero	$4,500 or the effective VOLL, whichever is less

(ix) For each Combined Cycle Train configuration that includes at least one SWGR that is operating in a non-ERCOT Control Area as part of a configuration with a COP Resource Status of EMRSWGR for the

instructed Operating Hour at the time of a RUC instruction requiring the switching of the SWGR into the ERCOT Control Area, if the QSE for the Combined Cycle Train has submitted an Energy Offer Curve for the RUC-committed configuration, ERCOT shall create a proxy Energy Offer Curve as described below:

MW	Price (per MWh)
HSL of RUC-committed configuration (if more than highest MW in Energy Offer Curve)	Greater of: $4,500 or the effective VOLL, whichever is less; and the price associated with the highest MW in QSE-submitted Energy Offer Curve
Energy Offer Curve for MW at and above HSL of QSE-committed configuration	Greater of: $4,500 or the effective VOLL, whichever is less; and the QSE-submitted Energy Offer Curve
HSL of QSE-committed configuration (if more than highest MW in Energy Offer Curve and price associated with highest MW in Energy Offer Curve is less than $4,500)	$4,500 or the effective VOLL, whichever is less
HSL of QSE-committed configuration (if more than highest MW in Energy Offer Curve)	Price associated with the highest MW in QSE-submitted Energy Offer Curve
Energy Offer Curve for MW at and below HSL of QSE-committed configuration	The QSE-submitted Energy Offer Curve
1 MW below lowest MW in Energy Offer Curve (if more than LSL)	-$249.99
LSL (if less than lowest MW in Energy Offer Curve)	-$250.00

(5) For use as SCED inputs for determining energy dispatch and Ancillary Service awards, ERCOT shall use the available Ancillary Service MW capacity of all Resources by creating a proxy Ancillary Service Offer for qualified Resources as follows:

(a) The proxy Ancillary Service Offer shall be a linked Ancillary Service Offer across all Ancillary Service products for which a Resource is qualified to provide. For Generation Resources, the proxy Ancillary Service Offer MW shall be equal to the Resource's telemetered HSL. For ESRs, the proxy Ancillary Service Offer MW shall be equal to the difference between the Resource's telemetered HSL and LSL. For Load Resources, the proxy Ancillary Service Offer MW shall be equal to the Resource's telemetered Maximum Power Consumption (MPC).

(b) For Resources that are not RUC-committed, the price in the proxy Ancillary Service Offer shall be set to:

(i) For Reg-Up and RRS, the maximum of:

(A) The proxy Ancillary Service Offer price floor for Reg-Up or RRS, respectively;

(B) The Resource's highest submitted Ancillary Service Offer price for Reg-Up or RRS, respectively;

(C) The Resource's highest Ancillary Service Offer price for ECRS (submitted or proxy); or

(D) The Resource's highest Ancillary Service Offer price for Non-Spin (submitted or proxy).

(ii) For ECRS, the maximum of:

(A) The proxy Ancillary Service Offer price floor for ECRS;

(B) The Resource's highest submitted Ancillary Service Offer price for ECRS; or

(C) The Resource's highest Ancillary Service Offer price for Non-Spin (submitted or proxy).

(iii) For Non-Spin, the maximum of:

(A) The proxy Ancillary Service Offer price floor for Non-Spin; or

(B) The Resource's highest submitted Ancillary Service Offer price for Non-Spin.

(iv) For Reg-Down, the maximum of:

(A) The proxy Ancillary Service Offer price floor for Reg-Down; or

(B) The Resource's highest submitted Ancillary Service Offer price for Reg-Down.

(c) The proxy Ancillary Service Offer price floors for each SCED-interval shall be derived from the effective ASDCs and Ancillary Service Plan using the following logic:

(i) The proxy Ancillary Service Offer price floor for Reg-Up is equal to the ~~minimum~~lesser of the values below minus $0.01 per MW per hour:

(A) $2,000 per MW per hour; ~~and~~or

(B) The point on the ASDC for Reg-Up that intersects with a quantity that is 95~~X~~% of the Ancillary Service Plan for Reg-Up.

(ii) The proxy Ancillary Service Offer price floor for RRS is equal to the ~~minimum~~lesser of the values below minus $0.01 per MW per hour:

(A) $2,000 per MW per hour; ~~and~~or

(B) The point on the ASDC for RRS that intersects with a quantity that is 95~~X~~% of the Ancillary Service Plan for RRS.

(iii) The proxy Ancillary Service Offer price floor for ECRS is equal to the ~~minimum~~lesser of the values below minus $0.01 per MW per hour:

(A) $2,000 per MW per hour; ~~and~~or

(B) The point on the ASDC for ECRS that intersects with a quantity that is 95~~X~~% of the Ancillary Service Plan for ECRS.

(iv) The proxy Ancillary Service Offer price floor for Non-Spin is equal to the ~~minimum~~lesser of the values below minus $0.01 per MW per hour:

(A) $2,000 per MW per hour; ~~and~~or

(B) The point on the ASDC for Non-Spin that intersects with a quantity that is 95~~X~~% of the Ancillary Service Plan for Non-Spin.

(v) The proxy Ancillary Service Offer price floor for Reg-Down is equal to the ~~minimum~~lesser of the values below minus $0.01 per MW per hour:

(A) $2,000 per MW per hour; ~~and~~or

(B) The point on the ASDC for Reg-Down that intersects with a quantity that is 95~~X~~% of the Ancillary Service Plan for Reg-Down.

(d) ERCOT systems shall be designed to allow for proxy Ancillary Service Offer price floors to differ when the same Ancillary Service product can be provided by either On-Line or Off-Line Resources, and/or an Ancillary Service product has sub-types.

~~(d) Proxy Ancillary Service Offer price floors shall be approved by TAC and posted on the ERCOT website.~~

(e) For RUC-committed Resources:

(i) If a RUC-committed Resource does not have an Ancillary Service Offer for an Ancillary Service product that the Resource is qualified to provide, ERCOT shall create an Ancillary Service Offer for that Ancillary Service product at a value of $250/per MWh for the full operating range of the Resource up to its telemetered HSL.

(ii) For each Ancillary Service product for which a RUC-committed Resource has an Ancillary Service Offer, the Ancillary Service Offer used by SCED for that Ancillary Service product across the full operating range of the Resource up to its telemetered HSL shall be the maximum of:

(A) The Resource's highest submitted Ancillary Service Offer price; or

(B) $250/per MWh.

(6) For use as SCED inputs for determining energy Dispatch and Ancillary Service awards, ERCOT shall use the available capacity of all On-Line ESRs by creating proxy Energy Bid/Offer Curves for certain Resources as follows:

(a) For each ESR for which its QSE has submitted an Energy Bid/Offer Curve that does not cover the full offer range (LSL to HSL) of the Resource's available capacity, ERCOT shall create a proxy Energy Bid/Offer Curve that extends the submitted Energy Bid/Offer Curve to use the entire available capacity of the Resource above the highest MW point on the Energy Bid/Offer Curve to the Resource's HSL and from the lowest MW point on the Energy Bid/Offer Curve to LSL, using these prices for the corresponding MW segments:

Scenario	MW Segment	Price (per MWh)
HSL MW and the highest MW point on the Energy Bid/Offer are both greater than or equal to zero. **and,** HSL is greater than the highest MW in submitted Energy Bid/Offer Curve	From highest MW point on submitted Energy Bid/Offer Curve to HSL MW	RTSWCAP
HSL MW is greater than or equal to zero, **and,** the highest MW point on the Energy Bid/Offer is less than zero	From highest MW point on submitted Energy Bid/Offer Curve to 0 MW From 0 MW to HSL	Price associated with the highest MW in submitted Energy Bid/Offer Curve RTSWCAP
HSL is less than zero and is also greater than the highest MW in submitted Energy Bid/Offer Curve	From highest MW point on submitted Energy Bid/Offer Curve to HSL MW	Price associated with the highest MW in submitted Energy Bid/Offer Curve

Energy Bid/Offer Curve		Energy Bid/Offer Curve
LSL MW and the lowest MW point on the Energy Bid/Offer Curve are both greater than or equal to zero, and, LSL is less than the lowest MW in submitted Energy Bid/Offer Curve	From LSL to lowest MW point on submitted Energy Bid/Offer Curve	Price associated with the lowest MW in submitted Energy Bid/Offer Curve
LSL MW is less than zero, and, the lowest MW point on the Energy Bid/Offer Curve is greater than zero	From LSL to 0 MW From 0 MW to lowest MW point on submitted Energy Bid/Offer Curve	-$250.00 Price associated with the lowest MW in submitted Energy Bid/Offer Curve
LSL and the lowest MW point on the Energy Bid/Offer Curve are both less than or equal to zero, and, LSL is less than the lowest MW point on the Energy Bid/Offer Curve	From LSL to lowest MW point on submitted Energy Bid/Offer Curve	-$250.00

(b) At the time of SCED execution, if a valid Energy Bid/Offer Curve or Output Schedule does not exist for an ESR that has a status of On-Line, then ERCOT shall notify the QSE and create a proxy Energy Bid/Offer Curve priced at -$250/MWh for the MW portion of the curve less than zero MW, and priced at the RTSWCAP for the MW portion of the curve greater than zero MW.

(c) At the time of SCED execution, if a QSE representing an ESR has submitted an Output Schedule instead of an Energy Bid/Offer Curve, ERCOT shall create a proxy Energy Bid/Offer Curve priced at -$250/ per MWh for the MW portion of the curve from its LSL to the MW amount on the Output Schedule, and priced at the RTSWCAP for the MW portion of the curve from the MW amount on the Output Schedule to its HSL.

(7) The Entity with decision-making authority, as more fully described in Section 3.19.1, Constraint Competitiveness Test Definitions, over how a Resource or Split Generation Resource is offered or scheduled, shall be responsible for all offers associated with each Resource, including offers represented by a proxy Energy Offer Curve, proxy Energy Bid/Offer Curve, or proxy Ancillary Service Offer.

(8) For a CLR whose QSE has submitted an Energy Bid Curve that does not cover the full range of the Resource's available Demand response capability, consistent with the CLR's telemetered quantities, ERCOT shall create a proxy energy bid as described below:

MW	Price (per MWh)

LPC to MPC minus maximum MW of Energy Bid Curve	Price associated with the lowest MW in submitted Energy Bid Curve
MPC minus maximum MW of Energy Bid Curve to MPC	Energy Bid Curve
MPC	Right-most point (lowest price) on Energy Bid Curve

(9) For a CLR whose QSE has not submitted an Energy Bid Curve, consistent with the CLR's telemetered quantities, ERCOT shall create a proxy Energy Bid Curve as described below:

MW	Price (per MWh)
LPC to MPC	SWCAP

(10) ERCOT shall ensure that any Energy Bid Curve is monotonically non-increasing. The QSE representing the CLR shall be responsible for all Energy Bid Curves, including Energy Bid Curves updated by ERCOT as described above.

(11) A CLR may consume energy only when dispatched by SCED to do so. A CLR may telemeter a status of OUTL only if the Resource is Off-Line and unavailable with its energy consumption at zero. In instances when the CLR is unable to follow SCED Dispatch Instructions but still consumes energy, the CLR must submit a Resource Status of ONHOLD. Under all telemetered statuses, including OUTL, the remaining telemetry quantities submitted by the QSE shall represent the operating conditions of the CLR that can be verified by ERCOT. A QSE representing a CLR with a telemetered status of OUTL or ONHOLD is still obligated to provide any applicable Ancillary Services awarded to the Resource. This paragraph does not apply to ESRs.

(12) Energy Offer Curves that were constructed in whole or in part with proxy Energy Offer Curves shall be so marked in all ERCOT postings or references to the energy offer.

(13) SCED will enforce Resource-specific Ancillary Service constraints to ensure that Ancillary Service awards are aligned with a Resource's qualifications and telemetered Ancillary Service capabilities.

(a) A scaling factor of 5/7 shall be used for Reg-Up award when ensuring that the SCED Base Point plus the product of this scaling factor and the Reg-Up award does not exceed HDL.

(b) A scaling factor of 5/7 shall be used for Reg-Down award when ensuring that the SCED Base Point minus the product of this scaling factor and the Reg-Down award does not go below LDL.

(14) Energy Bid/Offer Curves that were constructed in whole or in part with proxy Energy Bid/Offer Curves shall be so marked in all ERCOT postings or references to the energy bid/offer.

(15) The two-step SCED methodology referenced in paragraph (1) above is:

(a) The first step is to execute the SCED process to determine Reference LMPs. In this step, ERCOT executes SCED using the full Network Operations Model while only observing limits of Competitive Constraints in addition to power balance and Ancillary Service constraints. Energy Offer Curves for all On-Line Generation Resources, Energy Bid/Offer Curves for all On-Line ESRs, and Energy Bid Curves from available CLRs, whether submitted by QSEs or created by ERCOT under this Section, are used in the SCED to determine "Reference LMPs."

(b) The second step is to execute the SCED process to produce Base Points, Ancillary Service awards, Shadow Prices, Real-Time MCPCs, and LMPs, subject to security constraints (including Competitive and Non-Competitive Constraints) and other Resource constraints. The second step must:

(i) Use Energy Offer Curves for all On-Line Generation Resources, whether submitted by QSEs or created by ERCOT. Each Energy Offer Curve must be bounded at the lesser of the Reference LMP (from Step 1) or the appropriate Mitigated Offer Floor. In addition, each Energy Offer Curve subject to mitigation under the criteria described in Section 3.19.4, Security-Constrained Economic Dispatch Constraint Competitiveness Test, must be capped at the greater of the Reference LMP (from Step 1) at the Resource Node plus a variable not to exceed 0.01 multiplied by the value of the Resource's Mitigated Offer Cap (MOC) curve at the LSL or the appropriate MOC;

(ii) Use Energy Bid/Offer Curves for all On-Line ESRs, whether submitted by QSEs or created by ERCOT. Each Energy Bid/Offer Curve must be bounded at the lesser of the Reference LMP (from Step 1) or the appropriate Mitigated Offer Floor. The offer portion of each Energy Bid/Offer Curve subject to mitigation under the criteria described in Section 3.19.4, Security-Constrained Economic Dispatch Constraint Competitiveness Test, must be capped at the greater of the Reference LMP (from Step 1) at the Resource Node plus a variable not to exceed 0.01 multiplied by the value of the Resource's MOC curve at the LSL or the appropriate MOC;

(iii) Use Energy Bid Curves for all available CLRs, whether submitted by QSEs or created by ERCOT. There is no mitigation of Energy Bid Curves. An Energy Bid Curve from an Aggregate Load Resource (ALR) represents the bid for energy distributed across all nodes in the Load Zone in which the ALR is located. For an ESR or a CLR that is

not an ALR, an Energy Bid Curve represents a bid for energy at the applicable Resource Node;

(iv) Observe all Competitive and Non-Competitive Constraints; and

(v) Use Ancillary Service Offers to determine Ancillary Service awards.

(c) ERCOT shall archive information and provide monthly summaries of security violations and any binding transmission constraints identified in Step 2 of the SCED process. The summary must describe the limiting element (or identified operator-entered constraint with operator's comments describing the reason and the Resource-specific impacts for any manual overrides). ERCOT shall provide the summary to Market Participants on the MIS Secure Area and to the Independent Market Monitor (IMM).

(d) The System Lambda used to determine LMPs from SCED Step 2 shall be capped at the effective VOLL.

(16) For each SCED process, in addition to the binding Base Points, Ancillary Service awards, Real-Time MCPCs, and LMPs, ERCOT shall calculate a non-binding projection of the Base Points, Ancillary Service awards, MCPCs, Resource Node LMPs, Real-Time Reliability Deployment Price Adders, Hub LMPs, and Load Zone LMPs at a frequency of every five minutes for at least 15 minutes into the future based on the same inputs to the SCED process as described in this Section, except that the Resource's HDL and LDL and the total generation requirement will be as estimated at future intervals. The Resource's HDL and LDL will be calculated for each interval of the projection based on the ramp rate capability over the study period. ERCOT shall estimate the projected total generation requirement by calculating a Load forecast for the study period. In lieu of the steps described in Section 6.5.7.3.1, Determination of Real-Time Reliability Deployment Price Adders, the non-binding projection of Real-Time Reliability Deployment Price Adders shall be estimated based on GTBD, reliability deployments MWs, and aggregated offers. The Energy Offer Curve and Energy Bid/Offer Curves from SCED Step 2, the virtual offers for Load Resources deployed and the power balance penalty curve will be compared against the updated GTBD to get an estimate of the System Lambda from paragraph (2)(m) of Section 6.5.7.3.1. ERCOT shall post the projected non-binding Base Points and Ancillary Service awards for each Resource for each interval study period on the MIS Certified Area and the projected non-binding LMPs for Resource Nodes, Real-Time MCPCs, Real-Time Reliability Deployment Price Adders, Hub LMPs and Load Zone LMPs on the ERCOT website pursuant to Section 6.3.2, Activities for Real-Time Operations.

(17) ERCOT may override one or more of a CLR's parameters in SCED if ERCOT determines that the CLR's participation is having an adverse impact on the reliability of the ERCOT System.

Board Report

(18)	The QSE representing an ESR may withdraw energy from the ERCOT System only when dispatched by SCED to do so. An ESR may telemeter a status of OUT only if the ESR is in Outage status.

ERCOT Impact Analysis Report

NPRR Number	1269	NPRR Title	RTC+B Three Parameters Policy Issues
Impact Analysis Date		January 28, 2025	
Estimated Cost/Budgetary Impact		None.	
Estimated Time Requirements		No project required. This Nodal Protocol Revision Request (NPRR) can take effect upon implementation of PR447, Real-Time Co-Optimization (RTC). See Comments.	
ERCOT Staffing Impacts (across all areas)		Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		No impacts to ERCOT computer systems.	
ERCOT Business Function Impacts		No impacts to ERCOT business functions.	
Grid Operations & Practices Impacts		No impacts to ERCOT grid operations and practices.	

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation
None offered.

Comments
There are no additional impacts to this NPRR beyond what was captured in PR447, Real-Time Co-optimization.

Board Report

NPRR Number	1270	NPRR Title	Additional Revisions Required for Implementation of RTC
Date of Decision		April 8, 2025	
Action		Recommended Approval	
Timeline		Urgent	
Estimated Impacts		Cost/Budgetary: None Project Duration: No project required	
Proposed Effective Date		Upon system implementation of PR447, Real-Time Co-Optimization (RTC)	
Priority and Rank Assigned		Not applicable	
Nodal Protocol Sections Requiring Revision		6.5.5.2, Operational Data Requirements 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment 6.5.9.4.2, EEA Levels 8.1.1.2.1.3, Non-Spinning Reserve Qualification 8.1.1.2.1.7, ERCOT Contingency Reserve Service Qualification 8.1.1.4.3, Non-Spinning Reserve Service Energy Deployment Criteria	
Related Documents Requiring Revision/Related Revision Requests		Nodal Operating Guide Section 4.5.3.3, EEA Levels (Alignment Nodal Operating Guide Revision Request (NOGRR))	
Revision Description		This Nodal Protocol Revision Request (NPRR): • Updates requirements for Load Resources that are changing under RTC and were not updated in earlier revisions; • Removes language associated with group assignments in the Day-Ahead Market (DAM); deployments are Resource-specific based on Real-Time awards; no requirement to return to service in three hours as that capacity will be replaced with awarded capacity in Real-Time; • Eliminates the automatic qualification of all Resources to provide On-Line Non-Spinning Reserve (Non-Spin) and Security-Constrained Economic Dispatch (SCED)-dispatchable ERCOT Contingency Reserve Service (ECRS). Resources will be required to undergo a qualification test to provide each of these services; and	

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	• Adds additional pre-processing checks in the SCED process to validate Ancillary Service capability telemetry that are sent by Qualified Scheduling Entities (QSEs). ERCOT invites review of this NPRR from the RTC plus Batteries Task Force (RTCBTF). Note that the deployment changes for Load Resources identified above have no system impacts as they reflect the current Real-Time Co-Optimization plus Batteries (RTC+B) business requirements and interface requirements for Market Participants.
Reason for Revision	☐ Strategic Plan Objective 1 – Be an industry leader for grid reliability and resilience ☐ Strategic Plan 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 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	This NPRR provides improvements and clarifications for the successful implementation of RTC+B as discussed with RTCBTF.
PRS Decision	On 2/12/25, PRS voted unanimously to table NPRR1270. All Market Segments participated in the vote. On 3/12/25, PRS voted unanimously to grant NPRR1270 Urgent status; to recommend approval of NPRR1270 as submitted; and to forward to TAC NPRR1270 and the 1/28/25 Impact Analysis. All Market Segments participated in the vote.
Summary of PRS Discussion	On 2/12/25, the sponsor provided an overview of NPRR1270. Participants tabled NPRR1270 for continued discussions at upcoming RTCBTF meetings, and the sponsor noted they plan to request Urgent status for NPRR1270 at the March PRS meeting to keep this NPRR on-track for PUCT approval ahead of RTC+B market trials later this year.

