(10) ERCOT may establish an upper limit, in MWs, on the amount of ERS capacity it will procure for any ERS Time Period in any ERS Standard Contract Term.

(11) A QSE's offer to provide ERS shall include:

(a) The name of the QSE representing the ERS Resource and the name of an individual authorized by the QSE to represent the QSE and its ERS Resource(s);

(b) The name of an Entity that controls the ERS Resource, and an affirmation that the QSE has obtained written authorization from the Entity to submit ERS offers on its behalf and to represent the Entity in all matters before ERCOT concerning the Entity's provision of ERS;

(c) Any information or data specified by ERCOT, including access to historical meter data, and affirmation by the QSE that it has obtained written authorization from the controlling Entity of the ERS Resource for the QSE to obtain such data;

(d) Affirmation that the controlling Entity of the ERS Resource has reviewed P.U.C. SUBST. R. 25.507, Electric Reliability Council of Texas (ERCOT) Emergency Response Service (ERS), these Protocols and Other Binding Documents relating to the provision of ERS, and has agreed to comply with and be bound by such provisions;

(e) An agreement by the QSE to produce any written authorization or agreement between the QSE and any ERS Resource it represents, as described in this Section, upon request from ERCOT or the PUCT;

(f) Affirmation that no offered capacity from any site in an ERS Resource has been or will be committed to provide any other product, service, or program during any of the hours in the ERS Time Period in the Standard Contract Term for which the offer is submitted. Such prohibited products, services, or programs include, but are not limited to, Ancillary Services, Security-Constrained Economic Dispatch (SCED), or TDSP standard offer programs. As an exception to the foregoing, a QSE may offer a site to provide ERS for an ERS Time Period in the Standard Contract Term even if the QSE has an offer pending for that same site to serve as an MRA during that ERS Time Period and Standard Contract Term; however, if the site is selected to serve as an MRA it will not be permitted to serve as ERS during any ERS Time Period in the ERS Contract Term in which it is obligated to serve as an MRA; and

(g) Affirmation that the QSE and the controlling Entity the ERS Resource are familiar with any applicable federal, state or local environmental regulations that apply to the use of any generator in the provision of ERS, and that the use of such generator(s) to provide of ERS would not violate those regulations. This provision applies to both ERS Generators and to the use of backup generation by ERS Loads.

(12) Upon request from a QSE, ERCOT shall provide the dates and times for any deployment events or tests of any ERS site during the previous three ERS Standard Contract Terms, provided that the QSE has obtained written authorization from the ERS site to obtain the information from ERCOT. Such QSE requests shall include the following site-specific information: Electric Service Identifier (ESI ID), unique meter identifier (if applicable), or, if the site is in a Non-Opt-In Entity (NOIE) area, site name and site address.

(13) Sites associated with a Dynamically Scheduled Resource (DSR) may not participate in ERS. Offers for Resources containing sites associated with a DSR will be rejected by ERCOT. If ERCOT determines that any participating site is associated with a DSR, that site will be treated as removed from the Resource on the date the determination was made. An ERS Resource's obligation will not change as a result of any such site removal.

[NPRR1000: Delete item (13) above upon system implementation and renumber accordingly.]

(14) Each offer submitted by a QSE on behalf of an aggregated ERS Load on a weather-sensitive baseline shall include the QSE's projection of the maximum number of sites in the aggregation during the ERS Standard Contract Term. ERCOT shall review this projection and the information provided regarding the initial size of each aggregated ERS Load and shall reject any offer on behalf of such an ERS Load if the maximum size of the ERS Load projected by the QSE would violate the limits of site participation growth described in paragraph (15) below.

(15) A QSE may modify the population of an aggregated ERS Load on a weather-sensitive baseline once per month during an ERS Standard Contract Term via a process defined by ERCOT. Such adjustments shall be effective on the first day of each month following the first month. A fully validated ERS Offer form must be received by ERCOT no later than seven business days prior to the first day of the month for which is intended to be in effect.

(a) During an ERS Standard Contract Term, a QSE may increase the number of sites in an aggregated ERS Load on a weather-sensitive baseline by no more than the greater of the following:

(i) 100% of the initial number of sites; or

(ii) Two MW times the QSE's projection of the maximum number of sites in the aggregation during the ERS Standard Contract Term, divided by the maximum MW capacity offered for any ERS Time Period for the aggregation.

(b) Any sites added to an ERS Load on a weather-sensitive baseline are subject to the same requirements for historical meter data as the other sites in the aggregation, as described in paragraph (4) of Section 8.1.3.1.1.

(16) For each of the four ERS service types, an ERS Standard Contract Term may consist of a single ERS Contract Period or multiple non-overlapping ERS Contract Periods, as follows:

(a) If no ERS Resources' obligations are exhausted for an ERS service type during an ERS Contract Period pursuant to Section 3.14.3.3, Emergency Response Service Provision and Technical Requirements, the ERS Contract Period for that ERS service type shall terminate at the end of the last Operating Day of the ERS Standard Contract Term.

(b) If one or more ERS Resources' obligations in a given ERS service type are exhausted pursuant to Section 3.14.3.3, the ERS Contract Period for that ERS service type shall terminate at the end of the Operating Day during which the exhaustion occurred. However, if ERS Resources participating in a service type remain deployed at the end of that Operating Day, the ERS Contract Period for that ERS service type shall terminate at the end of the Operating Day on which those ERS Resources are recalled.

(c) If an ERS Contract Period terminates as provided in paragraph (b) above, and one or more ERS Resources' obligations were not exhausted, a new ERS Contract Period for the ERS service type shall begin at hour ending 0100 on the following Operating Day. This new ERS Contract Period shall terminate as provided in this Section.

(d) If ERCOT elects pursuant to paragraph (b) above to renew the obligations of any ERS Resources whose obligations were entirely exhausted, a new ERS Contract Period for the ERS service type shall begin at hour ending 0100 on the Operating Day after ERCOT has notified QSEs that it has elected to renew the obligation. If a new ERS Contract Period was initiated pursuant to paragraph (c) above on an Operating Day prior to ERCOT issuing a notice of renewal under this paragraph, that ERS Contract Period shall terminate at the end of the Operating Day on which ERCOT notified QSEs that the renewal will take place. This new ERS Contract Period shall terminate as provided in this Section.

(17) An ERS Resource currently obligated to provide an ERS service type during an ERS Time Period and ERS Contract Period may be offered to provide service as an MRA during that same ERS Time Period in the ERS Contract Period. If the ERS Resource is selected to provide service as an MRA during an ERS Time Period in the ERS Contract Period in which it is currently obligated to provide an ERS service type, the ERS Contract Period will be terminated for that ERS service type. The ERS Contract Period for that ERS service type shall terminate at the end of the Operating Day that is five days before the first Operating Day the ERS Resource is obligated to provide service under the MRA Agreement. However, if any ERS Resources participating in that ERS service type are currently deployed at the end of the Operating Day the ERS Contract Period is scheduled to terminate, then the ERS Resource's ERS Contract Period for that ERS service type shall continue until the end of the Operating Day on which all of the ERS

Resources participating in that ERS service type have been recalled, at which time the ERS Contract Period will terminate.

(18) ERS Resources shall be obligated in ERS Contract Periods as follows:

(a) Unless an ERS Contract Period is terminated pursuant to paragraph (17) above, for the first ERS Contract Period in an ERS Standard Contract Term, all ERS Resources awarded by ERCOT shall be obligated.

(b) For each of any subsequent ERS Contract Periods for a given ERS service type in an ERS Standard Contract Term, any ERS Resource with remaining obligation due to cumulative deployment time of less than eight hours at the end of the last ERS Contract Period shall be obligated for only this remaining deployment time in the new ERS Contract Period.

(c) For each of any subsequent ERS Contract Periods in an ERS Standard Contract Term, ERCOT may renew the obligations of certain ERS Resources as follows:

(i) During the offer submission process, QSEs shall designate on the ERS offer form, which is posted on the ERCOT website, whether an ERS Resource elects to participate in renewal ERS Contract Periods ("renewal opt-in"). Except as provided in paragraph (iv) below, this election is irrevocable once the ERS Resource has been committed for an ERS Standard Contract Term.

(ii) If the obligations of one or more ERS Resources are exhausted before the end of an ERS Standard Contract Term, ERCOT shall determine whether to include renewal opt-ins in the subsequent ERS Contract Period. ERCOT may limit any renewal to one or more ERS Time Periods in which obligations have been exhausted.

(iii) If ERCOT decides to include renewal opt-ins in a subsequent ERS Contract Period, ERCOT shall promptly notify all ERS QSEs as to the ERS Time Periods that it has elected to renew.

(iv) By the end of the second Business Day in any renewal ERS Contract Period, a QSE may revoke the renewal opt-in status of any of its committed ERS Resources for any subsequent ERS Contract Periods within that ERS Standard Contract Term. ERCOT shall develop a method for QSEs to communicate such information.

(v) By the end of the third Business Day in any ERS Contract Period other than the first ERS Contract Period in an ERS Standard Contract Term, ERCOT shall communicate to QSEs a confirmation of the terms of participation for all of their committed ERS Resources.

(19) In any 12-month period beginning on February 1st and ending on January 31st, ERCOT shall not commit dollars toward ERS in excess of the ERS cost cap. ERCOT may

determine cost limits for each ERS Standard Contract Term in order to ensure that the ERS cost cap is not exceeded.

[NPRR984: Replace paragraph (19) above with the following on October 1, 2021 and upon system implementation:]

(19) In any 12-month period beginning on December 1st and ending on November 30th, ERCOT shall not commit dollars toward ERS in excess of the ERS cost cap. ERCOT may determine cost limits for each ERS Standard Contract Term in order to ensure that the ERS cost cap is not exceeded.

(20) If a QSE offers a Weather-Sensitive ERS Load, selects a control group baseline for that ERS Load, and ERCOT determines that the magnitude of the offer relative to the baseline error will prevent accurate determination of the performance, ERCOT shall reject the offer.

(21) ERCOT shall reduce the available expenditure under the ERS cost cap by the value of the amount of ERS Self-Provision. ERCOT shall value ERS Self-Provision at the clearing price multiplied by the total MW of ERS Self-Provision during each relevant ERS Time Period.

(22) ERCOT shall procure ERS Resources for each ERS Time Period using a clearing price. The Emergency Response Service Procurement Methodology, posted on the ERCOT website, is an Other Binding Document that describes the methodology used by ERCOT to procure ERS. ERCOT may consider geographic location and its effect on congestion in making ERS awards. ERCOT may prorate the capacity awarded to an ERS Resource in an ERS Time Period if the capacity offered for that ERS Resource would cost more than the Emergency Response Service Procurement Methodology allows under the time period expenditure limit. Such proration shall only be done if the QSE indicates on its offer for an ERS Resource that the QSE is willing to have the capacity prorated and also has indicated the lowest prorated capacity limit which is acceptable for that ERS Resource. If proration would result in an award below an ERS Resource's designated prorated capacity limit or below the minimum MW offer applicable to the ERS service type as specified in paragraph (8) above, the offer will not be awarded.

(23) Payments and Self-Provision credits to QSEs representing ERS Resources are subject to adjustments as described in Section 8.1.3.3, Payment Reductions and Suspension of Qualification of Emergency Response Service Resources and/or their Qualified Scheduling Entities. Deployment of ERS Resources will not result in additional payments other than any payment for which the QSE may be eligible through Real-Time energy imbalance or other ERCOT Settlement process.

(24) QSEs representing ERS Resources selected to provide ERS shall execute a Standard Form Emergency Response Service Agreement, as provided in Section 22, Attachment G, Standard Form Emergency Response Service Agreement.

3.14.3.3 Emergency Response Service Provision and Technical Requirements

(1) If ERCOT deploys ERS, any ERS Resource that is contractually committed to provide the ERS service type deployed during the ERS Time Period that includes all or any part of the first interval of the Sustained Response Period must deploy. If an ERS Resource does not have an obligation for any part of the first interval of the Sustained Response Period, the ERS Resource is not required to deploy at any time during the Sustained Response Period.

(2) For purposes of this paragraph, deployment obligation time is the cumulative time during the Sustained Response Period of an event during which an ERS Resource has an obligation. Deployment obligation time does not include the ramp time. An ERS Resource shall be subject to a maximum of eight hours of cumulative deployment obligation time per ERS Contract Period, except that for ERS Resources that did not exhaust their obligations in a previous ERS Contract Period within the same ERS Standard Contract Term, the maximum deployment obligation time shall be the remaining deployment obligation time from the previous ERS Contract Period as provided by paragraph (18)(b) of Section 3.14.3.1, Emergency Response Service Procurement. Weather-Sensitive ERS test deployments do not contribute to the calculation of cumulative deployment obligation time.

(3) Notwithstanding paragraph (1) above, the following apply:

(a) For a Non-Weather-Sensitive ERS Resource, if an ERS deployment is still in effect when the ERS Resource's cumulative deployment obligation time equals or exceeds eight hours, the ERS Resource must continue to meet its event performance requirements for the next four hours or until ERCOT releases the ERS Resource, whichever comes first.

(b) For a Weather-Sensitive ERS Resource, if an ERS deployment is still in effect when the Weather-Sensitive ERS Resource's cumulative deployment obligation time equals or exceeds eight hours, the ERS Resource must continue to meet its event performance requirements for the next four hours or until ERCOT releases the ERS Load, whichever comes first.

(4) Unless ERCOT has received a notice of unavailability in a format prescribed by ERCOT, ERCOT shall assume that a contracted ERS Resource is fully available to provide ERS.

(5) QSEs and ERS Resources they represent shall meet the following technical requirements:

(a) Each ERS Resource, including each member of an aggregated ERS Resource, must have an ESI ID or Resource ID (RID) and dedicated metering, as defined by ERCOT. An ERS Resource located outside of a competitive service area may use a unique service identifier in lieu of an ESI ID or RID. ERCOT shall analyze 15-minute interval meter data, adjusted for the deemed actual Distribution Loss Factors (DLFs), for each ERS Resource for purposes of offer analysis, availability and performance measurement. ERS Resources behind a NOIE meter point shall arrange, preferably with the NOIE TDSP, to provide ERCOT with 15-minute

interval meter data subject to ERCOT's specifications and approval. ERS Resources behind a Private Use Network's Settlement Meter point shall provide ERCOT 15-minute interval meter data subject to ERCOT's specifications and approval. All generators in an ERS Resource must have TDSP metering capable of measuring energy exported to the ERCOT System and TDSP metering capable of measuring energy imported from the ERCOT System. The QSE must also ensure that interval metering is installed that measures the output of each site in the ERS Generator and that conforms with the requirements described in P.U.C. SUBST. R. 25.142, Submetering for Apartments, Condominiums, and Mobile Home Parks. Time stamps shall conform to the requirements in Section 10.9.2, TSP or DSP Metered Entities. The ERS Resource associated with unique meters in competitive choice areas will be adjusted by the same DLFs as the ESI ID associated with that ERS Resource. The ERS Resource associated with unique meters in NOIE areas will be adjusted based on a NOIE DSP DLF study submitted to ERCOT pursuant to paragraph (6) of Section 13.3, Distribution Losses.

(b) An ERS Resource participating in ERS-10 must be capable of meeting its event performance obligations relevant to its assigned performance evaluation methodology within ten minutes of an ERCOT Dispatch Instruction to its QSE, and must be able to maintain such performance for the entire Sustained Response Period. An ERS Resource participating in ERS-30 must be capable of meeting its event performance obligations relevant to its assigned performance evaluation methodology within 30 minutes of an ERCOT Dispatch Instruction to its QSE, and must be able to maintain such performance for the entire Sustained Response Period.

(c) A QSE must be capable of communicating with its ERS Resources in sufficient time to ensure deployment as described in paragraph (b) above.

(d) QSEs shall communicate to ERCOT, in a method prescribed by ERCOT, material changes in the availability status of their ERS Resources.

(e) An ERS Resource deployed for ERS must be able to return to a condition such that it is capable of meeting its ERS performance requirements within ten hours following a release Dispatch Instruction.

(f) ERS Resources and their QSEs are subject to qualification based on ERCOT's evaluation of their historical meter data and, if applicable, their historic performance in providing other comparable ERCOT services. ERS Resources and their QSEs are subject to testing requirements as described in Section 8.1.3.2, Testing of Emergency Response Service Resources.

(g) ERS Resources are not subject to the modeling, telemetry and COP requirements of other Resources.

(6) The contracted capacity of ERS Resources may not be used to provide Ancillary Services during a contracted ERS Time Period. Nothing herein shall be construed to limit passive (voluntary) Load response, provided the ERS Resource meets its performance and availability requirements, as described in Section 8.1.3.1, Performance Criteria for Emergency Response Service Resources.

(7) QSEs representing ERS Resources must meet the requirements specified in Section 8.1.3.3, Payment Reductions and Suspension of Qualification of Emergency Response Service Resources and/or their Qualified Scheduling Entities.

6.5.9.4.2 EEA Levels

(1) ERCOT will declare an EEA Level 1 when PRC falls below 2,300 MW and is not projected to be recovered above 2,300 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 1,750 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;

(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) At ERCOT's discretion, deploy available contracted ERS-30 via an XML message followed by a VDI to the all-QSE Hotline. ERCOT shall post a message electronically to the ERCOT website that ERS-30 has been deployed. The ERS-30 ramp period shall begin at the completion of the VDI.

(A) If less than 500 MW of ERS-30 is available for deployment, ERCOT shall deploy it as a single block.

(B) If the amount of ERS-30 available for deployment equals or exceeds 500 MW, ERCOT, at its discretion, may deploy ERS-30 as a single block or by group designation. ERCOT shall develop a random selection methodology for determining how to place ERS Resources in ERS-30 into groups, and shall describe the methodology in a document posted to the ERCOT website. Prior to the start of an ERS Contract Period for ERS-30, ERCOT shall notify QSEs representing ERS Resources in ERS-30 of their ERS Resources' group assignments.

(C) ERS-30 may be deployed at any time in a Settlement Interval.

(D) Upon deployment, QSEs shall instruct their ERS Resources in 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 the ERS-30 deployment or the ERS-30 Resources have reached their maximum deployment time.

(E) ERCOT shall notify QSEs of the release of ERS-30 via an XML message followed by VDI to the all-QSE Hotline. ERCOT shall post a message electronically to the ERCOT website that ERS-30 has been recalled. The VDI shall represent the official notice of ERS-30 release. ERCOT may release ERS-30 as a block or by group designation.

(F) Upon release, an ERS Resource in ERS-30 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.

[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 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 and telemetered HSLs, Normal Ramp Rates, Emergency Ramp Rates, and Ancillary Service capabilities are updated and reflect all Resource delays and limitations; and

(ii) Suspend any ongoing ERCOT required Resource performance testing.

[NPRR995 and NPRR1002: Insert applicable portions of paragraph (iii) below upon system

implementation:]

(iii) 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, Load Frequency Control 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 1,750 MW and is not projected to be recovered above 1,750 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 1,430 MW:

(i) Instruct TSPs and DSPs or their agents to reduce Customer Load by using distribution voltage reduction measures, if deemed beneficial by the TSP, DSP, or their agents.

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

(iii) Instruct QSEs to deploy available contracted ERS-10 Resources, undeployed ERS-30 and/or deploy RRS supplied from Load Resources (controlled by high-set under-frequency relays). ERCOT may deploy ERS-10, ERS-30, or RRS simultaneously or separately, and in any order. ERCOT shall issue such Dispatch Instructions in accordance with the deployment methodologies described in paragraphs (iv) and (v) below and, if deploying ERS-30, the methodologies described in paragraph (1)(a)(iv) above.

[NPRR863: Replace item (iii) above with the following upon system implementation:]

(iii) Instruct QSEs to deploy available contracted ERS-10 Resources, undeployed ERS-30, and/or deploy ECRS or RRS (controlled by high-set under-frequency relays) supplied from Load Resources. ERCOT may deploy ERS-10, ERS-30, ECRS, or RRS simultaneously or separately, and in any order. ERCOT shall issue such Dispatch Instructions in accordance with the deployment methodologies described in paragraphs (iv) and (v) below and, if deploying ERS-30, the methodologies described in paragraph (1)(a)(iv) above.

(iv) ERCOT shall deploy ERS-10 via an XML message followed by a VDI to the all-QSE Hotline. ERCOT shall post a message electronically to the ERCOT website that ERS-10 has been deployed. The ERS-10 ramp period shall begin at the completion of the VDI.

(A) If less than 500 MW of ERS-10 is available for deployment, ERCOT shall deploy all ERS-10 Resources as a single block.

