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| NOGRR Number | [253](https://www.ercot.com/mktrules/issues/NOGRR253) | NOGRR Title | Related to NPRR1178, Expectations for Resources Providing ERCOT Contingency Reserve Service |
| Date of Decision | June 20, 2023 |
| Action | Recommended Approval |
| Timeline  | Urgent - to align the Nodal Operating Guide with the Protocols as quickly as possible regarding ERCOT Contingency Reserve Service (ECRS) and Non-Spinning Reserve (Non-Spin). |
| Proposed Effective Date | Upon implementation of Nodal Protocol Revision Request (NPRR) 1178, Expectations for Resources Providing ERCOT Contingency Reserve Service |
| Priority and Rank Assigned | Not applicable |
| Nodal Operating Guide Sections Requiring Revision  | 2.3, Ancillary Services2.3.2.1, Additional Operational Details for Non-Spinning Reserve Service Providers2.3.3.1, Additional Operational Details for ERCOT Contingency Reserve Service (ECRS) Providers4.8.1, Responsive Reserve Service Manual Deployment4.8.2, Responsive Reserve Service Manual Recall |
| Related Documents Requiring Revision/Related Revision Requests | NPRR1178 |
| Revision Description | This Nodal Operating Guide Revision Request (NOGRR) aligns the Nodal Operating Guide language regarding ECRS and Non-Spin with the revisions proposed in NPRR1178, as well as the Protocol language approved in NPRR1096, Require Sustained Two-Hour Capability for ECRS and Four-Hour Capability for Non-Spin.This NOGRR also clarifies that ERCOT may manually deploy Load Resources other than Controllable Load Resources that are providing ECRS or Responsive Reserve (RRS) to maintain a minimum 500 MWs of Physical Responsive Capability (PRC) reserves on Security Constrained Economic Dispatch (SCED)-dispatchable Resources to continuously balance the Demand with supply while maintaining the stable grid frequency for smaller disturbances. |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](https://www.ercot.com/files/docs/2018/12/13/ERCOT_Strategic_Plan_2019-2023.pdf) or directed by the ERCOT Board). Market efficiencies or enhancements Administrative Regulatory requirements Other: (explain)*(please select all that apply)* |
| Business Case | This NOGRR aligns the Nodal Operating Guide with revisions to Ancillary Services approved in NPRR1096.Upon implementation of ECRS, Load Resources other than Controllable Load Resources are able to provide ECRS and RRS either individually or simultaneously. During conditions that lead to a manual deployment of RRS, and ERCOT deploys Load Resources other than Controllable Load Resources per Section 4.8.1 this NOGRR clarifies that ERCOT may deploy Load Resources other than Controllable Load Resources that are providing both ECRS and RRS using the approach outlined in paragraph (2) in Nodal Protocol Section 6.5.9.4.2, EEA Levels. |
| ROS Decision | On 5/4/23, ROS voted unanimously to grant NOGRR253 Urgent status; to recommend approval of NOGRR253 as submitted; and to forward to TAC NOGRR253 and the 5/3/23 Impact Analysis. All Market Segments participated in the vote.  |
| Summary of ROS Discussion | On 5/4/23, ERCOT Staff provided an overview of NOGRR253 and the justification for Urgent status.  |
| TAC Decision | On 5/23/23, TAC voted to recommend approval of NOGRR253 as recommended by ROS in the 5/4/23 ROS Report. There was one abstention from the Independent Generator (Luminant) Market Segment. All Market Segments participated in the vote. |
| Summary of TAC Discussion | On 5/23/23, TAC reviewed the ERCOT Opinion, ERCOT Market Impact Statement, and Independent Market Monitor (IMM) Opinion for NOGRR253. |
| ERCOT Board Decision | On 6/20/23, the ERCOT Board voted unanimously to recommend approval of NOGRR253 as recommended by TAC in the 5/23/23 TAC Report. |

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| **Opinions** |
| Credit Review | Not applicable |
| Independent Market Monitor Opinion | IMM has no opinion on NOGRR253. |
| ERCOT Opinion | ERCOT supports approval of NOGRR253. |
| ERCOT Market Impact Statement | ERCOT Staff has reviewed NOGRR253 and believes the market impact for NOGRR253 clarifies and aligns the Nodal Operating Guide with the Protocols and expectations for Resources providing ECRS. |