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	On 3/12/25, there was no discussion.
TAC Decision	On 3/26/25, TAC voted unanimously to recommend approval of NPRR1270 as recommended by PRS in the 3/12/25 PRS Report. All Market Segments participated in the vote.
Summary of TAC Discussion	On 3/26/25, there was no additional discussion beyond TAC review of the items below.
TAC Review/Justification of Recommendation	☒ Revision Request ties to Reason for Revision as explained in Justification ☒ Impact Analysis reviewed and impacts are justified as explained in Justification ☒ Opinions were reviewed and discussed ☒ Comments were reviewed and discussed (if applicable) ☐ Other: (explain)
ERCOT Board Decision	On 4/8/25, the ERCOT Board voted unanimously to recommend approval of NPRR1270 as recommended by TAC in the 3/26/25 TAC Report.

Opinions	
Credit Review	ERCOT Credit Staff and the Credit Finance Sub Group (CFSG) have reviewed NPRR1270 and do not believe that it requires changes to credit monitoring activity or the calculation of liability.
Independent Market Monitor Opinion	IMM supports approval of NPRR1270.
ERCOT Opinion	ERCOT supports approval of NPRR1270.
ERCOT Market Impact Statement	ERCOT Staff has reviewed NPRR1270 and believes the market impact for NPRR1270, after extensive review with stakeholders at the RTCBTF, provides improvements and clarifications to RTC requirements ahead of the upcoming RTC market trials.

Sponsor	
Name	Nitika Mago / Matt Mereness
E-mail Address	Nitika.Mago@ercot.com / Matt.Mereness@ercot.com

Board Report

Company	ERCOT
Phone Number	512-248-6601 / 512-248-3089
Cell Number	
Market Segment	Not applicable

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

Comments Received	
Comment Author	**Comment Summary**
None	

Market Rules Notes

Please note the baseline Protocol language in the following sections(s) has been updated to reflect the incorporation of the following NPRR(s) into the Protocols:

- NPRR1246, Energy Storage Resource Terminology Alignment for the Single-Model Era (incorporated 4/1/25)
  - Section 6.5.7.6.2.3
  - Section 6.5.9.4.2
  - Section 8.1.1.2.1.7

Please note that the following NPRR(s) also propose revisions to the following section(s):

- NPRR1235, Dispatchable Reliability Reserve Service as a Stand-Alone Ancillary Service
  - Section 6.5.5.2

Proposed Protocol Language Revision

6.5.5.2 Operational Data Requirements

Commented [CP1]: Please note NPRR1235 also proposes revisions to this section.

(1) ERCOT shall use Operating Period data to monitor and control the reliability of the ERCOT Transmission Grid and shall use it in network analysis software to predict the short-term reliability of the ERCOT Transmission Grid. Each TSP, at its own expense, may obtain that Operating Period data from ERCOT or directly from QSEs.

(2) A QSE representing a Generation Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each Generation Resource. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:

(a) Net real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process. Net real power represents the actual generation of a Resource for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), determination of the High Ancillary Service Limit (HASL), High Dispatch Limit (HDL), Low Dispatch Limit (LDL) and Low Ancillary Service Limit (LASL), and is consistent with telemetered HSL, LSL and Non-Frequency Responsive Capacity (NFRC);

(b) Gross real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversions constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process;

(c) Gross Reactive Power (in Megavolt-Amperes reactive (MVAr));

(d) Net Reactive Power (in MVAr);

(e) Power to standby transformers serving plant auxiliary Load;

(f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;

(g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(h) Generation Resource breaker and switch status;

(i) HSL (Combined Cycle Generation Resources) shall:

(i) Submit the HSL of the current operating configuration; and

(ii) When providing ECRS, update the HSL as needed, to be consistent with Resource performance limitations of ECRS provision;

(j) NFRC currently available (unloaded) and included in the HSL of the Combined Cycle Generation Resource's current configuration;

(k) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;

(l) Low Emergency Limit (LEL), under Section 6.5.9.2;

(m) LSL;

(n) Configuration identification for Combined Cycle Generation Resources;

(o) Ancillary Service Schedule for each quantity of ECRS and Non-Spin which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;

(i) For On-line Non-Spin, Ancillary Service Schedule shall be set to zero;

(ii) For Off-Line Non-Spin and for On-Line Non-Spin using Off-Line power augmentation technology the Ancillary Service Schedule shall equal the Non-Spin obligation and then shall be set to zero within 20 minutes following Non-Spin deployment;

(p) Ancillary Service Resource Responsibility for each quantity of Regulation Up Service (Reg-Up), Regulation Down Service (Reg-Down), RRS, ECRS, and Non-Spin. The sum of Ancillary Service Resource Responsibility for all Resources in a QSE is equal to the Ancillary Service Supply Responsibility for that QSE;

(q) Reg-Up and Reg-Down participation factors represent how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s). The Reg-Up and Reg-Down participation factors for a Resource providing Fast Responding Regulation Up Service (FRRS-Up) or Fast Responding Regulation Down Service (FRRS-Down) shall be zero;

(r) The designated Master QSE of a Generation Resource that has been split to function as two or more Split Generation Resources shall provide Real-Time telemetry for items (a), (b), (c), (d), (e), (g), and (h) above, PSS and AVR status for the total Generation Resource in addition to the Split Generation Resource the Master QSE represents; and

(s) For an ESR, the next Operating Hour's Ancillary Service Resource Responsibility for each quantity of Reg-Up, Reg-Down, ECRS, RRS and Non-Spin.

[NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (2) above with the following upon system implementation for NPRR1014 or NPRR1029; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

(2) A QSE representing a Generation Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT

for each Generation Resource. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:

(a) Net real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process. Net real power represents the actual generation of a Resource for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), High Dispatch Limit (HDL), and Low Dispatch Limit (LDL), and is consistent with telemetered HSL, LSL, and Frequency Responsive Capacity (FRC);

(b) Gross real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversions constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process;

(c) Gross Reactive Power (in Megavolt-Amperes reactive (MVAr));

(d) Net Reactive Power (in MVAr);

(e) Power to standby transformers serving plant auxiliary Load;

(f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;

(g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(h) Generation Resource breaker and switch status;

(i) HSL (Combined Cycle Generation Resources) shall:

(i) Submit the HSL of the current operating configuration; and

(ii) When providing ECRS, update the HSL as needed, to be consistent with Resource performance limitations of ECRS provision;

(j) For Resources with capacity that is not capable of providing Primary Frequency Response (PFR), the current FRC of the Resource;

(k) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;

(l) Low Emergency Limit (LEL), under Section 6.5.9.2;

(m) LSL;

(n) Configuration identification for Combined Cycle Generation Resources;

(o) For Resources with capacity that is not capable of providing PFR, the high and low limits in MW of the Resource's capacity that is frequency responsive;

(p) For RRS, including any sub-categories of RRS, the physical capability (in MW) of the Resource to provide RRS;

(q) For Ancillary Services other than RRS, a blended Normal Ramp Rate (in MW/min) that reflects the physical capability of the Resource to provide that specific type of Ancillary Service;

(r) Five-minute blended Normal Ramp Rates (up and down);

(s) The designated Master QSE of a Generation Resource that has been split to function as two or more Split Generation Resources shall provide Real-Time telemetry for items (a), (b), (c), (d), (e), (g), and (h) above, PSS and AVR status for the total Generation Resource in addition to the Split Generation Resource the Master QSE represents; and

(t) The telemetered MW of power augmentation capacity that is not On-Line for Resources that have power augmentation capacity included in HSL.

(3) For each Intermittent Renewable Resource (IRR), the QSE shall set the HSL equal to the current net output capability of the facility. The net output capability should consider the net real power of the IRR generation equipment, IRR generation equipment availability, weather conditions, and whether the IRR net output is being affected by compliance with a SCED Dispatch Instruction.

(4) For each Resource, the QSE for the Resource shall consider the physical capability to provide a specific type of Ancillary Service based on the operating conditions for that specific Ancillary Service, including equipment availability, weather conditions and ability to meet the Ancillary Service criteria specified in Section 8.1.1.3, Ancillary Service Capacity Compliance Criteria. ERCOT may perform validation of the QSE's submission to ensure these criteria are considered and adhered to.

(5~~4~~) For each Aggregate Generation Resource (AGR), the QSE shall telemeter the number of its generators online.

(6~~5~~) A QSE representing a Load Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time data to ERCOT for each Load Resource and ERCOT shall make the data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to the Load

Resource's host TSP or DSP at the TSP's or DSP's expense. The Load Resource's net real power consumption, Low Power Consumption (LPC) and Maximum Power Consumption (MPC) shall be telemetered to ERCOT using a positive (+) sign convention:

(a) Load Resource net real power consumption (in MW);

(b) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(c) Load Resource breaker status, if applicable;

(d) LPC (in MW);

(e) MPC (in MW);

(f) Ancillary Service Schedule (in MW) for each quantity of RRS, ECRS, and Non-Spin, which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;

(g) Ancillary Service Resource Responsibility (in MW) for each quantity of Reg-Up and Reg-Down for Controllable Load Resources (CLRs), and RRS, ECRS, and Non-Spin for all Load Resources;

(h) The status of the high-set under-frequency relay, if required for qualification. The under-frequency relay for a Load Resource providing Non-Spin shall be disabled and the status of that relay shall indicate it as disabled or unarmed;

(i) For a CLR providing Non-Spin, the Scheduled Power Consumption that represents zero Ancillary Service deployments;

(j) For a single-site CLR with registered maximum Demand response capacity of ten MW or greater, net Reactive Power (in MVAr);

(k) Resource Status (Resource Status shall be ONRL if high-set under-frequency relay is active);

(l) Reg-Up and Reg-Down participation factor, which represents how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s). The Reg-Up and Reg-Down participation factors for a Resource providing FRRS-Up or FRRS-Down shall be zero;

(m) For an Aggregate Load Resource (ALR) providing Non-Spin, the "Scheduled Power Consumption Plus Two Hours," representing the QSE's forecast of the CLR's instantaneous power consumption for a point two hours in the future; and

(n) For an ESR, the next Operating Hour's Ancillary Service Resource Responsibility for each quantity of Reg-Up, Reg-Down, ECRS, RRS and Non-Spin.

[NPRR1010 and NPRR1029: Replace applicable portions of paragraph (5) above with the following upon system implementation for NPRR1029; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

(5) A QSE representing a Load Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time data to ERCOT for each Load Resource and ERCOT shall make the data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to the Load Resource's host TSP or DSP at the TSP's or DSP's expense. The Load Resource's net real power consumption, Low Power Consumption (LPC) and Maximum Power Consumption (MPC) shall be telemetered to ERCOT using a positive (+) sign convention:

(a) Load Resource net real power consumption (in MW);

(b) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(c) Load Resource breaker status, if applicable;

(d) LPC (in MW);

(e) MPC (in MW);

(f) The Load Resource's Ancillary Service self-provision (in MW) for RRS and/or ECRS provided via under-frequency relay;

(g) The status of the high-set under-frequency relay, if required for qualification. The under-frequency relay for a Load Resource providing Non-Spin shall be disabled and the status of that relay shall indicate it as disabled or unarmed;

(h) For a Controllable Load Resource (CLR) providing Non-Spin, the Scheduled Power Consumption that represents zero Ancillary Service deployments;

(i) For a single-site CLR with registered maximum Demand response capacity of ten MW or greater, net Reactive Power (in MVAr);

(j) Resource Status;

(k) For an Aggregate Load Resource (ALR) providing Non-Spin, the "Scheduled Power Consumption Plus Two Hours," representing the QSE's forecast of the CLR's instantaneous power consumption for a point two hours in the future;

(l) For RRS, including any sub-categories of RRS, the current physical capability (in MW) of the Resource to provide RRS;

(m) For Ancillary Service products other than RRS, a blended Normal Ramp Rate (in MW/min) that reflects the current physical capability of the Resource's ability to provide a particular Ancillary Service product; and

(n) For a CLR, 5-minute blended Normal Ramp Rates (up and down).

[NPRR1014 and NPRR1029: Insert applicable portions of paragraph (6) below upon system implementation and renumber accordingly:]

(6) A QSE representing an ESR connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each ESR. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:

(a) Net real power consumption or output (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process. Net real power represents the actual generation or consumption of an ESR for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), in determination of High Dispatch Limit (HDL), and Low Dispatch Limit (LDL) and is consistent with telemetered HSL, LSL and Frequency Responsive Capacity (FRC);

(b) Gross real power consumption or output (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process;

(c) Gross Reactive Power (in Megavolt-Amperes reactive (MVAr));

(d) Net Reactive Power (in MVAr);

(e) Power to standby transformers serving plant auxiliary Load;

(f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;

(g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(h) ESR breaker and switch status;

(i) HSL;

(j) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;

(k) Low Emergency Limit (LEL), under Section 6.5.9.2;

(l) LSL;

(m) For RRS, including any sub-category of RRS, the current physical capability (in MW) of the Resource to provide RRS;

(n) For Ancillary Services other than RRS, a blended ramp rate (in MW/min) that reflects the current physical capability of the Resource to provide that specific type of Ancillary Service; and

(o) Five-minute blended normal up and down ramp rates;

(6) A QSE with Resources used in SCED shall provide communications equipment to receive ERCOT-telemetered control deployments.

(7) A QSE providing any Regulation Service shall provide telemetry indicating the appropriate status of Resources providing Reg-Up or Reg-Down, including status indicating whether the Resource is temporarily blocked from receiving Reg-Up and/or Reg-Down deployments from the QSE. This temporary blocking will be indicated by the enabling of the Raise Block Status and/or Lower Block Status telemetry points.

(a) Raise Block Status and Lower Block Status are telemetry points used in transient unit conditions to communicate to ERCOT that a Resource's ability to adjust its output has been unexpectedly impaired.

(b) When one or both of the telemetry points are enabled for a Resource, ERCOT will cease using the regulation capacity assigned to that Resource for Ancillary Service deployment.

(c) This hiatus of deployment will not excuse the Resource's obligation to provide the Ancillary Services for which it has been committed.

[NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (c) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014 or NPRR1029:]

(c) This hiatus of deployment will not excuse the Resource's obligation to provide the Ancillary Services for which it has been awarded.

(d) These telemetry points shall only be utilized during unforeseen transient unit conditions such as plant equipment failures. Raise Block Status and Lower Block Status shall only be enabled until the Resource operator has time to update the Resource limits and Ancillary Service telemetry to reflect the problem.

(e) The Resource limits and Ancillary Service telemetry shall be updated as soon as practicable. Raise Block Status and Lower Block Status will then be disabled.

(8) Real-Time data for reliability purposes must be accurate to within three percent. This telemetry may be provided from relaying accuracy instrumentation transformers.

(9) Each QSE shall report the current configuration of combined-cycle Resources that it represents to ERCOT. The telemetered Resource Status for a Combined Cycle Generation Resource may only be assigned a Resource Status of OFFNS if no generation units within that Combined Cycle Generation Resource are On-Line.

[NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (9) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014 or NPRR1029:]

(9) Each QSE shall report the current configuration of combined-cycle Resources that it represents to ERCOT. The telemetered Resource Status for a Combined Cycle Generation Resource may only be assigned a Resource Status of OFF if no generation units within that Combined Cycle Generation Resource are On-Line.

(10) A QSE representing Combined Cycle Generation Resources shall provide ERCOT with the possible operating configurations for each power block with accompanying limits. Combined Cycle Train power augmentation methods may be included as part of one or more of the registered Combined Cycle Generation Resource configurations. Power augmentation methods may include:

(a) Combustion turbine inlet air cooling methods;

(b) Duct firing;

(c) Other ways of temporarily increasing the output of Combined Cycle Generation Resources; and

(d) For Qualifying Facilities (QFs), an LSL that represents the minimum energy available for Dispatch by SCED, in MW, from the Combined Cycle Generation

Resource based on the minimum stable steam delivery to the thermal host plus a justifiable reliability margin that accounts for changes in ambient conditions.

(11) A QSE representing Generation Resources other than Combined Cycle Generation Resources may telemeter an NFRC value for their Generation Resource only if the QSE or Resource Entity associated with that Generation Resource has first requested and obtained ERCOT's approval of the Generation Resource's NFRC quantity.

[NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (11) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014 or NPRR1029:]

(11) A QSE representing a Generation Resource other than a Combined Cycle Generation Resource may provide FRC telemetry for the Generation Resource only if the QSE or Resource Entity associated with that Generation Resource has first requested and obtained ERCOT's approval.

(12) A QSE representing an ESR shall provide the following Real-Time telemetry data to ERCOT for each ESR:

(a) Maximum State of Charge (MaxSOC), in MWh;

(b) Minimum State of Charge (MinSOC), in MWh;

(c) State of Charge (SOC), in MWh;

(d) Maximum Operating Discharge Power Limit, in MW; and

(e) Maximum Operating Charge Power Limit, in MW.

(13) The QSE shall ensure that the SOC is greater than or equal to the MinSOC and less than or equal to the MaxSOC.

(14) For each ESR, ERCOT shall include in the HASL calculation the SOC that is available for an injection Base Point or the additional energy that the ESR can charge in the next SCED interval. For the purposes of paragraph (14), X equals 0.

(a) SOC available for an injection Base Point in the next SCED interval is the:

(i) Telemetered SOC;

(ii) Minus the sum of the individual SOC requirements for each up Ancillary Service (ECRS, Non-Spin, RRS, or Reg-Up) the ESR is carrying at that time;

(A) The SOC requirement for each up Ancillary Service, excluding RRS from Fast Frequency Response (FFR) and Fast Responding Regulation Service (FRRS), is equal to the ESR's Ancillary Service Resource Responsibility multiplied by the remaining time in the Operating Hour, in hours. Prior to X minutes before the end of current Operating Hour, this requirement may increase to account for the up Ancillary Services that the ESR is required to provide in the next Operating Hour. The SOC requirement for an ESR providing RRS from FFR is equal to the ESR's Ancillary Service Resource Responsibility for FFR multiplied by 0.25 hours. If FFR is deployed, an SOC credit will be given such that:

(1) Until FFR is recalled, the SOC credit is equal to the ESR's Ancillary Service Resource Responsibility for FFR at the time of deployment multiplied by the lower of the elapsed time since the beginning of the deployment and 0.25 hours;

(2) For the 15 minutes following the recall of FFR, the SOC credit is equal to the lower of the SOC credit just prior to FFR recall and the ESR's Ancillary Service Resource Responsibility for FFR for the current hour multiplied by 0.25 hours;

(3) Beginning 15 minutes after FFR recall, the SOC credit is zero; and

(4) If another FFR event occurs within 15 minutes after a previous FFR event has been recalled, the SOC credit for the first event calculated in paragraph (2) above will be applied to the SOC credit for each additional FFR event.

(iii) Minus the telemetered MinSOC.

(b) The additional energy that the ESR can charge in the next SCED interval is the:

(i) Telemetered MaxSOC;

(ii) Minus the SOC margin required for the Reg-Down Ancillary Service Resource Responsibility the ESR is carrying at that time, which is calculated as the ESR's Reg-Down Ancillary Service Resource Responsibility multiplied by the remaining time in the Operating Hour, in hours. Prior to X minutes before the end of current Operating Hour, this SOC margin requirement may increase to account for the Regulation Down the ESR is planning to provide in the next Operating Hour;

(iii) Minus telemetered SOC.

(15) In accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, ERCOT shall make the data specified in paragraph (12) available to any requesting TSP or DSP at the requesting TSP's or DSP's expense.