(B) If the amount of ERS-10 available for deployment equals or exceeds 500 MW, ERCOT, at its discretion, may deploy ERS-10 Resources as a single block or by group designation. ERCOT shall develop a random selection methodology for determining how to place ERS-10 Resources into groups, and shall describe the methodology in a document posted to the ERCOT website. Prior to the start of an ERS-10 Contract Period, ERCOT shall notify QSEs representing ERS-10 Resources of their ERS-10 Resources' group assignments.

(C) ERS-10 may be deployed at any time in a Settlement Interval.

(D) Upon deployment, QSEs shall instruct ERS-10 Resources to perform at contracted levels consistent with the criteria described in Section 8.1.3.1.4 until ERCOT releases the ERS-10 deployment or the ERS-10 Resources have reached their maximum deployment times.

(E) ERCOT shall notify QSEs of the release of ERS-10 via an XML message followed by VDI to the all-QSE Hotline. ERCOT shall post a message electronically to the ERCOT website that ERS-10 has been recalled. The VDI shall represent the official notice of ERS-10 release. ERCOT may release ERS-10 as a block or by group designation.

(F) Upon release, an ERS-10 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.

(v) ERCOT shall deploy RRS capacity supplied by Load Resources (controlled by high-set under-frequency relays) in accordance with the following:

[NPRR863: Replace paragraph (v) above with the following upon system implementation:]

(v) Load Resources providing ECRS that are not controlled by high set under-frequency relays shall be deployed prior to Group 1 deployment. 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 half of the 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 Group 1 Load Resources providing RRS. QSEs shall deploy Load Resources according to the group designation and will be given some discretion to deploy additional Load Resources from Group 2 if Load Resource operational considerations require such. ERCOT shall issue notification of the deployment via XML message. ERCOT shall follow this XML notification with a Hotline VDI, which shall initiate the ten-minute deployment period;

[NPRR863 and NPRR939: Replace applicable portions of paragraph (A) above with the following upon system implementation:]

(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) 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. ERCOT shall follow this XML notification with a Hotline VDI, which shall initiate the ten-minute deployment period;

(B) At the discretion of the ERCOT Operator, instruct QSEs to deploy the remaining 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 Group 2 Load Resources providing RRS. ERCOT shall issue notification of the deployment via XML message. ERCOT shall follow this XML notification with a Hotline VDI, which shall initiate the ten-minute deployment period;

[NPRR939: Replace paragraph (B) above with the following upon system implementation:]

(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 providing RRS based on their group designation. ERCOT shall issue notification of the deployment via XML message. ERCOT shall follow this XML notification with a Hotline VDI, which shall initiate the ten-minute deployment period;

(C) The ERCOT Operator may deploy both of the groups of Load Resources providing RRS at the same time. ERCOT shall issue notification of the deployment via XML message. ERCOT shall follow this XML notification with a Hotline VDI, which shall initiate the ten-minute deployment period; and

[NPRR863 and NPRR939: Replace applicable portions of paragraph (C) above with the following upon system implementation:]

(C) The ERCOT Operator may deploy 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. ERCOT shall follow this XML notification with a Hotline VDI, which 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), Group 1 and paragraph (B), Group 2. ERCOT shall develop a process for determining which individual Load Resource to place in Group 1 and which to place in Group 2. ERCOT procedures shall select Group 1 and Group 2 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.

[NPRR939 and NPRR1010: Replace applicable portions of paragraph (D) above with the following upon system implementation for NPRR939; and upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

(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 process for determining which individual Load Resource 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.

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

(vii) 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. ERCOT will declare an EEA Level 3 when PRC cannot be maintained above 1,430 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 will implement any measures associated with EEA Levels 1 and 2 that have not already been implemented.

[NPRR995 and NPRR1002: Insert applicable portions of paragraph (a) below upon system implementation and renumber accordingly:]

(a) ERCOT shall instruct ESRs and SOESSs to suspend charging. For ESRs, ERCOT shall issue the instruction via a SCED Base Point, or, if otherwise necessary, via a manual Dispatch instruction. An ESR or SOESS shall suspend charging unless providing Primary Frequency Response or LFC issues a charging instruction to an ESR that is carrying Reg-Down. 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.

(a) When PRC falls below 1,000 MW and is not projected to be recovered above 1,000 MW within 30 minutes, or when the clock-minute average frequency falls below 59.91 Hz for 25 consecutive minutes, ERCOT shall direct all TSPs and DSPs or their agents 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 1,000 MW of PRC within 30 minutes.

(b) In addition to measures associated with EEA Levels 1 and 2, TSPs and DSPs or their agents will keep in mind the need to protect the safety and health of the community and the essential human needs of the citizens. Whenever possible, TSPs and DSPs or their agents shall not manually drop Load connected to under-frequency relays during the implementation of the EEA.

8.1.3.1.3.1 Time Period Availability Calculations for Emergency Response Service Loads

(1) For an ERS Load on an ERS Default Baseline, ERCOT will calculate its ERSAF as follows:

(a) ERCOT will consider the ERS Load to have been unavailable for a 15-minute interval in a contracted ERS Time Period in which any of the following apply:

(i) The interval Load of the ERS Load was less than 95% of its contracted ERS MW capacity; or

(ii) Required metered interval data was not provided to ERCOT by the time ERCOT calculated availability for one or more sites in the ERS Resource.

(b) Otherwise, the ERS Load will be considered available for that 15-minute interval. The ERSAF will be the ratio of the number of 15-minute intervals the ERS Load was available during the ERS Time Period divided by the total number of 15-minute intervals in the ERS Time Period.

(c) Notwithstanding the foregoing, in determining the ERSAF, ERCOT will exclude from the calculation the following contracted intervals:

(i) Any 15-minute interval in which the ERS Load was deployed during an EEA, including intervals that begin during the ten-hour ERS recovery period following the issuance of the recall instruction;

(ii) Any 15-minute interval in which the ERS Load was deployed for an ERCOT unannounced test, and including intervals that begin during the full ten-hour ERS recovery period, if applicable; and

(iii) Any 15-minute interval following an ERS deployment resulting in exhaustion of the ERS Load's obligation in an ERS Contract Period.

(2) For an ERS Load assigned to the alternate baseline, ERCOT will calculate its ERSAF for an ERS Time Period using the following formula:

$$\mathbf{ERSAF}_{qce(tp)d} = \mathbf{MIN}\ (1, (\mathbf{AV}_{qce(tp)d} / (\mathbf{OFFERMW}_{qce(tp)d})))$$

The above variables are defined as follows:

Variable	Unit	Description
AV *qce(tp)d*	MW	Average MW Load, calculated as the average of the actual interval MW values or the MW values determined in accordance with paragraphs (a), (b), and (c) below, per 15-minute interval for an ERS Load in a contracted ERS Time Period per ERS service type *d*, excluding declared maximum base Load.
OFFERMW *qce(tp)d*	MW	An ERS Load's contracted capacity for an ERS Time Period, per ERS service type *d*, applicable to either competitively procured or self-provided ERS.
ERSAF *qce(tp)d*	None	Availability factor for an ERS Load for an ERS Time Period per ERS service type *d*.
q	None	A QSE.
c	None	ERS Contract Period.
e	None	An ERS Load.
tp	None	ERS Time Period.
d	None	ERS service type (Weather-Sensitive ERS-10, Non-Weather-Sensitive ERS-10, Weather-Sensitive ERS-30, or Non-Weather-Sensitive ERS-30).

(a) If the ERS Load is co-located with an ERS Generator and the QSE has opted for separate evaluation, its Load, for purposes of availability calculations, shall be determined as specified in paragraph (3)(c) of Section 8.1.3.1.2, Performance Evaluation for Emergency Response Service Generators.

(b) For purposes of calculating availability, the interval MW value will be deemed to be equal to the declared maximum base Load if the following condition is met:

(i) Required metered interval data was not provided to ERCOT by the time ERCOT calculated availability for one or more sites in the ERS Resource.

(c) For purposes of calculating availability, ERCOT shall exclude from the average any 15-minute interval meeting one or more of the following descriptions:

(i) Any 15-minute interval in which the ERS Load was deployed during an EEA event, including intervals that begin during the ten-hour ERS recovery period following the issuance of the recall instruction;

(ii) Any 15-minute interval in which the ERS Load was deployed for an ERCOT unannounced test, and including intervals that begin during the full ten-hour ERS recovery period, if applicable; or

(iii) Any 15-minute interval following the ERS deployment resulting in exhaustion of the ERS Load's obligation in an ERS Contract Period.

(3) A Weather-Sensitive ERS Load shall always have its availability factor for an ERS Contract Period set to 1.0 and its availability settlement weighting factor (ERSAFWT) set to zero.

8.1.3.1.3.2 Time Period Availability Calculations for Emergency Response Service Generators

(1) ERCOT shall evaluate the availability of an ERS Generator by using data from 15-minute interval metering dedicated to the ERS Generator.

(2) ERCOT will calculate an ERSAF using interval meter readings for an ERS Generator for each committed ERS Time Period as the ratio of the number of 15-minute intervals the ERS Generator was available in the ERS Time Period divided by the total number of obligated 15-minute intervals in the ERS Time Period. ERS Generators are considered available for any 15-minute interval except the following:

(a) An ERS Generator that is not co-located with an ERS Load will be considered unavailable for all 15-minute intervals that are part of an unsuccessful unannounced ERCOT test or event, as well as any subsequent intervals following the end of the test or event up to the interval immediately preceding the first full 15-minute interval for which the ERS Generator injects energy to the ERCOT System at a level greater than or equal to the sum of its injection capacity and obligation at the time of the test or event. The success or lack of success of an unannounced ERCOT test or event is determined by the criteria specified in Section 8.1.3.2, Testing of Emergency Response Service Resources.

(b) An ERS Generator that is co-located with an ERS Load and is being separately evaluated from the ERS Load will be considered unavailable for all 15-minute intervals that are part of an unsuccessful unannounced ERCOT test or event, as well as any subsequent intervals following the end of the test up to the interval immediately preceding the first full 15-minute interval for which the ERS Generator's output energy is greater than or equal to the sum of its injection capacity and obligation at the time of the test or event. The success or lack of success of an unannounced ERCOT test or event is determined by the criteria specified in Section 8.1.3.2.

(c) An ERS Generator that is co-located with an ERS Load and is being evaluated jointly with the ERS Load will be considered unavailable for all 15-minute intervals that are part of an unsuccessful unannounced ERCOT test or event, as well as any subsequent intervals following the end of the test up to the interval

immediately preceding the first full 15-minute interval for which the combined performance of the ERS Load and ERS Generator is greater than or equal to the combined obligation at the time of the test or event. The success or lack of success of an unannounced ERCOT test or event is determined by the criteria specified in Section 8.1.3.2.

(d) An ERS Generator will be considered unavailable during any 15-minute interval of an obligated ERS Time Period in which any of the following conditions are present:

(i) The ERS Generator output is greater than the sum of its self-serve capacity and its declared injection capacity for the ERS Time Period;

(ii) The export to the grid for the ERS Generator is greater than the injection capacity for the ERS Time Period; or

(iii) Required metered interval data was not provided to ERCOT by the time ERCOT calculated availability for one or more sites in the ERS Resource.

(e) ERCOT shall exclude any 15-minute intervals meeting one or more of the following descriptions from the availability:

(i) Any 15-minute interval in which the ERS Generator was deployed during an EEA event, including intervals that begin during the ten-hour ERS recovery period following the issuance of the recall instruction;

(ii) Any 15-minute interval following an ERS deployment that results in exhaustion of the ERS Generator's obligation in an ERS Contract Period; and

(iii) 15-minute intervals during a successfully completed ERCOT unannounced test of the ERS Generator including intervals that begin during the ten-hour ERS recovery period.

8.1.3.1.3.3 Contract Period Availability Calculations for Emergency Response Service Resources

(1) ERCOT shall compute a single time- and capacity-weighted availability factor (ERSAFCOMB) for each ERS Resource for an ERS Contract Period from the ERS Time Period ERSAFs calculated in Sections 8.1.3.1.1, Baselines for Emergency Response Service Loads, and 8.1.3.1.3.2, Time Period Availability Calculations for Emergency Response Service Generators, as follows:

If HOURS $_{qce(tp)d}$ **= 0, ERSAFCOMB** $_{qced}$ **= 1**

Otherwise

$$\mathbf{ERSAFCOMB}_{qced} = \sum_{tp} (\mathbf{HOURS}_{qce(tp)d} * \mathbf{OFFERMW}_{qce(tp)d} * \mathbf{ERSAF}_{qce(tp)d}) / \sum_{tp} (\mathbf{HOURS}_{qce(tp)d} * \mathbf{OFFERMW}_{qce(tp)d})$$

The above variables are defined as follows:

Variable	Unit	Description
$ERSAFCOMB_{qced}$	None	Time- and capacity-weighted availability factor for an ERS Contract Period per ERS service type *d*.
$HOURS_{qce(tp)d}$	Hours	The number of hours an ERS Resource is obligated in an ERS Time Period per ERS service type *d* minus any hours in that Time Period excluded for purposes of computing availability.
$OFFERMW_{qce(tp)d}$	MWh	The ERS Resource's contracted capacity for that time period per ERS service type *d* expressed in units of MWh.
$ERSAF_{qce(tp)d}$	None	Availability factor for an ERS Resource for an ERS Time Period and per ERS service type *d*.
q	None	A QSE.
c	None	ERS Contract Period.
e	None	Individual ERS Resource.
tp	None	ERS Time Period.
d	None	ERS service type (Weather-Sensitive ERS-10, Non-Weather-Sensitive ERS-10, Weather-Sensitive ERS-30, or Non-Weather-Sensitive ERS-30).

(2) In an ERS Contract Period with no ERS deployment events, the ERSAFWT for all ERS Resources shall be set to 1.0.

(3) In an ERS Contract Period with one or more ERS deployment events and in which no ERS Resource's ERS obligation is exhausted, the ERSAFWT for deployed ERS Resources shall be set to 0.25 and the ERSAFWT for all undeployed ERS Resources shall be set to 1.0.

(4) If, pursuant to Section 3.14.3.1, Emergency Response Service Procurement, an ERS Contract Period is shorter than the associated ERS Standard Contract Term the following shall apply:

(a) For all deployed ERS Resources, the ERSAFWT of the exhausted or discontinued ERS Resource shall be set to 0.25 × $ERSAFHRS_{qced}$ with $ERSAFHRS_{qced}$ determined as calculated paragraph (c) below.

(b) For all ERS Resources with no deployments during the ERS Contract Period, ERSAFWT shall be set to 1.0.

(c) ERSAFHRS$_{qced}$ for the ERS Contract Period shall be calculated using the following formula:

$$\mathbf{ERSAFHRS}_{qced} = \mathbf{AFHOURS}_{qced} / \sum_{tp} \mathbf{HOURS}_{qse(tp)d}$$

The above variables are defined as follows:

Variable	Unit	Description
ERSAFHRS $_{qced}$	None	The ratio of Availability Factor Hours (AFHOURS $_{qced}$) to the total awarded hours in the ERS Standard Contract Term *s* for ERS Resource *e* per ERS service type *d*.
AFHOURS $_{qced}$	Hours	The total number of the ERS Resource's obligated hours in ERS Contract Period *c*, minus any hours during that time excluded for purposes of computing availability.
HOURS $_{qse(tp)d}$	Hours	The total number of awarded hours for ERS Resource *e* for ERS Time Period *tp* in the ERS Standard Contract Term *s*.
q	None	A QSE.
s	None	ERS Standard Contract Term.
c	None	ERS Contract Period.
e	None	Individual ERS Resource.
tp	None	ERS Time Period.
d	None	ERS service type (Weather-Sensitive ERS-10, Non-Weather-Sensitive ERS-10, Weather-Sensitive ERS-30, or Non-Weather-Sensitive ERS-30).

(d) An ERS Resource shall be deemed to have met its availability requirements for an ERS Contract Period if ERSAFHRS for the ERS Contract Period is less than 0.5 and if the ERS Resource achieves an ERSAFCOMB greater than or equal to the value calculated in the formula below:

$$\mathbf{3.8 * ERSAFHRS}_{qced} - \mathbf{3.8 * (ERSAFHRS}_{qced})^2$$

(e) An ERS Resource that is deemed to have met its availability requirements under paragraph (d) above shall have its availability factor for that ERS Contract Period set to 1.0.

8.1.3.1.4 Event Performance Criteria for Emergency Response Service Resources

(1) No later than 45 days after the end of an ERS Standard Contract Term in which one or more ERS deployment events occurred, ERCOT shall provide each QSE representing ERS Resources with an event performance report containing the results of ERCOT's evaluation of the event(s). The report shall contain:

(a) For each event, the ERS event performance factor (ERSEPF) for each ERS Resource in the QSE's ERS portfolio, as described in this Section;

(b) For each event, the QSE's portfolio-level event performance factor, as described in Section 8.1.3.3, Payment Reductions and Suspension of Qualification of Emergency Response Service Resources and/or their Qualified Scheduling Entities;

(c) The QSE's portfolio-level event performance factor for the ERS Standard Contract Term, as described in Section 8.1.3.3.

(2) An ERS Resource's performance shall not be evaluated for an ERS deployment if one of the following is true:

(a) The Resource is in a ten-hour recovery period following a prior deployment at the beginning of the sustained response period of the deployment;

(b) The ERS Resource does not have an obligation for at least one full interval during the Sustained Response Period of that event;

(c) For Non-Weather-Sensitive ERS Resources, one or more sites of an ERS Resource were disabled or unverifiable due to events on the TDSP side of the meter affecting the supply, delivery or measurement of electricity either during the event or prior that impacts the creation of a credible baseline. QSEs must provide verification of such events from the TDSP or Meter Reading Entity (MRE); or

(d) For Weather-Sensitive ERS Resources, 10% or more sites of an ERS Load were disabled or unverifiable due to events on the TDSP side of the meter affecting the supply, delivery or measurement of electricity either during the event or prior that impacts the creation of a credible baseline.

(3) Otherwise, ERCOT shall evaluate an ERS Resource's performance during an ERS deployment based on the following criteria:

(a) Within the applicable ramp period, ERS Loads shall curtail Load and ERS Generators shall output energy and reach a level of energy injection to the ERCOT System in accordance with their ERS contractual obligations. The ramp period for ERS Resources in ERS-10 is ten minutes. The ramp period for ERS Resources in ERS-30 is 30 minutes.

(b) An ERS Load on a default baseline is expected to not increase its Load during the ramp period prior to an ERS test or deployment event. ERCOT will deem repeated occurrences of such Load increases to be a violation of the Protocols.

(c) ERCOT shall measure each ERS Resource's performance throughout the duration of an ERS deployment event by analyzing 15-minute interval meter data associated with the ERS Resource. ERCOT will compute an ERSEPF for each ERS Resource based upon this analysis.

(i) The ERSEPF is computed as the time-weighted arithmetic average of the EIPFs for the Sustained Response Period. An EIPF is computed for the ERS Resource for each of the 15-minute intervals in an ERS Sustained Response Period for which the ERS Resource has contracted capacity. If the last interval of the Sustained Response Period has an interval fraction (IntFrac) of less than one, the EIPF for that interval shall be excluded for the computation of ERSEPF. For an interval, $EIPF_i$ is computed as follows:

$EIPF_i$ = Max(Min(((Base_MWh $_i$ – Actual_MWh $_i$) / (IntFrac $_i$ * OFFERMW)),1),0)

The above variables are defined as follows:

Variable	Unit	Description
IntFrac $_i$	None	Interval fraction for that ERS Resource for that interval.
Base_MWh $_i$	MWh	For an ERS Load on a default baseline, the aggregated sum of baseline MWh values estimated by ERCOT for all sites in the ERS Load for that interval. For an ERS Load assigned to the alternate baseline, the sum of the ERS Load's OFFERMW and maximum base Load for that interval. For a stand-alone ERS Generator or an ERS Generator co-located and jointly evaluated with an ERS Load, the net energy injected to the ERCOT System for that interval. For an ERS Generator co-located with, but evaluated separately from an ERS Load, the energy output of the ERS Generator.
Actual_MWh $_i$	MWh	For an ERS Load, the aggregated sum of the actual MWh values for all sites in the ERS Load for that interval. For an ERS Generator, the ERS Generator's declared injection capacity, expressed in units of MWh.
OFFERMW	MWh	The ERS Resource's contracted capacity for that interval expressed in units of MWh.

i	None	An interval.

and where IntFrac $_i$ corresponds to the fraction of time for that interval for which the Sustained Response Period is in effect and is computed as follows:

IntFrac $_i$ = (CEndT $_i$ – CBegT $_i$) / 15

The above variables are defined as follows:

Variable	Unit	Description
IntFrac $_i$	None	Interval fraction for that ERS Resource for that interval.
CBegT $_i$	Minutes	If the Sustained Response Period begins after the start of that interval, the time in minutes from the beginning of that interval to the beginning of the Sustained Response Period, otherwise it is zero.
CEndT $_i$	Minutes	If the Sustained Response Period ends during that interval, the time in minutes from the beginning of that interval to the end of the Sustained Response Period, otherwise it is 15.
i	None	An interval.

