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| NPRR Number | [1096](http://www.ercot.com/mktrules/issues/NPRR1096) | NPRR Title | Require Sustained Six Hour Capability for ECRS and Non-Spin |
| Date Posted | September 28, 2021 |
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| Requested Resolution  | Normal |
| Nodal Protocol Sections Requiring Revision  | 2.1, Definitions3.17.3, Non-Spinning Reserve Service3.17.4, ERCOT Contingency Reserve Service8.1.1.2, General Capacity Testing Requirements 8.1.1.3.3, Non-Spinning Reserve Capacity Monitoring Criteria |
| Related Documents Requiring Revision/Related Revision Requests | None |
| Revision Description | This Nodal Protocol Revision Request (NPRR) requires Resources that provide ERCOT Contingency Reserve Service (ECRS) and/or Non-Spinning Reserve (Non-Spin) to limit their responsibility to a quantity of capacity that is capable of being sustained for six consecutive hours. Additionally, this NPRR also requires ERCOT to conduct unannounced tests on Energy Storage Resources (ESRs) that are providing ECRS and/or Non-Spin in Real-Time. |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/wcm/lists/144926/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 | ECRS and Non-Spin are intended to be relied upon during low frequency events to restore Responsive Reserve (RRS) and reduce the burden on Regulation Up Service (Reg-Up) by restoring frequency to its scheduled value. Deployment of ECRS and/or Non-Spin is typically expected during system events that are driven by sustained ramps in net Load. This NPRR proposes that the Resources that provide ECRS and Non-Spin provide it using capacity that it is capable of being sustained for six consecutive hours. Note that, with this change, ERCOT will allow a 300 MW - 600 MWh battery to provide up to 100 MW of its capacity as Non-Spin if it can demonstrate that it can sustain an energy deployment at this level for six hours.When Real-Time Co-optimization (RTC) is implemented, ERCOT proposes to reassess if the six-hour duration requirement for ECRS and Non-Spin can be lowered.In addition, based on stakeholder discussions, future design changes to Day-Ahead Market (DAM), Reliability Unit Commitment (RUC), and RTC clearing engines to consider state of charge for ESRs will also lead to a reassessment of the proposed six-hour duration requirement for ECRS and Non-Spin. |

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| Market Segment | Not applicable |

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| **Market Rules Notes** |

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

* NPRR1093, Load Resource Participation in Non-Spinning Reserve
	+ Section 3.17.3

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| Proposed Protocol Language Revision |

## 2.1 DEFINITIONS

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| [NPRR863: Insert the following definition “ERCOT Contingency Reserve Service (ECRS)” upon system implementation:]**ERCOT Contingency Reserve Service (ECRS)** An Ancillary Service that provides operating reserves that is intended to: (a) Restore Responsive Reserve (RRS) within ten minutes of a frequency deviation that results in significant depletion of RRS by restoring frequency to its scheduled value to return the system to normal; (b) Provide energy or continued Load interruption to avoid or during the implementation of an Energy Emergency Alert (EEA); (c) Provide backup regulation; and(d) Be sustained at a specified level for six consecutive hours. |

Non-Spinning Reserve (Non-Spin)

An Ancillary Service that is provided through use of the part of Off-Line Generation Resources that can be synchronized and ramped to a specified output level within 30 minutes (or Load Resources that can be interrupted within 30 minutes) and that can operate (or Load Resources that can be interrupted) at a specified output level for at least six consecutive hours. Non-Spin may also be provided from unloaded On-Line capacity that meets the 30-minute response requirements, that is reserved exclusively for use for this service and that can be sustained at a specified level for at least six consecutive hours.

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 six consecutive hours; or

(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 six consecutive hours.

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

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| ***[NPRR863: Insert Section 3.17.4 below upon system implementation:]******3.17.4 ERCOT Contingency Reserve Service*** (1) ERCOT Contingency Reserve Service (ECRS) is a service that is provided using capacity that can be sustained at a specified level for six consecutive hours and is used to restore or maintain the frequency of the ERCOT System:(a) In response to significant depletion of RRS;(b) As backup Regulation Service; and(c) By providing energy to avoid getting into or during an Energy Emergency Alert (EEA).(2) ECRS may be provided through one or more of the following means: (a) From On-Line or Off-Line Resources as prescribed in the Operating Guides following a significant frequency deviation in the ERCOT System; and(b) Either manually or by using a four-second signal to provide energy on deployment by ERCOT.(3) ECRS may be used to provide energy prior to or during the implementation of an EEA. ECRS provides Resource capacity, or capacity from interruptible Load available for deployment on ten minutes’ notice. (4) ECRS may be provided by: (a) Unloaded, On-Line Generation Resource capacity; (b) Quick Start Generation Resources (QSGRs); (c) Load Resources that may or may not be controlled by high-set, under-frequency relays; (d) Controllable Load Resources; and(e) Generation Resources operating in synchronous condenser fast-response mode as defined in the Operating Guides. |

