|  |  |  |  |
| --- | --- | --- | --- |
| **NPRR Number** | [**1192**](https://www.ercot.com/mktrules/issues/NPRR1192) | **NPRR Title** | **Move OBD to Section 22 – Requirements for Aggregate Load Resource Participation in the ERCOT Markets** |
| **Date of Decision** | October 24, 2023 |
| **Action** | Recommended Approval |
| **Timeline**  | Normal |
| **Proposed Effective Date** | Upon system implementation |
| **Priority and Rank Assigned** | Not Applicable |
| **Nodal Protocol Sections Requiring Revision**  | 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment 8.1.1.2, General Capacity Testing Requirements10.9, Standards for Metering Facilities Section 22, Attachment O, Requirements for Aggregate Load Resource Participation in the ERCOT Markets (new) |
| **Related Documents Requiring Revision/Related Revision Requests** | Requirements for Aggregate Load Resource Participation in the ERCOT Markets |
| **Revision Description** | This Nodal Protocol Revision Request (NPRR) incorporates the Other Binding Document “Requirements for Aggregate Load Resource Participation in the ERCOT Markets” into the Protocols. |
| **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 NPRR is published for transparency and to standardize the approval process for all binding language. Upon approval of this NPRR, “Requirements for Aggregate Load Resource Participation in the ERCOT Markets” will be removed from the Other Binding Documents List. |
| **PRS Decision** | On 9/13/23, PRS voted unanimously to recommend approval of NPRR1192 as revised by PRS. The Independent Retail Electric Provider (IREP) Market Segment did not participate in the vote.On 10/12/23, PRS voted unanimously to endorse and forward to TAC the 9/13/23 PRS Report and 9/12/23 Revised Impact Analysis for NPRR1192. All Market Segments participated in the vote. |
| **Summary of PRS Discussion** | On 9/13/23, participants offered correction to a typographical error.On 10/12/23, there was no discussion. |
| **TAC Decision** | On 10/24/23, TAC voted unanimously to recommend approval of NPRR1192 as recommended by PRS in the 10/12/23 PRS Report. All Market Segments participated in the vote. |
| **Summary of TAC Discussion** | On 10/24/23, participants reviewed the ERCOT Opinion, ERCOT Market Impact Statement, and Independent Market Monitor (IMM) Opinion for NPRR1192. |

|  |
| --- |
| **Opinions** |
| **Credit Review** | ERCOT Credit Staff and the Credit Finance Sub Group (CFSG) have reviewed NPRR1192 and do not believe that it requires changes to credit monitoring activity or the calculation of liability. |
| **Independent Market Monitor Opinion** | IMM has no opinion on NPRR1192. |
| **ERCOT Opinion** | ERCOT supports approval of NPRR1192. |
| **ERCOT Market Impact Statement** | ERCOT Staff has reviewed NPRR1192 and believes it has a positive market impact by standardizing the approval process for binding language. |

|  |
| --- |
| **Sponsor** |
| **Name** | Ann Boren |
| **E-mail Address** | Ann.Boren@ercot.com  |
| **Company** | ERCOT |
| **Phone Number** | 512-248-6465 |
| **Cell Number** |  |
| **Market Segment** | Not Applicable |

|  |
| --- |
| **Market Rules Staff Contact** |
| **Name** | Brittney Albracht |
| **E-Mail Address** | Brittney.Albracht@ercot.com  |
| **Phone Number** | 512-225-7027 |

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

|  |
| --- |
| **Market Rules Notes** |

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

* NPRR1188, Implement Nodal Dispatch and Energy Settlement for Controllable Load Resources
	+ Section 6.5.7.6.2.3
* NPRR1203, Implementation of Dispatchable Reliability Reserve Service
	+ Section 6.5.7.6.2.3

|  |
| --- |
| **Proposed Protocol Language Revision** |

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, ECRS, or when other Emergency Conditions exist. The deployment of Non-Spin must always be 100% of that scheduled on an individual Resource.

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

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

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

(a) A Controllable Load Resource 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 Section 22, Attachment O, Requirements for Aggregate Load Resource Participation in the ERCOT Markets.

(b) A Load Resource that is not a 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.

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

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

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

(6) Subject to the exceptions described in paragraphs (a) and (b) below, On-Line Generation Resources 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.