(ii) For an ERS Load assigned to an alternate baseline, if the IntFrac for the first interval of the Sustained Response Period is less than one, the EIPF for that interval shall be calculated as follows:

(A) If the actual Load of the full 15-minute interval is less than the maximum base Load, the EIPF for that interval shall be set to one.

(B) If the QSE submits interval data for the day of the event that is more granular than at the 15-minute interval level that shows the average Load for the ERS Resource was below its maximum base Load for the portion of the interval in the Sustained Response Period, the EIPF for that interval shall be set to one. This submitted data must be in a format acceptable to ERCOT and include, at a minimum, the actual Load and associated time stamps.

(C) If the QSE submits other documentary evidence that ERCOT determines, in its discretion, demonstrates the average Load for the ERS Resource was below its maximum base Load for the portion of the interval in the Sustained Response Period, the EIPF for that interval shall be set to one. The documentary evidence must be supported by a sworn affidavit.

(D) If none of the above applies, then ERCOT shall calculate EIPF using the formula in subsection (i) above with Base_MWh$_i$ determined using one of the baselines described in the document titled "Demand Response Baseline Methodologies" on ERCOT.com.

(iii) In any ERS Standard Contract Term in which ERCOT has deployed ERS, the ERSEPF for an ERS Resource shall be the time-weighted average of the event performance factors for all events for which the ERS Resource was deployed.

(iv) Irrespective of its ERSEPF, an ERS Resource shall be deemed to have met its event performance requirements if it is an ERS Load determined by ERCOT to have met its Load reduction obligations in the ERS deployment event if measured on one of ERCOT's established default baseline types other than the baseline type selected by the QSE, and ERCOT determines that the different baseline more accurately represents the ERS Load's Demand response contribution.

(4) For an ERS deployment event, ERCOT shall calculate EIPFs and an ERSEPF for a Weather-Sensitive ERS Load, using actual 15-minute interval meter data, or, for Distributed Renewable Generation (DRG) that has been designated by the QSE to be evaluated by using its native load calculated 15-minute interval native load data, consistent with the provisions of paragraph (3)(c)(i) above. No other provisions in paragraph (3) above shall apply to Weather-Sensitive ERS Loads.

(5) Regardless of the number of enrolled sites in the Weather-Sensitive ERS Load at the time of an event or test, the contracted capacity value (OFFERMW) used will be the value submitted by the QSE in its offer.

8.1.3.2 Testing of Emergency Response Service Resources

(1) ERCOT may conduct an unannounced test of any ERS Resource at any time during an ERS Time Period in which the ERS Resource is contracted to provide ERS. Prior to the beginning of a Standard Contract Term, a QSE may request that one or more of its ERS Resources awarded in ERS-30 be tested as if subject to a ten-minute ramp during that ERS Standard Contract Term. The duration of a test will not count toward the ERS Resource's eight hours of maximum deployment time for an ERS Contract Period.

(a) For Non-Weather-Sensitive ERS Resources, ERCOT shall determine a test performance factor for each test using the methodology defined in Section 8.1.3.1.4, Event Performance Criteria for Emergency Response Service Resources.

(i) The test performance factors for Non-Weather-Sensitive ERS Resources resulting from those tests will be used in Settlement for that and subsequent ERS Standard Contract Terms as specified in Section 8.1.3.3, Payment Reductions and Suspension of Qualification of Emergency Response Service Resources and/or their Qualified Scheduling Entities.

(ii) A test shall be deemed to be successful if the ERS Resource achieves both a test performance factor of 0.95 or greater and an EIPF for the full first interval of the test of 0.95 or greater.

(iii) An ERS Resource for which the most recent test with a ten-minute ramp was successful shall not be subject to a test for at least 330 days regardless of whether the ERS Resource is participating in ERS-10 or ERS-30.

(iv) An ERS Resource for which the most recent test with a 30-minute ramp was successful shall not be subject to a test for at least 330 days unless the ERS Resource participates in ERS-10 during that period.

(v) An ERS Resource participating in ERS-10 that meets its ERS-10 performance obligations for all ERS deployment events by achieving both an event performance factor of 0.95 or greater and an EIPF for the full first interval of 0.95 or greater during an ERS Standard Contract Term shall not be subject to a test for ERS-10 or ERS-30 for at least 330 calendar days following the date of the last deployment of ERS-10 during that ERS Standard Contract Term.

(vi) An ERS Resource participating in ERS-30 that meets its ERS-30 performance obligations for all ERS deployment events by achieving both an event performance factor of 0.95 or greater and an EIPF for the full first interval of 0.95 or greater during an ERS Standard Contract Term shall not be subject to a test for ERS-30 for at least 330 calendar days following the date of the last deployment of ERS-30 during that ERS Standard Contract Term.

(vii) Notwithstanding the foregoing:

(A) If the ERSAFCOMB for an ERS Resource for an ERS Standard Contract Term consisting of a single ERS Contract Period is less than 0.85, or the ERSAFCOMB for an ERS Resource for an ERS Contract Period with a duration that is less than an ERS Standard Contract Term is lower than the threshold specified in paragraph (4)(d) of Section 8.1.3.1.3.3, Contract Period Availability Calculations for Emergency Response Service Resources, ERCOT may re-test that ERS Resource without regard to the 330 day limit specified above.

(B) If an ERS Resource is contracted to provide services under a Must-Run Alternative (MRA) Agreement and has an ERS obligation during an overlapping ERS Standard Contract Term, ERCOT may conduct additional testing to verify the site's ability to provide both services on the same or consecutive days. Such testing may be conducted without regard to the 330 day limit specified above and without regard to any recovery periods allowed for either ERS or the MRA Agreement.

(C) If a single TDSP-metered Premise has more than one ERS site and those ERS sites participate in different ERS Resources, then all of

those ERS Resources will be subject to testing if any one of the ERS Resources is subject to testing.

(b) Testing will be considered void and would require re-testing for any non-weather-sensitive Resources if one or more sites of an ERS Resource were disabled or unverifiable due to events on the TDSP side of the meter affecting the supply, delivery or measurement of electricity either during the event or prior that impacts the creation of a credible baseline. QSEs must provide verification of such events from the TDSP or MRE.

(c) For Weather-Sensitive ERS Resources, ERCOT shall conduct unannounced testing of each Weather-Sensitive ERS Load at least once but no more than twice per month of obligation during an ERS Standard Contract Term, unless testing has been superseded by deployment events as described in paragraph (vii) below.

(i) The tests will be conducted according to normal ERS testing procedures.

(ii) At the time of Dispatch during a test, ERCOT will not advise the QSE of the test duration, which may vary from one full 15-minute interval to 12 full 15-minute intervals.

(iii) ERCOT may conduct a test during any of a Weather-Sensitive ERS Load's obligated hours. However, tests will generally be targeted toward periods of peak weather conditions.

(iv) For a Weather-Sensitive ERS Load assigned to the control group baseline, for each test ERCOT will designate a single group which shall be removed from the test population that will serve as the control group.

(v) ERCOT shall calculate a test performance factor for each test of a Weather-Sensitive ERS Load using the event performance methodology described in Section 8.1.3.1.4.

(vi) The QSE is responsible for managing group assignments and for deploying only the sites dispatched by ERCOT during a test.

(vii) ERCOT may reduce the number of tests administered by the number of deployment events during the ERS Standard Contract Term.

(viii) The test performance factors for Weather-Sensitive ERS Resources shall always be set to one for use in Settlement for the ERS Standard Contract Term.

(ix) Testing will be considered void for any weather-sensitive Resources if 10% or more sites of a weather-sensitive Resource were disabled or unverifiable due to events on the TDSP side of the meter affecting the supply, delivery or measurement of electricity either during the event or

prior that impacts the creation of a credible baseline. QSEs must provide verification of such events from the TDSP or MRE.

(2) ERCOT shall conduct an unannounced test of an ERS Resource that has been suspended from participation in ERS pursuant to Section 8.1.3.3. ERCOT will conduct such a test only after the QSE representing the ERS Resource has communicated to ERCOT a request for reinstatement of the suspended ERS Resource.

(3) An ERCOT unannounced test of an ERS Generator must demonstrate injection of energy to the ERCOT System. The use of Load banks is prohibited for ERCOT unannounced tests.

(4) If an ERS Generator is co-located with an ERS Load as specified in Section 8.1.3.1.2, Performance Evaluation for Emergency Response Service Generators, ERCOT shall test both such ERS Resources simultaneously. Test performance of the ERS Load and the ERS Generator shall be considered jointly, unless the QSE elected for separate evaluation at the beginning of the ERS Standard Contract Term.

(5) In order to assist QSEs and ERS Resources in managing environmental compliance, ERCOT shall limit the cumulative duration of Sustained Response Periods of testing of an ERS Resource to a maximum of one hour per ERS Standard Contract Term unless otherwise required to conduct re-testing.

(6) Notwithstanding paragraph (5) above, Weather-Sensitive ERS Resources shall be subject to testing as described in paragraph (1)(c) above.

8.1.3.3.3 Performance Criteria for Qualified Scheduling Entities Representing Non-Weather-Sensitive Emergency Response Service Resources

(1) A QSE's ERS performance will be evaluated based on its portfolio's performance for each of the four ERS service types during ERS deployment events and on the overall availability of its portfolio in an ERS Standard Contract Term, as follows:

(a) Availability:

(i) ERCOT shall calculate a portfolio-level availability factor for each QSE's ERS portfolio for each ERS service type for each ERS Time Period in an ERS Contract Period using the methodologies defined in Section 8.1.3.1.3, Availability Criteria for Emergency Response Service Resources, except that the availability factor for each ERS Time Period will be allowed to exceed 1.0. ERCOT shall then calculate a single time- and capacity-weighted availability factor for the QSE portfolio for each ERS service type for the ERS Contract Period using the methodologies defined in Section 8.1.3.1.3.

(ii) ERCOT shall then calculate a single time and capacity-weighted availability factor for the QSE portfolio for the ERS Standard Contract Term and the ERS service type, which will be capped at 1.0.

(A) For an ERS Standard Contract Term with a single ERS Contract Period, the QSE portfolio-level availability factor for each ERS service type for the ERS Standard Contract Term shall be the portfolio-level availability factor for each ERS service type for the ERS Contract Period.

(B) For an ERS Standard Contract Term with multiple ERS Contract Periods, ERCOT shall compute a QSE portfolio-level availability factor for each ERS service type for the ERS Standard Contract Term by averaging the QSE's availability factors across ERS Contract Periods and ERS Time Periods for each ERS service type, weighted according to time and capacity obligations.

(iii) The QSE's portfolio-level availability factor for each ERS service type for the ERS Standard Contract Term will determine both the availability component of the ERS payment to the QSE and whether the QSE has met its ERS availability requirements. If the QSE's portfolio-level availability factor for each ERS service type for the ERS Standard Contract Term equals or exceeds 0.95, the QSE shall be deemed to have met its availability requirements for the ERS Standard Contract Term; otherwise, the QSE shall be deemed to have failed to meet this requirement. If the QSE's portfolio-level availability factor for either ERS service type for the ERS Standard Contract Term is less than 1.0, the QSE's ERS capacity payment shall be reduced according to the formulas in Section 6.6.11.1, Emergency Response Service Capacity Payments.

(b) Event Performance:

(i) QSEs representing ERS Resources must meet performance standards specified in Section 8.1.3.1.4, Event Performance Criteria for Emergency Response Service Resources, as applied on a portfolio-level basis. ERCOT shall determine a QSE's portfolio-level event performance for each ERS service type by calculating a QSE portfolio-level event performance factor for each ERS deployment event. For purposes of evaluating ERS Loads, ERCOT shall establish a baseline representing the portfolio's estimated Load, or, for DRG that has been designated by the QSE to be evaluated by using its native load, calculated 15-minute interval native load data in the absence of the ERS deployment event. For purposes of evaluating ERS Generators, ERCOT shall compute portfolio-level injection of energy to the ERCOT System. Using this data, ERCOT shall calculate a QSE portfolio-level event performance factor for each ERS deployment event for each ERS service type based on the weighted

average of the event interval performance factors, weighted by the total obligation and IntFrac.

(ii) ERCOT shall then calculate an $ERSEPF_{qrd}$ for the ERS Standard Contract Term, which will be capped at 1.0. For an ERS Standard Contract Term with no ERS deployment events, the $ERSEPF_{qrd}$ for the ERS Standard Contract Term shall be set to 1.0.

(A) For an ERS Standard Contract Term with a single ERS deployment event, the $ERSEPF_{qrd}$ for the ERS Standard Contract Term shall be the QSE portfolio-level event performance factor for the event.

(B) For an ERS Standard Contract Term with multiple ERS deployment events, ERCOT shall compute the $ERSEPF_{qrd}$ for the ERS Standard Contract Term by averaging the QSE portfolio-level interval performance factors for all of the deployment events for each ERS service type, weighted by the total obligation and IntFrac.

(iii) The $ERSEPF_{qrd}$ for an ERS Standard Contract Term will determine both the event performance component of the ERS payment to the QSE and whether the QSE has met its ERS event performance requirements for that ERS service type. If an $ERSEPF_{qrd}$ for an ERS Standard Contract Term is greater than or equal to 0.95, the QSE will be deemed to have met its event performance requirements for the ERS Standard Contract Term for that ERS service type; otherwise, the QSE shall be deemed to have failed to meet this requirement. If a QSE's $ERSEPF_{qrd}$ is less than 1.0 for the Standard Contract Term, the QSE's ERS capacity payment shall be reduced according to the formulas in Section 6.6.11.1. For purposes of calculating an $ERSEPF_{qrd}$, any ERS Resource that was not subject to Dispatch during the event shall be treated as having met its obligation.

(iv) ERCOT will not include any Resources in the calculation of the $ERSEPF_{qrd}$ if one or more sites of an ERS Resource were disabled or unverifiable due to events on the TDSP side of the meter affecting the supply, delivery or measurement of electricity either during the event or prior that impacts the creation of a credible baseline. QSEs must provide verification of such events from the TDSP or MRE.

(c) Ten-minute Deployment: Within ten minutes of ERCOT's issuance of a VDI to deploy ERS-10, a QSE shall ensure that each ERS Resource participating in ERS-10 in its portfolio deploys in accordance with its obligations. For each ERS-10 deployment event, ERCOT shall assess each QSE's compliance with this requirement by calculating a capacity-weighted QSE portfolio-level interval performance factor for the first full interval of the Sustained Response Period, using the methodologies defined in Section 8.1.3.1.4.

(d) Thirty-minute Deployment: Within 30 minutes of ERCOT's issuance of a VDI to deploy ERS-30, a QSE shall ensure that each ERS Resource participating in its portfolio deploys in accordance with its obligations. For each ERS-30 deployment event, ERCOT shall assess each QSE's compliance with this requirement by calculating a capacity-weighted QSE portfolio-level interval performance factor for the first full interval of the Sustained Response Period, using the methodologies defined in Section 8.1.3.1.4.

The above variables are defined as follows:

Variable	Unit	Description
$ERSEPF_{qrd}$	None	*ERS Event Performance Factor per QSE per ERS Standard Contract Term per ERS Service Type*—Event performance factor for QSE *q* in ERS Standard Contract Term *r* and ERS service type *d* as calculated pursuant to Section 8.1.3.3.1.
q	None	A QSE.
r	None	ERS Standard Contract Term.
d	None	ERS service type (Non-Weather-Sensitive ERS-10 or Non-Weather-Sensitive ERS-30).

(2) Failure by a QSE portfolio to meet its ERS event performance or availability requirements shall not be cause for revocation of the QSE's Ancillary Services qualification.

Revised ERCOT Impact Analysis Report

NPRR Number	1090	NPRR Title	ERS Winter Storm Uri Lessons Learned Changes and Other ERS Items
Impact Analysis Date		September 28, 2021	
Estimated Cost/Budgetary Impact		Between $15k and $25k Additional Cost to Implement in Passport: N/A	
Estimated Time Requirements		The timeline for implementing this Nodal Protocol Revision Request (NPRR) is dependent upon Public Utility Commission of Texas (PUCT) prioritization and approval. Estimated project duration: 3 - 5 months in current systems Passport Schedule Risk Assessment: No Risk to Schedule	
ERCOT Staffing Impacts (across all areas)		Implementation Labor: 100% ERCOT; 0% Vendor Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		The following ERCOT systems would be impacted: • Market Operation Systems 71% • Data Management & Analytic Systems 29%	
ERCOT Business Function Impacts		ERCOT will update its business processes to implement this NPRR.	
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

NPRR Number	1093	NPRR Title	Load Resource Participation in Non-Spinning Reserve
Date of Decision		October 22, 2021	
Action		Recommended Approval	
Timeline		Urgent – to allow ERCOT to explore temporary work-arounds to allow Load Resources that are not Controllable Load Resources to participate in Non-Spinning Reserve (Non-Spin) so that additional capacity is available to ERCOT Operators for the upcoming winter and summer 2022.	
Proposed Effective Date		Upon system implementation	
Priority and Rank Assigned		Priority – 2021; Rank – 3195	
Nodal Protocol Sections Requiring Revision		3.6.1, Load Resource Participation 3.9.1, Current Operating Plan (COP) Criteria 3.16, Standards for Determining Ancillary Service Quantities 3.17.3, Non-Spinning Reserve Service 4.4.7.2, Ancillary Service Offers 4.4.7.2.1, Ancillary Service Offer Criteria 6.4.9.1.3, Replacement of Ancillary Service Due to Failure to Provide 6.5.5.2, Operational Data Requirements 6.5.7.3.1, Determination of Real-Time On-Line Reliability Deployment Price Adder 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment 6.7.5, Real-Time Ancillary Service Imbalance Payment or Charge 8.1.1.2.1.3, Non-Spinning Reserve Qualification 8.1.1.4.3, Non-Spinning Reserve Service Energy Deployment Criteria	
Related Documents Requiring Revision/Related Revision Requests		Nodal Operating Guide Revision Request (NOGRR) 232, Related to NPRR1093, Load Resource Participation in Non-Spinning Reserve Other Binding Document Revision Request (OBDRR) 032, Non-Spin Changes Related to NPRR1093, Load Resource Participation in Non-Spinning Reserve OBDRR033, ORDC Changes Related to NPRR1093, Load Resource Participation in Non-Spinning Reserve	
Revision Description		This Nodal Protocol Revision Request (NPRR) changes the Protocols to allow Load Resources that are not Controllable Load Resources to provide Non-Spin. The NPRR largely reinstates Protocol requirements that were in place during the first five years of the Nodal market implementation that were subsequently changed to enable Controllable Load Resource participation in Security-	

	Constrained Economic Dispatch (SCED) and Non-Spin. Additionally, it also incorporates market design changes that have been made for the Operating Reserve Demand Curve (ORDC) and Reliability Deployment Price Adder process when deploying Ancillary Services from Load Resources that are not Controllable Load Resources.
Reason for Revision	☒ Addresses current operational issues. ☒ Meets Strategic goals (tied to the ERCOT Strategic Plan or directed by the ERCOT Board). ☒ Market efficiencies or enhancements ☐ Administrative ☐ Regulatory requirements ☐ Other: (explain) *(please select all that apply)*
Business Case	This NPRR primarily removes unnecessary barriers for participation of a Load Resource, that is not a Controllable Load Resource, in providing Non-Spin. By allowing for increased participation in Non-Spin, ERCOT can access additional capacity from a Load Resource that otherwise would not be accessible. Additionally, allowing for increased participation in Non-Spin will improve Non-Spin offer liquidity and will allow ERCOT to more competitively procure the required quantities of Non-Spin. This is particularly important and timely given recent changes in the amount of Non-Spin within the Ancillary Service Plan.
Credit Work Group Review	ERCOT Credit Staff and the Credit Work Group (Credit WG) have reviewed NPRR1093 and do not believe that it requires changes to credit monitoring activity or the calculation of liability.
PRS Decision	On 9/16/21, PRS voted via roll call to grant NPRR1093 Urgent status; to recommend approval of NPRR1093 as amended by the 9/10/21 ERCOT comments as revised by PRS; and to forward to TAC NPRR1093 and the Impact Analysis with a recommended priority of 2021 and rank of 3195. There were three opposing votes from the Cooperative (2) (LCRA, STEC) and Independent Generator (Luminant) Market Segments and seven abstentions from the Cooperative (2) (Golden Spread, Brazos Electric), Independent Generator (2) (Exelon, Calpine), and Municipal (3) (DME, Austin Energy, CPS Energy) Market Segments. All Market Segments participated in the vote.
Summary of PRS Discussion	On 9/16/21, ERCOT Staff provided an overview of NPRR1093 and the case for Urgent status. Some participants voiced concern that

	NPRR1093, as written, could negatively impact existing Generation Resources providing Non-Spin, and opined that some minimum floor of MWs provided by SCED-dispatchable Resources should be added. In response, language was added to Section 3.16 to provide for approval of such a minimum.
TAC Decision	On 9/29/21, TAC voted via roll call to recommend approval of NPRR1093 as recommended by PRS in the 9/16/21 PRS Report; and the Revised Impact Analysis. There were six opposing votes from the Cooperative (4) (LCRA, STEC, Brazos Electric, Golden Spread) and Independent Generator (2) (Luminant, Calpine) Market Segments and two abstentions from the Independent Power Marketer (IPM) (Shell) and Municipal (Garland) Market Segments. All Market Segments participated in the vote.
Summary of TAC Discussion	On 9/29/21, TAC reviewed the ERCOT Opinion, ERCOT Market Impact Statement, and Business Case for NPRR1093. ERCOT Staff provided an overview of NPRR1093 and responded to the points raised within the 9/15/21 Joint Commenters comments. Opponents raised concerns that the increase in Non-Spin procurement is ERCOT-driven rather than stakeholder-driven; that this could result in inequitable treatment between Load and generation; and requested additional review of concerns at a workshop. ERCOT Staff and the Independent Market Monitor (IMM) reiterated their desire to see NPRR1093 move forward in hopes of implementing some of the changes for summer 2022 and suggested a workshop could be scheduled for ongoing discussions without delaying this NPRR. TAC leadership agreed to schedule a workshop for those continued discussions.
ERCOT Opinion	ERCOT supports approval of NPRR1093.
ERCOT Market Impact Statement	ERCOT Staff has reviewed NPRR1093 and believes the market impact for NPRR1093 allows ERCOT to access additional capacity from Load Resource participating in Non-Spin that otherwise would not be accessible, will improve Non-Spin offer liquidity, and will allow ERCOT to procure the required quantities of Non-Spin more competitively.
Board Decision	On 10/22/21, the ERCOT Board recommended approval of NPRR1093 as recommended by TAC in the 9/29/21 TAC Report.