8.1.1.2 General Capacity Testing Requirements

(1) Within the first 15 days of each Season, each QSE shall provide ERCOT a Seasonal HSL for any Generation Resource with a capacity greater than ten MW that will be operated during that Season. ERCOT shall provide an appropriate form for QSEs to submit their Seasonal HSL data. The Seasonal HSL form shall take into account auxiliary Load and gross and net real power capability of the Generation Resource. Each QSE shall update its COP and telemetry, as necessary, to reflect the HSL of each of its Generation Resources in a given operating interval as well as other operational limitations. The HSL shown in the COP for a Generation Resource may not be ramp rate-limited while the Real-Time telemetered value of HSL for the Generation Resource may be ramp rate-limited by the QSE representing the Generation Resource in order for the Generation Resource to meet its HSL using the testing process described in paragraph (2) below.

(2) To verify that the HSL reported by telemetry is achievable, ERCOT may, at its discretion, conduct an unannounced Generation Resource test. At a time determined solely by ERCOT, ERCOT will issue a Verbal Dispatch Instruction (VDI) to the QSE to operate the designated Generation Resource at its HSL as shown in the QSE’s telemetry at the time the test is initiated. The QSE shall immediately upon receiving the VDI release all Ancillary Service obligations carried by the unit to be tested and shall telemeter Resource Status as “ONTEST.” The QSE shall not be required to start the designated Generation Resource if it is not already On-Line when ERCOT announces its intent to test the Resource. If the designated Generation Resource is operating at its LSL when ERCOT sends the VDI to begin the test, the QSE shall have up to 60 minutes to allow the Resource to reach 90% of its HSL as shown by telemetry and up to an additional 20 minutes for the Resource to reach the HSL shown by telemetry at the time the test is initiated. This time requirement does not apply to nuclear-fueled Generation Resources. If the designated Generation Resource is operating between its LSL and 50% of its HSL shown by telemetry when ERCOT begins the test, the QSE shall have 60 minutes for the Resource to reach its HSL. If the Resource is operating at or above 50% of its HSL shown by telemetry when ERCOT begins the test, the QSE shall have 30 minutes for the Resource to reach its HSL. Once the designated Generation Resource reaches its HSL, the QSE shall hold it at that output level for a minimum of 30 minutes. The HSL for the designated Generation Resource shall be determined based on the Real-Time averaged MW telemetered by the Resource during the 30 minutes of constant output. After each test, the QSE representing the Generation Resource will complete and submit the test form using the Net Dependable Capability and Reactive Capability (NDCRC) application located on the Market Information System (MIS) Secure Area within two Business Days.

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| [NPRR1011: Replace paragraph (2) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:](2) To verify that the HSL reported by telemetry is achievable, ERCOT may, at its discretion, conduct an unannounced Generation Resource test. At a time determined solely by ERCOT, ERCOT will issue a Verbal Dispatch Instruction (VDI) to the QSE to operate the designated Generation Resource at its HSL as shown in the QSE’s telemetry at the time the test is initiated. Immediately upon receiving the VDI, the QSE shall telemeter Resource Status as “ONTEST.” The QSE shall not be required to start the designated Generation Resource if it is not already On-Line when ERCOT announces its intent to test the Resource. If the designated Generation Resource is operating at its LSL when ERCOT sends the VDI to begin the test, the QSE shall have up to 60 minutes to allow the Resource to reach 90% of its HSL as shown by telemetry and up to an additional 20 minutes for the Resource to reach the HSL shown by telemetry at the time the test is initiated. This time requirement does not apply to nuclear-fueled Generation Resources. If the designated Generation Resource is operating between its LSL and 50% of its HSL shown by telemetry when ERCOT begins the test, the QSE shall have 60 minutes for the Resource to reach its HSL. If the Resource is operating at or above 50% of its HSL shown by telemetry when ERCOT begins the test, the QSE shall have 30 minutes for the Resource to reach its HSL. Once the designated Generation Resource reaches its HSL, the QSE shall hold it at that output level for a minimum of 30 minutes. The HSL for the designated Generation Resource shall be determined based on the Real-Time averaged MW telemetered by the Resource during the 30 minutes of constant output. After each test, the QSE representing the Generation Resource will complete and submit the test form using the Net Dependable Capability and Reactive Capability (NDCRC) application located on the Market Information System (MIS) Secure Area within two Business Days. |