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

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

(9) 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.

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

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

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

(a) The Resource name;

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

(c) The anticipated duration of deployment.

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

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

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

|  |
| --- |
| [NPRR1000, NPRR1010, and NPRR1131: Replace applicable portions of Section 6.5.7.6.2.3 above with the following upon system implementation for NPRR1000 or NPRR1131; 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) 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 unarmed. (a) 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 Section 22, Attachment O, Requirements for Aggregate Load Resource Participation in the ERCOT Markets. (b) A Load Resource that is not a Controllable Load Resource shall be capable of being Dispatched to its Non-Spin Ancillary Service Resource Responsibility within 30 minutes of a deployment instruction for capacity.(5) Off-Line Generation Resources awarded Non-Spin, while Off-Line and before the receipt of any deployment instruction, shall be capable of being dispatched to their Non-Spin award within 30 minutes of a Dispatch Instruction. On-Line Generation Resources awarded Non-Spin on the power augmentation capacity shall be capable of being dispatched to their Non-Spin award within 30 minutes of a Dispatch Instruction.(6) ERCOT may deploy Non-Spin at any time in a Settlement Interval.(7) ERCOT shall develop a process to place Off-Line Generation Resources and Load Resources that are not Controllable Load Resources with Non-Spin award in a group based on a random sampling for the purpose of deploying these Resources manually. At ERCOT’s discretion, ERCOT may deploy all groups as specified in the Other Binding Document titled “Non-Spinning Reserve Deployment and Recall Procedure.”(a) On-Line Generation Resources participating in Off-Line Non-Spin using power augmentation will be randomly distributed in Real-Time among the groups created in the Day-Ahead for the purpose of manual deployment of Non-Spin by operator Dispatch Instruction.(b) Any Generation Resource providing Off-Line Non-Spin that did not previously receive group assignment will be automatically considered in Group 1. Any Load Resource that is not a Controllable Load Resource providing Non-Spin in Real-Time that did not previously receive group assignment will be automatically considered in Group 1. ERCOT may assign a Generation Resource providing Off-Line Non-Spin or a Load Resource that is not a Controllable Load Resource to another group if that Resource did not previously receive group assignment and, in ERCOT’s reasonable judgment, Group 1 is too large.(8) ERCOT’s Non-Spin deployment Dispatch Instructions must include:(a) The Resource name;(b) A MW level of capacity deployment for Generation Resources with Energy Offer Curve and a MW level of energy for Generation Resources with Output Schedules and a Dispatch Instruction for Load Resources, excluding Controllable Load Resources, at a minimum equal to their awarded Non-Spin Ancillary Service amount; and(c) The anticipated duration of deployment.(9) ERCOT shall provide a signal via ICCP to the QSE of a deployed Generation or Load Resource indicating that its Non-Spin capacity has been deployed.(10) ERCOT shall, as part of its TAC-approved Non-Spin deployment procedure, provide for the recall of Non-Spin from On-Line Resources that were previously Off-Line Resources providing Non-Spin capacity and from On-Line Resources providing Non-Spin through power augmentation.(11) ERCOT shall provide a notification to all QSEs via the ERCOT website when any Non-Spin capacity is deployed on the ERCOT System showing the time, MW quantity and the anticipated duration of the deployment. |

**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.

|  |
| --- |
| [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 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 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 Section 22, Attachment O, 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 Service, 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 and/or non-zero Non-Spin Ancillary Service Responsibility, to verify that the Ancillary Service Responsibility reported by telemetry is achievable based on the state of charge the Resource is maintaining in Real-Time, ERCOT may, at its discretion, conduct an unannounced ECRS/Non-Spin capability test. At a time determined solely by ERCOT, ERCOT will issue a VDI to the QSE to operate the designated ESR an output level that delivers the total state of charge the ESR was obligated to provide based on 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.” Once the designated ESR reaches the target output level, the QSE shall hold at that output level for a minimum duration required to verify ESR’s state of charge capability to meet the ECRS Ancillary Service Responsibility and Non-Spin Ancillary Service Responsibility. The two-hour and/or four-hour capability for the designated ESR shall be determined based on the Real-Time averaged MW telemetered by the Resource during the constant output (i.e., hold) phase of the test. After each test, the QSE representing the ESR will complete and submit the test form using the NDCRC application located on the MIS Secure Area within two Business Days. Should the designated ESR fail to demonstrate the state of charge level needed to meet the sum of 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.