Sponsor	
Name	Sandip Sharma
E-mail Address	sandip.sharma@ercot.com

Board Report

Company	ERCOT
Phone Number	512-248-4298
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 091021	Proposed additional revisions to clarify performance requirements, remove the breaker-control requirement for Load Resources providing Non-Spin, and correct typographical errors
Joint Commenters 091521	Raised concerns with NPRR1093 as written and outlined suggested revisions

Market Rules Notes

Please note administrative revisions, authored as "ERCOT Market Rules", have been made to the language below.

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

- NPRR1077, Extension of Self-Limiting Facility Concept to Settlement Only Generators (SOGs) and Telemetry Requirements for SOGs
  - Section 6.5.5.2
- NPRR1085, Ensuring Continuous Validity of Physical Responsive Capability (PRC) and Dispatch through Timely Changes to Resource Telemetry and Current Operating Plans (COPs)
  - Section 3.9.1
- NPRR1087, Prohibit Participation of Critical Loads as Load Resources or ERS Resources
  - Section 3.6.1
- NPRR1091, Changes to Address Market Impacts of Additional Non-Spin Procurement

- Section 6.5.7.3.1
- Section 6.5.7.6.2.3

- NPRR1096, Require Sustained Six Hour Capability for ECRS and Non-Spin
  - Section 3.17.3
- NPRR1101, Create Non-Spin Deployment Groups made up of Generation Resources Providing Off-Line Non-Spinning Reserve and Load Resources that are Not Controllable Load Resources Providing Non-Spinning Reserve
  - Section 6.5.7.6.2.3

Proposed Protocol Language Revision

3.6.1 Load Resource Participation

(1) A Load Resource may participate by providing:

(a) Ancillary Service:

(i) Regulation Up (Reg-Up) Service as a Controllable Load Resource capable of providing Primary Frequency Response;

(ii) Regulation Down (Reg-Down) Service as a Controllable Load Resource capable of providing Primary Frequency Response;

(iii) Responsive Reserve (RRS) as a Controllable Load Resource qualified for Security-Constrained Economic Dispatch (SCED) Dispatch and capable of providing Primary Frequency Response, or as a Load Resource controlled by high-set under-frequency relay;

[NPRR863: Insert paragraph (iv) below upon system implementation and renumber accordingly:]

(iv) ERCOT Contingency Reserve Service (ECRS) as a Controllable Load Resource qualified for SCED Dispatch and capable of providing Primary Frequency Response, or as a Load Resource that may or may not be controlled by high-set under-frequency relay; and

(iv) Non-Spinning Reserve (Non-Spin) as a Controllable Load Resource qualified for SCED Dispatch or as a Load Resource that is not a Controllable Load Resource and that is not controlled by under-frequency relay; and

(v) A Load Resource that is not a Controllable Load Resource cannot simultaneously provide Non-Spin and RRS in Real-Time;

(b) Energy in the form of Demand response from a Controllable Load Resource in Real-Time via SCED;

(c) Emergency Response Service (ERS) for hours in which the Load Resource does not have an Ancillary Service Resource Responsibility; and

[NPRR1007: Replace paragraph (c) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(c) Emergency Response Service (ERS) for hours in which the Load Resource has a Resource Status of OUTL; and

(d) Voluntary Load response in Real-Time.

(2) Except for voluntary Load response and ERS, loads participating in any ERCOT market must be registered as a Load Resource and are subject to qualification testing administered by ERCOT.

(3) All ERCOT Settlements resulting from Load Resource participation are made only with the Qualified Scheduling Entity (QSE) representing the Load Resource.

(4) A QSE representing a Load Resource and submitting a bid to buy for participation in SCED, as described in Section 6.4.3.1, RTM Energy Bids, must represent the Load Serving Entity (LSE) serving the Load of the Load Resource. If the Load Resource is an Aggregate Load Resource (ALR), the QSE must represent the LSE serving the Load of all sites within the ALR.

(5) The Settlement Point for a Controllable Load Resource is its Load Zone Settlement Point. For an Energy Storage Resource (ESR), the Settlement Point for the charging Load withdrawn by the modeled Controllable Load Resource associated with the ESR is the Resource Node of the modeled Generation Resource associated with the ESR.

(6) QSEs shall not submit offers for Load Resources containing sites associated with a Dynamically Scheduled Resource (DSR).

[NPRR1000: Delete paragraph (6) above upon system implementation.]

3.9.1 Current Operating Plan (COP) Criteria

(1) Each QSE that represents a Resource must submit a COP to ERCOT that reflects expected operating conditions for each Resource for each hour in the next seven Operating Days.

(2) Each QSE that represents a Resource shall update its COP reflecting changes in availability of any Resource as soon as reasonably practicable, but in no event later than 60 minutes after the event that caused the change.

(3) The Resource capacity in a QSE's COP must be sufficient to supply the Ancillary Service Supply Responsibility of that QSE.

[NPRR1007, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (3) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(3) Each QSE that represents a Resource shall update its COP to reflect the ability of the Resource to provide each Ancillary Service by product and sub-type.

(4) Load Resource COP values may be adjusted to reflect Distribution Losses in accordance with Section 8.1.1.2, General Capacity Testing Requirements.

(5) A COP must include the following for each Resource represented by the QSE:

(a) The name of the Resource;

(b) The expected Resource Status:

(i) Select one of the following for Generation Resources synchronized to the ERCOT System that best describes the Resource's status. Unless otherwise provided below, these Resource Statuses are to be used for COP and/or Real-Time telemetry purposes, as appropriate.

(A) ONRUC – On-Line and the hour is a RUC-Committed Hour;

(B) ONREG – On-Line Resource with Energy Offer Curve providing Regulation Service;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (B) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

(C) ON – On-Line Resource with Energy Offer Curve;

(D) ONDSR – On-Line Dynamically Scheduled Resource (DSR);

[NPRR1000: Delete item (D) above upon system implementation and renumber accordingly.]

(E) ONOS – On-Line Resource with Output Schedule;

(F) ONOSREG – On-Line Resource with Output Schedule providing Regulation Service;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (F) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

(G) ONDSRREG – On-Line DSR providing Regulation Service;

[NPRR1000, NPRR1007, NPRR1014, and NPRR1029: Delete item (G) above upon system implementation for NPRR1000, NPRR1014, or NPRR1029; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; and renumber accordingly.]

(H) FRRSUP – Available for Dispatch of Fast Responding Regulation Service (FRRS). This Resource Status is only to be used for Real-Time telemetry purposes;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (H) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 and NPRR1029; and renumber accordingly.]

(I) ONTEST – On-Line blocked from Security-Constrained Economic Dispatch (SCED) for operations testing (while ONTEST, a Generation Resource may be shown on Outage in the Outage Scheduler);

(J) ONEMR – On-Line EMR (available for commitment or dispatch only for ERCOT-declared Emergency Conditions; the QSE may appropriately set LSL and High Sustained Limit (HSL) to reflect operating limits);

(K) ONRR – On-Line as a synchronous condenser providing Responsive Reserve (RRS) but unavailable for Dispatch by SCED and available for commitment by RUC;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (K) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

[NPRR863: Insert paragraph (L) below upon system implementation and renumber accordingly:]

(L) ONECRS – On-Line as a synchronous condenser providing ERCOT Contingency Response Service (ECRS) but unavailable for Dispatch by SCED and available for commitment by RUC;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (L) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

(L) ONOPTOUT – On-Line and the hour is a RUC Buy-Back Hour;

(M) SHUTDOWN – The Resource is On-Line and in a shutdown sequence, and has no Ancillary Service Obligations other than Off-Line Non-Spinning Reserve (Non-Spin) which the Resource will provide following the shutdown. This Resource Status is only to be used for Real-Time telemetry purposes;

[NPRR1007, NPRR1014, and NPRR1029: Replace paragraph (M) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(H) SHUTDOWN – The Resource is On-Line and in a shutdown sequence, and is not eligible for an Ancillary Service award. This Resource Status is only to be used for Real-Time telemetry purposes;

(N) STARTUP – The Resource is On-Line and in a start-up sequence and has no Ancillary Service Obligations. This Resource Status is only to be used for Real-Time telemetry purposes;

[NPRR1007, NPRR1014, and NPRR1029: Replace paragraph (N) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(I) STARTUP – The Resource is On-Line and in a start-up sequence and is not eligible for an Ancillary Service award, unless coming On-Line in response to a manual deployment of ERCOT Contingency Reserve Service (ECRS) or Non-Spinning Reserve (Non-Spin). This Resource Status is only to be used for Real-Time telemetry purposes;

(O) OFFQS – Off-Line but available for SCED deployment. Only qualified Quick Start Generation Resources (QSGRs) may utilize this status; and

[NPRR1007, NPRR1014, and NPRR1029: Replace paragraph (O) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(J) OFFQS – Off-Line but available for SCED deployment and to provide ECRS and Non-Spin, if qualified and capable. Only qualified Quick Start Generation Resources (QSGRs) may utilize this status;

(P) ONFFRRRS – Available for Dispatch of RRS providing Fast Frequency Response (FFR) from Generation Resources. This Resource Status is only to be used for Real-Time telemetry purposes;

[NPRR1015: Replace paragraph (P) above with the following upon system implementation of NPRR863:]

(P) ONFFRRRS – Available for Dispatch of RRS when providing Fast Frequency Response (FFR) from Generation Resources. This Resource Status is only to be used for Real-Time telemetry purposes. A Resource with this Resource Status may also be providing Ancillary Services other than FFR;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (P) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

[NPRR1007, NPRR1014, and NPRR1029: Insert applicable portions of items (K) and (L) below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(K) ONSC – Resource is On-Line operating as a synchronous condenser and available to provide Responsive Reserve (RRS) and ECRS, if qualified and capable, and for commitment by RUC, but is unavailable for Dispatch by SCED. For SCED, Resource Base Points will be set equal to the telemetered net real power of the Resource available at the time of the SCED execution; and

(L) ONHOLD – Resource is On-Line but temporarily unavailable for Dispatch by SCED or Ancillary Service awards. This Resource Status is only to be used for Real-Time telemetry purposes. For SCED, Resource Base Points will be set equal to the telemetered net real power of the Resource available at the time of the SCED execution.

(ii) Select one of the following for Off-Line Generation Resources not synchronized to the ERCOT System that best describes the Resource's status. These Resource Statuses are to be used for COP and/or Real-Time telemetry purposes, as appropriate.

(A) OUT – Off-Line and unavailable;

(B) OFFNS – Off-Line but reserved for Non-Spin;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (B) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

(C) OFF – Off-Line but available for commitment in the Day-Ahead Market (DAM) and RUC;

[NPRR1007, NPRR1014, and NPRR1029: Replace item (C) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(B) OFF – Off-Line but available for commitment in the Day-Ahead Market (DAM), RUC, and providing Non-Spin, if qualified and capable;

(D) EMR – Available for commitment as a Resource contracted by ERCOT under Section 3.14.1, Reliability Must Run, or under paragraph (2) of Section 6.5.1.1, ERCOT Control Area Authority, or available for commitment only for ERCOT-declared Emergency Condition events; the QSE may appropriately set LSL and HSL to reflect operating limits; and

(E) EMRSWGR – Switchable Generation Resource (SWGR) operating in a non-ERCOT Control Area, or in the case of a Combined Cycle Train with one or more SWGRs, a configuration in which one or more of the physical units in that configuration are operating in a non-ERCOT Control Area; and

(iii) Select one of the following for Load Resources. Unless otherwise provided below, these Resource Statuses are to be used for COP and/or Real-Time telemetry purposes.

(A) ONRGL – Available for Dispatch of Regulation Service by Load Frequency Control (LFC) and, for any remaining Dispatchable capacity, by SCED with a Real-Time Market (RTM) Energy Bid;

(B) FRRSUP – Available for Dispatch of FRRS by LFC and not Dispatchable by SCED. This Resource Status is only to be used for Real-Time telemetry purposes;

(C) FRRSDN - Available for Dispatch of FRRS by LFC and not Dispatchable by SCED. This Resource Status is only to be used for Real-Time telemetry purposes;

(D) ONCLR – Available for Dispatch as a Controllable Load Resource by SCED with an RTM Energy Bid;

(E) ONRL – Available for Dispatch of RRS or Non-Spin, excluding Controllable Load Resources;

[NPRR1007, NPRR1014, and NPRR1029: Delete items (A)-(E) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

[NPRR863: Insert paragraph (F) below upon system implementation and renumber accordingly:]

(F) ONECL – Available for Dispatch of ECRS, excluding Controllable Load Resources;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (F) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029; and renumber accordingly.]

(F) OUTL – Not available;

[NPRR863 and NPRR1015: Insert applicable portions of paragraph (H) below upon system implementation of NPRR863:]

(H) ONFFRRRSL – Available for Dispatch of RRS when providing FFR, excluding Controllable Load Resources. This Resource Status is only to be used for Real-Time telemetry purposes;

[NPRR1007, NPRR1014, and NPRR1029: Delete item (H) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029.]

[NPRR1007, NPRR1014, NPRR1029: Insert item (B) below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(B) ONL – On-Line and available for Dispatch by SCED or providing Ancillary Services.

[NPRR1014 or NPRR1029: Insert applicable portions of paragraph (iv) below upon system implementation:]

(iv) Select one of the following for Energy Storage Resources (ESRs). Unless otherwise provided below, these Resource Statuses are to be used for COP and Real-Time telemetry purposes:

(A) ON – On-Line Resource with Energy Bid/Offer Curve;

(B) ONOS – On-Line Resource with Output Schedule;

(C) ONTEST – On-Line blocked from SCED for operations testing (while ONTEST, an Energy Storage Resource (ESR) may be shown on Outage in the Outage Scheduler);

(D) ONEMR – On-Line EMR (available for commitment or dispatch only for ERCOT-declared Emergency Conditions; the QSE may appropriately set LSL and High Sustained Limit (HSL) to reflect operating limits);

(E) ONHOLD – Resource is On-Line but temporarily unavailable for Dispatch by SCED or Ancillary Service awards. ESRs shall not be discharging into or charging from the grid. This Resource Status is only to be used for Real-Time telemetry purposes; and

(F) OUT – Off-Line and unavailable; and

(c) The HSL;

(i) For Load Resources other than Controllable Load Resources, the HSL should equal the expected power consumption;

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

(ii) For ESRs, the HSL may be negative;

(d) The LSL;

(i) For Load Resources other than Controllable Load Resources, the LSL should equal the expected Low Power Consumption (LPC);

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

(ii) For ESRs, the LSL may be positive;

(e) The High Emergency Limit (HEL);

(f) The Low Emergency Limit (LEL); and

(g) Ancillary Service Resource Responsibility capacity in MW for:

[NPRR1007, NPRR1014, and NPRR1029: Replace applicable portions of item (g) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(g) Ancillary Service capability in MW for each product and sub-type.

(i) Regulation Up (Reg-Up);

(ii) Regulation Down (Reg-Down);

(iii) RRS; and

[NPRR863: Insert paragraph (iv) below upon system implementation and renumber accordingly:]

(iv) ECRS; and

(iv) Non-Spin.

[NPRR1007, NPRR1014, and NPRR1029: Delete items (i)-(iv) above upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029.]

(6) For Combined Cycle Generation Resources, the above items are required for each operating configuration. In each hour only one Combined Cycle Generation Resource in a Combined Cycle Train may be assigned one of the On-Line Resource Status codes described above.

(a) During a RUC study period, if a QSE's COP reports multiple Combined Cycle Generation Resources in a Combined Cycle Train to be On-Line for any hour, then until the QSE corrects its COP, the On-Line Combined Cycle Generation Resource with the largest HSL is considered to be On-Line and all other Combined Cycle Generation Resources in the Combined Cycle Train are considered to be Off-Line. Furthermore, until the QSE corrects its COP, the Off-Line Combined Cycle Generation Resources as designated through the application of this process are ineligible for RUC commitment or de-commitment Dispatch Instructions.

(b) For any hour in which QSE-submitted COP entries are used to determine the initial state of a Combined Cycle Generation Resource for a DAM or Day-Ahead Reliability Unit Commitment (DRUC) study and the COP shows multiple Combined Cycle Generation Resources in a Combined Cycle Train to be in an On-line Resource Status, then until the QSE corrects its COP, the On-Line Combined Cycle Generation Resource that has been On-Line for the longest time from the last recorded start by ERCOT systems, regardless of the reason for the start, combined with the COP Resource Status for the remaining hours of the current Operating Day, is considered to be On-Line at the start of the DRUC study period and all other COP-designated Combined Cycle Generation Resources in the Combined Cycle Train are considered to be Off-Line.

(c) ERCOT systems shall allow only one Combined Cycle Generation Resource in a Combined Cycle Train to offer Off-Line Non-Spin in the DAM or Supplemental Ancillary Services Market (SASM).

[NPRR1007, NPRR1014, and NPRR1029: Replace paragraph (c) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1007; or upon system implementation for NPRR1014 or NPRR1029:]

(c) ERCOT systems shall allow only one Combined Cycle Generation Resource in a Combined Cycle Train to offer Off-Line Non-Spin in the DAM or SCED.

(i) If there are multiple Non-Spin offers from different Combined Cycle Generation Resources in a Combined Cycle Train, then prior to execution of the DAM, ERCOT shall select the Non-Spin offer from the Combined

Cycle Generation Resource with the highest HSL for consideration in the DAM and ignore the other offers.

(ii) Combined Cycle Generation Resources offering Off-Line Non-Spin must be able to transition from the shutdown state to the offered Combined Cycle Generation Resource On-Line state and be capable of ramping to the full amount of the Non-Spin offered.

(d) The DAM and RUC shall honor the registered hot, intermediate or cold Startup Costs for each Combined Cycle Generation Resource registered in a Combined Cycle Train when determining the transition costs for a Combined Cycle Generation Resource. In the DAM and RUC, the Startup Cost for a Combined Cycle Generation Resource shall be determined by the positive transition cost from the On-Line Combined Cycle Generation Resource within the Combine Cycle Train or from a shutdown condition, whichever ERCOT determines to be appropriate.

(7) ERCOT may accept COPs only from QSEs.