[NPRR1077: Insert paragraphs (16)-(18) below upon system implementation:]

(16) Except as provided in paragraph (15) below, a QSE representing a Settlement Only Generator (SOG) shall provide ERCOT the following Real-Time telemetry:

(a) Net real power injection at the Point of Interconnection (POI) or Point of Common Coupling (PCC) for each site with one or more SOGs;

(b) For any site with one or more ESSs that are registered as an SOG, net real power withdrawal at the POI or PCC;

(c) For each inverter at the site, gross real power output measured at the generator terminals for all SOGs that are located behind that inverter, separately aggregated by fuel type;

(d) For SOGs at the same site that are not located behind an inverter, gross real power output measured at the generator terminals for all SOGs, separately aggregated by fuel type;

(e) For any site with one or more ESSs registered as an SOG, for each inverter, gross real power withdrawal by all such ESSs that are located behind that inverter, as measured at the generator terminals; and

(f) Generator breaker status.

(17) A QSE is not required to provide telemetry for a Settlement Only Distribution Generator (SODG) if:

(a) The site that includes the SODG has not exported more than 10 MWh in any calendar year, exclusive of any energy exported during any Settlement Interval in which an ERCOT-declared Energy Emergency Alert (EEA) is in effect;

(b) The QSE or Resource Entity for the SODG has submitted a written request to ERCOT seeking an exemption from the telemetry requirements under this paragraph; and

(c) ERCOT has provided the QSE or Resource Entity written confirmation that the SODG is exempt from providing telemetry under this paragraph.

(18) If ERCOT determines that a site that includes an SODG has exported more than 10 MWh in a given calendar year, it shall notify the SODG's QSE that the SODG is no longer eligible for the telemetry exemption. Within 90 days of receiving this

notification, the QSE for the SODG shall comply with the telemetry requirements of paragraph (14) above.

[NPRR885: Insert paragraph (19) below upon system implementation:]

(19) A QSE representing a Must-Run Alternative (MRA) shall telemeter the MRA MW currently available (unloaded) and not included in the HSL.

[NPRR1029: Insert paragraph (20) below upon system implementation:]

(20) A QSE representing a DC-Coupled Resource shall provide the following Real-Time telemetry data in addition to that required for other ESRs:

(a) Gross AC MW production of the intermittent renewable generation component of the DC-Coupled Resource, which includes the portion of the intermittent renewable generation used to charge the ESS and/or serve auxiliary Load on the DC side of the inverter; and

(b) Gross AC MW capability of the intermittent renewable generation component of the DC-Coupled Resource, based on Real-Time conditions.

[NPRR995: Insert paragraph (21) below upon system implementation:]

(21) A QSE representing a Settlement Only Energy Storage System (SOESS) that elects to include the net generation and/or net withdrawals of the SOESS in the estimate of Real-Time Liability (RTL) shall provide ERCOT Real-Time telemetry of the net generation and/or net withdrawals of the SOESS.

6.5.7.6.2.3 Non-Spinning Reserve Service Deployment

(1) ERCOT shall deploy Non-Spin Service by operator Dispatch Instruction for the portion of On-Line Generation Resources that is only available through power augmentation and participating as Off-Line Non-Spin, Off-Line Generation Resources, and Load Resources that are not Controllable Load Resources. ERCOT shall develop a procedure approved by TAC to deploy Resources providing Non-Spin Service. ERCOT Operators shall implement the deployment procedure when a specified threshold(s) in MW of capability available to SCED to increase generation is reached. ERCOT Operators may implement the deployment procedure to recover deployed RRS, ECRS, or when other Emergency

Conditions exist. The deployment of Non-Spin must always be 100% of that scheduled on an individual Resource.

(2) Once Non-Spin capacity from Off-Line Generation Resources providing Non-Spin is deployed and the Generation Resources are On-Line, ERCOT shall use SCED to determine the amount of energy to be dispatched from those Resources.

(3) Off-Line Generation Resources providing Non-Spin (OFFNS Resource Status) are required to provide an Energy Offer Curve for use by SCED.

(4) Non-Spin can be provided by Controllable Load Resources that are SCED qualified or by Load Resources that are not Controllable Load Resources but do not have an under-frequency relay or the under-frequency relay is not armed. A Load Resource that is not a Controllable Load Resource shall be capable of being Dispatched to its Non-Spin Ancillary Service Resource Responsibility within 30 minutes of a deployment instruction for capacity. Following a deployment instruction, the QSE shall reduce the Non-Spin Ancillary Service Schedule by the amount of the deployment.

(5) ERCOT shall post a list of Off-Line Generation Resources and Load Resources that are not Controllable Load Resources on the MIS Certified Area immediately following the Day-Ahead Reliability Unit Commitment (DRUC) for each QSE with a Load Resource Non-Spin award. The list will be broken into groups of approximately 500 MW increments. ERCOT shall develop a process for determining which individual Resource to place in each group based on a random sampling of individual Load Resources that are not Controllable Load Resources awarded Non-Spin and Generation Resources carrying Off-Line Non-Spin. At ERCOT's discretion, ERCOT may deploy all groups as specified in the Other Binding Document titled "Non-Spinning Reserve Deployment and Recall Procedure."

(a) On-Line Generation Resources participating in Off-Line Non-Spin using power augmentation will be randomly distributed in Real-Time among the groups created in the Day-Ahead for the purpose of manual deployment of Non-Spin by operator Dispatch Instruction.

(b) Any Generation Resource providing Off-Line Non-Spin that did not previously receive group assignment will be automatically considered in Group 1. Any Load Resource that is not a Controllable Load Resource providing Non-Spin in Real-Time that did not previously receive group assignment will be automatically considered in Group 1. ERCOT may assign a Generation Resource providing Off-Line Non-Spin or a Load Resource that is not a Controllable Load Resource to another group if that Resource did not previously receive group assignment and, in ERCOT's reasonable judgment, Group 1 is too large.

(6) Subject to the exceptions described in paragraphs (a) and (b) below, On-Line Generation Resources and Controllable Load Resources that are assigned Non-Spin Ancillary Service Resource Responsibility during an Operating Hour shall always be deployed in that Operating Hour. This deployment shall be considered as a standing Protocol-

directed Non-Spin deployment Dispatch Instruction. Within the 30-second window prior to the top-of-hour clock interval described in paragraph (2) of Section 6.3.2, Activities for Real-Time Operations, the QSE shall respond to the standing Non-Spin deployment Dispatch Instruction for those Resources assigned Non-Spin Ancillary Service Resource Responsibility effective at the top-of-hour by adjusting the Non-Spin Ancillary Service Schedule telemetry. For a Generation Resource, the QSE shall set the Non-Spin Ancillary Service Schedule telemetry equal to the portion of Non-Spin being provided from power augmentation if the portion being provided from power augmentation is participating as Off-Line Non-Spin, otherwise it shall be set to 0. For a Controllable Load Resource, the QSE shall set the Non-Spin Ancillary Service Schedule telemetry equal to 0. As described in Section 6.5.7.2, Resource Limit Calculator, ERCOT shall adjust the HASL and LASL based on the QSE's telemetered Non-Spin Ancillary Service Schedule to account for such deployment and to make the energy from the full amount of the Non-Spin Ancillary Service Resource Responsibility available to SCED. A Non-Spin deployment Dispatch Instruction from ERCOT is not required and these Resources must be able to Dispatch their Non-Spin Ancillary Service Resource Responsibility in response to a SCED Base Point deployment instruction. The provisions of this paragraph (5) do not apply to:

(a) QSGRs assigned Off-Line Non-Spin Ancillary Service Resource Responsibility and provided to SCED for deployment, which must follow the provisions of Section 3.8.3, Quick Start Generation Resources; or

(b) The portion of On-Line Generation Resources that is only available through power augmentation if participating as Off-Line Non-Spin.

(7) Off-Line Generation Resources providing Non-Spin, while Off-Line and before the receipt of any deployment instruction, shall be capable of being dispatched to their Non-Spin Resource Responsibility within 30 minutes of a deployment instruction. Following a deployment instruction, the QSE shall reduce the Non-Spin Ancillary Service Schedule by the amount of the deployment. An Off-Line Generation Resource providing Non-Spin must also be brought On-Line with an Energy Offer Curve at an output level greater than or equal to P1 multiplied by LSL where P1 is defined in the "ERCOT and QSE Operations Business Practices During the Operating Hour." These actions must be done within a time frame that would allow SCED to fully dispatch the Resource's Non-Spin Resource Responsibility within the 30 minute period using the Resource's Normal Ramp Rate curve. The Resource Status indicating that a Generation Resource has come On-Line with an Energy Offer Curve is ON as described in paragraph (5)(b)(i) of Section 3.9.1, Current Operating Plan (COP) Criteria.

(8) For DSRs providing Non-Spin, on deployment of Non-Spin, the DSR's QSE shall adjust its Resource Output Schedule to reflect the amount of deployment. For non-DSRs with Output Schedules providing Non-Spin, on deployment of Non-Spin, ERCOT shall adjust the Resource Output Schedule for the remainder of the Operating Period to reflect the amount of deployment. ERCOT shall notify the QSEs representing the non-DSR of the adjustment through the MIS Certified Area.

(9) Base Points for On-Line Generation Resources and Controllable Load Resources providing Non-Spin include Non-Spin energy as well as any other energy dispatched as a result of SCED. These Resources' Non-Spin Ancillary Service Resource Responsibility and Normal Ramp Rate curve should allow SCED to fully Dispatch the Resource's Non-Spin Resource Responsibility within the 30-minute time frame according to the Resources' Normal Ramp Rate curve. For the portion of the Non-Spin Ancillary Service Resource Responsibility provided from power augmentation of a Generation Resource participating as Off-Line, SCED should be able to be dispatch it within 30 minutes of the Non-Spin deployment instruction.

(10) Each QSE providing Non-Spin from a Resource shall inform ERCOT of the Non-Spin Resource availability using the Resource Status and Non-Spin Ancillary Service Resource Responsibility indications for the Operating Hour using telemetry and shall use the COP to inform ERCOT of Non-Spin Resource Status and Non-Spin Ancillary Service Resource Responsibility for hours in the Adjustment Period through the end of the Operating Day.

(11) ERCOT may deploy Non-Spin at any time in a Settlement Interval.

(12) ERCOT's Non-Spin deployment Dispatch Instructions must include:

(a) The Resource name;

(b) A MW level of capacity deployment for Generation Resources with Energy Offer Curve, a MW level of energy for Generation Resources with Output Schedules, and a Dispatch Instruction for Load Resources equal to their awarded Non-Spin Ancillary Service Resource Responsibility; and

(c) The anticipated duration of deployment.

(13) ERCOT shall provide a signal via ICCP to the QSE of a deployed Generation or Load Resource indicating that its Non-Spin capacity has been deployed.

(14) ERCOT shall, as part of its TAC-approved Non-Spin deployment procedure, provide for the recall of Non-Spin energy including descriptions of changes to Output Schedules and release of energy obligations from On-Line Resources with Output Schedules and from On-Line Resources that were previously Off-Line Resources providing Non-Spin capacity.

(15) ERCOT shall provide a notification to all QSEs via the ERCOT website when any Non-Spin capacity is deployed on the ERCOT System showing the time, MW quantity and the anticipated duration of the deployment.

[NPRR1000, NPRR1010, NPRR1188, and NPRR1246: Replace applicable portions of Section 6.5.7.6.2.3 above with the following upon system implementation for NPRR1000 or

NPRR1188; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010 and NPRR1246:]

6.5.7.6.2.3 Non-Spinning Reserve Service Deployment

(1) ERCOT shall deploy Non-Spin Service by operator Dispatch Instruction for the portion of On-Line Generation Resources that is only available through power augmentation and participating as Off-Line Non-Spin and Off-Line Generation Resources. ERCOT shall develop a procedure approved by TAC to deploy Resources providing Non-Spin Service. ERCOT Operators shall implement the deployment procedure when a specified threshold(s) in MW of capability available to SCED to increase generation is reached. ERCOT Operators may implement the deployment procedure to recover deployed RRS, ECRS, or when other Emergency Conditions exist. The deployment of Non-Spin must always be 100% of that awarded on an individual Resource.

(2) Once Non-Spin capacity from Off-Line Generation Resources awarded Non-Spin is deployed and the Generation Resources are On-Line, ERCOT shall use SCED to determine the amount of energy to be dispatched from those Resources.

(3) Off-Line Generation Resources offering to provide Non-Spin must provide an Energy Offer Curve for use by SCED.

(4) Non-Spin can be provided by CLRs that are SCED qualified or by Load Resources that are not CLRs but do not have an under-frequency relay or the under-frequency relay is unarmed.

(a) CLRs awarded Non-Spin shall have an Energy Bid Curve for SCED and shall be capable of being Dispatched to its Non-Spin Ancillary Service award within 30 minutes, using the Resource's Normal Ramp Rate curve. An Aggregate Load Resource (ALR) must comply with all requirements in Section 22, Attachment O, Requirements for Aggregate Load Resource Participation in the ERCOT Markets.

(b) A Load Resource that is not a CLR shall be capable of being Dispatched to its Non-Spin Ancillary Service Resource Responsibility within 30 minutes of a deployment instruction for capacity.

(5) Off-Line Generation Resources awarded Non-Spin, while Off-Line and before the receipt of any deployment instruction, shall be capable of being dispatched to their Non-Spin award within 30 minutes of a Dispatch Instruction. On-Line Generation Resources awarded Non-Spin on the power augmentation capacity shall be capable of being dispatched to their Non-Spin award within 30 minutes of a Dispatch Instruction.

(6) ERCOT may deploy Non-Spin at any time in a Settlement Interval.

(7) ERCOT shall develop a process to deploy Non-Spin awarded to Off-Line Generation Resources, Load Resources that are not Controllable Load Resources (CLRs), and On-Line Generation Resources participating in Off-Line Non-Spin using power augmentation based on a random sampling of Resources. ERCOT at its discretion may deploy Non-Spin partially or fully as necessary. If Non-Spin is deployed partially, it shall be deployed in increments of 100% of each Resource's Non-Spin award. ERCOT shall issue notification of the deployment on a Resource-specific basis via XML message. ~~ERCOT shall develop a process to place Off-Line Generation Resources and Load Resources that are not Controllable Load Resources with Non-Spin award in a group based on a random sampling for the purpose of deploying these Resources manually. At ERCOT's discretion, ERCOT may deploy all groups as specified in the Other Binding Document titled "Non-Spinning Reserve Deployment and Recall Procedure."~~

~~(a) On-Line Generation Resources participating in Off-Line Non-Spin using power augmentation will be randomly distributed in Real-Time among the groups created in the Day-Ahead for the purpose of manual deployment of Non-Spin by operator Dispatch Instruction.~~

~~(b) Any Generation Resource providing Off-Line Non-Spin that did not previously receive group assignment will be automatically considered in Group 1. Any Load Resource that is not a Controllable Load Resource providing Non-Spin in Real-Time that did not previously receive group assignment will be automatically considered in Group 1. ERCOT may assign a Generation Resource providing Off-Line Non-Spin or a Load Resource that is not a Controllable Load Resource to another group if that Resource did not previously receive group assignment and, in ERCOT's reasonable judgment, Group 1 is too large.~~

(8) ERCOT's Non-Spin deployment Dispatch Instructions must include:

(a) The Resource name;

(b) A MW level of capacity deployment for Generation Resources with Energy Offer Curve, a MW level for ESRs with Energy Bid/Offer Curve, and a MW level of energy for Generation Resources with Output Schedules and a Dispatch Instruction for Load Resources, excluding CLRs, at a minimum equal to their awarded Non-Spin Ancillary Service amount; and

(c) The anticipated duration of deployment.

(9) ERCOT shall provide a signal via ICCP to the QSE of a deployed Resource indicating that its Non-Spin capacity has been deployed.

(10) ERCOT shall, as part of its TAC-approved Non-Spin deployment procedure, provide for the recall of Non-Spin from On-Line Resources that were previously Off-Line

Resources providing Non-Spin capacity and from On-Line Resources providing Non-Spin through power augmentation.

(11) ERCOT shall provide a notification to all QSEs via the ERCOT website when any Non-Spin capacity is deployed on the ERCOT System showing the time, MW quantity and the anticipated duration of the deployment.

6.5.9.4.2 EEA Levels

(1) ERCOT will declare an EEA Level 1 when PRC falls below 2,500 MW and is not projected to be recovered above 2,500 MW within 30 minutes without the use of the following actions that are prescribed for EEA Level 1:

(a) ERCOT shall take the following steps to maintain steady state system frequency near 60 Hz and maintain PRC above 2,000 MW:

(i) Request available Generation Resources that can perform within the expected timeframe of the emergency to come On-Line by initiating manual HRUC or through Dispatch Instructions;

[NPRR1246: Replace paragraph (i) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(i) Request available Generation Resources that can perform within the expected timeframe of the emergency to come On-Line by initiating manual HRUC or through Dispatch Instructions, and request available ESRs that can perform within the expected timeframe of the emergency to come On-Line through Dispatch Instructions;

(ii) Use available DC Tie import capacity that is not already being used;

(iii) Issue a Dispatch Instruction for Resources to remain On-Line which, before start of emergency, were scheduled to come Off-Line; and

(iv) Instruct QSEs to deploy undeployed ERS-10 and ERS-30.

[NPRR1010: Insert paragraph (v) below upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(v) At ERCOT's discretion, manually deploy, through ICCP, available RRS and ECRS capacity from Generation Resources having a Resource Status of ONSC and awarded RRS or ECRS.

(b) QSEs shall:

(i) Ensure COPs, telemetered status, and telemetered HSLs are updated and reflect all Resource delays and limitations; and

[NPRR1010: Replace paragraph (i) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(i) Ensure COPs, telemetered status, telemetered HSLs, Normal Ramp Rates, Emergency Ramp Rates, and Ancillary Service capabilities are updated and reflect all Resource delays and limitations; and

(ii) Ensure that each of its ESRs suspends charging until the EEA is recalled, except under the following circumstances:

(A) The ESR has a current SCED Base Point Instruction, LFC Dispatch Instruction, or manual Dispatch Instruction to charge the ESR;

(B) The ESR is actively providing Primary Frequency Response; or

(C) The ESR is co-located behind a POI with onsite generation that is incapable of exporting additional power to the ERCOT System, in which case the ESR may continue to charge as long as maximum output to the ERCOT System is maintained.

[NPRR995: Replace paragraph (ii) above with the following upon system implementation:]

(ii) Ensure that each of its ESRs and SOESSs suspends charging until the EEA is recalled, except under the following circumstances:

(A) The ESR has a current SCED Base Point Instruction, LFC Dispatch Instruction, or manual Dispatch Instruction to charge the ESR;

(B) The ESR or SOESS is actively providing Primary Frequency Response; or

(C) The ESR or SOESS is co-located behind a POI with onsite generation that is incapable of exporting additional power to the ERCOT System, in which case the ESR may continue to charge as long as maximum output to the ERCOT System is maintained.

(2) ERCOT may declare an EEA Level 2 when the clock-minute average system frequency falls below 59.91 Hz for 15 consecutive minutes. ERCOT will declare an EEA Level 2 when PRC falls below 2,000 MW and is not projected to be recovered above 2,000 MW within 30 minutes without the use of the following actions that are prescribed for EEA Level 2:

(a) In addition to the measures associated with EEA Level 1, ERCOT shall take the following steps to maintain steady state system frequency at a minimum of 59.91 Hz and maintain PRC above 1,500 MW:

(i) Instruct TSPs and DSPs or their agents to reduce Customer Load by using existing, in-service distribution voltage reduction measures that have not already been implemented. A TSP, DSP, or their agent shall implement these instructions if distribution voltage reduction measures are available and already installed. If the TSP, DSP, or their agent determines in their sole discretion that the distribution voltage reduction would adversely affect reliability, the voltage reduction measure may be reduced, modified, or otherwise changed from maximum performance to a level of exercise that has no negative impact to reliability.

(ii) Instruct TSPs and DSPs to implement any available Load management plans to reduce Customer Load.

(iii) Instruct QSEs to deploy ECRS or RRS (controlled by high-set under-frequency relays) supplied from Load Resources. ERCOT may deploy ECRS or RRS from Load Resources simultaneously or separately~~, and in any order~~. ERCOT shall issue such Dispatch Instructions in accordance with the deployment methodologies described in paragraph (iv) below.