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| Sponsor |
| Name | Nitika Mago |
| E-mail Address | Nitika.Mago@ercot.com |
| Company | ERCOT |
| Phone Number | 512-248-6601 |
| Cell Number | 512-689-1360 |
| Market Segment | Not Applicable |

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

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| **Comments Received** |
| Comment Author | **Comment Summary** |
| None |  |

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| **Market Rules Notes** |

Please note the baseline language in the following Section(s) has been updated to reflect the incorporation of the following NOGRR(s) into the Nodal Operating Guide:

* NOGRR187, Related to NPRR863, Creation of ERCOT Contingency Reserve Service and Revisions to Responsive Reserve (unboxed 6/9/23)
	+ Section 2.3
	+ Section 2.3.3.1
	+ Section 4.8.1

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| Proposed Guide Language Revision |

**2.3** **Ancillary Services**

(1) The types of Ancillary Services required by ERCOT are described below:

| **ANCILLARY SERVICE TYPE** | **DESCRIPTION** | **ERCOT AUTHORITY ACTION** |
| --- | --- | --- |
| Regulation Down Service (Reg-Down)andRegulation Up Service (Reg-Up)(for Generation Resources and Energy Storage Resources (ESRs))***Reference: Protocol Section 2, Definitions and Acronyms*** | Resource capacity provided by a Qualified Scheduling Entity (QSE) from a specific Generation Resource or ESR to control frequency within the system which is controlled second by second, normally by an Automatic Generation Control (AGC) system. | a. Reg-Down energy is a deployment to increase or decrease generation at a level below the Generation Resource’s or ESR’s Base Point in response to a change in system frequency.b. Reg-Up energy is a deployment to increase or decrease generation at a level above the Generation Resource’s or ESR’s Base Point in response to a change in system frequency. |
| Reg-DownandReg-Up(for Load Resource)***Reference: Protocol Section 2*** | Load Resource capacity provided by a QSE from a specific Load Resource to control frequency within the system. | a. Reg-Down is a deployment to increase or decrease Load as deployed within its Ancillary Service Schedule for Reg-Down below the Load Resource’s Maximum Power Consumption (MPC) limit in response to a change in system frequency.b. Reg-Up is a deployment to increase or decrease Load as deployed within its Ancillary Service Schedule for Reg-Up above the Load Resource’s Low Power Consumption (LPC) limit in response to a change in system frequency. |
| Responsive Reserve (RRS) ***Reference: Protocol Section******2*** | Operating reserves on Generation Resources, ESRs, Load Resources, and Resources capable of providing Fast Frequency Response (FFR) maintained by ERCOT to help control the frequency of the system. RRS on Generation Resources, ESRs, and Controllable Load can be used as energy during an Energy Emergency Alert (EEA) event. | RRS may only be deployed as follows:a. Through automatic Governor action or under-frequency relay in response to frequency deviations; b. By electronic signal from ERCOT in response to the need; andc. As ordered by an ERCOT Operator during an EEA or other emergencies. |
| ERCOT Contingency Reserve Service (ECRS)***Reference: Protocol Section******2*** | a. Off-Line Generation Resource capacity, or reserved capacity from On-Line Generation Resources, capable of being ramped to a specified output level within ten minutes, operating at a specified output for at least two consecutive hours, and are dispatchable by SCED.b. Controllable Load Resources dispatchable by SCED that are capable of ramping to an ERCOT-instructed consumption level within ten minutes and consuming at the ERCOT-instructed level for at least two consecutive hours.c. Load Resources that are not Controllable Load Resources and may or may not be controlled by under-frequency relay. Load Resources that are not Controllable Load Resources providing ECRS must be capable of reducing Load in response to an Extensible Markup Language (XML) Dispatch Instruction within ten minutes and remain deployed until recalled by ERCOT. | Deployed in response to loss-of-Resource contingencies, Load forecasting error, or other contingency events on the system. See Protocol Section 6.5.7.6.2.4, Deployment and Recall of ERCOT Contingency Reserve Service. |
| Non-Spinning Reserve (Non-Spin) Service***Reference: Protocol Section 2*** | a. Off-Line Generation Resource or ESR capacity, or reserved capacity from On-Line Generation Resources or ESRs, capable of being ramped to a specified output level within 30 minutes and operating at a specified output for at least four consecutive hours. b. Controllable Load Resources that are capable of ramping to an ERCOT-instructed consumption level within 30 minutes and consuming at the ERCOT-instructed level for at least four consecutive hours.c. Load Resources that are not Controllable Load Resources and that are not controlled by under-frequency relay. Load Resources that are not Controllable Load Resources providing Non-Spin must be capable of reducing Load in response to an Extensible Markup Language (XML) Dispatch Instruction within 30 minutes and remain deployed until recalled by ERCOT. | Deployed in response to loss-of-Resource contingencies, Load forecasting error, or other contingency events on the system. See Protocol Section 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment. |
| Voltage Support Service (VSS)***Reference: Protocol Section* *3.15, Voltage Support*** | Reactive capability of a Generation Resource that is required to maintain transmission and distribution voltages on the ERCOT Transmission Grid within acceptable limits. All Generation Resources with a gross rating greater than 20 MVA shall provide VSS. | Direct the scheduling of VSS by providing Voltage Profiles at the Point of Interconnection Bus (POIB). The Generation Resource is obligated to maintain the published Voltage Profile within its Corrected Unit Reactive Limit (CURL). |
| Black Start Service (BSS)***Reference: Protocol Section* *3.14.2, Black Start*** | The provision of Generation Resources under a Black Start Agreement, which are capable of self-starting without support from within ERCOT in the event of a Partial Blackout or Blackout. | Provide emergency Dispatch Instructions to begin restoration to a secure operating state after a Partial Blackout or Blackout. |
| Reliability Must-Run (RMR) Service***Reference: Protocol Section* *3.14.1, Reliability Must Run*** | The provision of Generation Resource capacity and energy under an RMR Agreement. | Enter into contractual agreements to retain units required for reliable operations. Direct the operation of those units that otherwise would not operate and that are necessary to provide reliable operations. |