(8) For the first 168 hours of the COP, ERCOT will update the HSL values for Wind-powered Generation Resources (WGRs) with the most recently updated Short-Term Wind Power Forecast (STWPF), and the HSL values for PhotoVoltaic Generation Resources (PVGRs) with the most recently updated Short-Term PhotoVoltaic Power Forecast (STPPF). ERCOT will notify the QSE via an Extensible Markup Language (XML) message each time COP HSL values are updated with the forecast values. A QSE representing a WGR may override the STWPF HSL value but must submit an HSL value that is less than or equal to the amount for that Resource from the most recent STWPF provided by ERCOT; a QSE representing a PVGR may override the STPPF HSL value but must submit an HSL value that is less than or equal to the amount for that Resource from the most recent STPPF provided by ERCOT.

[NPRR1029: Replace paragraph (8) above with the following upon system implementation:]

(8) For the first 168 hours of the COP, ERCOT will update the HSL values for Wind-powered Generation Resources (WGRs) with the most recently updated Short-Term Wind Power Forecast (STWPF), and the HSL values for PhotoVoltaic Generation Resources (PVGRs) with the most recently updated Short-Term PhotoVoltaic Power Forecast (STPPF). A QSE representing a DC-Coupled Resource shall provide the capacity value of the Energy Storage System (ESS) that is included in the HSL of the DC-Coupled Resource, and ERCOT will update the DC-Coupled Resource's HSL with the sum of the forecasts of the intermittent renewable generation component and the QSE-submitted value for the ESS component. ERCOT will notify the QSE via an Extensible Markup Language (XML) message each time COP HSL values are updated with the forecast values. A QSE representing a WGR may override the STWPF HSL value but must submit an HSL value that is less than or equal to the amount for that Resource from the most recent STWPF provided by ERCOT; a QSE representing a

PVGR may override the STPPF HSL value but must submit an HSL value that is less than or equal to the amount for that Resource from the most recent STPPF provided by ERCOT. A QSE representing a DC-Coupled Resource may override the COP HSL value with a value that is lower than the ERCOT-populated value, and may override with a value that is higher than the ERCOT-populated value if the ESS component of the DC-Coupled Resource can support the higher value.

(9) A QSE representing a Generation Resource that is not actively providing Ancillary Services or is providing Off-Line Non-Spin that the Resource will provide following the shutdown, may only use a Resource Status of SHUTDOWN to indicate to ERCOT through telemetry that the Resource is operating in a shutdown sequence or a Resource Status of ONTEST to indicate in the COP and through telemetry that the Generation Resource is performing a test of its operations either manually dispatched by the QSE or by ERCOT as part of the test. A QSE representing a Generation Resource that is not actively providing Ancillary Services may only use a Resource Status of STARTUP to indicate to ERCOT through telemetry that the Resource is operating in a start-up sequence requiring manual control and is not available for Dispatch.

(10) If a QSE has not submitted a valid COP for any Generation Resource for any hour in the DAM or RUC Study Period, then the Generation Resource is considered to have a Resource Status as OUT thus not available for DAM awards or RUC commitments for those hours.

(11) If a COP is not available for any Resource for any hour from the current hour to the start of the DAM period or RUC study, then the Resource Status for those hours are considered equal to the last known Resource Status from a previous hour's COP or from telemetry as appropriate for that Resource.

(12) A QSE representing a Resource may only use the Resource Status code of EMR for a Resource whose operation would have impacts that cannot be monetized and reflected through the Resource's Energy Offer Curve or recovered through the RUC make-whole process or if the Resource has been contracted by ERCOT under Section 3.14.1 or under paragraph (2) of Section 6.5.1.1. If ERCOT chooses to commit an Off-Line unit with EMR Resource Status that has been contracted by ERCOT under Section 3.14.1 or under paragraph (2) of Section 6.5.1.1, the QSE shall change its Resource Status to ONRUC. Otherwise, the QSE shall change its Resource Status to ONEMR.

(13) A QSE representing a Resource may use the Resource Status code of ONEMR for a Resource that is:

(a) On-Line, but for equipment problems it must be held at its current output level until repair and/or replacement of equipment can be accomplished; or

(b) A hydro unit.

(14) A QSE operating a Resource with a Resource Status code of ONEMR may set the HSL and LSL of the unit to be equal to ensure that SCED does not send Base Points that would move the unit.

(15) A QSE representing a Resource may use the Resource Status code of EMRSWGR only for an SWGR.

[NPRR1026: Insert paragraph (16) below upon system implementation:]

(16) A QSE representing a Self-Limiting Facility must ensure that the sum of the COP HSL/LSL and the sum of the telemetered HSL/LSL submitted for each Resource within the Self-Limiting Facility do not exceed either the limit on MW Injection or the limit on the MW Withdrawal established for the Self-Limiting Facility.

[NPRR1029: Insert paragraph (16) below upon system implementation:]

(16) A QSE representing a DC-Coupled Resource shall not submit an HSL that exceeds the inverter rating or the sum of the nameplate ratings of the generation component(s) of the Resource.

3.16 Standards for Determining Ancillary Service Quantities

(1) ERCOT shall comply with the requirements for determining Ancillary Service quantities as specified in these Protocols and the ERCOT Operating Guides.

(2) ERCOT shall, at least annually, determine with supporting data, the methodology for determining the quantity requirements for each Ancillary Service needed for reliability, including:

[NPRR863: Insert item (a) below upon system implementation and renumber accordingly:]

(a) The percentage or MW limit of ERCOT Contingency Reserve Service (ECRS) allowed from Load Resources providing ECRS;

(a) The maximum amount (MW) of Responsive Reserve (RRS) that can be provided by Resources capable of Fast Frequency Response (FFR);

(b) The maximum amount (MW) of Regulation Up Service (Reg-Up) that can be provided by Resources providing Fast Responding Regulation Up Service (FRRS-Up); and

(c) The maximum amount (MW) of Regulation Down Service (Reg-Down) that can be provided by Resources providing Fast Responding Regulation Down Service (FRRS-Down).

[NPRR1007: Delete items (b) and (c) above upon system implementation of the Real-Time Co-Optimization (RTC) project and renumber accordingly.]

(d) The minimum capacity required from Resources providing RRS using Primary Frequency Response shall not be less than 1,150 MW.

(3) The ERCOT Board shall review and approve ERCOT's methodology for determining the minimum Ancillary Service requirements, any minimum capacity required from SCED dispatchable Resources to provide Non-Spin, the minimum capacity required from Resources providing Primary Frequency Response to provide RRS, the maximum amount of RRS that can be provided by Resources capable of FFR, and the maximum amount of Reg-Up and Reg-Down that can be provided by Resources providing FRRS-Up and FRRS-Down.

[NPRR1007: Replace paragraph (3) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(3) The ERCOT Board shall review and approve ERCOT's methodology for determining the minimum Ancillary Service requirements, any minimum capacity required from SCED dispatchable Resources to provide Non-Spin, the minimum capacity required from Resources providing Primary Frequency Response to provide RRS and the maximum amount of RRS that can be provided by Resources capable of FFR.

(4) If ERCOT determines a need for additional Ancillary Service Resources under these Protocols or the ERCOT Operating Guides, after an Ancillary Service Plan for a specified day has been posted, ERCOT shall inform the market by posting notice on the ERCOT website, of ERCOT's intent to procure additional Ancillary Service Resources under Section 6.4.9.2, Supplemental Ancillary Services Market. ERCOT shall post the reliability reason for the increase in service requirements.

[NPRR1007: Delete paragraph (4) above upon system implementation of the Real-Time Co-Optimization (RTC) project and renumber accordingly.]

(5) Monthly, ERCOT shall determine and post on the Market Information System (MIS) Secure Area a minimum capacity required from Resources providing RRS using Primary Frequency Response. The remaining capacity required for RRS may be supplied by all Resources qualified to provide RRS, provided that RRS from Load Resources on high-set under-frequency relays and Resources providing FFR shall be limited to 60% of the total ERCOT RRS requirement. ERCOT may increase the minimum capacity required from

Resources providing RRS using Primary Frequency Response if it believes that the current posted quantity will have a negative impact on reliability or if it would require additional Regulation Service to be deployed.

(6) The amount of RRS that a Qualified Scheduling Entity (QSE) can self-arrange using a Load Resource excluding Controllable Load Resources and Resources providing FFR is limited to its Load Ratio Share (LRS) of the capacity allowed to be provided by Resources not providing RRS using Primary Frequency Response established in paragraph (5) above, provided that RRS from these Resources shall be limited to 60% of the total ERCOT RRS requirement.

(7) However, a QSE may offer more RRS from Load Resources and Resources capable of providing FFR above the percentage limit established by ERCOT for sale of RRS to other Market Participants. The total amount of RRS Service using the Load Resource (excluding Controllable Load Resources) or Resources providing FFR procured by ERCOT is also limited to the capacity established in paragraph (5) above, up to the lesser of the 60% limit or the limit established by ERCOT in paragraph (5) above.

[NPRR863: Replace paragraph (7) above with the following upon system implementation:]

(7) However, a QSE may offer more of the Load Resource above the percentage limit established by ERCOT for sale of RRS to other Market Participants. The total amount of RRS using the Load Resource procured by ERCOT is also limited to the capacity established in paragraph (5) above, up to the lesser of the 60% limit or the limit established by ERCOT in paragraph (5) above.

[NPRR863: Insert paragraphs (8)-(10) below upon system implementation and renumber accordingly:]

(8) Monthly, ERCOT shall determine and post on the MIS Secure Area a minimum capacity required from Resources providing ECRS. The amount of Load Resources excluding Controllable Load Resources that may or may not be on high-set under-frequency relays providing ECRS is limited to 50% of the total ERCOT ECRS requirement.

(9) The amount of ECRS that a QSE can self-arrange using a Load Resource excluding Controllable Load Resources is limited to the lower of:

(a) 50% of its ECRS Ancillary Service Obligation; or

(b) A reduced percentage of its ECRS Ancillary Service Obligation based on the limit established by ERCOT in paragraph (8) above.

(10) A QSE may offer more of the Load Resource above the percentage limit established by ERCOT for sale of ECRS to other Market Participants. The total amount of ECRS using the Load Resource excluding Controllable Load Resources procured by ERCOT

is also limited to the lesser of the 50% limit or the limit established by ERCOT in paragraph (9) above.

(8) The maximum MW amount of capacity from Resources providing FRRS-Up is limited to 65 MW. ERCOT may reduce this limit if it believes that this amount will have a negative impact on reliability or if this limit would require additional Regulation Service to be deployed.

(9) The maximum MW amount of capacity from Resources providing FRRS-Down is limited to 35 MW. ERCOT may reduce this limit if it believes that this amount will have a negative impact on reliability or if this limit would require additional Regulation Service to be deployed.

(10) Resources can only provide FRRS-Up or FRRS-Down if awarded Regulation Service in the Day-Ahead Market (DAM) for that particular Resource, up to the awarded quantity.

[NPRR1007: Delete paragraphs (8)-(10) above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

3.17.3 Non-Spinning Reserve Service

(1) Non-Spinning Reserve (Non-Spin) Service is provided by using:

(a) Generation Resources, whether On-Line or Off-Line, capable of:

(i) Being synchronized and ramped to a specified output level within 30 minutes; and

(ii) Running at a specified output level for at least one hour;

(b) Controllable Load Resources qualified for Dispatch by Security-Constrained Economic Dispatch (SCED) and capable of:

(i) Ramping to an ERCOT-instructed consumption level within 30 minutes; and

(ii) Consuming at the ERCOT-instructed level for at least one hour; or

(c) Load Resources that are not Controllable Load Resources and are qualified for deployment by the Operator using the Ancillary Service Deployment Manager and capable of:

(i) Reducing consumption based on an ERCOT XML instruction within 30 minutes; and

(ii) Maintaining that deployment until recalled.

(2) The Non-Spin may be deployed by ERCOT to increase available reserves in Real-Time Operations.

4.4.7.2 Ancillary Service Offers

(1) By 1000 in the Day-Ahead, a QSE may submit Generation Resource-specific Ancillary Service Offers to ERCOT for the DAM and may offer the same Generation Resource capacity for any or all of the Ancillary Service products simultaneously with any Energy Offer Curves from that Generation Resource in the DAM. A QSE may also submit Ancillary Service Offers in a SASM. Offers of more than one Ancillary Service product from one Generation Resource may be inclusive or exclusive of each other and of any Energy Offer Curves, as specified according to a procedure developed by ERCOT.

[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]

(1) By 1000 in the Day-Ahead, a QSE may submit Resource-Specific Ancillary Service Offers from Generation Resources and ESRs to ERCOT for the DAM and may offer the same Generation Resource or ESR capacity for any or all of the Ancillary Service products simultaneously with any Energy Offer Curves from that Generation Resource or Energy Bid/Offer Curves from that ESR in the DAM. Offers of more than one Ancillary Service product from one Generation Resource may be inclusive or exclusive of each other and of any Energy Offer Curves, as specified according to a procedure developed by ERCOT. Offers of more than one Ancillary Service product from one ESR may be inclusive or exclusive of each other, as specified according to a procedure developed by ERCOT.

(2) By 1000 in the Day-Ahead, a QSE may submit Load Resource-specific Ancillary Service Offers for Regulation Service, Non-Spin and RRS to ERCOT and may offer the same Load Resource capacity for any or all of those Ancillary Service products simultaneously. Offers of more than one Ancillary Service product from one Load Resource may be inclusive or exclusive of each other, as specified according to a procedure developed by ERCOT.

[NPRR863, NPRR1008, and NPRR1014: Replace applicable portions of paragraph (2) above with the following upon system implementation for NPRR863 or NPRR1014; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008:]

(2) By 1000 in the Day-Ahead, a QSE may submit Load Resource-Specific Ancillary Service Offers for Regulation Service, Non-Spin, RRS, and ECRS to ERCOT and may offer the same Load Resource capacity for any or all of those Ancillary Service

products simultaneously. Offers of more than one Ancillary Service product from one Load Resource may be inclusive or exclusive of each other, as specified according to a procedure developed by ERCOT.

[NPRR1008, NPRR1014, and NPRR1015: Insert applicable portions of paragraph (3) below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014; or upon system implementation of NPRR863 for NPRR1015; and renumber accordingly:]

(3) By 1000 in the Day-Ahead, a QSE may submit Resource-Specific Ancillary Service Offers to ERCOT for FFR Resources, and may offer the same capacity for any or all of the Ancillary Service products simultaneously with any Energy Offer Curves from that Resource in the DAM. Offers of more than one Ancillary Service product may be inclusive or exclusive of each other and of any Energy Offer Curves, as specified according to a procedure developed by ERCOT.

[NPRR1008 and NPRR1014: Insert applicable portions of paragraph (3) below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014; and renumber accordingly:]

(3) By 1000 in the Day-Ahead, a QSE may submit an Ancillary Service Only Offer to ERCOT for the DAM. An individual Ancillary Service Only Offer must be exclusive to a single Ancillary Service product. For purposes of Ancillary Service sub-category limitations and validations, an Ancillary Service Only Offer for RRS will be treated as if it was an offer for RRS from an On-Line Generation Resource. Likewise, an Ancillary Service Only Offer for ECRS will be treated as if it was an offer for ECRS from an On-Line Generation Resource.

(3) Ancillary Service Offers remain active for the offered period until:

(a) Selected by ERCOT;

(b) Automatically inactivated by the software at the offer expiration time specified by the QSE when the offer is submitted; or

(c) Withdrawn by the QSE, but a withdrawal is not effective if the deadline for submitting offers has already passed.

[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (3) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]

(5) Ancillary Service Offers remain active for the offered period unless the offer is:

(a) Effective after DAM and is higher than the Real-Time System-Wide Offer Cap (RTSWCAP);

(b) Automatically inactivated by the software at the offer expiration time specified by the QSE when the offer is submitted; or

(c) Withdrawn by the QSE, but a withdrawal is not effective if the deadline for submitting offers has already passed.

(4) A Load Resource that is not a Controllable Load Resource may specify whether its Ancillary Service Offer for RRS or Non-Spin may only be procured by ERCOT as a block.

[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (4) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]

(6) A Load Resource that is not a Controllable Load Resource may specify whether its Resource-Specific Ancillary Service Offer for RRS may only be procured by ERCOT as a block.

[NPRR863 or NPRR1014: Insert applicable portions of paragraph (5) below upon system implementation and renumber accordingly:]

(7) A Load Resource that is not a Controllable Load Resource may specify whether its Resource-Specific Ancillary Service Offer for ECRS may only be procured by ERCOT as a block.

(5) A QSE that submits an On-Line Ancillary Service Offer without also submitting a Three-Part Supply Offer for the DAM for any given hour will be considered by the DAM to be self-committed for that hour, as long as an Ancillary Service Offer for Off-Line Non-Spin was not also submitted for that hour. When the DAM considers a self-committed offer for clearing, the Resource constraints identified in paragraph (4)(c)(ii) of Section 4.5.1, DAM Clearing Process, other than HSL, are ignored. A Combined Cycle Generation Resource will be considered by the DAM to be self-committed based on an On-Line Ancillary Service Offer submittal if:

(a) Its QSE submits an On-Line Ancillary Service Offer without also submitting a Three-Part Supply Offer for the DAM for any Combined Cycle Generation Resource within the Combined Cycle Train for that hour;

(b) No Ancillary Service Offer for Off-Line Non-Spin for any Combined Cycle Generation Resource within the Combined Cycle Train is submitted for that hour; and

(c) No On-Line Ancillary Service Offer for any other Combined Cycle Generation Resource within the Combined Cycled Train is submitted for that hour.

[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (5) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]

(8) A QSE that submits an On-Line Resource-Specific Ancillary Service Offer without also submitting a Three-Part Supply Offer for the DAM for any given hour will be considered by the DAM to be self-committed for that hour, as long as a Resource-Specific Ancillary Service Offer for Off-Line Non-Spin was not also submitted for that hour. A QSE that submits an On-Line ESR-specific Ancillary Service Offer or Energy Bid/Offer Curve for the DAM will be considered to be On-Line. A QSE may not submit an Off-Line Ancillary Service Offer for an ESR. When the DAM considers a self-committed offer for clearing, the Resource constraints identified in paragraph (4)(c)(ii) of Section 4.5.1, DAM Clearing Process, other than HSL, are ignored; however, for an ESR, the DAM will consider LSL and HSL. A Combined Cycle Generation Resource will be considered by the DAM to be self-committed based on an On-Line Resource-Specific Ancillary Service Offer submittal if:

(a) Its QSE submits an On-Line Resource-Specific Ancillary Service Offer without also submitting a Three-Part Supply Offer for the DAM for any Combined Cycle Generation Resource within the Combined Cycle Train for that hour;

(b) No Resource-Specific Ancillary Service Offer for Off-Line Non-Spin for any Combined Cycle Generation Resource within the Combined Cycle Train is submitted for that hour; and

(c) No On-Line Resource-Specific Ancillary Service Offer for any other Combined Cycle Generation Resource within the Combined Cycled Train is submitted for that hour.

(9) ERCOT will attempt to procure the quantity from its Ancillary Service Plan from Resource-Specific Ancillary Service Offers as well as Ancillary Service Only Offers against respective ASDCs.

4.4.7.2.1 Ancillary Service Offer Criteria

(1) Each Ancillary Service Offer must be submitted by a QSE and must include the following information:

(a) The selling QSE;

(b) The Resource represented by the QSE from which the offer would be supplied;

(c) The quantity in MW and Ancillary Service type from that Resource for this specific offer and the specific quantity in MW and Ancillary Service type of any other Ancillary Service offered from this same capacity;

(d) An Ancillary Service Offer linked to a Three-Part Supply Offer from a Resource designated to be Off-Line for the offer period in its COP may only be struck if the Three-Part Supply Offer is struck. The total capacity struck must be within limits as defined in item (4)(c)(iii) of Section 4.5.1, DAM Clearing Process;

(e) An Ancillary Service Offer linked to other Ancillary Service Offers or an Energy Offer Curve from a Resource designated to be On-Line for the offer period in its COP may only be struck if the total capacity struck is within limits as defined in item (4)(c)(iii) of Section 4.5.1;

(f) The first and last hour of the offer;

(g) A fixed quantity block, or variable quantity block indicator for the offer:

(i) If a fixed quantity block, not to exceed 150 MW, which may only be offered by a Load Resource that is not a Controllable Load Resource and that is offering to provide RRS or Non-Spin, and which may clear at a Market Clearing Price for Capacity (MCPC) below the Ancillary Service Offer price for that block, the single price (in $/MW) and single quantity (in MW) for all hours offered in that block; or

(ii) If a variable quantity block, which may be offered by a Generation Resource or a Load Resource, the single price (in $/MW) and single "up to" quantity (in MW) contingent on the purchase of all hours offered in that block; and

(h) The expiration time and date of the offer.