(iv) Load Resources providing ECRS that are not controlled by high-set under-frequency relays shall be deployed prior to ~~Group 1~~ deployment of those that have armed under-frequency relays. ERCOT shall deploy ECRS and RRS capacity supplied by Load Resources (controlled by high-set under-frequency relays) in accordance with the following:

(A) Instruct QSEs to deploy ~~RRS with a Group 1 designation and all of the~~ ECRS that is supplied from Load Resources (controlled by high-set under-frequency relays) that are only providing ECRS and then instruct QSEs to deploy Load Resources (controlled by high-set under-frequency relays) ~~by instructing the QSE representing the specific Load Resources to interrupt Group 1 Load Resources~~ providing ECRS and RRS. QSEs ~~shall deploy Load Resources according to the group designation and~~ will be given some discretion to deploy additional Load Resources ~~from any of the groups~~ not designated for deployment if Load Resource operational considerations require such. ERCOT shall issue notification of the deployment via XML message. The deployment

time within the ERCOT XML deployment message shall initiate the ten-minute deployment period;

(B) At the discretion of the ERCOT Operator, instruct QSEs to deploy RRS that is supplied from Load Resources (controlled by high-set under-frequency relays) by instructing the QSE representing the specific Load Resource to interrupt additional Load Resources that are only providing RRS ~~based on their group designation~~. ERCOT shall issue notification of the deployment via XML message. The deployment time within the ERCOT XML deployment message shall initiate the ten-minute deployment period;

(C) The ERCOT Operator may deploy all Load Resources ~~providing only ECRS (not controlled by high-set under-frequency relays) and all groups of Load Resources~~ providing RRS and ECRS at the same time. ERCOT shall issue notification of the deployment via XML message. The deployment time within the ERCOT XML deployment message shall initiate the ten-minute deployment period; and

(D) ~~ERCOT shall post a list of Load Resources on the MIS Certified Area immediately following the DRUC for each QSE with a Load Resource obligation which may be deployed to interrupt under paragraph (A) and paragraph (B).~~ ERCOT shall develop a Real-Time process for deploying~~determining which individual~~ Load Resources ~~to place in each group~~ based on a random sampling of individual Load Resources. At ERCOT's discretion, ERCOT may deploy all Load Resources at any given time during EEA Level 2.

[NPRR1010: Replace paragraph (D) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(D) ~~ERCOT shall post a list of Load Resources on the MIS Certified Area immediately following the DRUC for each QSE with a Load Resource RRS or ECRS award, which may be deployed to interrupt under paragraph (A) and paragraph (B).~~ ERCOT shall develop a Real-Time process for deploying~~determining which individual~~ Load Resources ~~to place in each group~~ based on a random sampling of individual Load Resources. At ERCOT's discretion, ERCOT may deploy all Load Resources at any given time during EEA Level 2.

(v) Unless a media appeal is already in effect, ERCOT shall issue an appeal through the public news media for voluntary energy conservation; and

(vi) With the approval of the affected non-ERCOT Control Area, TSPs, DSPs, or their agents may implement transmission voltage level BLTs, which transfer Load from the ERCOT Control Area to non-ERCOT Control Areas in accordance with BLTs as defined in the Operating Guides.

(b) Confidentiality requirements regarding transmission operations and system capacity information will be lifted, as needed to restore reliability.

(3) ERCOT may declare an EEA Level 3 when the clock-minute average system frequency falls below 59.91 Hz for 20 consecutive minutes or when steady-state frequency falls below 59.8 Hz. ERCOT will declare an EEA Level 3 when PRC cannot be maintained above 1,500 MW or when the clock-minute average system frequency falls below 59.91 Hz for 25 consecutive minutes. Upon declaration of an EEA Level 3, ERCOT shall take any of the following measures as necessary to recover frequency or PRC to the minimum required levels:

(a) Instruct ESRs to suspend charging. For ESRs, ERCOT shall issue the suspension instruction via a SCED Base Point instruction, or, if otherwise necessary, via a manual Dispatch Instruction. An ESR shall suspend charging unless it is providing Primary Frequency Response, has received a charging instruction via SCED Base Point, or is carrying Reg-Down and has received a charging instruction from LFC. However, an ESR co-located behind a POI with onsite generation that is incapable of exporting additional power to the ERCOT System may continue to charge as long as maximum output to the ERCOT System is maintained.

[NPRR995: Replace paragraph (a) above with the following upon system implementation:]

(a) Instruct ESRs to suspend charging. For ESRs, the suspension instruction shall be issued via a SCED Base Point, or, if otherwise necessary, via a manual Dispatch Instruction. An ESR shall suspend charging unless it is providing Primary Frequency Response, has received a charging instruction via SCED Base Point, or is carrying Reg-Down and has received a charging instruction from LFC. An SOESS shall suspend charging unless it is providing Primary Frequency Response. However, an ESR or SOESS co-located behind a POI with onsite generation that is incapable of exporting additional power to the ERCOT System may continue to charge as long as maximum output to the ERCOT System is maintained.

(b) Direct all TOs to shed firm Load, in 100 MW blocks, distributed as documented in the Operating Guides in order to maintain a steady state system frequency at a minimum of 59.91 Hz and to recover 1,500 MW of PRC within 30 minutes.

(i) TOs and TDSPs may shed Load connected to under-frequency relays pursuant to an ERCOT Load shed directive issued during EEA Level 3 so

long as each affected TO continues to comply with its Under-Frequency Load Shed (UFLS) obligation as described in Nodal Operating Guide Section 2.6.1, Automatic Firm Load Shedding, and its Load shed obligation as described in Nodal Operating Guide Section 4.5.3.4, Load Shed Obligation.

(c) Implement any appropriate measures associated with EEA Levels 1 and 2 that have not already been implemented.

8.1.1.2.1.3 Non-Spinning Reserve Qualification

(1) Each Resource providing Non-Spin must be capable of being synchronized and ramped to its Ancillary Service Schedule for Non-Spin within 30 minutes. Non-Spin may be provided from Generation Resource capacity that can ramp within 30 minutes or Load Resources capable of unloading within 30 minutes. Non-Spin may only be provided from capacity that is not fulfilling any other energy or capacity commitment.

(2) A Load Resource providing Non-Spin must provide a telemetered output signal.

(3) Each Generation Resource and Load Resource providing Non-Spin must meet additional technical requirements specified in this Section.

(4) QSEs using a Controllable Load Resource to provide Non-Spin must be capable of responding to ERCOT Dispatch Instructions in a similar manner to QSEs using Generation Resource to provide Non-Spin.

(5) Each QSE shall ensure that each Resource is able to meet the Resource's obligations to provide the Ancillary Service Resource Responsibility. Each Generation Resource and Controllable Load Resource providing Non-Spin must meet additional technical requirements specified in this Section.

(6) For any Resource requesting qualification for Non-Spin, a qualification test for each Resource to provide Non-Spin is conducted during a continuous eight hour period agreed to by the QSE and ERCOT. ERCOT shall confirm the date and time of the test with the QSE. ERCOT shall administer the following test requirements.

(a) At any time during the window (selected by ERCOT when market and reliability conditions allow and not previously disclosed to the QSE), ERCOT shall notify the QSE by using the messaging system and requesting that the QSE provide an amount of Non-Spin from each Resource equal to the amount for which the QSE is requesting qualification. The QSE shall acknowledge the start of the test.

(b) For Generation Resources: during the test window, ERCOT shall send a message to the QSE representing a Generation Resources to deploy Non-Spin. ERCOT shall monitor the adjustment of the Generation Resource's Non-Spin Ancillary Service Schedule within five minutes for Resources On-Line. ERCOT shall measure the test Resource's response as described under Section 8.1.1.4.3, Non-

Spinning Reserve Service Energy Deployment Criteria. ERCOT shall evaluate the response of the Generation Resource given the current operating conditions of the system and determine the Resource's qualification to provide Non-Spin.

(c) For Load Resources, ERCOT shall send an instruction to deploy Non-Spin. ERCOT shall measure the Resource's response as described under Section 8.1.1.4.3.

[NPRR1011: Replace Section 8.1.1.2.1.3 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

8.1.1.2.1.3 Non-Spinning Reserve Qualification

(1) Each Off-Line Resource being offered in to provide Non-Spin must be capable of being synchronized and ramped to its Ancillary Service award for Non-Spin within 30 minutes. Non-Spin may be provided from Generation Resource capacity that can ramp within 30 minutes or Load Resources capable of unloading within 30 minutes. Non-Spin may only be provided from capacity that is not fulfilling any other energy or capacity commitment.

(2) ~~All~~ Resources are required to undergo a qualification test~~qualified to participate in SCED are also qualified~~ to provide Non-Spin when the Resource is On-Line, which shall at least include the ability to provide applicable telemetry and market submissions. The amount of Non-Spin for which the Resource is qualified when On-Line is limited to the amount of capacity that can be ramped or unloaded within 30 minutes.

(3) A Controllable Load Resource offering to provide Non-Spin must be qualified to participate in SCED and must provide a telemetered output signal, including breaker status.

(4) Each Resource providing Non-Spin when Off-Line or providing Non-Spin as a Load Resource other than a Controllable Load Resource must meet additional technical requirements specified in this Section.

(5) QSEs using a Controllable Load Resource to provide Non-Spin must be capable of responding to ERCOT Dispatch Instructions in a similar manner to QSEs using Generation Resource to provide Non-Spin.

(6) Each QSE shall ensure that each Resource is able to meet the Resource's obligations to provide the Ancillary Service award.

(7) For any Resource requesting qualification for providing Non-Spin when Off-Line or providing Non-Spin as a Load Resource other than a Controllable Load Resource, a qualification test for each Resource to provide Non-Spin is conducted during a continuous eight hour period agreed to by the QSE and ERCOT. ERCOT shall

confirm the date and time of the test with the QSE. ERCOT shall administer the following test requirements.

(a) At any time during the window (selected by ERCOT when market and reliability conditions allow and not previously disclosed to the QSE), ERCOT shall notify the QSE by using the messaging system and requesting that the QSE provide an amount of Non-Spin from each Resource equal to the amount for which the QSE is requesting qualification. The QSE shall acknowledge the start of the test.

(b) For the Resources being tested during the test window, ERCOT shall send a message to the QSE representing a Resource to deploy Non-Spin. ERCOT shall measure the test Resource's response as described under Section 8.1.1.4.3, Non-Spinning Reserve Service Energy Deployment Criteria. ERCOT shall evaluate the response of the Resource given the current operating conditions of the system and determine the Resource's qualification to provide Non-Spin.

(8) The maximum quantity of Non-Spin that an individual Resource is qualified to provide is limited to the amount of Non-Spin that can be sustained by the Resource for at least one hour.

8.1.1.2.1.7 ERCOT Contingency Reserve Service Qualification

(1) ECRS may be provided by:

(a) Unloaded Generation Resources that are On-Line;

(b) Quick Start Generation Resources (QSGRs);

(c) Load Resources that may or may not be controlled by high-set under-frequency relays;

(d) Generation Resources operating in the synchronous condenser fast-response mode; or

(e) Controllable Load Resources.

(2) The amount of ECRS provided by individual Generation Resources and Load Resources is limited to ten times its telemetered emergency ramp rate. Each Resource providing ECRS must be capable of ramping the Resource's Ancillary Service Resources Responsibility for ECRS within ten minutes of the notice to deploy ECRS, and must be able to maintain the scheduled level of deployment for the period of service commitment. The amount of ECRS on a Generation Resource may be further limited by requirements of the Operating Guides.

(3) A Load Resource must be loaded and capable of unloading the scheduled amount of ECRS within ten minutes of instruction by ERCOT and must either be immediately

responsive to system frequency or be interrupted by action of under-frequency relays with settings as specified by the Operating Guides.

(4) Any QSE providing ECRS shall provide communications equipment to receive ERCOT telemetered control deployments of ECRS.

(5) Load Resources providing ECRS must provide a telemetered output signal, including breaker status and status of the under-frequency relay, if applicable.

(6) Each QSE shall ensure that each Resource is able to meet the Resource's obligations to provide the Ancillary Service Resource Responsibility. Each Generation Resource and Load Resource providing ECRS must meet additional technical requirements specified in this Section.

(7) A qualification test for each Resource to provide ECRS is conducted during a continuous eight-hour period agreed to by the QSE and ERCOT. ERCOT shall confirm the date and time of the test with the QSE. ERCOT shall administer the following test requirements:

(a) At any time during the window (selected by ERCOT when market and reliability conditions allow and not previously disclosed to the QSE), ERCOT shall notify the QSE it is to provide an amount of ECRS from its Resource to be qualified equal to the amount that the QSE is requesting qualification. The QSE shall acknowledge the start of the test.

(b) For Generation Resources desiring qualification to provide ECRS, ERCOT shall send a signal to the Resource's QSE to deploy ECRS, indicating the MW amount. ERCOT shall monitor the QSE's telemetry of the Resource's Ancillary Service Schedule for an update within 15 seconds. ERCOT shall measure the test Resource's response as described under Section 8.1.1.4.4, ERCOT Contingency Reserve Service Energy Deployment Criteria. ERCOT shall evaluate the response of the Generation Resource given the current operating conditions of the system and determine the Resource's qualification to provide ECRS.

(c) For Controllable Load Resources desiring qualification to provide ECRS, ERCOT shall send a signal to the Resource's QSE to deploy ECRS, indicating the MW amount. ERCOT shall measure the test Resource's response as described under Section 8.1.1.4.4. ERCOT shall evaluate the response of the Controllable Load Resource given the current operating conditions of the system and determine the Controllable Load Resource's qualification to provide ECRS.

(d) For Load Resources, excluding Controllable Load Resources, desiring qualification to provide ECRS, ERCOT shall deploy ECRS, indicating the MW amount. ERCOT shall measure the test Resource's response as described under Section 8.1.1.4.4.

(e) On successful demonstration of all test criteria, ERCOT shall qualify that the Resource is capable of providing ECRS and shall provide a copy of the certificate to the QSE and the Resource Entity.

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[NPRR1011 and NPRR1246: Replace Section 8.1.1.2.1.7 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

8.1.1.2.1.7 ERCOT Contingency Reserve Service Qualification

(1) ECRS may be provided by:

(a) Unloaded Generation Resources that are On-Line;

(b) Quick Start Generation Resources (QSGRs);

(c) Load Resources that may or may not be controlled by high-set under-frequency relays;

(d) Generation Resources operating in the synchronous condenser fast-response mode;

(e) Controllable Load Resources (CLRs); or

(f) ESRs.

(2) ~~All~~ Resources are required to undergo a qualification test~~qualified to participate in SCED or qualified to telemeter a Resource Status of ONSC are also qualified~~ to provide ECRS when the Resource is On-Line, which shall at least include the ability to provide applicable telemetry and market submissions. The amount of ECRS for which the Resource is qualified when On-Line will be limited to the amount of capacity that can be ramped or unloaded within ten minutes. Off-Line ECRS can only be provided by qualified QSGRs.

(3) The amount of ECRS provided by individual Generation Resources and Load Resources is limited to ten times its telemetered emergency ramp rate. Each Resource providing ECRS must be capable of ramping the Resource's Ancillary Service award for ECRS within ten minutes of the notice to deploy ECRS, and must be able to maintain the awarded level of deployment for at least one hour. The amount of ECRS on a Generation Resource may be further limited by requirements of the Operating Guides.

(4) A Load Resource must be loaded and capable of unloading the awarded amount of ECRS within ten minutes of instruction by ERCOT and must either be immediately responsive to system frequency or be interrupted by action of under-frequency relays with settings as specified by the Operating Guides.

(5) Any QSE providing ECRS shall provide communications equipment to receive ERCOT telemetered control deployments of ECRS.

(6) Load Resources providing ECRS must provide a telemetered output signal, including breaker status and status of the under-frequency relay, if applicable.

(7) Each QSE shall ensure that each Resource is able to meet the Resource's obligations to provide the Ancillary Service award. Each Generation Resource and Load Resource providing ECRS when Off-Line as a QSGR with an OFFQS Resource Status, or when not qualified to participate in SCED, must meet additional technical requirements specified in this Section.

(8) A qualification test for each Resource to provide ECRS when Off-Line as a QSGR with an OFFQS Resource Status or as a Load Resource, excluding CLRs, is conducted during a continuous eight-hour period agreed to by the QSE and ERCOT. ERCOT shall confirm the date and time of the test with the QSE. ERCOT shall administer the following test requirements:

(a) At any time during the window (selected by ERCOT when market and reliability conditions allow and not previously disclosed to the QSE), ERCOT shall notify the QSE it is to provide an amount of ECRS from its Resource to be qualified equal to the amount that the QSE is requesting qualification. The QSE shall acknowledge the start of the test.

(b) Generation Resources desiring qualification to provide ECRS when Off-Line must meet the QSGR qualification criteria outlined under Section 8.1.1.2, General Capacity Testing Requirements. ERCOT shall measure the test Resource's response as described under Section 8.1.1.2 for QSGR. ERCOT shall evaluate the response of the Generation Resource given the current operating conditions of the system and determine the Resource's qualification to provide ECRS.

(c) For Load Resources, excluding CLRs, desiring qualification to provide ECRS, ERCOT shall deploy ECRS, indicating the MW amount. ERCOT shall measure the test Resource's response as described under Section 8.1.1.4.4.

(d) On successful demonstration of all test criteria, ERCOT shall qualify that the Resource is capable of providing ECRS and shall provide a copy of the certificate to the QSE and the Resource Entity.

8.1.1.4.3 Non-Spinning Reserve Service Energy Deployment Criteria

(1) ERCOT shall, as part of its Ancillary Service deployment procedure under Section 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment, include all performance metrics for a Resource receiving a Non-Spin recall instruction from ERCOT.

(2) A Non-Spin Dispatch Instruction from ERCOT must respect the minimum runtime of a Generation Resource. After the recall of a Non-Spin Dispatch Instruction, any Generation Resource previously Off-Line providing Non-Spin is allowed to remain On-Line for 30 minutes following the recall. During that time period, the On-Line Generation Resource is treated as if the Non-Spin is being provided.

(3) Control performance during periods in which ERCOT has deployed Non-Spin shall be based on the requirements below and failure to meet any one of these requirements for the greater of one or 5% of Non-Spin deployments during a month shall be reported to the Reliability Monitor as non-compliance:

(a) Within 20 minutes following a deployment instruction, the QSE must update the telemetered Ancillary Service Schedule for Non-Spin for Generation Resources and Controllable Load Resources to reflect the deployment amount.

(b) Off-Line Generation Resources, within 25 minutes following a deployment instruction, must be On-Line with an Energy Offer Curve and the telemetered net generation must be greater than or equal to the Resource's telemetered LSL multiplied by P1 where P1 is defined in the "ERCOT and QSE Operations Business Practices During the Operating Hour." The Resource Status that must be telemetered indicating that the Resource has come On-Line with an Energy Offer Curve is ON as described in paragraph (5)(b)(i) of Section 3.9.1, Current Operating Plan (COP) Criteria.

(c) If an Off-Line Generation Resource experiences a Startup Loading Failure (excluding those caused by operator error), the Resource may be considered for exclusion from performance non-compliance if the QSE provides to ERCOT the following documentation regarding the incident:

(i) Its generation log documenting the Startup Loading Failure; and

(ii) Equipment failure documentation such as, but not limited to, GADS reports, plant operator logs, work orders, or other applicable information.

(d) For QSEs with Load Resources that are not Controllable Load Resources, 30 minutes following deployment instruction the sum of the QSE's Load Resource response shall not be less than 95% of the requested MW deployment, nor more than 150% of the lesser of the following:

(i) The QSE's award for Non-Spin from Load Resources that are not Controllable Load Resources; or

(ii) The requested MW deployment.

The QSE's portfolio shall maintain this response until recalled.

(e) During periods when the Load level of a Load Resource that is not a Controllable Load Resource providing Non-Spin has been affected by a Dispatch Instruction from ERCOT, the performance of a Load Resource in response to a Dispatch Instruction must be determined by subtracting the Load Resource's actual Load response from its Baseline. "Baseline" capacity is calculated by measuring the average of the real power consumption for five minutes before the Dispatch Instruction if the Load level of a Load Resource had not been affected by a Dispatch Instruction from ERCOT. The actual Load response is the difference

between the Baseline and the average of the real power consumption data being telemetered to ERCOT over the Settlement Interval for the period beginning 30 minutes after the Dispatch Instruction and ending at the time of recall. The instantaneous response at any point in time during the sustained response period must be no less than 95% and no more than 150% of the Dispatch Instruction.