(3) ERCOT may test multiple Generation Resources within a single QSE within a single 24-hour period. However, in no case shall ERCOT test more than two Generation Resources within one QSE simultaneously. All Resources On-Line in a Combined-Cycle Configuration will be measured on an aggregate capacity basis. All QSEs associated with a jointly owned unit will be tested simultaneously. Hydro, wind, and PhotoVoltaic (PV) generation will be excluded from unannounced generation capacity testing. ERCOT shall not perform an unannounced Generation Resource test during a Watch or Energy Emergency Alert (EEA) event. If an unannounced Generation Resource test is underway when a Watch or EEA event commences, ERCOT may cancel the test.

(4) Should the designated Generation Resource fail to reach its HSL shown in its telemetry within the time frame set forth herein, the Real-Time averaged MW telemetered during the test shall be the basis for the new HSL for the designated Generation Resource for that Season. The QSE shall have the opportunity to request another test as quickly as possible (at a time determined by ERCOT) and may retest up to two times per month. The QSE may also demonstrate an increased value of HSL by operating the Generation Resource at an Output Schedule for at least 30 minutes. In order to raise an output schedule above the Seasonal HSL, the QSE may set the Resource telemetered HSL equal to its output temporarily for the purposes of the demonstration tests. After either a retest or a demonstration test, the MW capability of the Generation Resource based on the average of the MW production telemetered during the test shall be the basis for the new HSL for the designated Generation Resource for that Season. Any requested retest must take place within three Business Days after the request for retest.

(5) The telemetered value of HSL for the Generation Resource shall only be used for testing purposes as described in this Section or for system reliability calculations.

(6) A Resource Entity owning a hydro unit operating in the synchronous condenser fast response mode to provide hydro RRS shall evaluate the maximum capability of the Resource each Season.

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| [NPRR863: Replace paragraph (6) above with the following upon system implementation:](6) A Resource Entity owning a Generation Resource operating in the synchronous condenser fast response mode to provide RRS or ECRS shall evaluate the maximum capability of the Resource each Season.  |

(7) ERCOT shall maintain historical records of unannounced Generation Resource test results, using the information contained therein to adjust the Reserve Discount Factor (RDF) subject to the approval of the appropriate TAC subcommittee. ERCOT shall report to the Reliability and Operations Subcommittee (ROS) annually or as requested by ROS the aggregated results of such unannounced testing (excluding retests), including, but not limited to, the number and total capacity of Resources tested, the percentage of Resources that met or exceeded their HSL reported by telemetry, the percentage that failed to meet their HSL reported by telemetry, and the total MW capacity shortfall of those Resources that failed to meet their HSL reported by telemetry.

(8) QSEs who receive a VDI to operate the designated Generation Resource for an unannounced Generation Resource test may be considered for additional compensation under Section 6.6.9, Emergency Operations Settlement. Any unannounced Generation Resource test VDI that ERCOT issues as a result of a QSE-requested retest will not be considered for additional compensation under Section 6.6.9.

(9) All unannounced Generation Resource test VDIs will be considered as an instructed deviation for compliance purposes.

(10) Before the start of each Season, a QSE shall provide ERCOT a list identifying each Controllable Load Resource that is expected to operate in a Season as a provider of Ancillary Service. Prior to the beginning of each Season, QSEs shall identify the Controllable Load Resources to be tested during the Season and the specific week of the test if known. Any Controllable Load Resource for which the QSE desires qualification to provide Ancillary Services shall have its Net Dependable Capability verified prior to providing Ancillary Services.

(11) ERCOT shall verify the telemetry attributes of each qualified Load Resource as follows:

(a) ERCOT shall annually verify the telemetry attributes of each Load Resource providing RRS using a high-set under-frequency relay. In addition, once every two years, any Load Resource qualified to provide RRS using a high-set under-frequency relay shall test the correct operation of the under-frequency relay or the output from the solid-state switch, whichever applies. However, if a Load Resource’s performance has been verified through response to an actual event, the data from the event can be used to meet the annual telemetry verification requirement for that year and the biennial relay-testing requirement.