(2) A valid Ancillary Service Offer in the DAM must be received before 1000 for the effective DAM. A valid Ancillary Service Offer in an SASM must be received before the applicable deadline for that SASM.

(3) No Ancillary Service Offer price may exceed the System-Wide Offer Cap (SWCAP) (in $/MW). No Ancillary Service Offer price may be less than $0 per MW.

(4) The minimum amount per Resource for each Ancillary Service product that may be offered is one-tenth (0.1) MW.

(5) A Resource may offer more than one Ancillary Service.

(6) A Load Resource that is not a Controllable Load Resource, may simultaneously offer RRS and Non-Spin in a DAM or SASM and be awarded RRS and Non-Spin for the same Operating Hour but will not be allowed to provide RRS and Non-Spin on the same Load Resource simultaneously in Real-Time.

(7) Offers for Load Resources may be adjusted to reflect Distribution Losses in accordance with Section 8.1.1.2, General Capacity Testing Requirements.

(8) A Load Resource that is qualified to perform as a Controllable Load Resource may not offer to provide Ancillary Services as a Controllable Load Resource and a Load Resource controlled by high-set under-frequency relay simultaneously behind a common breaker.

[NPRR863, NPRR1008, and NPRR1014: Replace applicable portions of Section 4.4.7.2.1 above with the following upon system implementation for NPRR863 or NPRR1014; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008:]

4.4.7.2.1 Resource-Specific Ancillary Service Offer Criteria

(1) Each Resource-Specific Ancillary Service Offer must be submitted by a QSE and must include the following information:

(a) The selling QSE;

(b) The Resource represented by the QSE from which the offer would be supplied;

(c) The quantity in MW and Ancillary Service type from that Resource for this specific offer and the specific quantity in MW and Ancillary Service type of any other Ancillary Service offered from this same capacity;

(d) A Resource-Specific Ancillary Service Offer linked to a Three-Part Supply Offer from a Resource designated to be Off-Line for the offer period in its COP may only be struck if the Three-Part Supply Offer is struck. The total capacity struck must be within limits as defined in item (4)(c)(iii) of Section 4.5.1, DAM Clearing Process;

(e) A Resource-Specific Ancillary Service Offer linked to other Resource-Specific Ancillary Service Offers or an Energy Offer Curve or Energy Bid/Offer Curve from a Resource designated to be On-Line for the offer period in its COP may only be struck if the total capacity struck is within limits as defined in item (4)(c)(iii) of Section 4.5.1;

(f) The first and last hour of the offer;

(g) A fixed quantity block or variable quantity block indicator for the offer:

(i) If a fixed quantity block, not to exceed 150 MW, which may only be offered by a Load Resource that is not a Controllable Load Resource and that is offering to provide RRS, ECRS, or Non-Spin and which may clear at a Market Clearing Price for Capacity (MCPC) below the Resource-Specific Ancillary Service Offer price for that block, the single price (in $/MW) and single quantity (in MW) for all hours offered in that block. This fixed quantity block indicator will only be considered in the DAM and will be ignored for awarding of Ancillary Services in the Real-Time Market (RTM); or

(ii) If a variable quantity block, which may be offered by a Generation Resource, an ESR, or a Load Resource, the single price (in $/MW) and single "up to" quantity (in MW) contingent on the purchase of all hours offered in that block. This variable quantity block indicator will only be considered in the DAM and will be ignored for awarding of Ancillary Services in the RTM; and

(h) The expiration time and date of the offer.

(2) A valid Resource-Specific Ancillary Service Offer in the DAM must be received before 1000 for the effective DAM.

(3) No Resource-Specific Ancillary Service Offer received before 1000 in the Day-Ahead may contain a price exceeding the Day-Ahead System-Wide Offer Cap (DASWCAP) (in $/MW). No Resource-Specific Ancillary Service Offer received after 1430 in the Day-Ahead may contain a price exceeding the Real-Time System-Wide Offer Cap (RTSWCAP) (in $/MW). No Ancillary Service Offer price may be less than $0 per MW.

(4) The minimum amount per Resource for each Ancillary Service product that may be offered is one-tenth (0.1) MW.

(5) A Resource may offer more than one Ancillary Service.

(6) A Load Resource, that is not a Controllable Load Resource, may simultaneously offer RRS, ECRS, and Non-Spin in a DAM and be awarded RRS, ECRS, and Non-Spin for the same Operating Hour in the DAM, but will not be awarded Non-Spin and RRS on the same Load Resource simultaneously in Real-Time. (7) Offers for Load Resources may be adjusted to reflect Distribution Losses in accordance with Section 8.1.1.2, General Capacity Testing Requirements.

(8) A Load Resource that is qualified to perform as a Controllable Load Resource may not offer to provide Ancillary Services as a Controllable Load Resource and a Load

Resource controlled by high-set under-frequency relay simultaneously behind a common breaker.

6.4.9.1.3 Replacement of Ancillary Service Due to Failure to Provide

(1) ERCOT may procure Ancillary Services to replace those of a QSE that has failed on its Ancillary Services Supply Responsibility through a SASM, as described below in Section 6.4.9.2, Supplemental Ancillary Services Market. A QSE is considered to have failed on its Ancillary Services Supply Responsibility when ERCOT determines, in its sole discretion, that some or all of the QSE's Resource-specific Ancillary Service capacity will not be available in Real-Time. This Section does not apply to a failure to provide caused by events described in Section 6.4.9.1.2, Replacement of Infeasible Ancillary Service Due to Transmission Constraints.

(2) Within a time frame acceptable to ERCOT, each affected QSE may either substitute capacity to meet its Ancillary Services Supply Responsibility or inform ERCOT that the Ancillary Services capacity needs to be replaced. If a QSE elects to substitute capacity, ERCOT shall determine the feasibility of the substitution. If the substitution is deemed infeasible by ERCOT or the QSE informs ERCOT that the Ancillary Services capacity needs to be replaced, then ERCOT shall procure, if in its sole discretion it finds that the service is still needed, the Ancillary Services capacity required under Section 6.4.9.2.

(3) ERCOT shall charge each QSE that has failed according to paragraph (1) on its Ancillary Service Supply Responsibility for a particular Ancillary Service for a specific hour.

(4) A Load Resource that is not a Controllable Load Resource shall not simultaneously provide RRS and Non-Spin on the same Load Resource in Real-Time. ERCOT may, in its sole discretion, evaluate whether the simultaneous provision of RRS and Non-Spin results in the QSE failing on its RRS or Non-Spin Ancillary Service Supply Responsibility.

[NPRR1010: Delete Section 6.4.9.1.3 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

6.5.5.2 Operational Data Requirements

(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 RRS, update the HSL as needed, to be consistent with Resource performance limitations of RRS 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 RRS 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 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; and

(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.

[NPRR863, NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (2) above with the following upon system implementation for NPRR863, 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 Aggregate Generation Resource (AGR), the QSE shall telemeter the number of its generators online.

(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 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, and RRS 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 Controllable Load Resource providing Non-Spin, the Scheduled Power Consumption that represents zero Ancillary Service deployments;

(j) For a single-site Controllable Load Resource 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; and

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

[NPRR863, NPRR1010, and NPRR1029: Replace applicable portions of paragraph (5) above with the following upon system implementation for NPRR863 or 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 providing Non-Spin, the Scheduled Power Consumption that represents zero Ancillary Service deployments;

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

(j) Resource Status;

(k) For a Controllable Load Resource providing Non-Spin, the "Scheduled Power Consumption Plus Two Hours," representing the QSE's forecast of the Controllable Load Resource'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 Controllable Load Resource, 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 Energy Storage Resource (ESR) shall provide the following Real-Time telemetry data to ERCOT for each ESR:

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

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

(c) State of Charge, in MWh;

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

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

(13) 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.

[NPRR829: Insert paragraph (14) below upon system implementation:]

(14) A QSE representing a Settlement Only Generator (SOG) that elects to include the net generation of the SOG in the estimate of Real-Time Liability (RTL) shall provide ERCOT Real-Time telemetry of the net generation of the SOG.

[NPRR885: Insert paragraph (15) below upon system implementation:]

(15) 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 (16) below upon system implementation:]

(16) A QSE representing a DC-Coupled Resource shall provide the following Real-Time telemetry data in addition to that required for other Energy Storage Resources (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 Energy Storage System (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 (17) below upon system implementation:]

(17) 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.

6.5.7.3.1 Determination of Real-Time On-Line Reliability Deployment Price Adder

(1) The following categories of reliability deployments are considered in the determination of the Real-Time On-Line Reliability Deployment Price Adder:

(a) RUC-committed Resources, except for those whose QSEs have opted out of RUC Settlement in accordance with paragraph (12) of Section 5.5.2, Reliability Unit Commitment (RUC) Process;

(b) RMR Resources that are On-Line, including capacity secured to prevent an Emergency Condition pursuant to paragraph (2) of Section 6.5.1.1, ERCOT Control Area Authority;

(c) Deployed Load Resources other than Controllable Load Resources;

(d) Deployed Emergency Response Service (ERS);

(e) Real-Time DC Tie imports during an EEA where the total adjustment shall not exceed 1,250 MW in a single interval;

(f) Real-Time DC Tie exports to address emergency conditions in the receiving electric grid;

(g) Energy delivered to ERCOT through registered Block Load Transfers (BLTs) during an EEA;

(h) Energy delivered from ERCOT to another power pool through registered BLTs during emergency conditions in the receiving electric grid; and

(i) ERCOT-directed firm Load shed during EEA Level 3, as described in paragraph (3) of Section 6.5.9.4.2, EEA Levels.

(2) The Real-Time On-Line Reliability Deployment Price Adder is an estimation of the impact to energy prices due to the above categories of reliability deployments. For intervals where there are reliability deployments as described in paragraph (1) above, after the two-step SCED process and also after the Real-Time On-Line Reserve Price Adder and Real-Time Off-Line Reserve Price Adder have been determined, the Real-Time On-Line Reliability Deployment Price Adder is determined as follows:

(a) For RUC-committed Resources with a telemetered Resource Status of ONRUC and for RMR Resources that are On-Line, set the LSL, LASL, and LDL to zero.

(b) Notwithstanding item (a) above, for RUC-committed Combined Cycle Generation Resources with a telemetered Resource Status of ONRUC that were instructed by ERCOT to transition to a different configuration to provide additional capacity, set the LSL, LASL, and LDL equal to the minimum of their current value and the COP HSL of the QSE-committed configuration for the RUC hour at the snapshot time of the RUC instruction.

(c) For all other Generation Resources excluding ones with a telemetered status of ONRUC, ONTEST, STARTUP, SHUTDOWN, and also excluding RMR Resources that are On-Line and excluding Generation Resources with a telemetered output less than 95% of LSL:

(i) Set LDL to the greater of Aggregated Resource Output - (60 minutes * SCED Down Ramp Rate), or LASL; and

(ii) Set HDL to the lesser of Aggregated Resource Output + (60 minutes*SCED Up Ramp Rate), or HASL.

(d) For all Controllable Load Resources excluding ones with a telemetered status of OUTL:

(i) Set LDL to the greater of Aggregated Resource Output - (60 minutes * SCED Up Ramp Rate), or LASL; and

(ii) Set HDL to the lesser of Aggregated Resource Output + (60 minutes*SCED Down Ramp Rate), or HASL.

(e) Add the deployed MW from Load Resources that are not Controllable Load Resources and that are providing RRS to GTBD linearly ramped over the ten-minute ramp period and add the deployed MW from Load Resources that are not Controllable Load Resources providing Non-Spin to GTBD linearly ramped over the 30-minute ramp period. The amount of deployed MW is calculated from the Resource telemetry and from applicable deployment instructions in Extensible Markup Language (XML) messages. ERCOT shall generate a linear bid curve defined by a price/quantity pair of $300/MWh for the first MW of Load

Resources deployed and a price/quantity pair of $700/MWh for the last MW of Load Resources deployed in each SCED execution. After recall instruction, the restoration period length and amount of MW added to GTBD during the restoration period will be determined by validated telemetry and the type of Ancillary Service deployed from the Resource. The TAC shall review the validity of the prices for the bid curve at least annually.

(f) Add the deployed MW from ERS to GTBD. The amount of deployed MW is determined from the XML messages and ERS contracted capacities for the ERS Time Periods when ERS is deployed. After recall, an approximation of the amount of un-restored ERS shall be used. After ERCOT recalls each group, GTBD shall be adjusted to reflect restoration on a linear curve over the assumed restoration period ("RHours").

The above parameter is defined as follows:

Parameter	Unit	Current Value*
RHours	Hours	4.5
* Changes to the current value of the parameter(s) referenced in this table above may be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value.		

(g) Add the MW from Real-Time DC Tie imports during an EEA to GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the ERCOT Operator.

(h) Subtract the MW from Real-Time DC Tie exports to address emergency conditions in the receiving electric grid from GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the receiving grid operator.

(i) Add the MW from energy delivered to ERCOT through registered BLTs during an EEA to GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the ERCOT Operator.

(j) Subtract the MW from energy delivered from ERCOT to another power pool through registered BLTs during emergency conditions in the receiving electric grid from GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the receiving grid operator.

(k) Perform a SCED with changes to the inputs in items (a) through (j) above, considering only Competitive Constraints and the non-mitigated Energy Offer Curves.

(l) Perform mitigation on the submitted Energy Offer Curves using the LMPs from the previous step as the reference LMP.

(m) Perform a SCED with the changes to the inputs in items (a) through (j) above, considering both Competitive and Non-Competitive Constraints and the mitigated Energy offer Curves.

(n) Determine the positive difference between the System Lambda from item (m) above and the System Lambda of the second step in the two-step SCED process described in paragraph (10)(b) of Section 6.5.7.3, Security Constrained Economic Dispatch.

(o) Determine the amount given by the Value of Lost Load (VOLL) minus the sum of the System Lambda of the second step in the two step SCED process described in paragraph (10)(b) of Section 6.5.7.3 and the Real-Time On-Line Reserve Price Adder.

(p) The Real-Time On-Line Reliability Deployment Price Adder is the minimum of items (n) and (o) above except when ERCOT is directing firm Load shed during EEA Level 3. When ERCOT is directing firm Load shed during EEA Level 3 to either maintain sufficient PRC or stabilize grid frequency, as described in paragraph (3) of Section 6.5.9.4.2, the Real-Time On-Line Reliability Deployment Price Adder is the VOLL minus the sum of the System Lambda of the second step in the two-step SCED process described in paragraph (10)(b) of Section 6.5.7.3 and the Real-Time On-Line Reserve Price Adder. Once ERCOT is no longer directing firm Load shed, as described above, the Real-Time On-Line Reliability Deployment Price Adder will again be set as the minimum of items (n) and (o) above.

[NPRR904, NPRR1006, NPRR1010, and NPRR1014: Replace applicable portions of Section 6.5.7.3.1 above with the following upon system implementation for NPRR904, NPRR1006, or NPRR1014; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

6.5.7.3.1 Determination of Real-Time Reliability Deployment Price Adder

(1) The following categories of reliability deployments are considered in the determination of the Real-Time Reliability Deployment Price Adder for Energy, and the Real-Time Reliability Deployment Price Adders for Ancillary Services:

(a) RUC-committed Resources, except for those whose QSEs have opted out of RUC Settlement in accordance with paragraph (12) of Section 5.5.2, Reliability Unit Commitment (RUC) Process;

(b) RMR Resources that are On-Line, including capacity secured to prevent an Emergency Condition pursuant to paragraph (2) of Section 6.5.1.1, ERCOT Control Area Authority;

(c) Deployed Load Resources other than Controllable Load Resources;

(d) Deployed Emergency Response Service (ERS);

(e) ERCOT-directed DC Tie imports during an EEA or transmission emergency where the total adjustment shall not exceed 1,250 MW in a single interval;

(f) ERCOT-directed curtailment of DC Tie imports below the higher of DC Tie advisory import limit as of 0600 in the Day-Ahead or subsequent advisory import limit to address local transmission system limitations where the total adjustment shall not exceed 1,250 MW in a single interval;

(g) ERCOT-directed curtailment of DC Tie imports below the higher of DC Tie advisory import limit as of 0600 in the Day-Ahead or subsequent advisory import limit due to an emergency action by a neighboring system operator during an emergency that is accommodated by ERCOT where the total adjustment shall not exceed 1,250 MW in a single interval;

(h) ERCOT-directed DC Tie exports to address emergency conditions in the receiving electric grid where the total adjustment shall not exceed 1,250 MW in a single interval;

(i) ERCOT-directed curtailment of DC Tie exports below the DC Tie advisory export limit as of 0600 in the Day-Ahead or subsequent advisory export limit during EEA, a transmission emergency, or to address local transmission system limitations where the total adjustment shall not exceed 1,250 MW in a single interval;

(j) Energy delivered to ERCOT through registered Block Load Transfers (BLTs) during an EEA;

(k) Energy delivered from ERCOT to another power pool through registered BLTs during emergency conditions in the receiving electric grid; and

(l) ERCOT-directed deployment of Transmission and/or Distribution Service Provider (TDSP) standard offer Load management programs.

(2) The Real-Time Reliability Deployment Price Adder for Energy, and Real-Time Reliability Deployment Price Adders for Ancillary Services are estimations of the impact to energy prices and Real-Time MCPCs due to the above categories of reliability deployments. For intervals where there are reliability deployments as described in paragraph (1) above, the Real-Time Reliability Deployment Price Adder for Energy and

Real-Time Reliability Deployment Price Adders for Ancillary Services are determined as follows:

(a) For RUC-committed Resources with a telemetered Resource Status of ONRUC and for RMR Resources that are On-Line:

(i) Set the LSL and LDL to zero;

(ii) Remove all Ancillary Service Offers; and

(iii) For the first step of SCED, administratively set the Energy Offer Curve for the Resource at a value equal to the power balance penalty price for all capacity between 0 MW and the HSL of the Resource.

(b) Notwithstanding item (a) above, for RUC-committed Combined Cycle Generation Resources with a telemetered Resource Status of ONRUC that were instructed by ERCOT to transition to a different configuration to provide additional capacity:

(i) Set the LSL and LDL equal to the minimum of their current value and the COP HSL of the QSE-committed configuration for the RUC hour at the snapshot time of the RUC instruction;

(ii) Set the maximum Ancillary Service capabilities of the Resource equal to the minimum of their current value and COP Ancillary Service capabilities of the QSE-committed configuration for the RUC hour at the snapshot time of the RUC instruction; and

(iii) For the first step of SCED, administratively set the Energy Offer Curve for the Resource at a value equal to the power balance penalty price for the additional capacity of the Resource, defined as the positive difference between the Resource's current telemetered HSL and the COP HSL of the QSE-committed configuration for the RUC hour at the snapshot time of the RUC instruction.

(c) For all other Generation Resources excluding ones with a telemetered status of ONRUC, ONTEST, STARTUP, SHUTDOWN, and also excluding RMR Resources that are On-Line and excluding Generation Resources with a telemetered output less than 95% of LSL:

(i) If the Generation Resource SCED Base Point is not at LDL, set LDL to the greater of Aggregated Resource Output - (60 minutes * Normal Ramp Rate down), or LSL; and

(ii) If the Generation Resource SCED Base Point is not at HDL, set HDL to the lesser of Aggregated Resource Output + (60 minutes * Normal Ramp Rate up), or HSL.

(d) For all On-Line ESRs:

(i) If the ESR SCED Base Point is not at LDL, set LDL to the greater of Aggregated Resource Output - (60 minutes * Normal Ramp Rate down), or LSL; and

(ii) If the ESR SCED Base Point is not at HDL, set HDL to the lesser of Aggregated Resource Output + (60 minutes * Normal Ramp Rate up), or HSL.

(e) For all Controllable Load Resources excluding ones with a telemetered status of OUTL:

(i) If the Controllable Load Resource SCED Base Point is not at LDL, set LDL to the greater of Aggregated Resource Output - (60 minutes * Normal Ramp Rate down), or LSL; and

(ii) If the Controllable Load Resource SCED Base Point is not at HDL, set HDL to the lesser of Aggregated Resource Output + (60 minutes * Normal Ramp Rate up), or HSL.

(f) Add the deployed MW from Load Resources that are not Controllable Load Resources and that are providing RRS to GTBD linearly ramped over the ten-minute ramp period and add the deployed MW from Load Resources that are not Controllable Load Resources providing Non-Spin to GTBD linearly ramped over the 30-minute ramp period. The amount of deployed MW is calculated from the Resource telemetry and from applicable deployment instructions in Extensible Markup Language (XML) messages. ERCOT shall generate a linear bid curve defined by a price/quantity pair of $300/MWh for the first MW of Load Resources deployed and a price/quantity pair of $700/MWh for the last MW of Load Resources deployed in each SCED execution. After recall instruction, the amount of MW added to GTBD during the restoration period will be determined by validated telemetry. The TAC shall review the validity of the prices for the bid curve at least annually.

