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<p>ERCOT Contingency Reserve Service (ECRS)</p> <p><i>Reference: Protocol Section 2</i></p>	<p>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, and operating at a specified output for <u>at least two consecutive hours, the entire duration of the ECRS obligation</u> and are dispatchable by SCED.</p> <p>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 <u>at least two consecutive hours, the entire duration of the ECRS obligation</u>.</p> <p>c. <u>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. Load Resources other than Controllable Load Resources that may or may not be controlled by under-frequency relay that are capable of interrupting within ten minutes at ERCOT instruction for the entire duration of the ECRS obligation.</u></p>	<p>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.</p>
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ANCILLARY SERVICE TYPE	DESCRIPTION	ERCOT AUTHORITY ACTION
<p>Non-Spinning Reserve (Non-Spin) Service</p> <p><i>Reference: Protocol Section 2</i></p>	<p>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 <u>at least four consecutive hours</u>the entire duration of the Non-Spin obligation.</p> <p>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 <u>at least four consecutive hours</u>the entire duration of the Non-Spin obligation.</p> <p>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.</p>	<p>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.</p>

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ANCILLARY SERVICE TYPE	DESCRIPTION	ERCOT AUTHORITY ACTION
Voltage Support Service (VSS) <i>Reference: Protocol Section 3.15, Voltage Support</i>	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) <i>Reference: Protocol Section 3.14.2, Black Start</i>	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 <i>Reference: Protocol Section 3.14.1, Reliability Must Run</i>	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.

[NOGRR204 and NOGRR211: Replace applicable portions of paragraph (1) above with the following upon system implementation of NPRR989 or NPRR1007, respectively:]

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

ANCILLARY SERVICE TYPE	DESCRIPTION	ERCOT AUTHORITY ACTION
<p>Regulation Down Service (Reg-Down) and Regulation Up Service (Reg-Up) (for Generation Resources and Energy Storage Resources (ESRs))</p> <p><i>Reference: Protocol Section 2, Definitions and Acronyms</i></p>	<p>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.</p>	<p>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.</p> <p>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.</p>
<p>Reg-Down and Reg-Up (for Load Resource)</p> <p><i>Reference: Protocol Section 2</i></p>	<p>Load Resource capacity provided by a QSE from a specific Load Resource to control frequency within the system.</p>	<p>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.</p> <p>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.</p>
<p>Responsive Reserve (RRS)</p> <p><i>Reference: Protocol Section 2</i></p>	<p>Operating reserves on Generation Resources, ESRs, Load Resources, and Resources capable of providing Fast Frequency Response (FFR)</p>	<p>RRS may only be deployed as follows:</p> <p>a. Through automatic Governor action or under-</p>

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	<p>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.</p>	<p>frequency relay in response to frequency deviations;</p> <p>b. By electronic signal from ERCOT in response to the need; and</p> <p>c. As ordered by an ERCOT Operator during an EEA or other emergencies.</p>
<p>ERCOT Contingency Reserve Service (ECRS)</p> <p><i>Reference: Protocol Section 2</i></p>	<p>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 <u>two consecutive</u> one hours.</p> <p>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 <u>two consecutive</u> one hours.</p> <p>c. <u>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</u></p>	<p>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.</p>

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	<p><u>ERCOT Load Resources other than Controllable Load Resources that may or may not be controlled by under-frequency relay that are capable of interrupting within ten minutes at ERCOT instruction for at least one hour.</u></p>	
<p>Non-Spinning Reserve (Non-Spin) Service</p> <p><i>Reference: Protocol Section 2</i></p>	<p>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 <u>four consecutive</u> one hours.</p> <p>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 <u>four consecutive</u> one hours.</p> <p>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</p>	<p>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.</p>

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	deployed until recalled by ERCOT.	
Voltage Support Service (VSS) <i>Reference: Protocol Section 3.15, Voltage Support</i>	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) <i>Reference: Protocol Section 3.14.2, Black Start</i>	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 <i>Reference: Protocol Section 3.14.1, Reliability Must Run</i>	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.

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~~one~~ hours, as specified in item (1)(a) of Protocol Section 3.17.3, Non-Spinning Reserve Service.

[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

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level for at least four consecutive ~~one~~ 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 ~~one~~ 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 ~~for a minimum of one hour up to a maximum of the hours of service responsibility.~~

[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;

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- (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~~for a minimum of one hour.~~

- (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

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- (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.

[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

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(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~~one~~ 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~~one~~ 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

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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 $HASL - (Gen + 5 \text{ minute load ramp}) \leq 200 \text{ MW}$, ERCOT may deploy a portion of the available RRS capacity from Generation Resources, Energy Storage Resources (ESRs), and Controllable Load Resources ~~in~~ 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 $HSL - (Gen + 5 \text{ minute load ramp}) \leq 500 \text{ MW}$, ERCOT may deploy Load Resources that are not Controllable Load Resources and that are controlled by high set under frequency relays 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 $HASL - (Gen + 5 \text{ minute load ramp}) > 1,600 \text{ MW}$ and/or $PRC \geq 3,300 \text{ MW}$.
- (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.

ERCOT Impact Analysis Report

NOGRR Number	<u>253</u>	NOGRR Title	Related to NPPR1178, Expectations for Resources Providing ERCOT Contingency Reserve Service
Impact Analysis Date	May 3, 2023		
Estimated Cost/Budgetary Impact	None.		
Estimated Time Requirements	No project required. This Nodal Operating Guide Revision Request (NOGRR) can take effect upon implementation of Nodal Protocol Revision Request (NPPR) 1178.		
ERCOT Staffing Impacts (across all areas)	Ongoing Requirements: No impacts to ERCOT staffing.		
ERCOT Computer System Impacts	No impacts to ERCOT computer systems.		
ERCOT Business Function Impacts	No impacts to ERCOT business functions.		
Grid Operations & Practices Impacts	No impacts to ERCOT grid operations and practices.		

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation

None offered.

Comments

There are no additional impacts to this NOGRR beyond what was captured in the Impact Analysis for NPPR1178.