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| ***[NOGRR204 and NOGRR211: Replace applicable portions of paragraph (1) above with the following upon system implementation of NPRR989 or NPRR1007, respectively:]***(1) The types of Ancillary Services required by ERCOT are described below:

| **ANCILLARY SERVICE TYPE** | **DESCRIPTION** | **ERCOT AUTHORITY ACTION** |
| --- | --- | --- |
| Regulation Down Service (Reg-Down)andRegulation Up Service (Reg-Up)(for Generation Resources and Energy Storage Resources (ESRs))***Reference: Protocol Section******2, Definitions and Acronyms*** | Resource capacity provided by a Qualified Scheduling Entity (QSE) from a specific Generation Resource or ESR to control frequency within the system which is controlled second by second, normally by an Automatic Generation Control (AGC) system. | a. Reg-Down energy is a Resource-specific deployment to increase or decrease generation at a level below the Generation Resource’s or ESR’s Base Point in response to a change in system frequency.b. Reg-Up energy is a Resource-specific deployment to increase or decrease generation at a level above the Generation Resource’s or ESR’s Base Point in response to a change in system frequency. |
| Reg-DownandReg-Up(for Load Resource)***Reference: Protocol Section******2*** | Load Resource capacity provided by a QSE from a specific Load Resource to control frequency within the system. | a. Reg-Down is a Resource-specific deployment to increase or decrease Load below the Load Resource’s Maximum Power Consumption (MPC) limit in response to a change in system frequency.b. Reg-Up is a Resource-specific deployment to increase or decrease Load above the Load Resource’s Low Power Consumption (LPC) limit in response to a change in system frequency. |
| Responsive Reserve (RRS) ***Reference: Protocol Section******2*** | Operating reserves on Generation Resources, ESRs, Load Resources, and Resources capable of providing Fast Frequency Response (FFR) maintained by ERCOT to help control the frequency of the system. RRS on Generation Resources, ESRs, and Controllable Load can be used as energy during an Energy Emergency Alert (EEA) event. | RRS may only be deployed as follows:a. Through automatic Governor action or under-frequency relay in response to frequency deviations; b. By electronic signal from ERCOT in response to the need; andc. As ordered by an ERCOT Operator during an EEA or other emergencies. |
| ERCOT Contingency Reserve Service (ECRS)***Reference: Protocol Section******2*** | a. Off-Line Generation Resource or ESR capacity, or reserved capacity from On-Line Generation Resources or ESRs, capable of being ramped to a specified output level within ten minutes and operating at a specified output for at least two consecutive hours.b. Controllable Load Resources dispatchable by SCED that are capable of ramping to an ERCOT-instructed consumption level within ten minutes and consuming at the ERCOT-instructed level for at least two consecutive hours.c. Load Resources that are not Controllable Load Resources and may or may not be controlled by under-frequency relay. Load Resources that are not Controllable Load Resources providing ECRS must be capable of reducing Load in response to an Extensible Markup Language (XML) Dispatch Instruction within ten minutes and remain deployed until recalled by ERCOT. | Deployed in response to loss-of-Resource contingencies, Load forecasting error, or other contingency events on the system. See Protocol Section 6.5.7.6.2.4, Deployment and Recall of ERCOT Contingency Reserve Service. |