(g) Add the deployed MW from ERS to GTBD. The amount of deployed MW is determined from the XML messages and ERS contracted capacities for the ERS Time Periods when ERS is deployed. After recall, an approximation of the amount of un-restored ERS shall be used. After ERCOT recalls each group, GTBD shall be adjusted to reflect restoration on a linear curve over the assumed restoration period ("RHours").

The above parameter is defined as follows:

Parameter	Unit	Current Value*
RHours	Hours	4.5
* Changes to the current value of the parameter(s) referenced in this table above may be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value.		

(h) Add the MW from DC Tie imports during an EEA or transmission emergency, to address local transmission system limitations, or due to an emergency action by a neighboring system operator during an emergency that is accommodated by ERCOT to GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the ERCOT Operator.

(i) Add the MW from DC Tie export curtailments during an EEA or transmission emergency, to address local transmission system limitations, or due to an emergency action by a neighboring system operator during an emergency that is accommodated by ERCOT to GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the ERCOT Operator. The MW added to GTBD associated with any individual DC Tie shall not exceed the higher of DC Tie advisory limit for exports on that tie as of 0600 in the Day-Ahead or subsequent advisory export limit minus the aggregate export on the DC Tie that remained scheduled following the Dispatch Instruction from the ERCOT Operator.

(j) Subtract the MW from DC Tie exports to address emergency conditions in the receiving electric grid from GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the receiving grid operator.

(k) Subtract the MW from DC Tie import curtailments to address local transmission system limitations or emergency conditions in the receiving electric grid from GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the receiving grid operator. The MW subtracted from GTBD associated with any individual DC Tie shall not exceed the higher of DC Tie advisory limit for imports on that tie as of 0600 in the Day-Ahead or subsequent advisory import limit minus the aggregate import on the DC Tie that remained scheduled following the Dispatch Instruction from the ERCOT Operator.

(l) Add the MW from energy delivered to ERCOT through registered BLTs during an EEA to GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the ERCOT Operator.

(m) Subtract the MW from energy delivered from ERCOT to another power pool through registered BLTs during emergency conditions in the receiving electric grid from GTBD. The amount of MW is determined from the Dispatch Instruction and should continue over the duration of time specified by the receiving grid operator.

(n) Add the deployed MWs from TDSP standard offer Load management programs to GTBD, if ERCOT instructs TDSPs to deploy their standard offer Load management programs. The amount of deployed MW is the value ERCOT provided for all TDSP standard offer Load management programs in the most current May Report on Capacity, Demand and Reserves in the ERCOT Region, unless modified as specified in this paragraph. If ERCOT is informed that all or a portion of a TDSP's standard offer Load management program has been fully exhausted, or has been expanded as the result of a Public Utility Commission of Texas (PUCT) proceeding, ERCOT will remove the associated MW value of any exhausted capacity from the amount of deployed MW or, in the case of an expansion, ERCOT will request an updated MW value from the relevant TDSPs to use in place of the May Report on Capacity, Demand and Reserves in the ERCOT Region value for that year. The initial value ERCOT will use for deployed MW under this paragraph for each calendar year, as well as any subsequent changes to this value, will be communicated to Market Participants in a Market Notice. After recall, an approximation of the amount of un-restored TDSP standard offer Load management programs shall be used. GTBD shall be adjusted to reflect restoration on a linear curve over the assumed restoration period ("RHours") defined by item (g) above.

(o) Perform a SCED with changes to the inputs in items (a) through (m) above, considering only Competitive Constraints and the non-mitigated Energy Offer Curves.

(p) Perform mitigation on the submitted Energy Offer Curves using the LMPs from the previous step as the reference LMP.

(q) Perform a SCED with the changes to the inputs in items (a) through (m) above, considering both Competitive and Non-Competitive Constraints and the mitigated Energy offer Curves.

(r) The Real-Time Reliability Deployment Price Adder for Energy is equal to the positive difference between the System Lambda from item (q) above and the System Lambda of the second step in the two-step SCED process described in paragraph (10)(b) of Section 6.5.7.3, Security Constrained Economic Dispatch.

(s) For each individual Ancillary Service, the Real-Time Reliability Deployment Price Adder for Ancillary Service is equal to the positive difference between the MCPC for that Ancillary Service from item (q) above and the MCPC for that Ancillary Service.

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. 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 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) Controllable Load Resources providing Non-Spin shall have an RTM Energy Bid for SCED and shall be capable of being Dispatched to its Non-Spin Ancillary Service Resource Responsibility within 30 minutes of a deployment instruction for capacity, using the Resource's Normal Ramp Rate curve. An Aggregate Load Resource must comply with all requirements in the document titled "Requirements for Aggregate Load Resource Participation in the ERCOT Markets."

(b) Load Resources that are not Controllable Load Resources 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.

(c) ERCOT shall post a list of Load Resources that are not Controllable Load Resources on the MIS Certified Area immediately following the 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 Load Resource to place in each group based on a random sampling of individual Load Resources. At ERCOT's discretion, ERCOT may deploy all groups of Load Resources that are not Controllable Load Resources providing Non-Spin as specified in the Other Binding Document titled "Non-Spinning Reserve Deployment and Recall Procedure."

(5) Subject to the exceptions described in paragraphs (a) and (b) below, On-Line Generation 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 Generation Resources assigned Non-Spin Ancillary Service Resource Responsibility effective at the top-of-hour by adjusting the Non-Spin Ancillary Service Schedule telemetry. 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. 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 Generation 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.

(6) 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.

(7) 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.

(8) For On-Line Generation Resources providing Non-Spin, Base Points 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 participating as Off-Line, SCED should be able to be dispatch it within 30 minutes of the Non-Spin deployment instruction.

(9) 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.

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

(11) 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.

(12) 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.

(13) 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.

(14) 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.

[NPRR863, NPRR1000, and NPRR1010: Replace applicable portions of Section 6.5.7.6.2.3 above with the following upon system implementation for NPRR863 or NPRR1000; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

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) Controllable Load Resources awarded Non-Spin shall have an RTM Energy Bid 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 must comply with all requirements in the document titled "Requirements for Aggregate Load Resource Participation in the ERCOT Markets."

(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'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 amount; and

(c) The anticipated duration of deployment.

(8) 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.

(9) 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.

(10) 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.

6.7.5 Real-Time Ancillary Service Imbalance Payment or Charge

(1) Based on the Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reserve Price Adders and a Real-Time Off-Line Reserve Price Adders, ERCOT shall calculate Ancillary Service imbalance Settlement, which will make Resources indifferent to the utilization of their capacity for energy or Ancillary Service reserves, as set forth in this Section.

(2) The payment or charge to each QSE for Ancillary Service imbalance is calculated based on the price calculation set forth in paragraph (12) of Section 6.5.7.3, Security Constrained Economic Dispatch, and applied to the following amounts for each QSE:

(a) The amount of Real-Time Metered Generation from all Generation Resources, represented by the QSE for the 15-minute Settlement Interval;

[NPRR987: Replace paragraph (a) above with the following upon system implementation:]

(a) The amount of Real-Time Metered Generation from all Generation Resources and Energy Storage Resources (ESRs), represented by the QSE for the 15-minute Settlement Interval;

(b) The amount of On-Line capacity based on the telemetered High Sustained Limit (HSL) for all On-Line Generation Resources, the telemetered consumption from Load Resources with a validated Ancillary Service Schedule for RRS controlled by high-set under-frequency relay or Non-Spin, and the capacity from Controllable Load Resources available to SCED;

[NPRR863 and NPRR987: Replace applicable portions of paragraph (b) above with the following upon system implementation:]

(b) The amount of On-Line capacity based on the telemetered High Sustained Limit (HSL) for all On-Line Generation Resources and ESRs, the telemetered consumption from Load Resources with a validated Ancillary Service Schedule for ECRS or RRS controlled by high-set under-frequency relay or Non-Spin, and the capacity from Controllable Load Resources available to SCED, including capacity from modeled Controllable Load Resources associated with ESRs;

(c) The amount of Ancillary Service Resource Responsibility for Reg-Up, RRS and Non-Spin for all Generation and Load Resources represented by the QSE for the 15-minute Settlement Interval.

[NPRR863 and NPRR987: Replace applicable portions of paragraph (c) above with the following upon system implementation:]

(c) The amount of Ancillary Service Resource Responsibility for Reg-Up, ECRS, RRS and Non-Spin for all Generation Resources, ESRs, and Load Resources represented by the QSE for the 15-minute Settlement Interval.

(3) Resources meeting one or more of the following conditions will be excluded from the amounts calculated pursuant to paragraphs (2)(a) and (b) above:

(a) Nuclear Resources;

(b) Resources with a telemetered ONTEST, STARTUP (except Resources with Non-Spin Ancillary Service Resource Responsibility greater than zero), or SHUTDOWN Resource Status excluding Resources telemetering both STARTUP Resource Status and greater than zero Non-Spin Ancillary Service Responsibility; or

(c) Resources with a telemetered net real power (in MW) less than 95% of their telemetered Low Sustained Limit (LSL) excluding Resources telemetering both STARTUP Resource Status and greater than zero Non-Spin Ancillary Service Responsibility.

[NPRR987: Replace paragraph (c) above with the following upon system implementation:]

(c) Resources with a telemetered net real power (in MW) less than 95% of their telemetered Low Sustained Limit (LSL) excluding the following:

(i) Resources telemetering both STARTUP Resource Status and greater than zero Non-Spin Ancillary Service Responsibility; or

(ii) ESRs.

(4) Reliability Must-Run (RMR) Units and Reliability Unit Commitment (RUC) Resources On-Line during the hour due to an ERCOT instruction, except for any RUC Resource committed by a RUC Dispatch Instruction where that Resource's QSE subsequently opted out of RUC Settlement pursuant to paragraph (12) of Section 5.5.2, Reliability Unit Commitment (RUC) Process, those RUC Resources that had a Three-Part Supply Offer cleared in the DAM for the hour, or a Switchable Generation Resource (SWGR) released by a non-ERCOT Control Area Operator (CAO) to operate in the ERCOT Control Area due to an ERCOT RUC instruction for an actual or anticipated Energy Emergency Alert (EEA) condition, and any Combined Cycle Generation Resource that was RUC-committed from one On-Line configuration to a different configuration with additional capacity, as described in paragraph (3) of Section 5.5.2, will be excluded from the amounts calculated for the 15-minute Settlement Interval pursuant to paragraphs (2)(a), (b), and (c) above.

[NPRR885: Replace paragraph (4) above with the following upon system implementation:]

(4) Reliability Must-Run (RMR) Units, and Must-Run Alternatives (MRAs), and Reliability Unit Commitment (RUC) Resources On-Line during the hour due to an ERCOT instruction, except for any RUC Resource committed by a RUC Dispatch Instruction where that Resource's QSE subsequently opted out of RUC Settlement pursuant to paragraph (12) of Section 5.5.2, Reliability Unit Commitment (RUC) Process, those RUC Resources that had a Three-Part Supply Offer cleared in the DAM for the hour, or a Switchable Generation Resource (SWGR) released by a non-ERCOT Control Area Operator (CAO) to operate in the ERCOT Control Area due to an ERCOT RUC instruction for an actual or anticipated Energy Emergency Alert (EEA) condition, and any Combined Cycle Generation Resource that was RUC-committed from one On-Line configuration to a different configuration with additional capacity, as described in paragraph (3) of Section 5.5.2, will be excluded from the amounts calculated for the 15-minute Settlement Interval pursuant to paragraphs (2)(a), (b), and (c) above.

(5) The Real-Time Off-Line Reserve Capacity for the QSE (RTOFFCAP) shall be administratively set to zero when the SCED snapshot of the Physical Responsive Capability (PRC) is less than or equal to the PRC MW at which EEA Level 1 is initiated.

(6) Resources that have a Under Generation Volume (UGEN) greater than zero, and are not-exempt from a Base Point Deviation Charge, as set forth in Section 6.6.5, Base Point Deviation Charge, or are not already excluded in paragraphs (3) or (4) above, for the 15-minute Settlement Interval will have the UGEN amounts removed from the amounts calculated pursuant to paragraphs (2)(a) and (b) above.

[NPRR987: Replace paragraph (6) above with the following upon system implementation:]

(6) Resources that have an Under Generation Volume (UGEN) or an Under Performance Volume (UPESR) greater than zero, and are not exempt from a Base Point Deviation Charge, as set forth in Section 6.6.5, Base Point Deviation Charge, or are not already excluded in paragraphs (3) or (4) above, for the 15-minute Settlement Interval will have the UGEN or UPESR amounts removed from the amounts calculated pursuant to paragraphs (2)(a) and (b) above.

(7) The payment or charge to each QSE for the Ancillary Service imbalance for a given 15-minute Settlement Interval is calculated as follows:

$$\mathbf{RTASIAMT}_q = \mathbf{(-1) * [(RTASOLIMB}_q \mathbf{* RTRSVPOR) + (RTASOFFIMB}_q \mathbf{* RTRSVPOFF)]}$$

$$\mathbf{RTRDASIAMT}_q = \mathbf{(-1) * (RTASOLIMB}_q \mathbf{* RTRDP)}$$

Where:

$$RTASOLIMB_q = RTOLCAP_q - [((SYS\_GEN\_DISCFACTOR * RTASRESP_q) * ¼) - RTASOFF_q - RTRUCNBBRESP_q - RTCLRNSRESP_q - RTNCLRNSRESP_q - RTRMRRESP_q]$$

Where:

$$RTASOFF_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTASOFFR_{q,r,p}$$

$$RTRUCNBBRESP_q = SYS\_GEN\_DISCFACTOR * \sum_r RTRUCASA_{q,r} * ¼$$

$$RTCLRNSRESP_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTCLRNSRESPR_{q,r,p}$$

$$RTNCLRNSRESP_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTNCLRNSRESPR_{q,r,p}$$

$$RTRMRRESP_q = SYS\_GEN\_DISCFACTOR * \sum_q \sum_r \sum_p (HRRADJ_{q,r,p} + HRUADJ_{q,r,p} + HNSADJ_{q,r,p}) * ¼$$

[NPRR863: Replace the formula "$RTRMRRESP_q$" above with the following upon system implementation:]

$$RTRMRRESP_q = SYS\_GEN\_DISCFACTOR * \sum_q \sum_r \sum_p (HRRADJ_{q,r,p} + HECRADJ_{q,r,p} + HRUADJ_{q,r,p} + HNSADJ_{q,r,p}) * \frac{1}{4}$$

$$RTOLCAP_q = (RTOLHSL_q - RTMGQ_q - SYS\_GEN\_DISCFACTOR * (\sum_r \sum_p UGENA_{q,r,p})) + RTCLRCAP_q + RTNCLRCAP_q$$

[NPRR987: Replace the formula "$RTOLCAP_q$" above with the following upon system implementation:]

$$RTOLCAP_q = (RTOLHSL_q - RTMGQ_q - SYS\_GEN\_DISCFACTOR * (\sum_r \sum_p (UGENA_{q,r,p} + UPESRA_{q,r,p}))) + RTCLRCAP_q + RTNCLRCAP_q + RTESRCAP_q$$

Where:

$$RTNCLRCAP_q = Min(Max(RTNCLRNPC_q - RTNCLRLPC_q, 0.0), RTNCLRRRS_q * 1.5)$$

[NPRR863: Replace the formula "$RTNCLRCAP_q$" above with the following upon system implementation:]

$$RTNCLRCAP_q = Min(Max(RTNCLRNPC_q - RTNCLRLPC_q, 0.0), (RTNCLRECRS_q + RTNCLRRRS_q) * 1.5)$$

$$RTNCLRRRS_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTNCLRRRSR_{q,r,p}$$

[NPRR863: Insert the formula "$RTNCLRECRS_q$" below upon system implementation:]

$$RTNCLRECRS_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTNCLRECRSR_{q,r,p}$$

$$RTNCLRNPC_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTNCLRNPCR_{q,r,p}$$

$$RTNCLRLPC_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTNCLRLPCR_{q,r,p}$$

$$RTOLHSL_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTOLHSLRA_{q,r,p}$$

$$RTMGQ_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTMGA_{q,r,p}$$

If $RTMGA_{q,r,p} > RTOLHSLRA_{q,r,p}$

Then $RTMGA_{q,r,p} = RTOLHSLRA_{q,r,p}$

[NPRR987: Insert the language below upon system implementation:]

Where for a Controllable Load Resource other than a modeled Controllable Load Resource associated with an Energy Storage Resource (ESR):

$$RTCLRCAP_q = RTCLRNPC_q - RTCLRLPC_q - RTCLRNS_q + RTCLRREG_q$$

$$RTCLRNPC_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTCLRNPCR_{q,r,p}$$

$$RTCLRLPC_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTCLRLPCR_{q,r,p}$$

$$RTCLRNS_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTCLRNSR_{q,r,p}$$

$$RTCLRREG_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTCLRREGR_{q,r,p}$$

Where:

$$RTRSVPOR = \sum_y (RNWF_y * RTORPA_y)$$

$$RTASOFFIMB_q = RTOFFCAP_q - (RTASOFF_q + RTCLRNSRESP_q + RTNCLRNSRESP_q)$$

$$RTOFFCAP_q = (SYS\_GEN\_DISCFACTOR * RTCST30HSL_q) + (SYS\_GEN\_DISCFACTOR * RTOFFNSHSL_q) + RTCLRNS_q + RTNCLRNSCAP_q$$

$$RTNCLRNSCAP_q = Min(Max(RTNCLRNPC_q - RTNCLRLPC_q, 0.0), RTNCLRNS_q * 1.5)$$

$$RTNCLRNS_q = SYS\_GEN\_DISCFACTOR * \sum_r \sum_p RTNCLRNSR_{q,r,p}$$

$$RTRSVPOFF = \sum_y (RNWF_y * RTOFFPA_y)$$

$$RTRDP = \sum_{y} (RNWF_{y} * RTORDPA_{y})$$

$$RNWF_{y} = TLMP_{y} / \sum_{y} TLMP_{y}$$

[NPRR987: Insert the language below upon system implementation:]

Where for an ESR:

$$RTESRCAP_{q} = \sum_{g} (RTESRCAPR_{q, g, p})$$

Where:

$$RTESRCAPR_{q, g, p} = Min[(RTOLHSLRA_{q, r, p} - RTMGA_{q, r, p} + RTCLRNPCR_{q, r, p}), (RTCLRNPCR_{q, r, p} + SOCT_{q, r} - SOCOM_{q, r})]$$

The above variables are defined as follows:

Variable	Unit	Description
$RTASIAMT_{q}$	$	*Real-Time Ancillary Service Imbalance Amount*—The total payment or charge to QSE *q* for the Real-Time Ancillary Service imbalance associated with Operating Reserve Demand Curve (ORDC) for each 15-minute Settlement Interval.
$RTRDASIAMT_{q}$	$	*Real-Time Reliability Deployment Ancillary Service Imbalance Amount*—The total payment or charge to QSE *q* for the Real-Time Ancillary Service imbalance associated with Reliability Deployments for each 15-minute Settlement Interval.
$RTASOLIMB_{q}$	MWh	*Real-Time Ancillary Service On-Line Reserve Imbalance for the QSE*—The Real-Time Ancillary Service On-Line reserve imbalance for the QSE *q*, for each 15-minute Settlement Interval.
$RTORPA_{y}$	$/MWh	*Real-Time On-Line Reserve Price Adder per interval*—The Real-Time Price Adder for On-Line Reserves for the SCED interval *y*.
$RTOFFPA_{y}$	$/MWh	*Real-Time Off-Line Reserve Price Adder per interval*—The Real-Time Price Adder for Off-Line Reserves for the SCED interval *y*.
$TLMP_{y}$	second	*Duration of SCED interval per interval*—The duration of the SCED interval *y*.
RTRDP	$/MWh	*Real-Time On-Line Reliability Deployment Price*—The Real-Time price for the 15-minute Settlement Interval, reflecting the impact of reliability deployments on energy prices that is calculated from the Real-Time On-Line Reliability Deployment Price Adder.
$RTORDPA_{y}$	$/MWh	*Real-Time On-Line Reliability Deployment Price Adder*—The Real-Time Price Adder that captures the impact of reliability deployments on energy prices for the SCED interval *y*.
$RNWF_{y}$	none	*Resource Node Weighting Factor per interval*—The weight used in the Resource Node Settlement Point Price calculation for the portion of the SCED interval *y* within the 15-minute Settlement Interval.