**10.9 Standards for Metering Facilities**

(1) For Transmission Service Provider (TSP) and Distribution Service Provider (DSP) Metered Entities, an Interval Data Recorder (IDR) Meter is required on any of the following locations/sites:

(a) Non-Opt-In Entity (NOIE) or External Load Serving Entity (ELSE) metering points used to determine the total Load for that NOIE or ELSE; and

(b) Block Load Transfer (BLT) metering points, registered for Settlements in accordance with Section 6.5.9.5.1, Registration and Posting of BLT Points.

(2) For TSP and DSP Metered Entities, an IDR is required on any of the following locations/sites:

(a) Load Resources participating in the Ancillary Services markets, with the exception of Aggregate Load Resources (ALRs) for which statistical sampling is used to validate telemetry, as detailed in Section 22, Attachment O, Requirements for Aggregate Load Resource Participation in the ERCOT Markets;

(b) Settlement Only Distribution Generators (SODGs); and

(c) Locations meeting IDR requirements defined in Section 18, Load Profiling.

ERCOT Nodal Protocols

Section 22

**Attachment O: Requirements for
Aggregate Load Resource Participation
in the ERCOT Markets**

Date TBD

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |

# 1 Background and Introduction

Qualification as a Load Resource is a prerequisite for the provision of Demand response in the Ancillary Services markets and Real-Time Energy Market.

This attachment sets forth the detailed requirements for Aggregations of Loads (more than one single Load site) to qualify as Aggregate Load Resources (ALRs) and maintain such qualification, thus becoming eligible to provide Ancillary Services. The attachment is limited to ALR qualification for participation in Security-Constrained Economic Dispatch (SCED) and the provision of Non-Spinning Reserve (Non-Spin).

For purposes of this attachment, the following terminology applies:

* A “Device” refers to an appliance, implement, or instrument under control or otherwise being used to provide Demand response. A Device is always located behind a Premise-level meter.
* A “Resource” or “Aggregation” refers to an ALR, as defined in Protocol Section 2, Definitions and Acronyms.
* All references to ALR in this attachment refer to an ALR that is also a Controllable Load Resource.[[1]](#footnote-1)

# 2 Telemetry and Metering Requirements

A QSE Telemetry

A Qualified Scheduling Entity (QSE) representing a Load Resource is required to send Resource-level Real-Time telemetry to ERCOT every two seconds per Protocol Section 6.5.5.2, Operational Data Requirements; Nodal Operating Guide, Section 7, Telemetry and Communication, and the ERCOT Nodal ICCP Communication Handbook available on the ERCOT website. Telemetered data points are specific to the service being provided and are listed in detail in Protocol Section 6.5.5.2.

The relevant telemetry signals shall represent one of the following:

* The sum of the Load of all Premises in the ALR, or
* The sum of the Load of the Devices under control.

B Premise-Level Interval Metering

Premises in an ALR are required to have 15-minute interval meter data, whether Electric Service Identifier (ESI ID) data from the competitive choice areas of ERCOT or revenue-quality meter data within a Non Opt-In Entity (NOIE) territory.[[2]](#footnote-2) ERCOT will use this Premise-level interval meter data both as the foundation of the telemetry validation process and for event performance measurement and verification.

Interval meter data must be time-stamped within appropriate standards in correlation with ERCOT 15-minute Settlement clock intervals, and shall be provided to ERCOT for metered sites within the ALR through one of the following methods:

* For ALRs in competitive choice areas of ERCOT, investor-owned Transmission and/or Distribution Service Providers (TDSPs) submit ESI ID-level Interval Data Recorder (IDR) or Advanced Metering Infrastructure (AMI) data via the Texas Standard Electronic Transaction (TX SET) process (for IDR metering) or via the approved file format defined in Retail Market Guide, Section 9, Appendix G, ERCOT Specified File Format for Submission of Interval Data for Advanced Metering Systems, (for AMI metering); or
* For ALRs in a NOIE service area, the NOIE shall submit IDR, AMI, or equivalent Premise-level meter data, associated with a non-Settlement ESI ID or a designated unique meter identifier. Such meters shall be maintained and read by the NOIE meter-reading entity. The data shall be submitted to ERCOT either via TX SET or in a format and transport method defined by ERCOT no later than 35 days after each corresponding Operating Day.