| Non-Spinning Reserve (Non-Spin) Service***Reference: Protocol Section 2*** | a. Off-Line Generation Resource or ESR capacity, or reserved capacity from On-Line Generation Resources or ESRs, capable of being ramped to a specified output level within 30 minutes and operating at a specified output for at least four consecutive hours. b. Controllable Load Resources that are capable of ramping to an ERCOT-instructed consumption level within 30 minutes and consuming at the ERCOT-instructed level for at least four consecutive hours.c. Load Resources that are not Controllable Load Resources and that are not controlled by under-frequency relay. Load Resources that are not Controllable Load Resources providing Non-Spin must be capable of reducing Load in response to an Extensible Markup Language (XML) Dispatch Instruction within 30 minutes and remain deployed until recalled by ERCOT. | Deployed in response to loss-of-Resource contingencies, Load forecasting error, or other contingency events on the system. See Protocol Section 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment. |
| Voltage Support Service (VSS)***Reference: Protocol Section* *3.15, Voltage Support*** | Reactive capability of a Generation Resource or ESR that is required to maintain transmission and distribution voltages on the ERCOT Transmission Grid within acceptable limits. All Generation Resources and ESRs with a gross rating greater than 20 MVA shall provide VSS. | Direct the scheduling of VSS by providing Voltage Profiles at the Point of Interconnection Bus (POIB). The Generation Resource or ESR is obligated to maintain the published Voltage Profile within its Corrected Unit Reactive Limit (CURL). |
| Black Start Service (BSS)***Reference: Protocol Section* *3.14.2, Black Start*** | The provision of Generation Resources under a Black Start Agreement, which are capable of self-starting without support from within ERCOT in the event of a Partial Blackout or Blackout. | Provide emergency Dispatch Instructions to begin restoration to a secure operating state after a Partial Blackout or Blackout. |
| Reliability Must-Run (RMR) Service***Reference: Protocol Section* *3.14.1, Reliability Must Run*** | The provision of Generation Resource capacity and energy under an RMR Agreement. | Enter into contractual agreements to retain units required for reliable operations. Direct the operation of those units that otherwise would not operate and that are necessary to provide reliable operations. |

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2.3.2.1 Additional Operational Details for Non-Spinning Reserve Service Providers

(1) Non-Spin Service Generation Resource providers must be capable of being synchronized and ramped to a specified output level within 30 minutes of notification of deployment and run at a specified output level for at least four consecutive hours, as specified in item (1)(a) of Protocol Section 3.17.3, Non-Spinning Reserve Service.

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| [NOGRR211: Replace paragraph (1) above with the following upon system implementation of NPRR1007:](1) Non-Spin Service Generation Resource providers, including MW from power augmentation, must be capable of being synchronized and ramped to a specified output level within 30 minutes of notification of deployment and run at a specified output level for at least four consecutive hours, as specified in item (1)(a) of Protocol Section 3.17.3, Non-Spinning Reserve Service. |

(2) Non-Spin Controllable Load Resource providers must be capable of ramping to an ERCOT-instructed consumption level within 30 minutes and consuming at the ERCOT-instructed level for at least four consecutive hours, as specified in item (1)(b) of Protocol Section 3.17.3.

(3) A Load Resource that is not a Controllable Load Resource providing Non-Spin must be capable of reducing Load based on an XML Dispatch Instruction issued by ERCOT within 30 minutes and maintaining that deployment until recalled.