(4) A Load Resource that is not a Controllable Load Resource providing Non-Spin must return to at least 95% of its Ancillary Service Resource Responsibility for Non-Spin within three hours following a recall instruction unless replaced by another Resource as described below. However, the Load Resource should attempt to return to at least 95% of its Ancillary Service Resource Responsibility for Non-Spin as soon as practical considering process constraints. For a Load Resource that is not a Controllable Load Resource that is unable to return to its Ancillary Service Resource Responsibility within three hours of recall instruction, its QSE may replace the quantity of deficient Non-Spin capacity within that same three hours using other Resources not previously committed to provide Non-Spin.

(5) ERCOT may revoke the Ancillary Service qualification of any Load Resource that is not a Controllable Load Resource for failure to comply with the required performance standards, based on the evaluation it performed under this Section. Specifically, if a Load Resource that is not a Controllable Load Resource that is providing Non-Spin fails to respond with at least 95% of its Dispatch Instruction for Non-Spin within 30 minutes of an ERCOT Dispatch Instruction, that response shall be considered a failure. Two Load Resource performance failures within any rolling 365-day period shall result in disqualification of that Load Resource. After six months of disqualification, the Load Resource may reapply for qualification provided it submits a corrective action plan to ERCOT that identifies actions taken to correct performance deficiencies and the disqualified Load Resource successfully passes qualification test as specified in Section 8.1.1.1, Ancillary Service Qualification and Testing.

[NPRR1011: Replace Section 8.1.1.4.3 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

8.1.1.4.3 Non-Spinning Reserve Service Energy Deployment Criteria

(1) ERCOT shall, as part of its Ancillary Service deployment procedure under Section 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment, include all performance metrics for a Resource receiving a Non-Spin recall instruction from ERCOT.

(2) A Non-Spin Dispatch Instruction from ERCOT must respect the minimum runtime of a Generation Resource.

(3) Control performance during periods in which ERCOT has manually deployed Non-Spin shall be based on the requirements below and failure to meet any one of these requirements for the greater of one or 5% of Non-Spin deployments during a month shall be reported to the Reliability Monitor as non-compliance:

(a) Off-Line Generation Resources, within 25 minutes following a deployment instruction, must be On-Line with an Energy Offer Curve and the telemetered net generation must be greater than or equal to the Resource's telemetered LSL multiplied by P1 where P1 is defined in the "ERCOT and QSE Operations Business Practices During the Operating Hour." The Resource Status that must be telemetered indicating that the Resource has come On-Line with an Energy Offer Curve is ON as described in paragraph (5)(b)(i) of Section 3.9.1, Current Operating Plan (COP) Criteria.

(b) If an Off-Line Generation Resource experiences a Startup Loading Failure (excluding those caused by operator error), the Resource may be considered for exclusion from performance non-compliance if the QSE provides to ERCOT the following documentation regarding the incident:

(i) Its generation log documenting the Startup Loading Failure; and

(ii) Equipment failure documentation such as, but not limited to, GADS reports, plant operator logs, work orders, or other applicable information.

(c) Controllable Load Resources must be available to SCED, and must have a Real-Time Market (RTM) Energy Bid and the telemetered net real power consumption must be greater than or equal to the Resource's telemetered LPC.

(d) For QSEs with Load Resources that are not Controllable Load Resources, 30 minutes following deployment instruction, the sum of the QSE's Load Resource response shall not be less than 95% of the requested MW deployment, nor more than 150% of the lesser of the following:

(i) The QSE's award for Non-Spin from Load Resources that are not Controllable Load Resources; or

(ii) The requested MW deployment.

The QSE's portfolio shall maintain this response until recalled.

(e) During periods when the Load level of a Load Resource that is not a Controllable Load Resource providing Non-Spin has been affected by a Dispatch Instruction from ERCOT, the performance of a Load Resource in response to a Dispatch Instruction must be determined by subtracting the Load Resource's actual Load response from its Baseline. "Baseline" capacity is calculated by measuring the average of the real power consumption for five minutes before the Dispatch Instruction if the Load level of a Load Resource had not been affected by a Dispatch Instruction from ERCOT. The actual Load response is the difference between the Baseline and the average of the real power consumption data being telemetered to ERCOT over the Settlement Interval for the period beginning 30 minutes after the Dispatch Instruction and ending at the time of recall. The instantaneous response at any point in time

during the sustained response period must be no less than 95% and no more than 150% of the Dispatch Instruction.

(4) Once Non-Spin capacity has been manually deployed by ERCOT, the Resource's Non-Spin capacity shall remain available for dispatch by SCED until ERCOT issues a recall instruction or the Resource has exhausted its ability to maintain the deployed capacity after meeting the requirements of paragraph (2) of Section 8.1.1.3.3, Non-Spinning Reserve Capacity Monitoring Criteria, whichever occurs first.

~~(5) A Load Resource that is not a Controllable Load Resource providing Non-Spin must return to at least 95% of its Ancillary Service Resource Responsibility for Non-Spin within three hours following a recall instruction unless replaced by another Resource as described below. However, the Load Resource should attempt to return to at least 95% of its Ancillary Service Resource Responsibility for Non-Spin as soon as practical considering process constraints. For a Load Resource that is not a Controllable Load Resource that is unable to return to its Ancillary Service Resource Responsibility within three hours of recall instruction, its QSE may replace the quantity of deficient Non-Spin capacity within that same three hours using other Resources not previously committed to provide Non-Spin.~~

(56) ERCOT may revoke the Ancillary Service qualification of any Load Resource that is not a Controllable Load Resource for failure to comply with the required performance standards, based on the evaluation it performed under this Section. Specifically, if a Load Resource that is not a Controllable Load Resource that is providing Non-Spin fails to respond with at least 95% of its Dispatch Instruction for Non-Spin within 30 minutes of an ERCOT Dispatch Instruction, that response shall be considered a failure. Two Load Resource performance failures within any rolling 365-day period shall result in disqualification of that Load Resource. After six months of disqualification, the Load Resource may reapply for qualification provided it submits a corrective action plan to ERCOT that identifies actions taken to correct performance deficiencies and the disqualified Load Resource successfully passes qualification test as specified in Section 8.1.1.1, Ancillary Service Qualification and Testing.

ERCOT Impact Analysis Report

NPRR Number	1270	NPRR Title	Additional Revisions Required for Implementation of RTC
Impact Analysis Date		January 28, 2025	
Estimated Cost/Budgetary Impact		None.	
Estimated Time Requirements		No project required. This Nodal Protocol Revision Request (NPRR) can take effect upon implementation of PR447, Real-Time Co-Optimization (RTC). See Comments.	
ERCOT Staffing Impacts (across all areas)		Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		No impacts to ERCOT computer systems.	
ERCOT Business Function Impacts		No impacts to ERCOT business functions.	
Grid Operations & Practices Impacts		No impacts to ERCOT grid operations and practices.	

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation
None offered.

Comments
There are no additional impacts to this NPRR beyond what was captured in PR447, Real-Time Co-optimization.

Board Report

NPRR Number	1273	NPRR Title	Appropriate Accounting for ESRs in PRC Calculation
Date of Decision		April 8, 2025	
Action		Recommended Approval	
Timeline		Urgent – The current calculation for Physical Responsive Capacity (PRC) may not provide sufficient time for load shed once the trigger for Energy Emergency Alert (EEA) Level 3 is met.	
Estimated Impacts		Cost/Budgetary: None Project Duration: No project required	
Proposed Effective Date		First of the month following Public Utility Commission of Texas (PUCT) approval	
Priority and Rank Assigned		Not applicable	
Nodal Protocol Sections Requiring Revision		6.5.7.5, Ancillary Services Capacity Monitor	
Related Documents Requiring Revision/Related Revision Requests		None	
Revision Description		This Nodal Protocol Revision Request (NPRR) modifies the capacity from Energy Storage Resources (ESRs) included in the calculation of PRC to be the amount that can be sustained for 45 minutes.	
Reason for Revision		☐ Strategic Plan Objective 1 – Be an industry leader for grid reliability and resilience ☐ Strategic Plan 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 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	

Board Report

	☐ 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	North American Electric Reliability Corporation (NERC) Reliability Standard EOP-011, specifies that a Balancing Authority will declare EEA Level 3 when a system's operating reserves are less than its Most Severe Single Contingency (MSSC) as defined by NERC, and will immediately take actions, including manual load shed, adequate to mitigate this emergency. Under normal conditions, ERCOT procures sufficient Responsive Reserve (RRS) Service and other Ancillary Services to avoid the need for manual or under-frequency load shed to meet these requirements. As long as these Ancillary Services are preserved, then the NERC Reliability Standard EOP-011 (as well as other standards related to timely frequency recovery and recovery of contingency reserves) can be met. However, during tight operational conditions when Demand approaches the available supply, these Ancillary Service reserves are released to be used as needed to provide energy to meet Demand. During these periods, the calculation of PRC becomes critically important, as it is the value which is monitored to determine the level of operating reserves that are available to implement the NERC Reliability Standard EOP-011. During these conditions, ERCOT monitors PRC and will implement EEA Level 3 and shed firm load if PRC drops below 1,500 MW and is not expected to recover within 30 minutes. When ERCOT orders Transmission Operators (TOs) to implement load shed, they have up to 30 minutes to implement their share of that load shed amount. ERCOT will also order load shed based on defined low frequency triggers which are used as a backstop in case the telemetered capacity values used for PRC are inaccurate. Therefore, the primary purpose of the calculation of PRC is to provide an indication of how much capacity is available to respond to a unit trip during these scarcity conditions when no other capacity is available. With the inclusion of limited-duration ESRs on the ERCOT System, another consideration is whether the capacity included in PRC has sufficient State of Charge (SOC) to replace the capacity lost from the MSSC until load shed can be implemented. The current calculation of PRC includes capacity from ESRs that is able to be sustained for 15 minutes. While this was tied to the duration for the provision of Primary Frequency Response, when the

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	value of PRC becomes most important, the calculation of PRC should include the capacity from ESRs that is able to be sustained long enough to allow time for load to be shed and not just what is needed to support frequency. This value must be greater than the 30 minutes allowed for load shed. ERCOT is proposing 45 minutes to account for control room response, rapid changes in PRC, and delays in SOC telemetry changes. This NPRR does not impact requirements for ESRs and is only intended to change ERCOT's PRC calculation. It is also worth noting this change is distinct from the Ancillary Service duration topic that is being considered by the Real-Time Co-optimization plus Batteries Task Force (RTCBTF).
PRS Decision	On 3/12/25, PRS voted unanimously to grant NPRR1273 Urgent status; to recommend approval of NPRR1273 as submitted; and to forward to TAC NPRR1273 and the 2/12/25 Impact Analysis. All Market Segments participated in the vote.
Summary of PRS Discussion	On 3/12/25, participants reviewed NPRR1273 and the 2/12/25 Impact Analysis.
TAC Decision	On 3/26/25, TAC voted unanimously to recommend approval of NPRR1273 as recommended by PRS in the 3/12/25 PRS Report. All Market Segments participated in the vote.
Summary of TAC Discussion	On 3/26/25, there was no additional discussion beyond TAC review of the items below.
TAC Review/Justification of Recommendation	[X] Revision Request ties to Reason for Revision as explained in Justification [X] Impact Analysis reviewed and impacts are justified as explained in Justification [X] Opinions were reviewed and discussed [X] Comments were reviewed and discussed (if applicable) [ ] Other: (explain)
ERCOT Board Decision	On 4/8/25, the ERCOT Board voted unanimously to recommend approval of NPRR1273 as recommended by TAC in the 3/26/25 TAC Report.

Opinions

Board Report

Credit Review	ERCOT Credit Staff and the Credit Finance Sub Group (CFSG) have reviewed NPRR1273 and do not believe that it requires changes to credit monitoring activity or the calculation of liability.
Independent Market Monitor Opinion	IMM has no opinion on NPRR1273.
ERCOT Opinion	ERCOT supports approval of NPRR1273.
ERCOT Market Impact Statement	ERCOT Staff has reviewed NPRR1273 and changing the PRC calculation to include the capacity that can be sustained for 45 minutes rather than 15 minutes will better ensure that PRC is an accurate indicator of the amount of capacity that currently has sufficient energy to support the grid until any needed load shed could be implemented. This change has a positive market impact by allowing ERCOT to meet its reliability obligations and by informing the market more accurately about grid conditions during scarcity.

Sponsor	
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Market Segment	Not applicable

Market Rules Staff Contact	
Name	Erin Wasik-Gutierrez
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Comments Received	
Comment Author	**Comment Summary**
None	

Market Rules Notes

Board Report

Please note that the following NPRR(s) also propose revisions to the following section(s):

- NPRR1235, Dispatchable Reliability Reserve Service as a Stand-Alone Ancillary Service
  - Section 6.5.7.5

Proposed Protocol Language Revision

6.5.7.5 Ancillary Services Capacity Monitor

Commented [EWG1]: Please note NPRR1235 also proposes revisions to this section.

(1) ERCOT shall calculate the following every ten seconds and provide Real-Time summaries to ERCOT Operators and all Market Participants using ICCP, giving updates of calculations every ten seconds, and posting on the ERCOT website, giving updates of calculations every five minutes, which show the Real-Time total system amount of:

(a) RRS capacity from:

(i) Generation Resources;

(ii) Load Resources excluding CLRs;

(iii) CLRs; and

(iv) Resources capable of Fast Frequency Response (FFR);

(b) Ancillary Service Resource Responsibility for RRS from:

(i) Generation Resources;

(ii) Load Resources excluding CLRs;

(iii) CLRs; and

(iv) Resources capable of FFR;

(c) ECRS capacity from:

(i) Generation Resources;

(ii) Load Resources excluding CLRs;

(iii) CLRs; and

(iv) Quick Start Generation Resources (QSGRs);

(d) Ancillary Service Resource Responsibility for ECRS from:

(i) Generation Resources;

(ii) Load Resources excluding CLRs; and

(iii) CLRs; and

(iv) QSGRs;

(e) ECRS deployed to Generation and Load Resources;

(f) Non-Spin available from:

(i) On-Line Generation Resources with Energy Offer Curves;

(ii) Undeployed Load Resources;

(iii) Off-Line Generation Resources; and

(iv) Resources with Output Schedules;

(g) Ancillary Service Resource Responsibility for Non-Spin from:

(i) On-Line Generation Resources with Energy Offer Curves;

(ii) On-Line Generation Resources with Output Schedules;

(iii) Load Resources;

(iv) Off-Line Generation Resources excluding QSGRs; and

(v) QSGRs;

(h) Undeployed Reg-Up and Reg-Down;

(i) Ancillary Service Resource Responsibility for Reg-Up and Reg-Down;

(j) Deployed Reg-Up and Reg-Down;

(k) Available capacity:

(i) With Energy Offer Curves in the ERCOT System that can be used to increase Generation Resource Base Points in SCED;

(ii) With Energy Offer Curves in the ERCOT System that can be used to decrease Generation Resource Base Points in SCED;

(iii) Without Energy Offer Curves in the ERCOT System that can be used to increase Generation Resource Base Points in SCED;

(iv) Without Energy Offer Curves in the ERCOT System that can be used to decrease Generation Resource Base Points in SCED;

(v) With RTM Energy Bid curves from available CLRs in the ERCOT System that can be used to decrease Base Points (energy consumption) in SCED;

(vi) With RTM Energy Bid curves from available CLRs in the ERCOT System that can be used to increase Base Points (energy consumption) in SCED;

(vii) From Resources participating in SCED plus the Reg-Up, ECRS, and RRS from Load Resources and the Net Power Consumption minus the Low Power Consumption from Load Resources with a validated Real-Time RRS and ECRS Schedule;

(viii) From Resources included in item (vii) above plus reserves from Resources that could be made available to SCED in 30 minutes;

(ix) In the ERCOT System that can be used to increase Generation Resource Base Points in the next five minutes in SCED; and

(x) In the ERCOT System that can be used to decrease Generation Resource Base Points in the next five minutes in SCED;

(l) Aggregate telemetered HSL capacity for Resources with a telemetered Resource Status of EMR;

(m) Aggregate telemetered HSL capacity for Resources with a telemetered Resource Status of OUT;

(n) Aggregate net telemetered consumption for Resources with a telemetered Resource Status of OUTL; and

(o) The ERCOT-wide PRC calculated as follows:

$$PRC_1 = \sum_{i=\text{online generation resource}}^{\text{All online generation resources}} \text{Min}(\text{Max}((RDF*(HSL-NFRC) - \text{Actual Net Telemetered Output})_i, 0.0), 0.2*RDF*(HSL-NFRC)_i),$$

where the included On-Line Generation Resources do not include WGRs, nuclear Generation Resources, or Generation Resources with an output less than or equal to 95% of telemetered LSL or with a telemetered status of ONTEST, ONHOLD, STARTUP, or SHUTDOWN.

$$PRC_2 = \sum_{i=\text{online WGR}}^{\text{All online WGRs}} \text{Min}(\text{Max}((\text{RDFw}*\text{HSL} - \text{Actual Net Telemetered Output})_i, 0.0), 0.2*\text{RDFw}*\text{HSL}_i),$$

where the included On-Line WGRs only include WGRs that are Primary Frequency Response-capable.

PRC_3 = $\sum_{i=\text{online generation resource}}^{\text{All online generation resources}}$ ((Synchronous condenser output)$_i$ as qualified by item (8) of Operating Guide Section 2.3.1.2, Additional Operational Details for Responsive Reserve and ERCOT Contingency Reserve Service Providers))

PRC_4 = $\sum_{i=\text{online load resource}}^{\text{All online load resources}}$ (Min(Max((Actual Net Telemetered Consumption – LPC), 0.0), ECRS and RRS Ancillary Service Resource Responsibility * 1.5) from all Load Resources controlled by high-set under frequency relays carrying an ECRS and/or RRS Ancillary Service Resource Responsibility)$_i$

PRC_5 = $\sum_{i=\text{online load resource}}^{\text{All online load resources}}$ Min(Max((LRDF_1*Actual Net Telemetered Consumption – LPC)$_i$, 0.0), (0.2 * LRDF_1 * Actual Net Telemetered Consumption)) from all CLRs active in SCED and carrying Ancillary Service Resource Responsibility

PRC_6 = $\sum_{i=\text{online load resource}}^{\text{All online load resources}}$ Min(Max((LRDF_2 * Actual Net Telemetered Consumption – LPC)$_i$, 0.0), (0.2 * LRDF_2 * Actual Net Telemetered Consumption)) from all CLRs active in SCED and not carrying Ancillary Service Resource Responsibility

PRC_7 = $\sum_{i=\text{online FFR resource}}^{\text{All online FFR resources}}$ (Capacity from Resources capable of providing FFR)$_i$

$$PRC_8 = \sum_{i=online\ ESR}^{All\ online\ ESR}$$

(If discharging or idle, Min(X% of HSL based on droop, HSL-ESR-Gen "injection", the capacity that can be sustained for ~~1~~15 minutes per the State of Charge), else Min(X% of (HSL – LSL(ESR "charging") based on droop, the capacity that can be sustained for ~~1~~15 minutes per the State of Charge – LSL(ESR "charging")))

Excludes ESR capacity used to provide FFR.

$PRC = PRC_1 + PRC_2 + PRC_3 + PRC_4 + PRC_5 + PRC_6 + PRC_7 + PRC_8$

The above variables are defined as follows:

Variable	Unit	Description
PRC_1	MW	Generation On-Line greater than 0 MW
PRC_2	MW	WGRs On-Line greater than 0 MW
PRC_3	MW	Synchronous condenser output
PRC_4	MW	Capacity from Load Resources carrying ECRS Ancillary Service Resource Responsibility
PRC_5	MW	Capacity from CLRs active in SCED and carrying Ancillary Service Resource Responsibility
PRC_6	MW	Capacity from CLRs active in SCED and not carrying Ancillary Service Resource Responsibility
PRC_7	MW	Capacity from Resources capable of providing FFR
PRC_8	MW	ESR capacity capable of providing Primary Frequency Response
PRC	MW	Physical Responsive Capability
X	Percentage	Percent threshold based on the Governor droop setting of ESRs
RDF		The currently approved Reserve Discount Factor
RDF_W		The currently approved Reserve Discount Factor for WGRs
LRDF 1		The currently approved Load Resource Reserve Discount Factor for CLRs carrying Ancillary Service Resource Responsibility
LRDF 2		The currently approved Load Resource Reserve Discount Factor for CLRs not carrying Ancillary Service Resource Responsibility
NFRC	MW	Non-Frequency Responsive Capacity

(2) Each QSE shall operate Resources providing Ancillary Service capacity to meet its obligations. If a QSE experiences temporary conditions where its total obligation for providing Ancillary Service cannot be met on the QSE's Resources, then the QSE may add additional capability from other Resources that it represents. It adds that capability by changing the Resource Status and updating the Ancillary Service Schedules and Ancillary Services Resource Responsibility of the affected Resources and notifying ERCOT under Section 6.4.9.1, Evaluation and Maintenance of Ancillary Service

Capacity Sufficiency. If the QSE is unable to meet its total obligations to provide committed Ancillary Services capacity, the QSE shall notify ERCOT immediately of the expected duration of the QSE's inability to meet its obligations. ERCOT shall determine whether replacement Ancillary Services will be procured to account for the QSE's shortfall according to Section 6.4.9.1.