Variable	Unit	Description
RTRSVPOR	$/MWh	*Real-Time Reserve Price for On-Line Reserves*—The Real-Time Reserve Price for On-Line Reserves for the 15-minute Settlement Interval.
RTRSVPOFF	$/MWh	*Real-Time Reserve Price for Off-Line Reserves*—The Real-Time Reserve Price for Off-Line Reserves for the 15-minute Settlement Interval.
$RTOLCAP_q$	MWh	*Real-Time On-Line Reserve Capacity for the QSE*—The Real-Time reserve capacity of On-Line Resources available for the QSE *q*, for the 15-minute Settlement Interval.
$RTOLHSLRA_{q,r,p}$	MWh	*Real-Time Adjusted On-Line High Sustained Limit for the Resource*—The Real-Time telemetered HSL for the Resource *r* represented by QSE *q* at Resource Node *p* that is available to SCED, integrated over the 15-minute Settlement Interval, and adjusted pursuant to paragraphs (3) and (4) above.
$RTOLHSL_q$	MWh	*Real-Time On-Line High Sustained Limit for the QSE*—The Real-Time telemetered HSL for all Generation Resources available to SCED, pursuant to paragraphs (3) and (4) above, integrated over the 15-minute Settlement Interval for the QSE *q*, discounted by the system-wide discount factor. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time On-Line High Sustained Limit for the QSE*—The integrated Real-Time telemetered HSL for all Generation Resources, not including modeled Generation Resources associated with ESRs, available to SCED, pursuant to paragraphs (3) and (4) above, integrated over the 15-minute Settlement Interval for the QSE *q*, discounted by the system-wide discount factor.
$RTASRESP_q$	MW	*Real-Time Ancillary Service Supply Responsibility for the QSE*—The Real-Time Ancillary Service Supply Responsibility for Reg-Up, RRS and Non-Spin pursuant to Section 4.4.7.4, Ancillary Service Supply Responsibility, for all Generation and Load Resources for the QSE *q*, for the 15-minute Settlement Interval. ***[NPRR863: Replace the description above with the following upon system implementation:]*** *Real-Time Ancillary Service Supply Responsibility for the QSE*—The Real-Time Ancillary Service Supply Responsibility for Reg-Up, ECRS, RRS and Non-Spin pursuant to Section 4.4.7.4, Ancillary Service Supply Responsibility, for all Generation and Load Resources for the QSE *q*, for the 15-minute Settlement Interval.

Variable	Unit	Description
RTCLRCAP $_q$	MWh	*Real-Time Capacity from Controllable Load Resources for the QSE*—The Real-Time capacity and Reg-Up minus Non-Spin available from all Controllable Load Resources available to SCED for the QSE q, integrated over the 15-minute Settlement Interval. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Capacity from Controllable Load Resources for the QSE*—The Real-Time capacity and Reg-Up minus Non-Spin available from all Controllable Load Resources, not including modeled Controllable Load Resources associated with ESRs available to SCED for the QSE q, integrated over the 15-minute Settlement Interval.
RTNCLRCAP $_q$	MWh	*Real-Time Capacity from Non-Controllable Load Resources carrying Responsive Reserve for the QSE*—The Real-Time capacity for all Load Resources other than Controllable Load Resources that have a validated Real-Time RRS Ancillary Service Schedule for the QSE q, integrated over the 15-minute Settlement Interval. ***[NPRR863: Replace the description above with the following upon system implementation:]*** *Real-Time Capacity from Non-Controllable Load Resources carrying ERCOT Contingency Reserve or Responsive Reserve for the QSE*—The Real-Time capacity for all Load Resources other than Controllable Load Resources that have a validated Real-Time ECRS or RRS Ancillary Service Schedule for the QSE q, integrated over the 15-minute Settlement Interval.
RTNCLRRRS $_q$	MWh	*Real-Time Non-Controllable Load Resources Responsive Reserve for the QSE*—The validated Real-Time telemetered RRS Ancillary Service Supply Responsibility for all Load Resources other than Controllable Load Resources for QSE q discounted by the system-wide discount factor, integrated over the 15-minute Settlement Interval.
RTNCLRRRSR $_{q, r, p}$	MWh	*Real-Time Non-Controllable Load Resource Responsive Reserve*—The validated Real-Time telemetered RRS Ancillary Service Resource Responsibility for the Load Resource r (which is not a Controllable Load Resource) represented by QSE q at Resource Node p, integrated over the 15-minute Settlement Interval.

Variable	Unit	Description
[NPRR863: Insert the variables "RTNCLRECRS $_q$" and "RTNCLRECRSR $_{q, r, p}$" below upon system implementation:]		
RTNCLRECRS $_q$	MWh	*Real-Time Non-Controllable Load Resources ERCOT Contingency Reserve for the QSE*—The validated Real-Time telemetered ECRS Ancillary Service Supply Responsibility for all Load Resources other than Controllable Load Resources for QSE *q* discounted by the system-wide discount factor, integrated over the 15-minute Settlement Interval.
RTNCLRECRSR $_{q, r, p}$	MWh	*Real-Time Non-Controllable Load Resource ERCOT Contingency Reserve* —The validated Real-Time telemetered ECRS Ancillary Service Resource Responsibility for the Load Resource *r* (which is not a Controllable Load Resource) represented by QSE *q* at Resource Node *p*, integrated over the 15-minute Settlement Interval.
RTNCLRNPCR $_{q, r, p}$	MWh	*Real-Time Non-Controllable Load Resource Net Power Consumption*—The Real-Time net real power consumption from the Load Resource *r* (which is not a Controllable Load Resource) represented by QSE *q* at Resource Node *p* that has a validated Real-Time RRS or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval. ***[NPRR863: Replace the description above with the following upon system implementation:]*** *Real-Time Non-Controllable Load Resource Net Power Consumption*—The Real-Time net real power consumption from the Load Resource *r* (which is not a Controllable Load Resource) represented by QSE *q* at Resource Node *p* that has a validated Real-Time ECRS, RRS, or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval.
RTNCLRLPCR $_{q, r, p}$	MWh	*Real-Time Non-Controllable Load Resource Low Power Consumption*—The Real-Time Low Power Consumption (LPC) from the Load Resource *r* (which is not a Controllable Load Resource) represented by QSE *q* at Resource Node *p* that has a validated Real-Time RRS or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval. ***[NPRR863: Replace the description above with the following upon system implementation:]*** *Real-Time Non-Controllable Load Resource Low Power Consumption*—The Real-Time Low Power Consumption (LPC) from the Load Resource *r* (which is not a Controllable Load Resource) represented by QSE *q* at Resource Node *p* that has a validated Real-Time ECRS, RRS, or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval

Variable	Unit	Description
$RTNCLRNPC_q$	MWh	*Real-Time Non-Controllable Load Resource Net Power Consumption for the QSE*—The Real-Time net real power consumption from all Load Resources other than Controllable Load Resources for QSE *q* that have a validated Real-Time RRS or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval discounted by the system-wide discount factor. ***[NPRR863: Replace the description above with the following upon system implementation:]*** *Real-Time Non-Controllable Load Resource Net Power Consumption for the QSE*—The Real-Time net real power consumption from all Load Resources other than Controllable Load Resources for QSE *q* that have a validated Real-Time ECRS, RRS, or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval discounted by the system-wide discount factor.
$RTNCLRLPC_q$	MWh	*Real-Time Non-Controllable Load Resource Low Power Consumption for the QSE*—The Real-Time LPC from all Load Resources other than Controllable Load Resources for QSE *q* that have a validated Real-Time RRS or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval discounted by the system-wide discount factor. ***[NPRR863: Replace the description above with the following upon system implementation:]*** *Real-Time Non-Controllable Load Resource Low Power Consumption for the QSE*—The Real-Time LPC from all Load Resources other than Controllable Load Resources for QSE *q* that have a validated Real-Time ECRS,RRS, or Non-Spin Ancillary Service Schedule integrated over the 15-minute Settlement Interval discounted by the system-wide discount factor.
$RTNCLRNSCAP_q$	MWh	*Real-Time Capacity from Non-Controllable Load Resources carrying Non-Spin for the QSE*—The Real-Time capacity for all Load Resources that are not Controllable Load Resources and that have a validated Real-Time Non-Spin Ancillary Service Schedule for the QSE *q*, integrated over the 15-minute Settlement Interval.
$RTNCLRNSR_{q,r,p}$	MWh	*Real-Time Non-Spin Schedule for the Non-Controllable Load Resource* —The validated Real-Time telemetered Non-Spin Ancillary Service Schedule for the Load Resource *r* that is not a Controllable Load Resources represented by QSE *q* at Resource Node *p*, integrated over the 15-minute Settlement Interval.
$RTNCLRNS_q$	MWh	*Real-Time Non-Spin Schedule for Non-Controllable Load Resources for the QSE*—The Real-Time telemetered Non-Spin Ancillary Service Schedule for all Load Resources that are not Controllable Load Resources for the QSE *q*, integrated over the 15-minute Settlement Interval discounted by the system-wide discount factor.

Variable	Unit	Description
RTNCLRNSRESP $_q$	MWh	*Real-Time Non-Controllable Load Resource Non-Spin Responsibility for the QSE*—The Real Time telemetered Non-Spin Ancillary Service Supply Responsibility for all Load Resources that are not Controllable Load Resources discounted by the system-wide discount factor for the QSE *q*, integrated over the 15-minute Settlement Interval.
RTNCLRNSRESPR $_{q, r, p}$	MWh	*Real-Time Non-Controllable Load Resource Non-Spin Responsibility for the Resource*—The Real-Time telemetered Non-Spin Ancillary Service Resource Responsibility for the Load Resource *r* that is not a Controllable Load Resource represented by QSE *q* at Resource Node *p* integrated over the 15-minute Settlement Interval.
RTCLRNPCR $_{q, r, p}$	MWh	*Real-Time Net Power Consumption from the Controllable Load Resource*—The Real-Time net real power consumption from the Controllable Load Resource *r* represented by QSE *q* at Resource Node *p* available to SCED integrated over the 15-minute Settlement Interval. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Net Power Consumption from the Controllable Load Resource*—The Real-Time net real power consumption from the Controllable Load Resource or modeled Controllable Load Resource associated with an ESR, *r* represented by QSE *q* at Resource Node *p* available to SCED integrated over the 15-minute Settlement Interval.
RTCLRNPC $_q$	MWh	*Real-Time Net Power Consumption from Controllable Load Resources for the QSE*—The Real-Time net real power consumption from all Controllable Load Resources available to SCED integrated over the 15-minute Settlement Interval for the QSE *q* discounted by the system-wide discount factor. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Net Power Consumption from Controllable Load Resources for the QSE*—The Real-Time net real power consumption from all Controllable Load Resources, not including modeled Controllable Load Resources associated with ESRs, available to SCED integrated over the 15-minute Settlement Interval for the QSE *q* discounted by the system-wide discount factor.

Variable	Unit	Description
RTCLRLPCR $_{q, r, p}$	MWh	*Real-Time Low Power Consumption for the Controllable Load Resource*—The Real-Time LPC from the Controllable Load Resource *r* represented by QSE *q* at Resource Node *p* available to SCED integrated over the 15-minute Settlement Interval. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Low Power Consumption for the Controllable Load Resource*—The Real-Time LPC from the Controllable Load Resource or modeled Controllable Load Resource associated with an ESR, *r* represented by QSE *q* at Resource Node *p* available to SCED integrated over the 15-minute Settlement Interval.
RTCLRLPC $_{q}$	MWh	*Real-Time Low Power Consumption from Controllable Load Resources for the QSE*—The Real-Time LPC from Controllable Load Resources available to SCED integrated over the 15-minute Settlement Interval for the QSE *q* discounted by the system-wide discount factor. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Low Power Consumption from Controllable Load Resources for the QSE*—The Real-Time LPC from Controllable Load Resources, not including modeled Controllable Load Resources associated with ESRs, available to SCED integrated over the 15-minute Settlement Interval for the QSE *q* discounted by the system-wide discount factor.
RTCLRREG $_{q}$	MWh	*Real-Time Controllable Load Resources Regulation-Up Schedule for the QSE*—The Real-Time Reg-Up Ancillary Service Schedule from all Controllable Load Resources with Primary Frequency Response for the QSE *q*, integrated over the 15-minute Settlement Interval discounted by the system-wide discount factor. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Controllable Load Resources Regulation-Up Schedule for the QSE*—The Real-Time Reg-Up Ancillary Service Schedule from all Controllable Load Resources, not including modeled Controllable Load Resources associated with ESRs, with Primary Frequency Response for the QSE *q*, integrated over the 15-minute Settlement Interval discounted by the system-wide discount factor.

Variable	Unit	Description
RTCLRREGR $_{q, r, p}$	MWh	*Real-Time Controllable Load Resource Regulation-Up Schedule for the Resource*—The validated Real-Time Reg-Up Ancillary Service Schedule for the Controllable Load Resource *r* represented by QSE *q* at Resource Node *p* with Primary Frequency Response, integrated over the 15-minute Settlement Interval. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Controllable Load Resource Regulation-Up Schedule for the Resource*—The validated Real-Time Reg-Up Ancillary Service Schedule for the Controllable Load Resource or modeled Controllable Load Resource associated with an ESR, *r* represented by QSE *q* at Resource Node *p* with Primary Frequency Response, integrated over the 15-minute Settlement Interval.
RTMGA $_{q, r, p}$	MWh	*Real-Time Adjusted Metered Generation per QSE per Settlement Point per Resource*—The adjusted metered generation, pursuant to paragraphs (3) and (4) above, of Generation Resource *r* represented by QSE *q* at Resource Node *p* in Real-Time for the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource *r* is the Combined Cycle Train.
RTMGQ $_{q}$	MWh	*Real-Time Metered Generation per QSE*—The metered generation, discounted by the system-wide discount factor, of all generation Resources represented by QSE *q* in Real-Time for the 15-minute Settlement Interval, pursuant to paragraphs (3) and (4) above. ***[NPRR987: Replace the description above with the following upon system implementation:]*** *Real-Time Metered Generation per QSE*—The metered generation, discounted by the system-wide discount factor, of all Generation Resources, not including modeled Generation Resources associated with ESRs, represented by QSE *q* in Real-Time for the 15-minute Settlement Interval, pursuant to paragraphs (3) and (4) above.

<table>
<tr><th>Variable</th><th>Unit</th><th>Description</th></tr>
<tr><td colspan="3">
[NPRR987: Insert the variables “RTESRCAPR $_{q, g, p}$”, “RTESRCAP $_{q}$”, “SOCT $_{q, r}$”, and “SOCOM $_{q, r}$” below upon system implementation:]
<table>
<tr><td>RTESRCAPR $_{q, g, p}$</td><td>MWh</td><td>Real-Time Capacity from an Energy Storage Resource – Capacity provided by an ESR g, represented by QSE q at Resource Node p, which considers energy limitations of the ESR and potentially higher contribution when charging for the15-minute Settlement Interval.</td></tr>
<tr><td>RTESRCAP $_{q}$</td><td>MWh</td><td>Real-Time Capacity from Energy Storage Resources per QSE – Capacity provided by all ESRs, represented by QSE q, for the 15-minute Settlement Interval.</td></tr>
<tr><td>SOCT $_{q, r}$</td><td>MWh</td><td>State of Charge Telemetered by an Energy Storage Resource – The average telemetered state of charge of Resource r, represented by QSE q, over the 15-minute Settlement Interval.</td></tr>
<tr><td>SOCOM $_{q, r}$</td><td>MWh</td><td>State of Charge Operating Minimum for an Energy Storage Resource –The average telemetered state of charge operating minimum of Resource r, represented by QSE q, over the 15-minute Settlement Interval.</td></tr>
</table>
</td></tr>
<tr><td>RTASOFFIMB $_{q}$</td><td>MWh</td><td>Real-Time Ancillary Service Off-Line Reserve Imbalance for the QSE—The Real-Time Ancillary Service Off-Line reserve imbalance for the QSE q, for each 15-minute Settlement Interval.</td></tr>
<tr><td>RTOFFCAP $_{q}$</td><td>MWh</td><td>Real-Time Off-Line Reserve Capacity for the QSE—The Real-Time reserve capacity of Off-Line Resources available for the QSE q, for the 15-minute Settlement Interval.

[NPRR1069: Replace the description above with the following upon system implementation of NPRR987:]

Real-Time Off-Line Reserve Capacity for the QSE—The Real-Time reserve capacity of Off-Line Resources, not including modeled Generation Resources associated with ESRs, available for the QSE q, for the 15-minute Settlement Interval.</td></tr>
</table>

Variable	Unit	Description
RTCST30HSL $_q$	MWh	*Real-Time Generation Resources with Cold Start Available in 30 Minutes*—The Real-Time telemetered HSLs of Generation Resources, excluding Intermittent Renewable Resources (IRRs), that have telemetered an OFF Resource Status and can be started from a cold temperature state in 30 minutes for the QSE q, time-weighted over the 15-minute Settlement Interval. ***[NPRR1069: Replace the description above with the following upon system implementation of NPRR987:]*** *Real-Time Generation Resources with Cold Start Available in 30 Minutes*—The Real-Time telemetered HSLs of Generation Resources, excluding Intermittent Renewable Resources (IRRs) and modeled Generation Resources associated with ESRs, that have telemetered an OFF Resource Status and can be started from a cold temperature state in 30 minutes for the QSE q, time-weighted over the 15-minute Settlement Interval.
RTOFFNSHSL $_q$	MWh	*Real-Time Generation Resources with Off-Line Non-Spin Schedule*—The Real-Time telemetered HSLs of Generation Resources that have telemetered an OFFNS Resource Status for the QSE q, time-weighted over the 15-minute Settlement Interval. ***[NPRR1069: Replace the description above with the following upon system implementation of NPRR987:]*** *Real-Time Generation Resources with Off-Line Non-Spin Schedule*—The Real-Time telemetered HSLs of Generation Resources, not including modeled Generation Resources associated with ESRs, that have telemetered an OFFNS Resource Status for the QSE q, time-weighted over the 15-minute Settlement Interval.
RTASOFFR $_{q, r, p}$	MWh	*Real-Time Ancillary Service Schedule for the Off-Line Generation Resource*—The validated Real-Time telemetered Ancillary Service Schedule for the Off-Line Generation Resource r represented by QSE q at Resource Node p, integrated over the 15-minute Settlement Interval.

Variable	Unit	Description
RTASOFF $_q$	MWh	*Real-Time Ancillary Service Schedule for Off-Line Generation Resources for the QSE*—The Real-Time telemetered Ancillary Service Schedule for all Off-Line Generation Resources discounted by the system-wide discount factor for the QSE *q*, integrated over the 15-minute Settlement Interval. ***[NPRR1069: Replace the description above with the following upon system implementation of NPRR987:]*** *Real-Time Ancillary Service Schedule for Off-Line Generation Resources for the QSE*—The Real-Time telemetered Ancillary Service Schedule for all Off-Line Generation Resources, not including modeled Generation Resources associated with ESRs, discounted by the system-wide discount factor for the QSE *q*, integrated over the 15-minute Settlement Interval.
HRRADJ $_{q, r, p}$	MW	*Ancillary Service Resource Responsibility Capacity for Responsive Reserve at Adjustment Period*—The RRS Ancillary Service Resource Responsibility for the Resource *r* represented by QSE *q* at Resource Node *p* as seen in the last Current Operating Plan (COP) and Trades Snapshot at the end of the Adjustment Period, for the hour that includes the 15-minute Settlement Interval.
[NPRR863: Insert the variable "HECRADJ $_{q, r, p}$" below upon system implementation:]		
HECRADJ $_{q, r, p}$	MW	*Ancillary Service Resource Responsibility Capacity for ERCOT Contingency Reserve Service at Adjustment Period*—The ECRS Ancillary Service Resource Responsibility for the Resource *r* represented by QSE *q* at Resource Node *p* as seen in the last Current Operating Plan (COP) and Trades Snapshot at the end of the Adjustment Period, for the hour that includes the 15-minute Settlement Interval.
HRUADJ $_{q, r, p}$	MW	*Ancillary Service Resource Responsibility Capacity for Reg-Up at Adjustment Period*—The Regulation Up Ancillary Service Resource Responsibility for the Resource *r* represented by QSE *q* at Resource Node *p* as seen in the last COP and Trades Snapshot at the end of the Adjustment Period, for the hour that includes the 15-minute Settlement Interval.
HNSADJ $_{q, r, p}$	MW	*Ancillary Service Resource Responsibility Capacity for Non-Spin at Adjustment Period*—The Non-Spin Ancillary Service Resource Responsibility for the Resource *r* represented by QSE *q* at Resource Node *p* as seen in the last COP and Trades Snapshot at the end of the Adjustment Period, for the hour that includes the 15-minute Settlement Interval.