(4) To become provisionally qualified as a provider of Non-Spin, a Load Resource shall complete the following requirements:

(a) Register as a Load Resource with ERCOT;

(b) Complete asset registration of the Load Resource;

(c) Provide ERCOT the appropriate Non-Spinning Load affidavit;

(d) Test to verify appropriate voice communications are in place for VDIs by ERCOT;

(e) Provide telemetry through the QSE to ERCOT in accordance with all applicable requirements set forth in paragraph (5) of Protocol Section 6.5.5.2, Operational Data Requirements; and

(f) Be able to consume at an ERCOT-instructed level during an ERCOT deployment based on the applicable duration requirements specified in Section 2.3, Ancillary Services.

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| [NOGRR211: Replace applicable portions of paragraph (4) above with the following upon system implementation of NPRR1007:](4) To become provisionally qualified as a provider of Non-Spin, a Load Resource shall complete the following requirements:(a) Register as a Load Resource with ERCOT;(b) Complete asset registration of the Load Resource;(c) Provide ERCOT the appropriate Non-Spinning Load affidavit;(d) Test to verify appropriate voice communications are in place for VDIs by ERCOT;(e) Provide telemetry through the QSE to ERCOT in accordance with all applicable requirements set forth in paragraph (5) of Protocol Section 6.5.5.2, Operational Data Requirements; and(f) Be able to consume at an ERCOT-instructed level during an ERCOT deployment based on the applicable duration requirements specified in Section 2.3, Ancillary Services. |

(5) To become and remain fully qualified as a provider of Non-Spin, the Load Resource shall complete all the requirements for provisional qualification identified above and the following:

(a) Respond successfully to an actual ERCOT deployment or pass simulated or actual testing according to ERCOT’s Procedure; and

(b) Perform verification testing as described in Section 8, Attachment G, Load Resource Tests.

2.3.3.1 Additional Operational Details for ERCOT Contingency Reserve Service (ECRS) Providers

(1) Generation Resources providing ECRS must be capable of being synchronized and ramped to a specified output level within ten minutes of notification of deployment and run at a specified output level for the entire duration of its ECRS obligation.

(2) Controllable Load Resource providing ECRS must be capable of ramping to an ERCOT-instructed consumption level within ten minutes and consuming at the ERCOT-instructed level for the entire duration of its ECRS obligation.

(3) To become provisionally qualified as a provider of ECRS, a Controllable Load Resource shall complete the following requirements:

(a) Register as a Controllable Load Resource with ERCOT;

(b) Provide ERCOT the ECRS Load affidavit;

(c) Test to verify primary and alternative voice communications are in place for VDIs by ERCOT;

(d) Provide telemetry through the QSE to ERCOT in accordance with all applicable requirements set forth in paragraph (5) of Protocol Section 6.5.5.2, Operational Data Requirements; and

(e) Be able to maintain consumption at an ERCOT-instructed level during an ERCOT-instructed test for the entire duration of the test period.

(4) To become and remain fully qualified as a provider of ECRS, the Controllable Load Resource shall complete all the requirements for provisional qualification identified above and the following:

(a) Respond successfully to an actual ERCOT deployment or pass actual testing according to ERCOT’s Procedure; and

(b) Perform verification testing as described in Section 8, Attachment G, Load Resource Tests.

(5) The total amount of ECRS that Load Resources other than Controllable Load Resources may provide shall not exceed 50% of the total ERCOT-wide ECRS requirement. A Load Resource must be loaded and capable of unloading the scheduled amount of ECRS within ten minutes of instruction by ERCOT or be interrupted by action of under-frequency relays.

(a) Load Resources that are providing ECRS are not required to be controlled by high-set under-frequency relays.

(b) Load Resources controlled by high-set under-frequency relays and providing ECRS shall meet the relay setting requirement stated in paragraph (6) of Section 2.3.1.2, Additional Operational Details for Responsive Reserve Providers.

(6) ERCOT shall deploy ECRS to meet NERC Reliability Standards and other performance criteria as specified in these Operating Guides and the Protocols by one or more of the following:

(a) Automatic Dispatch Instruction signal to release ECRS capacity from Generation Resources and Controllable Load Resources to SCED; and/or

(b) Dispatch Instruction for deployment of Load Resources energy via electronic Messaging System.

(7) ERCOT shall release ECRS from Generation Resources and Controllable Load Resources to SCED when frequency drops below 59.91 Hz and available Reg-Up alone is not sufficient to restore frequency. ERCOT shall recall automatically deployed ECRS capacity once system frequency recovers above 59.97 Hz.