(3) The Load Resource Reserve Discount Factors (RDFs) for CLRs (LRDF_1 and LRDF_2) shall be subject to review and approval by TAC.

(4) The RDFs used in the PRC calculation shall be posted to the ERCOT website no later than three Business Days after approval.

[NPRR1010, NPRR1014, NPRR1029, NPRR1188, NPRR1204, and NPRR1244: Replace applicable portions of Section 6.5.7.5 above with the following upon system implementation for NPRR1014, NPRR1029, NPRR1188, or NPRR1224; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010 and NPRR1204:]

6.5.7.5 Ancillary Services Capacity Monitor

(1) Every ten seconds, ERCOT shall calculate the following and provide Real-Time summaries to ERCOT Operators and all Market Participants using ICCP and postings on the ERCOT website showing the Real-Time total system amount of:

(a) RRS capability from:

(i) Generation Resources and ESRs in the form of PFR that can be sustained for the SCED duration requirements of PFR;

(ii) Load Resources, excluding CLRs, capable of responding via under-frequency relay;

(iii) CLRs in the form of PFR;

(iv) Resources, other than ESRs, capable of Fast Frequency Response (FFR); and

(v) ESRs, in the form of FFR, that can be sustained for the SCED duration requirements of FFR;

(b) Ancillary Service Resource awards for RRS to:

(i) Generation Resources and ESRs in the form of PFR;

(ii) Load Resources, excluding CLRs, capable of responding by under-frequency relay;

(iii) CLRs in the form of PFR; and

(iv) Resources providing FFR;

(c) ECRS capability from:

(i) Generation Resources;

(ii) Load Resources excluding CLRs;

(iii) CLRs;

(iv) Quick Start Generation Resources (QSGRs); and

(v) ESRs that can be sustained for the SCED duration requirements of ECRS.

(d) Ancillary Service Resource awards for ECRS to:

(i) Generation Resources;

(ii) Load Resources excluding CLRs; and

(iii) CLRs;

(iv) QSGRs; and

(v) ESRs.

(e) ECRS manually deployed by Resources with a Resource Status of ONSC;

(f) Non-Spin available from:

(i) On-Line Generation Resources with Energy Offer Curves;

(ii) Undeployed Load Resources;

(iii) Off-Line Generation Resources and On-Line Generation Resources with power augmentation;

(iv) Resources with Output Schedules; and

(v) ESRs that can be sustained for the SCED duration requirements of Non-Spin.

(g) Ancillary Service Resource awards for Non-Spin to:

(i) On-Line Generation Resources with Energy Offer Curves;

(ii) On-Line Generation Resources with Output Schedules;

(iii) Load Resources;

(iv) Off-Line Generation Resources excluding Quick Start Generation Resources (QSGRs), including Non-Spin awards on power augmentation capacity that is not active on On-Line Generation Resources;

(v) QSGRs; and

(vi) ESRs.

(h) Reg-Up and Reg-Down capability (for ESRs, the SCED duration requirements of Reg-Up and Reg-Down are considered);

(i) Undeployed Reg-Up and Reg-Down;

(j) Ancillary Service Resource awards for Reg-Up and Reg-Down;

(k) Deployed Reg-Up and Reg-Down;

(l) Available capacity:

(i) With Energy Offer Curves in the ERCOT System that can be used to increase Generation Resource Base Points in SCED;

(ii) With Energy Offer Curves in the ERCOT System that can be used to decrease Generation Resource Base Points in SCED;

(iii) Without Energy Offer Curves in the ERCOT System that can be used to increase Generation Resource Base Points in SCED;

(iv) Without Energy Offer Curves in the ERCOT System that can be used to decrease Generation Resource Base Points in SCED;

(v) With Energy Bid Curves from available CLRs in the ERCOT System that can be used to decrease Base Points (energy consumption) in SCED;

(vi) With Energy Bid Curves from available CLRs in the ERCOT System that can be used to increase Base Points (energy consumption) in SCED;

(vii) From Resources participating in SCED plus the Reg-Up, RRS, and ECRS from Load Resources and the Net Power Consumption minus the Low Power Consumption from Load Resources with a validated Real-Time RRS and ECRS awards;

(viii) With Energy Bid/Offer Curves for ESRs in the ERCOT System that can be used to increase ESR Base Points in SCED while respecting SCED duration requirements for ESR Base Points in SCED;

(ix) With Energy Bid/Offer Curves for ESRs in the ERCOT System that can be used to decrease ESR Base Points in SCED while respecting SCED duration requirements for ESR Base Points in SCED;

(x) Without Energy Bid/Offer Curves for ESRs in the ERCOT System that can be used to increase ESR Base Points in SCED while respecting SCED duration requirements for ESR Base Points in SCED;

(xi) Without Energy Bid/Offer Curves for ESRs in the ERCOT System that can be used to decrease ESR Base Points in SCED while respecting SCED duration requirements for ESR Base Points in SCED;

(xii) From Resources included in item (vii) above plus reserves from Resources that could be made available to SCED in 30 minutes;

(xiii) In the ERCOT System that can be used to increase Generation Resource Base Points in the next five minutes in SCED; and

(xiv) In the ERCOT System that can be used to decrease Generation Resource Base Points in the next five minutes in SCED;

(xv) The total capability of Resources available to provide the following combinations of Ancillary Services, based on the Resource telemetry from the QSE and capped by the limits of the Resource:

(A) Capacity to provide Reg-Up, RRS, or both, irrespective of whether it is capable of providing ECRS or Non-Spin;

(B) Capacity to provide Reg-Up, RRS, ECRS, or any combination, irrespective of whether it is capable of providing Non-Spin; and

(C) Capacity to provide Reg-Up, RRS, ECRS, or Non-Spin, in any combination;

(m) Aggregate telemetered HSL capacity for Resources with a telemetered Resource Status of EMR;

(n) Aggregate telemetered HSL capacity for Resources with a telemetered Resource Status of OUT;

(o) Aggregate net telemetered consumption for Resources with a telemetered Resource Status of OUTL; and

(p) The ERCOT-wide PRC calculated as follows:

$$PRC_1 = \sum_{i=\text{online generation resource}}^{\text{All online generation resources}} \text{Min}(\text{Max}((RDF*FRCHL - FRCO)_i, 0.0), 0.2*RDF*FRCHL_i),$$

where the included On-Line Generation Resources do not include WGRs, nuclear Generation Resources, or Generation Resources with an output less than or equal to 95% of telemetered LSL with a telemetered status of ONTEST, ONHOLD, STARTUP, or SHUTDOWN.

$$PRC_2 = \sum_{i=\text{online WGR}}^{\text{All online WGRs}} \text{Min}(\text{Max}((RDF_W*HSL - \text{Actual Net Telemetered Output})_i, 0.0), 0.2*RDF_W*HSL_i),$$

where the included On-Line WGRs only include WGRs that are Primary Frequency Response-capable.

$$PRC_3 = \sum_{i=\text{online generation resource}}^{\text{All online generation resources}} ((\text{Synchronous condenser output})_i \text{ as qualified by item (8) of Operating Guide Section 2.3.1.2, Additional Operational Details for Responsive Reserve and ERCOT Contingency Reserve Service Providers))}$$

$$PRC_4 = \sum_{i=\text{online load resource}}^{\text{All online load resources}} (\text{Min}(\text{Max}((\text{Actual Net Telemetered Consumption} - \text{LPC}), 0.0), \text{ECRS and RRS Ancillary Service Resource award} * 1.5) \text{ from all Load Resources controlled by high-set under-frequency relays with an ECRS and/or RRS Ancillary Service Resource award})_i$$

$$PRC_5 = \sum_{i=\text{online load resource}}^{\text{All online load resources}} \text{Min}(\text{Max}((LRDF\_1*\text{Actual Net Telemetered Consumption} - \text{LPC})_i, 0.0), (0.2 * LRDF\_1 * \text{Actual Net Telemetered Consumption})) \text{ from all CLRs active in SCED and qualified for Regulation Service and/or RRS with an Ancillary Service Resource award}$$

$PRC_6 =$	$\sum_{i=\text{online load resource}}^{\text{All online load resources}}$	Min(Max((LRDF_2 * Actual Net Telemetered Consumption – LPC)$_i$, 0.0), (0.2 * LRDF_2 * Actual Net Telemetered Consumption)) from all CLRs active in SCED and qualified for Regulation Service and/or RRS without an Ancillary Service Resource award
$PRC_7 =$	$\sum_{i=\text{online FFR resource}}^{\text{All online FFR resources}}$	(Capacity from Resources capable of providing FFR)$_i$
$PRC_8 =$	$\sum_{i=\text{online ESR}}^{\text{All online ESR}}$	(If discharging or idle, Min(X% of HSL based on droop, HSL-ESR-Gen "injection", the capacity that can be sustained for ~~1~~15 minutes per the State of Charge), else Min(X% of (HSL – LSL(ESR "charging") based on droop, the capacity that can be sustained for ~~1~~15 minutes per the State of Charge – LSL(ESR "charging")))
Excludes ESR capacity used to provide FFR.		
$PRC_9 =$	$\sum_{i=\text{online ESR}}^{\text{All online DC-Coupled Resources}}$	(If discharging or idle, Min(X% of HSL based on droop, HSL-Gen "injection", the sum of the MW headroom available from the intermittent renewable generation component and the MW capacity that can be sustained for ~~1~~15 minutes per the ESS State of Charge), else Min(X% of Real-Time Total Capacity based on droop, the sum of the MW headroom available from the intermittent renewable generation component and the MW capacity that can be sustained for ~~1~~15 minutes per the ESS State of Charge))

Excludes DC-Coupled Resource capacity used to provide FFR.

$PRC = PRC_1 + PRC_2 + PRC_3 + PRC_4 + PRC_5 + PRC_6 + PRC_7 + PRC_8 + PRC_9$

The above variables are defined as follows:

Variable	Unit	Description
PRC_1	MW	Generation On-Line greater than 0 MW
PRC_2	MW	WGRs On-Line greater than 0 MW
PRC_3	MW	Synchronous condenser output
PRC_4	MW	Capacity from Load Resources with an ECRS Ancillary Service Resource award
PRC_5	MW	Capacity from CLRs active in SCED and qualified for Regulation Service and/or RRS with an Ancillary Service Resource award
PRC_6	MW	Capacity from CLRs active in SCED and qualified for Regulation Service and/or RRS without an Ancillary Service Resource award
PRC_7	MW	Capacity from Resources capable of providing FFR.
PRC_8	MW	ESR capacity capable of providing Primary Frequency Response
PRC_9	MW	Capacity from DC-Coupled Resources capable of providing Primary Frequency Response
PRC	MW	Physical Responsive Capability
X	Percentage	Percent threshold based on the Governor droop setting of ESRs
RDF		The currently approved Reserve Discount Factor
RDF_W		The currently approved Reserve Discount Factor for WGRs
LRDF_1		The currently approved Load Resource Reserve Discount Factor for CLRs awarded an Ancillary Service Resource award
LRDF_2		The currently approved Load Resource Reserve Discount Factor for CLRs not awarded an Ancillary Service Resource award
FRCHL	MW	Telemetered High limit of the FRC for the Resource
FRCO	MW	Telemetered output of FRC portion of the Resource

(2) The Load Resource Reserve Discount Factors (RDFs) for CLRs (LRDF_1 and LRDF_2) shall be subject to review and approval by TAC.

(3) The RDFs used in the PRC calculation shall be posted to the ERCOT website no later than three Business Days after approval.

(4) ERCOT shall display on the ERCOT website and update every ten seconds a rolling view of the ERCOT-wide PRC, as defined in paragraph (1)(p) above, for the current Operating Day.

ERCOT Impact Analysis Report

NPRR Number	1273	NPRR Title	Appropriate Accounting for ESRs in PRC Calculation
Impact Analysis Date		February 12, 2025	
Estimated Cost/Budgetary Impact		None.	
Estimated Time Requirements		No project required. This Nodal Protocol Revision Request (NPRR) can take effect following Public Utility Commission of Texas (PUCT) approval. See Comments.	
ERCOT Staffing Impacts (across all areas)		Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		No impacts to ERCOT computer systems.	
ERCOT Business Function Impacts		No impacts to ERCOT business functions.	
Grid Operations & Practices Impacts		No impacts to ERCOT grid operations and practices.	

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation
None offered.

Comments
If approved, this NPRR can be completed with a minor parameter change.

Board Report

NOGRR Number	274	NOGRR Title	**Conform Nodal Operating Guide to Revisions Implemented for NPRR1217, Remove Verbal Dispatch Instruction (VDI) Requirement for Deployment and Recall of Load Resources and Emergency Response Service (ERS) Resources**
Date of Decision		April 8, 2025	
Action		Recommended Approval	
Timeline		Urgent – The Nodal Operating Guide is out of synch with the Protocols since the implementation of Nodal Protocol Revision Request (NPRR) 1217, Remove Verbal Dispatch Instruction (VDI) Requirement for Deployment and Recall of Load Resources and Emergency Response Service (ERS) Resources on 10/1/2024	
Estimated Impacts		Cost/Budgetary: None Project Duration: No project required	
Proposed Effective Date		The first of the month following Public Utility Commission of Texas (PUCT) approval	
Nodal Operating Guide Sections Requiring Revision		4.5.3.1, General Procedures Prior to EEA Operations	
Related Documents Requiring Revision/Related Revision Requests		None	
Revision Description		This Nodal Operating Guide Revision Request (NOGRR) conforms the Nodal Operating Guide to Protocol changes made by NPRR1217.	
Reason for Revision		☐ Strategic Plan Objective 1 – Be an industry leader for grid reliability and resilience ☐ Strategic Plan 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 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)	

Board Report

	☐ 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	With NPRR1217 being implemented on 10/1/24, there are now inconsistencies between the Protocols and the Nodal Operating Guide, and this NOGRR addresses this issue.
ROS Decision	On 3/6/25, ROS voted unanimously to grant NOGRR274 Urgent status; to recommend approval of NOGRR274 as submitted; and to forward to TAC NOGRR274 and the 2/26/25 Impact Analysis. All Market Segments participated in the vote.
Summary of ROS Discussion	On 3/6/25, ERCOT Staff provided an overview of NOGRR274.
TAC Decision	On 3/26/25, TAC voted unanimously to recommend approval of NOGRR274 as recommended by ROS in the 3/6/25 ROS Report. All Market Segments participated in the vote.
Summary of TAC Discussion	On 3/26/25, there was no additional discussion beyond TAC review of the items below.
TAC Review/Justification of Recommendation	☒ Revision Request ties to Reason for Revision as explained in Justification ☒ Impact Analysis reviewed and impacts are justified as explained in Justification ☒ Opinions were reviewed and discussed ☒ Comments were reviewed and discussed (if applicable) ☐ Other: (explain)
ERCOT Board Decision	On 4/8/25, the ERCOT Board voted unanimously to recommend approval of NOGRR274 as recommended by TAC in the 3/26/25 TAC Report.

Opinions	
Credit Work Group Review	Not applicable

Board Report

Independent Market Monitor Opinion	IMM has no opinion on NOGRR274.
ERCOT Opinion	ERCOT supports approval of NOGRR274.
ERCOT Market Impact Statement	ERCOT Staff has reviewed NOGRR274 and confirms the revisions appropriately conform the Nodal Operating Guide with the Protocol language implemented from NPRR1217. There are no impacts to the ERCOT market beyond those associated with NPRR1217.

Sponsor	
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Market Segment	Not applicable

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Comments Received	
Comment Author	**Comment Summary**
None	

Market Rules Notes

Please note that the following NOGRR(s) also propose revisions to Section 4.5.3.1:

- NOGRR265, Related to NPRR1238, Voluntary Registration of Loads with Curtailable Load Capabilities

Proposed Guide Language Revision

Board Report

4.5.3.1 General Procedures Prior to EEA Operations

Commented [CP1]: Please note NOGRR265 also proposes revisions to this section.

(1) Prior to declaring EEA Level 1 detailed in Section 4.5.3.3, EEA Levels, ERCOT may perform the following operations consistent with Good Utility Practice:

(a) Provide Dispatch Instructions to QSEs for specific Resources to operate at an Emergency Base Point to maximize Resource deployment so as to increase Responsive Reserve (RRS) levels on other Resources;

(b) Commit specific available Resources as necessary that can respond in the timeframe of the emergency. Such commitments will be settled using the Hourly Reliability Unit Commitment (HRUC) process;

(c) Start Reliability Must-Run (RMR) Units available in the time frame of the emergency. RMR Units should be loaded to full capability;

(d) Utilize available Resources providing RRS, ERCOT Contingency Reserve Service (ECRS), and Non-Spinning Reserve (Non-Spin) services as required;

(e) Instruct TSPs and Distribution Service Providers (DSPs) or their agents to reduce Customer Load by using existing, in-service distribution voltage reduction measures if ERCOT determines that the implementation of these measures could help avoid entering into EEA and ERCOT does not expect to need to use these measures to reduce the amount of Load shedding that may be needed in EEA Level 3. A TSP, DSP, or their agent shall implement these instructions if distribution voltage reduction measures are available and already installed. If the TSP, DSP, or their agent determines in their sole discretion that the distribution voltage reduction would adversely affect reliability, the voltage reduction measure may be reduced, modified, or otherwise changed from maximum performance to a level of exercise that has no negative impact to reliability; and

(f) ERCOT shall use the PRC and system frequency to determine the appropriate Emergency Notice and EEA levels.

(2) When PRC falls below 3,000 MW and is not projected to be recovered above 3,000 MW within 30 minutes following the deployment of Non-Spin, ERCOT may deploy available contracted Emergency Response Service (ERS)-10 and ERS-30 via an Extensible Markup Language (XML) message ~~followed by a Verbal Dispatch Instruction (VDI) to the QSE Hotline. The ERS-10 and ERS-30 ramp periods shall begin at the completion of the VDI.~~ The deployment time within the ERCOT XML deployment message shall represent the beginning of the ERS-10 and ERS-30 ramp periods.

(a) ERS-10 and ERS-30 may be deployed at any time in a Settlement Interval. ERS-10 and ERS-30 may be deployed either simultaneously or separately, and in any order, at the discretion of ERCOT operators.

(b) Upon deployment, QSEs shall instruct their ERS Resources in ERS-10 and ERS-30 to perform at contracted levels consistent with the criteria described in Section

8.1.3.1.4, Event Performance Criteria for Emergency Response Service Resources, until either ERCOT ~~releases~~recalls the ERS-10 and ERS-30 deployment or the ERS-10 and ERS-30 Resources have reached their maximum deployment time.

(c) ERCOT shall notify QSEs of the recall~~release~~ of ERS-10 and ERS-30 via an XML message ~~followed by VDI to the QSE Hotline. The VDI shall represent the official notice of ERS-10 and ERS-30 release.~~ The recall time within the ERCOT XML message shall represent the official notice of ERS-10 and ERS-30 recall.

(d) Upon ~~release~~recall, an ERS Resource shall return to a condition such that it is capable of meeting its ERS performance requirements as soon as practical, but no later than ten hours following the ~~release~~recall.

(3) When a Watch is issued for PRC below 3,000 MW and ERCOT expects system conditions to deteriorate to the extent that an EEA Level 2 or 3 may be experienced, ERCOT shall evaluate constraints active in SCED and determine which constraints have the potential to limit generation output.