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| [NPRR863: Replace paragraph (a) above with the following upon system implementation:](a) ERCOT shall annually verify the telemetry attributes of each Load Resource providing RRS or ECRS using a high-set under-frequency relay. In addition, once every two years, any Load Resource qualified to provide RRS or ECRS using a high-set under-frequency relay shall test the correct operation of the under-frequency relay or the output from the solid-state switch, whichever applies. However, if a Load Resource’s performance has been verified through response to an actual event, the data from the event can be used to meet the annual telemetry verification requirement for that year and the biennial relay-testing requirement.  |

(b) ERCOT shall periodically validate the telemetry attributes of each Controllable Load Resource. In the case of an Aggregate Load Resource (ALR), ERCOT will follow the validation procedures described in the document titled “Requirements for Aggregate Load Resource Participation in the ERCOT Markets.” If a QSE fails to meet its telemetry validation requirements, ERCOT may suspend the QSE and/or the Controllable Load Resource from participation in the applicable services or markets. If disqualified pursuant to this paragraph, a QSE or Controllable Load Resource may reestablish its qualification by submitting a corrective action plan to ERCOT that identifies actions taken to correct performance deficiencies and by successfully passing a new ERCOT telemetry validation test.

(12) Telemetry values of a Load Resource may be adjusted to reflect Distribution Losses, based on the ERCOT-forecasted Distribution Loss Factors (DLFs). Load Resources may be adjusted for Distribution Losses using the same distribution loss code as assigned to the ESI ID.

(13) A specific Load Resource to be used for the first time to provide Regulation, RRS, Non-Spin or energy by following Security-Constrained Economic Dispatch (SCED) Base Points, must be tested to ERCOT’s reasonable satisfaction using actual Demand response as part of its qualification. The test must take place at a time mutually selected by the QSE representing the Load Resource and ERCOT. ERCOT shall make available its standard test document for Load Resource qualification required under this Section on the ERCOT website.

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| [NPRR863: Replace paragraph (13) above with the following upon system implementation:](13) A specific Load Resource to be used for the first time to provide Regulation, RRS, ECRS, Non-Spin or energy by following Security-Constrained Economic Dispatch (SCED) Base Points, must be tested to ERCOT’s reasonable satisfaction using actual Demand response as part of its qualification. The test must take place at a time mutually selected by the QSE representing the Load Resource and ERCOT. ERCOT shall make available its standard test document for Load Resource qualification required under this Section on the ERCOT website. |

(14) Any changes to a Load Resource including changes to its capability to provide Ancillary Service requires updates by the Load Resource to the registration information detailing the change. For Non-Opt-In Entities (NOIEs) representing specific Load Resources that are located behind the NOIE Settlement Metering points, the NOIE shall provide an alternative unique descriptor of the qualified Load Resource for ERCOT’s records.

(15) Qualification of a Resource, including a Load Resource, remains valid for that Resource in the event of a change of QSE for the Resource, provided that the new QSE demonstrates to ERCOT’s reasonable satisfaction that the new QSE has adequate communications and control capability for the Resource.

(16) For purposes of qualifying Quick Start Generation Resources (QSGRs), ERCOT shall issue a unit-specific VDI for the MW amount that the QSE is requesting to qualify its QSGR to provide. The QSE shall telemeter an ONTEST Resource Status. The QSGR will only be qualified to provide an amount not to exceed the observed output at the end of a ten-minute test period.

(17) ERCOT may revoke the QSGR qualification of any QSGR for failure to comply with the following performance standard:

(a) A QSGR, available for deployment by SCED, is deemed to have failed to start for the purpose of this performance measure if the QSGR fails to achieve at least 90% of the minimum ERCOT SCED Base Point, including zero Base Points, within ten minutes of the initial ERCOT SCED Base Point that dispatched the QSGR above zero MW output.

(b) ERCOT may revoke a QSGR’s qualification if within a rolling 90-day period the number of QSGR failures to start, as determined by paragraph (a) above, exceeds the higher of three failures or 10% of the number of quick start mode startups made in response to SCED deployments.

(18) If disqualified pursuant to paragraph (17) above, a QSGR may reestablish its QSGR qualification by submitting a corrective action plan to ERCOT that identifies actions taken to correct performance deficiencies and by successfully passing a new ERCOT QSGR test.