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| [NOGRR211: Replace Section 2.3.3.1 above with the following upon system implementation of NPRR1007:]2.3.3.1 Additional Operational Details for ERCOT Contingency Reserve Service (ECRS) Providers (1) Generation Resources providing ECRS must be capable of being synchronized and ramped to a specified output level within ten minutes of notification of deployment and run at a specified output level for at least two consecutive hours.(2) Controllable Load Resource providing ECRS must be capable of ramping to an ERCOT-instructed consumption level within ten minutes and consuming at the ERCOT-instructed level for at least two consecutive hours. (3) To become provisionally qualified as a provider of ECRS, a Controllable Load Resource shall complete the following requirements:(a) Register as a Controllable Load Resource with ERCOT;(b) Provide ERCOT the ECRS Load affidavit;(c) Test to verify primary and alternative voice communications are in place for VDIs by ERCOT;(d) Provide telemetry through the QSE to ERCOT in accordance with all applicable requirements set forth in paragraph (5) of Protocol Section 6.5.5.2, Operational Data Requirements; and(e) Be able to maintain consumption at an ERCOT-instructed level during an ERCOT-instructed test for the entire duration of the test period.(4) To become and remain fully qualified as a provider of ECRS, the Controllable Load Resource shall complete all the requirements for provisional qualification identified above and the following:(a) Respond successfully to an actual ERCOT deployment or pass actual testing according to ERCOT’s Procedure; and(b) Perform verification testing as described in Section 8, Attachment G, Load Resource Tests.(5) The total amount of ECRS that Load Resources other than Controllable Load Resources may provide shall not exceed 50% of the total ERCOT-wide ECRS requirement. A Load Resource must be loaded and capable of unloading the scheduled amount of ECRS within ten minutes of instruction by ERCOT or be interrupted by action of under-frequency relays.(a) Load Resources that are providing ECRS are not required to be controlled by high-set under-frequency relays.(b) Load Resources controlled by high-set under-frequency relays and providing ECRS shall meet the relay setting requirement stated in paragraph (6) of Section 2.3.1.2, Additional Operational Details for Responsive Reserve Providers. (6) ERCOT shall deploy ECRS to meet NERC Reliability Standards and other performance criteria as specified in these Operating Guides and the Protocols by Dispatch Instruction for ECRS through Inter-Control Center Communications Protocol (ICCP) to a QSE representing a Generation Resource in synchronous condenser fast-response mode that is responding to a Frequency Measurable Event (FME) at or below the frequency set point specified in paragraph (3)(b) of Protocol Section 3.18, or under manual deployment when system frequency does not go below the frequency set point specified in paragraph (3)(b) of Protocol Section 3.18. Dispatch Instructions under this section shall only occur during scarcity conditions, as specified in Protocol Section 6.5.9.4.2, EEA Levels, or in an attempt to recover frequency to meet NERC Standards; and/or Dispatch Instruction for deployment of Load Resources energy via electronic Messaging System. |

4.8.1 Responsive Reserve Service Manual Deployment

(1) RRS for capacity may be manually deployed (HASL released) when the system approaches scarcity conditions so that the capacity reserved behind HASL will be released to SCED.

(a) When HASL – (Gen + 5 minute load ramp) <= 200 MW, ERCOT may deploy a portion of the available RRS capacity from Generation Resources, Energy Storage Resources (ESRs), and Controllable Load Resources after all the available ECRS (dispatchable by SCED) and Non-Spinning Reserve (Non-Spin) service has been deployed and Resources have responded to any earlier deployments.

(b) When HSL – (Gen + 5 minute load ramp) <= 500 MW, ERCOT may deploy Load Resources that are not Controllable Load Resources and that are providing ECRS or RRS.

4.8.2 Responsive Reserve Service Manual Recall

1. The manual deployment of RRS for capacity from Generation Resources, ESRs, and Controllable Load Resources may be recalled when HASL – (Gen + 5 minute load ramp) > 1,600 MW and/or PRC >= 3,300 MW.

(2) The operator will consider system conditions and Ancillary Services in releasing or recalling RRS. System frequency, load ramp, and factors such as Regulation Up Service (Reg-Up) versus Regulation Down Service (Reg-Down) deployment status will be considered.