(a) Upon identification of such constraints, ERCOT shall coordinate with the TSPs that own or operate the overloaded Transmission Facilities associated with those constraints, as well as the Resource Entities whose generation output may be limited, to determine whether:

[NOGRR177: Replace paragraph (a) above with the following upon system implementation of NPRR857:]

(a) Upon identification of such constraints, ERCOT shall coordinate with the TSPs and DCTOs that own or operate the overloaded Transmission Facilities associated with those constraints, as well as the Resource Entities whose generation output may be limited, to determine whether:

(i) A 15-Minute Rating is available that allows for additional transmission capacity for use in congestion management, if an EEA Level 2 or 3 is declared, and post-contingency actions can be taken within 15 minutes to return the flow to within the Emergency Rating. Such actions may include, but are not limited to, reducing the generation that increased output as a result of enforcing the 15-Minute Rating rather than the Emergency Rating;

(ii) Post-contingency loading of the Transmission Facilities is expected to be at or below Normal Rating within two hours; or

(iii) Additional transmission capacity could allow for additional output from a limited Generation Resource by taking one of the following actions:

(A) Restoring Transmission Elements that are out of service;

(B) Reconfiguring the transmission system; or

(C) Making adjustments to phase angle regulator tap positions.

If ERCOT determines that one of the above-mentioned actions allows for additional output from a limited Generation Resource, ERCOT may instruct the TSPs to take the action(s) during the Advisory to allow for additional output from the limited Generation Resource.

(b) ERCOT shall also coordinate with TSPs who own and operate the Transmission Facilities associated with the double-circuit contingencies for the constraints identified above to determine whether the double-circuit failures are at a high risk of occurring due to system conditions, which may include: severe weather conditions forecasted by ERCOT in the vicinity of the double-circuit, weather conditions that indicate a high risk of insulator flashover on the double-circuit, repeated Forced Outages of the individual circuits that are part of the double-circuit in the preceding 48 hours, or fire in progress in the right of way of the double-circuit.

[NOGRR177: Replace paragraph (b) above with the following upon system implementation of NPRR857:]

(b) ERCOT shall also coordinate with TSPs and DCTOs who own and operate the Transmission Facilities associated with the double-circuit contingencies for the constraints identified above to determine whether the double-circuit failures are at a high risk of occurring due to system conditions, which may include: severe weather conditions forecasted by ERCOT in the vicinity of the double-circuit, weather conditions that indicate a high risk of insulator flashover on the double-circuit, repeated Forced Outages of the individual circuits that are part of the double-circuit in the preceding 48 hours, or fire in progress in the right of way of the double-circuit.

(c) The actions detailed in this Section shall be supplemental to the development and maintenance of Constraint Management Plans (CMPs) as otherwise directed by the Protocols or Operating Guides.

(4) When a Watch is issued for PRC below 3,000 MW, QSEs shall suspend any ongoing ERCOT-required Resource performance testing.

ERCOT Impact Analysis Report

NOGRR Number	274	NOGRR Title	Conform Nodal Operating Guide to Revisions Implemented for NPRR1217, Remove Verbal Dispatch Instruction (VDI) Requirement for Deployment and Recall of Load Resources and Emergency Response Service (ERS) Resources
Impact Analysis Date		February 26, 2025	
Estimated Cost/Budgetary Impact		None.	
Estimated Time Requirements		No project required. This Nodal Operating Guide Revision Request (NOGRR) can take effect following Public Utility Commission of Texas (PUCT) approval.	
ERCOT Staffing Impacts (across all areas)		Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		No impacts to ERCOT computer systems.	
ERCOT Business Function Impacts		No impacts to ERCOT business functions.	
Grid Operations & Practices Impacts		No impacts to ERCOT grid operations and practices.	

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation
None offered.

Comments
None.

Board Report

PGRR Number	115	PGRR Title	Related to NPRR1234, Interconnection Requirements for Large Loads and Modeling Standards for Loads 25 MW or Greater
Date of Decision		April 8, 2025	
Action		Recommended Approval	
Timeline		Normal	
Estimated Impacts		Cost/Budgetary: None Project Duration: No project required	
Proposed Effective Date		Upon implementation of Nodal Protocol Revision Request (NPRR) NPRR1234, Interconnection Requirements for Large Loads and Modeling Standards for Loads 25 MW or Greater	
Priority and Rank Assigned		Not applicable	
Planning Guide Sections Requiring Revision		2.1, Definitions 4.1.1.1, Planning Assumptions 4.1.1.2, Reliability Performance Criteria 5.2.10, Required Interconnection Equipment (new) 5.3.5, ERCOT Quarterly Stability Assessment 6.6, Modeling of Large Loads (new) 6.6.1, Modeling of Large Loads Not Co-Located with a Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG) (new) 6.6.2, Modeling of Large Loads Co-Located with an Existing Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG) (new) 6.6.3, Modeling of Large Loads Co-Located with a Proposed Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG) (new) 6.10, Contingency Filing Requirements 9, Large Load Additions at New or Modification of Existing Load Interconnection(s) (new) 9.1, Introduction (new) 9.2, General Provisions (new) 9.2.1, Applicability of the Large Load Interconnection Study Process (new) 9.2.2, Submission of Large Load Project Information and Initiation of the Large Load Interconnection Study (LLIS) (new) 9.2.3, Modification of Large Load Project Information (new) 9.2.4, Load Commissioning Plan (new) 9.2.5, Required Interconnection Equipment (new)	

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	9.3, Interconnection Study Procedures for Large Loads (new) 9.3.1, Large Load Interconnection Study (LLIS) (new) 9.3.2, Large Load Interconnection Study Scoping Process (new) 9.3.3, Large Load Interconnection Study Description and Methodology (new) 9.3.4, Large Load Interconnection Study Elements (new) 9.3.4.1, Steady-State Analysis (new) 9.3.4.2, System Protection (Short-Circuit) Analysis (new) 9.3.4.3, Dynamic and Transient Stability Analysis (new) 9.4, LLIS Report and Follow-up (new) 9.5, Interconnection Agreements and Responsibilities (new) 9.5.1, Interconnection Agreement for Large Loads not Co-Located with a Generation Resource Facility (new) 9.5.2, Interconnection Agreement for Large Loads Co-Located with one or more Generation Resource Facilities (new) 9.6, Initial Energization and Continuing Operations for Large Loads (new)
Related Documents Requiring Revision/Related Revision Requests	NPRR1234
Revision Description	This Planning Guide Revision Request (PGRR) creates a new process for studying the reliability impacts of all Large Loads (as defined in the accompanying NPRR1234) seeking to interconnect to the ERCOT System. As with the Full Interconnection Study (FIS) required for proposed Generation Resources, this PGRR requires a Large Load Interconnection Study (LLIS) for each new Large Load meeting applicability requirements that is proposed to interconnect to the ERCOT System. Like the FIS, the LLIS will consist of a similar suite of studies conducted by one or more affected Transmission Service Providers (TSPs). This PGRR describes these studies in detail and establishes timelines for the review of these studies and the completion of other steps in the interconnection process. This PGRR also: • Requires all Large Loads evaluated via the LLIS to be included in the existing quarterly stability assessment prior to Initial Energization; • Adds additional reliability performance criteria for the inclusion and evaluation of Large Loads in planning studies; • Adds requirements that must be met prior to including a Large Load in the ERCOT Network Operations Model; and • Establishes required interconnection equipment for both Generation Resources and Large Loads.

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Reason for Revision	☒ Strategic Plan Objective 1 – Be an industry leader for grid reliability and resilience ☐ Strategic Plan 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 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	As detailed in the justification for the related NPRR1234, Large Loads present greater risks to system reliability. With an increase in the number of operational and proposed Large Loads on the ERCOT System, a commensurately greater need exists to evaluate the reliability impacts of these Loads before they are allowed to energize. The interconnection process described in this PGRR replaces the interim interconnection process that ERCOT established on March 25, 2022. As with the interim process, the interconnection process described in this PGRR ensures that ERCOT can meet its obligations to evaluate interconnections of new Loads under NERC Reliability Standard FAC-002-3.
ROS Decision	On 7/11/24, ROS voted unanimously to table PGRR115 and refer the issue to the Planning Working Group (PLWG). All Market Segments participated in the vote. On 2/6/25, ROS voted unanimously to recommend approval of PGRR115 as amended by the 2/5/25 CenterPoint comments. All Market Segments participated in the vote. On 3/6/25, ROS voted unanimously to endorse and forward to TAC the 2/6/25 ROS Report as amended by the 2/14/25 ERCOT Steel Mills comments and the 5/28/24 Impact Analysis for PGRR115. All Market Segments participated in the vote.
Summary of ROS Discussion	On 7/11/24, the sponsor provided an overview of PGRR115, and participants reviewed the 7/3/24 ERCOT Steel Mills comments.

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	Participants requested to table PGRR115 and refer it to PLWG for further review. On 2/6/25, ROS reviewed the 1/30/25 PLWG comments, 2/4/25 Google comments, and 2/5/25 CenterPoint comments. Participants discussed the need for an interconnection limit and questioned if 1 GW is the appropriate value. ERCOT reiterated a limit is needed for grid reliability, and while the 1 GW is based on an existing study, additional studies are underway to reflect the most recent grid composition and ERCOT would be willing to revisit the 1 GW limit with stakeholders in a future PGRR based on the results of those studies. On 3/6/25, ROS reviewed the 2/14/25 ERCOT Steel Mills comments and ERCOT Staff confirmed the current interim process(es) in place for Large Loads will continue until NPRR1234 and PGRR115 are implemented.
TAC Decision	On 3/26/25, TAC voted to recommend approval of PGRR115 as recommended by ROS in the 3/6/25 ROS Report as revised by TAC. There were three abstentions from the Consumer (2) (CMC Steel, Lyondell Chemical) and Independent Generator (Calpine) Market Segments. All Market Segments participated in the vote.
Summary of TAC Discussion	On 3/26/25, TAC reviewed the items below, and discussed desktop edits to extend the date referenced in Section 9.2.5 from March 1, 2025 to June 1, 2025 to avoid inadvertently creating an unachievable compliance deadline based on the anticipated approval date of PGRR115.
TAC Review/Justification of Recommendation	☒ Revision Request ties to Reason for Revision as explained in Justification ☒ Impact Analysis reviewed and impacts are justified as explained in Justification ☒ Opinions were reviewed and discussed ☒ Comments were reviewed and discussed (if applicable) ☐ Other: (explain)
ERCOT Board Decision	On 4/8/25, the ERCOT Board voted unanimously to recommend approval of PGRR115 as recommended by TAC in the 3/26/25 TAC Report.

Opinions

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Credit Review	Not applicable
Independent Market Monitor Opinion	IMM has no opinion on PGRR115.
ERCOT Opinion	ERCOT supports approval of PGRR115.
ERCOT Market Impact Statement	ERCOT Staff has reviewed PGRR115 and believes the market impact for PGRR115, along with NPRR1234, provides necessary structure and clarification to the interconnection requirements for Large Loads.

Sponsor	
Name	Bill Blevins
E-mail Address	Bill.Blevins@ercot.com
Company	ERCOT
Phone Number	512-248-6691
Cell Number	
Market Segment	Not applicable

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

Comments Received	
Comment Author	**Comment Summary**
ERCOT Steel Mills 070324	Proposed edits clarifying the applicability of PGRR115 language to new or modified Large Loads, rather than existing Large Loads, and removing the proposed capability for TOs to remotely operate breakers
ERCOT 081224	Responded to concerns identified in the 7/3/24 ERCOT Steel Mills comments
CenterPoint 082924	Proposed clarifying edits and raised questions for continued discussions with stakeholders and ERCOT

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Oncor 090924	Proposed clarifying edits and raised questions for continued discussions with stakeholders and ERCOT
ERCOT Steel Mills 091824	Proposed edits to the 7/3/24 ERCOT Steel Mills comments clarifying the applicability of PGRR115 language to new vs existing Large Loads and expressing concerns with remote operation of breakers at Large Load sites
ERCOT Steel Mills 092524	Proposed an additional edit inadvertently omitted from the 9/18/24 ERCOT Steel Mills comments
AEP 100424	Proposed clarifying edits and raised questions for continued discussions with stakeholders and ERCOT
ERCOT 111124	Responded to prior commenters (ERCOT Steel Mills, AEP, Oncor, and CenterPoint) and provided redlines incorporating elements of those comments with which ERCOT agrees
CenterPoint 121224	Proposed additional clarifying edits to the 11/11/24 ERCOT comments
Joint TSPs 121214	Proposed edits to the 11/11/24 ERCOT comments memorializing stability study screening criteria thresholds
Oncor 121224	Responded to the 12/12/24 Joint TSPs comments and provided additional edits to the 11/11/24 ERCOT comments
ERCOT Steel Mills 121924	Proposed edits to the 12/12/24 Oncor comments striking language requiring breakers be capable of remote operation
ERCOT 012425	Proposed additional edits to the 12/12/24 Oncor comments incorporating elements of December 2024 stakeholder comments with which ERCOT agrees
ERCOT Steel Mills 012925	Highlighted concerns with language within paragraph (7) of Section 4.1.1.1 which they feel could be misinterpreted as applying to all Large Loads
PLWG 013025	Proposed additional clarifying edits to the 1/24/25 ERCOT comments
Google 020425	Proposed edits to the 1/30/25 PLWG comments striking the 1 GW limit
CenterPoint 020525	Proposed additional clarifying edits to the 1/30/25 PLWG comments
ERCOT Steel Mills 021425	Proposed a minor clarification within paragraph (7) of Section 4.1.1.1

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Market Rules Notes

Please note the baseline Planning Guide language in the following sections(s) has been updated to reflect the incorporation of the following PGRR(s) into the Planning Guide:

- PGRR098, Consideration of Load Shed in Transmission Planning Criteria (unboxed 8/1/24)
  - Section 4.1.1.1
- PGRR107, Related to NPRR1180, Inclusion of Forecasted Load in Planning Analyses (incorporated 2/1/25)
  - Section 4.1.1.1
- PGRR112, Dynamic Data Model and Full Interconnection Study (FIS) Deadline for Quarterly Stability Assessment (unboxed 12/1/24)
  - Section 5.3.5
- PGRR113, Related to NPRR1198, Congestion Mitigation Using Topology Reconfigurations (incorporated 8/1/24)
  - Section 4.1.1.2
- PGRR118, Related to NPRR1246, Energy Storage Resource Terminology Alignment for the Single-Model Era (incorporated 4/1/25)
  - Section 5.3.5

Please note that the following PGRR(s) also propose revisions to the following section(s):

- PGRR122, Reliability Performance Criteria for Loss of Load
  - Section 4.1.1.2

Proposed Guide Language Revision

2.1 DEFINITIONS

Load Commissioning Plan (LCP)

An agreed upon schedule between the interconnecting Transmission Service Provider (TSP) and Interconnecting Large Load Entity (ILLE) for connecting a Large Load in increments defined by the ILLE, compiled in the format prescribed by ERCOT, detailing dates, cumulative peak Demand amounts, and transmission upgrades that would be required to be in service for each amount of peak Demand. The LCP shall cover the time period from the Initial Energization date up to the final amount of peak Demand ~~A schedule for connecting a Large Load, in the format prescribed by ERCOT, detailing dates, cumulative peak Demand amounts, and required transmission upgrades from the Initial Energization date up to the final amount of peak Demand.~~

4.1.1.1 Planning Assumptions

(1) A contingency loss of an element includes the loss of an element with or without a single line-to-ground or three-phase fault.

(2) A common tower outage is the contingency loss of a double-circuit transmission line consisting of two circuits sharing a tower for 0.5 miles or greater.

(3) Unavailability of a single generating unit includes an entire Combined Cycle Train, if no part of the train can operate with one of the units Off-Line as provided in the Resource Registration data.

(4) The contingency loss of a single generating unit shall include the loss of an entire Combined Cycle Train, if that is the expected consequence.

(5) The following assumptions may be applied to planning studies:

(a) Reasonable variations of load forecast, including forecasted load growth based on Substantiated Load;

(b) Reasonable variations of generation commitment and dispatch applicable to transmission planning analyses on a case-by-case basis may include, but are not limited to, the following methods:

(i) Production cost model simulation, security constrained optimal power flow, or similar modeling tools that analyze the ERCOT System using hourly generation dispatch assumptions;

(ii) Modeling of high levels of intermittent generation conditions; or

(iii) Modeling of low levels of or no intermittent generation conditions.

(6) Assumed Direct Current Tie (DC Tie) imports and exports will be curtailed as necessary to meet reliability criteria in planning studies.

(7) Each Large Load included in a planning study shall be set to a level of Demand consistent with the current Load Commissioning Plan, if applicable.

(~~8~~7) Manual System Adjustments shall not increase the amount of consequential load loss following a common tower outage, or the contingency loss of a single generating unit, transmission circuit, transformer, shunt device, flexible alternating current transmission system (FACTS) device, or DC Tie Resource or DC Tie Load, with or without a single line-to-ground fault.

4.1.1.2 Reliability Performance Criteria

Commented [CP1]: Please note PGRR122 also proposes revisions to this section.

(1) The following reliability performance criteria (summarized in Table 1, ERCOT-specific Reliability Performance Criteria, below) shall be applicable to planning analyses in the ERCOT Region:

(a) With all Facilities in their normal state, following a common tower outage with or without a single line-to-ground fault, all Facilities shall be within their applicable

Ratings, the ERCOT System shall remain stable with no cascading or uncontrolled Islanding, and there shall be no non-consequential Load loss;

(b) With all Facilities in their normal state, following an outage of a Direct Current Tie (DC Tie) Resource or DC Tie Load with or without a single line-to-ground fault, all Facilities shall be within their applicable Ratings, the ERCOT System shall remain stable with no cascading or uncontrolled Islanding, and there shall be no non-consequential Load loss;

(c) With all Facilities in their normal state, following an outage of a Large Load with or without a three-phase fault, all Facilities shall be within their applicable Ratings, ~~and~~ the ERCOT System shall remain stable with no cascading or uncontrolled Islanding,~~ and~~ ~~T~~there shall be no non-consequential Load loss;

(d~~e~~) With any single generating unit unavailable, followed by Manual System Adjustments, followed by a common tower outage, the opening of a line section without a fault, or outage of a DC Tie Resource or DC Tie Load with or without a single line-to-ground fault, all Facilities shall be within their applicable Ratings, the ERCOT System shall remain stable with no cascading or uncontrolled Islanding, and there shall be no non-consequential Load loss;

(e~~d~~) With any single transformer, with the high voltage winding operated at 300 kV or above and low voltage winding operated at 100 kV or above unavailable, followed by Manual System Adjustments, followed by a common tower outage, the opening of a line section without a fault, or the contingency loss of a single generating unit, transmission circuit, transformer, shunt device, flexible alternating current transmission system (FACTS) device, or DC Tie Resource or DC Tie Load with or without a single line-to-ground fault, all Facilities shall be within their applicable Ratings, the ERCOT System shall remain stable with no cascading or uncontrolled Islanding, and there shall be no non-consequential Load loss. An operational solution may be planned on a permanent basis to resolve a performance deficiency under this condition; and

(f~~e~~) With any single DC Tie Resource or DC Tie Load unavailable, followed by Manual System Adjustments, followed by a common tower outage, the opening of a line section without a fault, or the contingency loss of a single generating unit, transmission circuit, transformer, shunt device, FACTS device, or DC Tie Resource or DC Tie Load, with or without a single line-to-ground fault, all Facilities shall be within their applicable Ratings, the ERCOT System shall remain stable with no cascading or uncontrolled Islanding, and there shall be no non-consequential Load loss. An operational solution may be planned on a permanent basis to resolve a performance deficiency under this condition; and~~-~~

~~(g) For all category P1 or P7 events described in the NERC Reliability Standard addressing Transmission Planning Performance Requirements, when a new Large Load is being interconnected, the total consequential Load loss attributable to the~~

~~new Large Load shall not be more than 1,000 MW. Calculation of total Load loss shall exclude existing Loads already connected to the system.~~

	Initial Condition	Event	Facilities within Applicable Ratings and System Stable with No Cascading or Uncontrolled Outages	Non-consequential Load Loss Allowed
1	Normal System	Common tower outage, DC Tie Resource outage, ~~or~~ DC Tie Load outage, or the outage of a Large Load	Yes	No
2	Unavailability of a generating unit, followed by Manual System Adjustments	Common tower outage, DC Tie Resource outage, ~~or~~ DC Tie Load outage, or opening of a line section without a fault	Yes	No
3	Unavailability of a transformer with the high voltage winding operated at 300 kV or above and low voltage winding operated at 100 kV or above, followed by Manual System Adjustments	Common tower outage; opening of a line section without a fault; or Contingency loss of one of the following: 1. Generating unit; 2. Transmission circuit; 3. Transformer; 4. Shunt device; 5. FACTS device; or 6. DC Tie Resource or DC Tie Load	Yes	No

	Initial Condition	Event	Facilities within Applicable Ratings and System Stable with No Cascading or Uncontrolled Outages	Non-consequential Load Loss Allowed
4	Unavailability of a DC Tie Resource or DC Tie Load, followed by Manual System Adjustments	Common tower outage; Opening of a line section without a fault; or Contingency loss of one of the following: 1. Generating unit; 2. Transmission circuit; 3. Transformer; 4. Shunt device; 5. FACTS device; or 6. DC Tie Resource or DC Tie Load	Yes	No

Table 1: ERCOT-specific Reliability Performance Criteria

(2) ERCOT and the TSPs shall endeavor to resolve any performance deficiencies as appropriate. If a Transmission Facility improvement is required to meet the criteria in this Section 4.1.1.2, but the improvement cannot be implemented in time to resolve the performance deficiency, an interim solution may be used to resolve the deficiency until the improvement has been implemented.