NOIE Premise-level unique meter identifiers must use ESI ID-style nomenclature, in which the NOIE TDSP Department of Energy (DOE) code comprises the first digits of the identifier. The unique meter identifier must remain constant in perpetuity at the Premise.

A NOIE meter-reading entity shall validate Premise-level interval meter data; however, any gaps in the data should not be edited or estimated.  ERCOT will not use data with gaps, or data flagged by the NOIE or ERCOT as invalid.

Ongoing telemetry validation and performance measurement and verification are dependent upon a NOIE making timely and accurate Premise-level meter data submissions. Failure to meet the data submission requirements may result in suspension of the ALR’s qualification to participate in SCED and provide Non-Spin. An ALR that has been suspended for this reason may be reinstated only upon successful restoration of accurate and timely meter data submissions.

NOIEs shall archive Premise-level data sufficient to meet these requirements.

C Statistical Sampling

If interval metering is not present or accessible for all sites in an ALR, ERCOT, at its discretion, may design a statistical sample consisting of a sufficient number of 15-minute interval-metered Premises to be consistent with industry best practices.[[3]](#footnote-3) ERCOT shall determine the sample size and composition for any statistical sample.

If statistical sampling is employed, the meter-reading entity shall provide at least 270 days of historical Premise-level 15-minute interval data for each Premise in the statistical sample. If 270 days of historical interval data are not available, the meter-reading entity shall provide as much historical data as is available. ERCOT may disqualify an ALR if it determines that the available historical data for a statistical sample is insufficient to create accurate baseline modeling.

To assist in sampling accuracy, the meter-reading entity shall provide at the time of enrollment, for each Premise in the ALR, at least 12 months of historical monthly billing kWh data, and shall provide monthly billing kWh data for each Premise on an ongoing basis. In addition, ERCOT may require the QSE or meter-reading entity to provide attributes, if available, for each Premise, potentially including but not limited to:

* Identification of Transmission Substation and Load point (irrespective of the Load point associated with the ALR in the Network Model);
* House type (e.g., single-family, multi-family, manufactured); and
* Devices subject to control (e.g., AC, heat pump, electric resistance heat, water heater, pool pump).

Submitting Premise attributes may enable ERCOT to create a smaller statistical sample size.

ERCOT will refresh the makeup of a statistical sample periodically based on population changes. In addition, ERCOT may adjust the size of a statistical sample periodically to reflect the percent of valid data being provided. When new Premises are added to a statistical sample, the meter-reading entity shall provide historical data for the new Premises consistent with the enrollment requirements cited in the preceding paragraph.

As a condition for allowing statistical sampling, ERCOT and the meter-reading entity shall establish a mutually agreeable goal of providing universal interval data at a date in the future.

# 3 Telemetry Validation

The objective of ALR telemetry validation is to create an acceptable standard that provides ERCOT operations with assurance that the telemetered values from the QSE provide an accurate representation of the physical Load characteristics of the ALR. This section describes the processes ERCOT will use to conduct qualification testing and validation for QSE telemetry, with the goal of insuring that an ALR’s telemetered data points provide a representation of ALR performance that meets reasonableness criteria consistent with good utility practice.

ERCOT shall validate telemetry data by comparing aggregated Premise-level 15 minute interval data to the ALR-level QSE telemetry signal, using the procedures described here.

**Premise-Level Telemetry**

In a case in which the ALR telemetry values represent the sum of the Load of the ALR member Premises, ERCOT will aggregate (or, in the case of a statistical sample, extrapolate) the Premise-level 15-minute interval meter data to the ALR level and will compare this data to the QSE telemetry values for Net Real Power Consumption, averaged over each 15-minute Settlement interval. ERCOT will conduct this telemetry validation periodically with each test encompassing all 15-minute Settlement intervals during the calendar month being evaluated. The telemetry must validate to the following criteria: for each month being evaluated, 90% of the 15-minute aggregated Net Real Power Consumption values must be within 10% of the resource-level interval meter data.

**Device-Level Telemetry**

In a case in which the ALR telemetry values represent the sum of the Load of the Devices under control, ERCOT will compare aggregated (or extrapolated) Premise-level data to the ALR QSE telemetry values.