(19) If an Energy Storage Resource (ESR) is telemetering a non-zero ECRS Ancillary Service Responsibility or non-zero Non-Spin Ancillary Service Responsibility, to verify that the Ancillary Service Responsibility reported by telemetry is achievable, ERCOT may, at its discretion, conduct an unannounced ECRS/Non-Spin capability test. At a time determined solely by ERCOT, ERCOT will issue a Verbal Dispatch Instruction (VDI) to the QSE to operate the designated ESR at an output level that equals the sum of the ECRS Ancillary Service Responsibility and Non-Spin Ancillary Service Responsibility as shown in the ESR’s telemetry at the time the test is initiated. The QSE shall immediately upon receiving the VDI release all Ancillary Service obligations carried by the ESR to be tested and shall telemeter Resource Status as “ONTEST.” The QSE shall not be required to start the designated ESR if it is not already On-Line when ERCOT announces its intent to test the Resource. Once the designated ESR reaches the target output level, the QSE shall hold at that output level for a minimum of six consecutive hours. The six-hour capability for the designated ESR shall be determined based on the Real-Time averaged MW telemetered by the Resource during the six consecutive hours of constant output. After each test, the QSE representing the ESR will complete and submit the test form using the Net Dependable Capability and Reactive Capability (NDCRC) application located on the Market Information System (MIS) Secure Area within two Business Days. Should the designated ESR fail to reach the sum of the ECRS Ancillary Service Responsibility and Non-Spin Ancillary Service Responsibility shown in its telemetry within the time frame set forth herein, the Real-Time averaged MW telemetered during the test shall be the basis for the ECRS and Non-Spin capacity that the Resource may provide. The QSE shall have the opportunity to request another test as quickly as possible (at a time determined by ERCOT) and may retest up to two times per month. After either a retest or a demonstration test, the average of the MW output telemetered during the test shall be the basis for the new ECRS and Non-Spin capability for the designated ESR. Any requested retest must take place within three Business Days after the request for retest or a mutually agreeable date.

8.1.1.3.3 Non-Spinning Reserve Capacity Monitoring Criteria

(1) ERCOT shall continuously monitor the capacity of each Resource to provide Non-Spin. ERCOT shall consider for each Resource providing Non-Spin capacity, the actual generation, or Load, the Ancillary Service Schedule for Non-Spin, the HSL/Maximum Power Consumption (MPC), the LSL/Low Power Consumption (LPC), ramp rates, and any other commitments of Ancillary Service capacity. ERCOT shall also monitor Non-Spin provided on Resources with OFFNS status.

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| [NPRR1011: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:](1) ERCOT shall continuously monitor the capacity of each Resource to provide Non-Spin. ERCOT shall consider for each Resource the Resource Status, the actual generation or Load, the Ancillary Service award for Non-Spin, the HSL/Maximum Power Consumption (MPC), the LSL/Low Power Consumption (LPC), ramp rates, and the Resource’s qualification to provide Non-Spin. ERCOT shall also monitor Non-Spin available from and awarded to qualified Resources with an OFF status.(2) For the Non-Spin capability provided for a Resource to ERCOT by the Resource’s QSE, the amount of Non-Spin reflected in that capability must be limited to the amount of Non-Spin that can be sustained by the Resource for at least six consecutive hours. |

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| [NPRR863 and NPRR1011: Insert applicable portions of Section 8.1.1.3.4 below upon system implementation for NPRR863; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1011:]**8.1.1.3.4 ERCOT Contingency Reserve Service Capacity Monitoring Criteria**(1) ERCOT shall continuously monitor the capacity of each Resource to provide ECRS. ERCOT shall consider for each Resource the Resource Status, the On-Line versus Off-Line status, actual generation or Load, the Ancillary Service award for ECRS, the HSL, the LSL, ramp rates, relay status, and the Resource’s qualification to provide ECRS.(2) For the ECRS capability provided for a Resource to ERCOT by the Resource’s QSE, the amount of ECRS reflected in that capability must be limited to the amount of ECRS that can be sustained by the Resource for at least six consecutive hours.(3) For Load Resources, excluding Controllable Load Resources, that have an ECRS award, the amount of ECRS capacity provided must be measured as the Load Resource’s average Load level in the last five minutes.(4) A Resource that is capable of providing ECRS and that has a Resource Status code of ONSC and an ECRS award is considered to be providing capability to the extent that it is not using that capacity to provide energy or other Ancillary Services. |