(a) A Remedial Action Scheme (RAS) shall not be planned to resolve a planning criteria performance deficiency unless it is expected that system conditions will change such that the RAS will no longer be needed within the next five years.

[PGRR113: Replace item (a) above with the following upon system implementation of NPRR1198:]

(a) A Remedial Action Scheme (RAS) or Constraint Management Plan (CMP) shall not be planned to resolve a planning criteria performance deficiency unless it is expected that system conditions will change such that the RAS or CMP will no longer be needed within the next five years.

5.2.10 Required Interconnection Equipment

(1) Each Point of Interconnection (POI) for a Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG) interconnected at transmission voltage to the ERCOT System must have a permanent configuration consisting of a station with breakers capable of interrupting fault current to sectionalize the transmission lines connecting the station to the ERCOT System. The breakers shall be under the remote control of the applicable TO and capable of being operated remotely to comply with an instruction from ERCOT.

5.3.5 ERCOT Quarterly Stability Assessment

(1) ERCOT shall conduct a stability assessment every three months to assess the impact of planned large generators and Large Loads subject to the requirements of Section 9.2.1, Applicability of the Large Load Interconnection Study Process, connecting to the ERCOT System. ~~The assessment shall derive the conditions to be studied with consideration given to the results of the FIS stability studies for large generators, with planned Initial Synchronization in the period under study. ERCOT may study conditions other than those identified in the FIS stability studies.~~

(a) For large generators with planned Initial Synchronization in the period under study, the assessment shall derive the conditions to be studied with consideration given to the results of the FIS stability studies.

(b) For new Large Loads and Load modifications subject to the requirements of Section 9.2.1, with planned Initial Energization in the period under study, the assessment shall derive the conditions to be studied from the most current Load Commissioning Plan and with consideration given to the results of the LLIS stability studies.

(c) ERCOT may study conditions other than those identified in the FIS or LLIS stability studies.

(2) Large generators that are not included in the assessment as described in this Section as result of the IE failing to meet the prerequisites by the deadlines as listed in the table below will not be eligible for Initial Synchronization during that three-month period. ~~Large~~ Loads described in paragraph (1)(b) above that are not included in the assessment ~~as described in this Section~~ as a result of failing to meet the prerequisites by the deadlines as listed in the table below will not be eligible for Initial Energization during that three-month period. The timeline for the quarterly stability assessment shall be in accordance with the following table:

Generator Initial Synchronization or Large Load Initial Energization Date	**Last Day for an IE, Resource Entity, or TSP to meet prerequisites as listed in paragraphs (4) and (5) below**	**Completion of Quarterly Stability Assessment**

Upcoming January, February, March	Prior August 1	End of October
Upcoming April, May, June	Prior November 1	End of January
Upcoming July, August, September	Prior February 1	End of April
Upcoming October, November, December	Prior May 1	End of July

(3) If the last day for an IE, Resource Entity, or TSP to meet prerequisites or if completion of the quarterly stability assessment as shown in the above table falls on a weekend or holiday, the deadline will extend to the next Business Day.

(4) The following prerequisites shall be satisfied prior to a large generator being included in the quarterly stability assessment:

(a) The generator has met the requirements of Section 6.9, Addition of Proposed Generation to the Planning Models.

(b) The IE has provided all generator data in accordance with the Resource Registration Glossary, Planning Model column, including but not limited to steady state, system protection and stability models.

(i) The IE shall submit the final dynamic data model at least 45 days prior to the quarterly stability assessment deadline described in paragraph (2) above. If ERCOT is unable to complete its review prior to the quarterly stability assessment deadline, ERCOT shall not include the Generation Resource or Settlement Only Generator (SOG) in that quarterly stability assessment.

(ii) Changes to the dynamic data model after the stability study is deemed complete may subject the Generation Resource or SOG to modification of one or more FIS study elements as defined in paragraph (9) of Section 5.3.2.5, FIS Report and Follow-up. If ERCOT and the lead TSP(s) determine that modifications to one or more FIS study elements are required, then ERCOT shall not include the Generation Resource or SOG in a quarterly stability assessment until the revised FIS has been completed in accordance with paragraph (4)(c)(i) below.

(iii) If an IE submitted a final dynamic data model at least 45 days prior to the quarterly stability assessment deadline but ERCOT determines that the Generation Resource or SOG is ineligible to be included in a quarterly stability assessment pursuant to paragraphs (4)(b)(i) or (4)(b)(ii) above, ERCOT will send a notification to the IE.

[PGRR118: Replace paragraph (b) above with the following upon system implementation of NPRR1246:]

(b) The IE has provided all generator data in accordance with the Resource Registration Glossary, Planning Model column, including but not limited to steady state, system protection and stability models.

(i) The IE shall submit the final dynamic data model at least 45 days prior to the quarterly stability assessment deadline described in paragraph (2) above. If ERCOT is unable to complete its review prior to the quarterly stability assessment deadline, ERCOT shall not include the Generation Resource, ESR or Settlement Only Generator (SOG) in that quarterly stability assessment.

(ii) Changes to the dynamic data model after the stability study is deemed complete may subject the Generation Resource, ESR, or SOG to modification of one or more FIS study elements as defined in paragraph (9) of Section 5.3.2.5, FIS Report and Follow-up. If ERCOT and the lead TSP(s) determine that modifications to one or more FIS study elements are required, then ERCOT shall not include the Generation Resource, ESR, or SOG in a quarterly stability assessment until the revised FIS has been completed in accordance with paragraph (4)(c)(i) below.

(iii) If an IE submitted a final dynamic data model at least 45 days prior to the quarterly stability assessment deadline but ERCOT determines that the Generation Resource, ESR, or SOG is ineligible to be included in a quarterly stability assessment pursuant to paragraphs (4)(b)(i) or (4)(b)(ii) above, ERCOT will send a notification to the IE.

(c) The following elements must be complete:

(i) Final FIS studies, which the TSP must have submitted via the online RIOO system at least 45 days prior to the quarterly stability assessment deadline;

(ii) Reactive Power Study; and

(iii) System improvements or mitigation plans that were identified in these studies as required to meet the operational standards established in the Protocols, Planning Guide, Nodal Operating Guides, and Other Binding Documents prior to synchronizing the generator.

(d) The data used in the studies identified in paragraph (4)(c) above is consistent with data submitted by the IE as required by Section 6.9.

(5) The following prerequisites must be satisfied prior to the inclusion of a new Large Load or Load modification subject to the requirements of Section 9.2.1 ~~Large Load~~ in the quarterly stability assessment:

(a) The Large Load has met the requirements of Section 9.4, LLIS Report and Follow-up, and Section 9.5, Interconnection Agreements and Responsibilities;

(b) The Load Commissioning Plan has been updated to reflect the results of the LLIS as required by paragraph (1) of Section 9.2.4, Load Commissioning Plan;

(~~b~~c) The interconnecting TSP has provided to ERCOT the dynamic load model it received from the ILLE per paragraph (1) of Section 9.3.4.3, Dynamic and Transient Stability Analysis, and written affirmation that no changes to the project information have been communicated by the ILLE, per Section 9.2.3, Modification of Large Load Project Information, that would invalidate the model. ~~all necessary modeling data. The model data must include, but is not limited to steady state, system protection, and stability models.~~

~~(i) The dynamic data model will be reviewed by ERCOT prior to the quarterly stability assessment and shall be submitted by the interconnecting TSP 45 days before the quarterly stability assessment deadline. If this review cannot be completed prior to the quarterly stability assessment deadline, ERCOT may refuse to allow Initial Energization in the three month period associated with the quarterly stability assessment deadline. ERCOT shall include the Large Load in the next quarterly stability assessment period provided that the review of the dynamic data model has been completed prior to the next quarterly stability assessment's deadline.~~

(~~c~~d) The following elements must be complete:

(i) Reactive Power Study, if required according to Protocol Section 3.15, Voltage Support; and

(ii) SS~~R~~O Study, if required according to Protocol Section 3.22.1.4, Large Load Interconnection Assessment; and

(~~d~~e) The data used in the studies identified in paragraph (c) above is consistent with data used in the final LLIS studies approved per Section 9.4, LLIS Report and Follow-up.

(6~~5~~) At any time following the inclusion of a large generator or applicable Large Load in a stability assessment, but before the Initial Synchronization of the generator or Initial Energization of the Large Load, if ERCOT determines, in its sole discretion, that the generator or Large Load no longer meets the prerequisites described in paragraphs (4) or (5) above, or that an IE or ILLE has made a change to the design of the generator or Large Load that could have a material impact on ERCOT System stability, then ERCOT may refuse to allow Initial Synchronization of the generator or Initial Energization of the Large Load. ~~provided that~~ ERCOT shall include the generator or Large Load in the next

quarterly stability assessment period that commences after identification of the material change or after the generator or Large Load meets the prerequisites specified in paragraphs (4) or (5) above, as applicable. If ERCOT determines, in its sole discretion, that the change to the design of the generator or Large Load would not have a material impact on ERCOT System stability, then ERCOT may not refuse to allow Initial Synchronization of the generator or Initial Energization of the Large Load due to this change.

(~~7~~6) ERCOT shall post to the MIS Secure Area a report summarizing the results of the quarterly stability assessment within ten Business Days of completion.

6.6 Modeling of Large Loads

6.6.1 Modeling of Large Loads Not Co-Located with a Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG)

(1) The interconnecting Transmission Service Provider (TSP) shall not add a new Large Load or Load modification subject to the requirements of Section 9.2.1, Applicability of the Large Load Interconnection Study Process, ~~Large Load~~ to the Network Operations Model until the following conditions have been met:

(a) The LLIS has been completed and results communicated per paragraph (~~7~~6) of Section 9.4, LLIS Report and Follow-up;

(b) The TSP has satisfied all conditions of 9.5.1, Interconnection Agreement for Large Loads not Co-Located with a Generation Resource Facility Registered as a Private Use Network~~; and~~.

~~(c) The Large Load has been included in a completed QSA.~~

6.6.2 Modeling of Large Loads Co-Located with an Existing Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG)

(1) The addition of a new Large Load to an existing Generation Resource, ESR, or SOG, or the modification of an existing Load at the Generation Resource, ESR, or SOG, subject to the requirements of Section 9.2.1, Applicability of the Large Load Interconnection Study Process, is considered a material modification of the Resource Registration as described in paragraph (8) of Section 6.8.2. The Resource Entity (RE) shall update the Resource Registration data to reflect the new or increased Load.

(2) The RE shall not update the Resource Registration data to reflect the new or increased Load until the following requirements have been satisfied:

(a) ERCOT has communicated the completion of the LLIS as described in paragraph (~~7~~6) of Section 9.4, LLIS Report and Follow-up; and

(b) All required interconnection agreements have been executed and acknowledged by all parties as prescribed in Section 9.5.2, Interconnection Agreement for

Large Loads Co-Located with one or more Generation Resource Facilities ~~Registered as a Private Use Network~~;

~~(c) The Large Load has been included in a completed QSA.~~

6.6.3 Modeling of Large Loads Co-Located with a Proposed Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG)

(1) A new Large Load co-located with a proposed Generation Resource, ESR, or SOG shall be included in the data provided by the IE or RE during the Resource Registration process.

(2) The Large Load shall not be included in the Network Operations Model until the following requirements have been satisfied:

(a) ERCOT has communicated the completion of the LLIS as described in paragraph (~~7~~6) of Section 9.4, LLIS Report and Follow-up;

(b) All required interconnection agreements have been executed and acknowledged by all parties as prescribed in Section 9.5.2, Interconnection Agreement for Large Loads Co-Located with one or more Generation Resource Facilities ~~Registered as a Private Use Network~~; and

~~(c) The Large Load has been included in a completed QSA; and~~

(~~d~~c) All applicable requirements of Section 6.9 have been completed.

6.10 Contingency Filing Requirements

(1) Each Transmission Service Provider (TSP), or the entity designated as its modeling entity in Appendix A to the ERCOT Steady State Working Group Procedure Manual, shall provide updates to the ERCOT contingency list corresponding to the steady-state base cases for the TSP's existing system and planned future Transmission Facilities. ERCOT shall post the list to the Market Information System (MIS) Secure Area. The list shall be reviewed and updated as described in the ERCOT Steady State Working Group Procedure Manual. At a minimum, the list shall contain all required category P1, P2, P4, P5, and P7 contingencies, as described in the North American Electric Reliability Corporation (NERC) Reliability Standard addressing Transmission System Planning Performance Requirements, all contingencies representing the Forced Outage of a double circuit (two circuits on the same structures in excess of 0.5 miles in length), all contingencies representing the Outage of a double circuit (two circuits on the same structure in excess of 0.5 miles in length) where both circuits must be taken out for a maintenance outage, all contingencies representing the Outage of a Large Load, and any other contingencies described in the ERCOT Steady State Working Group Procedure Manual.

9 LARGE LOAD ADDITIONS AT NEW OR MODIFICATION OF EXISTING LOAD INTERCONNECTION(S)

9.1 Introduction

(1) This Section defines the requirements and processes used to facilitate new or modified Large Load interconnections with the ERCOT System. This process will be referred to as the Large Load Interconnection Study (LLIS) process. The requirements are designed to:

(a) Facilitate studies to identify potential system limitations and determine facilities needed to interconnect a new Large Load to or modify an existing Large Load ~~to~~on the ERCOT network;

(b) Facilitate orderly and organized Large Load interconnections, while allowing ERCOT to determine whether the interconnection of the proposed Large Load would comply with North American Electric Reliability Corporation (NERC) Reliability Standards, ERCOT Protocols, ERCOT Planning and Operating Guides, TSP criteria, and any Applicable Legal Authority (ALA);

(c) Specify the communications required between Interconnecting Large Load Entities (ILLEs), Transmission Service Providers (TSPs), Distribution Service Providers (DSPs), Resource Entities (REs), Interconnecting Entities (IEs), and ERCOT;

(d) Provide the best information on future Large Load additions for use in identifying, forecasting, and analyzing short- and long-range ERCOT capabilities, demands, and reserves; and

(e) Provide ERCOT accurate data about new and modified Large Load subject to the provisions detailed in section 9.2.1, Applicability of the Large Load Interconnection Study Process, to ensure that ERCOT and stakeholders have the information necessary for planning purposes.

(2) Submission of all project data, ~~study documents,~~ and other communications described in this Section shall be in the manner and format prescribed by ERCOT. ERCOT shall publicly post the format of such submissions on the ERCOT website.

(3) ERCOT shall manage a confidential email list (Transmission Owner Load Interconnection) to facilitate communication of confidential Large Load-related information among TSPs and ERCOT. Membership to this email list will be limited to ERCOT and appropriate TSP personnel.

9.2 General Provisions

9.2.1 Applicability of the Large Load Interconnection Study Process

(1) Any request to interconnect or modify a Load Facility that meets one or more of the following criteria shall be subject to the Large Load Interconnection Study (LLIS) process:

(a) A new Large Load;

(b) A modification of any existing Load Facility that increases the aggregate peak Demand of the Facility by 75 MW or more; or

~~(c) A modification of an existing Load Facility that is not a Large Load such that, after modification, the peak Demand of the Load Facility is increased by 20 MW or more and the Load Facility qualifies as a Large Load; or~~

(c~~d~~) A modification of an existing Large Load that changes or adds a Point of Interconnection (POI) or Service Delivery Point to a different electrical bus on a different electrical circuit.

9.2.2 Submission of Large Load Project Information and Initiation of the Large Load Interconnection Study (LLIS)

(1) For any Load request meeting one or more criteria defined in paragraph (1) of Section 9.2.1, Applicability, the following actions shall be completed prior to the initiation of the LLIS process described in Section 9.3, Interconnection Study Procedures for Large Loads.

(a) Submission of all information, including but not limited to, data required by the lead TSP to perform steady state, short circuit, motor start, stability analyses and any other studies the lead TSP deems necessary to reliably interconnect the Load. The dynamic load model to be provided for performing stability analysis will be in a format prescribed by the lead TSP and/or ERCOT; ~~of the type and in the format prescribed by ERCOT, needed to define, model, and study the Load request;~~

(b) Submission of a ~~complete~~preliminary Load Commissioning Plan that fully reflects the proposed project schedule;

(c) Written acknowledgement from the ILLE of its obligations to notify the interconnecting TSP of changes to the Large Load project information or to the ll~~L~~oad composition, technology, or ~~load~~ parameters, as described in Section 9.2.3 Modification of Large Load Project Information, during the interconnection process;

(~~e~~d) A formal request to initiate the LLIS process described in Section 9.3; and

(~~d~~e) Payment of the LLIS Application Fee to ERCOT as described in paragraph (3).

(2) The interconnecting Transmission Service Provider (TSP) shall submit the information described in paragraphs (1)(a) through (1)(~~e~~d) above on behalf of the Interconnecting Large Load Entity (ILLE).

(3) The ILLE shall pay to ERCOT the LLIS Application Fee, as described in the ERCOT Fee Schedule prior to the commencement of the LLIS. The interconnecting TSP, RE, or IE may choose to submit this fee to ERCOT on the behalf of the ILLE. Payment of the ERCOT LLIS Application Fee shall not affect the independent responsibility of the ILLE to pay for interconnection studies conducted by the interconnecting TSP or for any DSP studies.

9.2.3 Modification of Large Load Project Information

(1) The interconnecting Transmission Service Provider (TSP) shall update any project information submitted per paragraph (1) of Section 9.2.2 within ~~five~~ten Business Days of being notified by the ILLE of a material change.

(2) The ILLE shall notify the lead TSP if a change to the ~~L~~load composition ~~, or~~ technology, or ~~load~~ parameters occurs after the ILLE has provided the TSP with its initial dynamic load model(s) per paragraph (2) of Section 9.3.4.3, Dynamic and Transient Stability Analysis. If ~~a~~the change to ~~l~~Load composition ~~or~~, technology, or ~~load~~ parameters ~~that~~ differs substantially from the dynamic models information used in the LLIS Stability Study as described in Section 9.3.4.3, ~~Dynamic and Transient Stability (Load Stability, Voltage) Analysis,~~ is made at any time after the initiation of the LLIS, the lead TSP shall ~~provide an rationale to ERCOT on~~determine whether a new Stability Study is required and provide a written explanation of its determination to ERCOT. The lead TSP shall perform a new Stability Study that reflects the new composition of the proposed Load unless ~~both~~ ERCOT ~~and~~in collaboration with the lead TSP agree such a study is not needed.

(3) If a material change is made such that the interconnection request no longer meets the applicability criteria of Section 9.2.1, Applicability, the interconnecting TSP shall respect the conclusions of any completed LLIS study elements when evaluating the reliability of the modified interconnection request. ~~not interconnect the Load above any Demand limit identified in any completed LLIS study elements.~~

9.2.4 Load Commissioning Plan

(1) The Load Commissioning Plan (LCP) shall be maintained and updated by the interconnecting Transmission Service Provider (TSP) using information provided by the Interconnecting Large Load Entity (ILLE). The LCP must specify the load increments and timeline by which the ILLE intends to increase peak Demand. The plan shall reflect the most currently available project information and shall be updated upon receipt of updated project information from the ILLE and as otherwise described in this section.