As the initial step in validating Device-level ALR telemetry, ERCOT shall compare the telemetered values for Net Real Power Consumption, averaged over each 15-minute interval, to the aggregated (or extrapolated) Premise-level interval-metered Load. The Premise-level metered Load must exceed the Device-level telemetered NPC values for at least 99 percent of all Settlement intervals in the calendar month being evaluated; otherwise, the telemetry will be considered invalid.

As the second step in validating Device-level ALR telemetry, ERCOT shall evaluate changes in the magnitude of telemetered Device-level Load in response to SCED Base Point Instructions or QSE-initiated self-deployment. Such changes in telemetered NPC should be reflected as corresponding changes in the aggregated (or extrapolated) Premise-level interval meter data, as estimated using an applicable ERCOT baseline methodology.[[4]](#footnote-4). ERCOT will conduct this telemetry validation periodically with each test encompassing all 15-minute Settlement intervals during the calendar month being evaluated. The following intervals will be subject to telemetry validation:

* Any intervals in which the ALR was instructed by SCED to reduce its consumption to a level below its Scheduled Power Consumption by a MW value greater than 10% of the difference between its Scheduled Power Consumption and its Low Power Consumption;
* Any intervals in which the ALR was instructed by SCED to increase its consumption to a level greater than 110% of its current Net Real Power Consumption; and
* Any intervals in which the QSE initiated an out-of-market deployment of the ALR and reported the deployment details to ERCOT, unless the QSE has notified ERCOT of a telemetry failure.

The telemetry must validate to the following criteria: for each month being evaluated, in at least 90% of the intervals subject to telemetry validation, the changes to the telemetered Net Real Power Consumption values, averaged over 15-minute intervals, must be within 10% of the corresponding changes to the aggregated (or extrapolated) Premise-level interval meter data. ERCOT will conduct this validation for any ALRs that have a cumulative rolling six-month total of at least 50 intervals subject to validation. For any six-month period in which an ALR has fewer than 50 intervals subject to validation, the ALR shall be exempt from the suspension provisions detailed below.

ERCOT will conduct a telemetry validation test as part of any ALR’s qualification test to provide Non-Spin as follows: for the duration of the specified period of the qualification test, 80% of the 15-minute aggregated Scheduled Power Consumption plus Two (SPC+2) values must be within 10% of the telemetered Net Real Power Consumption values for the corresponding interval.

In addition, ERCOT will perform periodic telemetry validation as follows: on a monthly basis, 80% of the 15-minute aggregated SPC+2 values must be within 10% of the Scheduled Power Consumption values for the corresponding interval.

For a Non-Spin deployment event, ERCOT may compare the telemetered Scheduled Power Consumption and SPC+2 values for each interval of the event to the ERCOT baseline for the interval. If the difference between the ERCOT baseline and both the Scheduled Power Consumption and SPC+2 values is less than or equal to 10%, the telemetry will be deemed valid for that event.

Failure to meet telemetry validation criteria may result in suspension of the ALR’s qualification to participate in SCED and/or provide Non-Spin. An ALR that has been suspended for telemetry validation failure may be reinstated only upon successfully completing a new telemetry validation test as prescribed herein.

No later than April 1 of each year, ERCOT shall submit a report to TAC containing the results of telemetry validation testing for the prior calendar year. The report shall contain, at a minimum:

* The total number of qualified ALRs in the ERCOT Region;
* The number of telemetry validation tests conducted; and
* The number of telemetry validation test failures.

# 4 Management of Changes to ALR Populations

Changing ALR parameters will be managed by the Resource Entity and the QSE using a market interface[[5]](#footnote-5) dedicated to ALR population maintenance.

* ALR parameters will be established in the Network Model by the ALR’s Resource Entity using the approved Resource Registration process. ALRs that are subject to dynamically changing populations should set their Resource Registration data parameters at levels that will accommodate several months of potential growth so as to reduce the need for frequent Resource Registration updates.
* The QSE may add or subtract Premises from an ALR at any time. The QSE shall update appropriate telemetry values when a change is made to the population,
* QSEs shall report to ERCOT its ALR population changes on a monthly basis via the market interface.
	+ The updates shall include start and stop dates for new Premises in the ALR and/or Premises that have left the ALR. If a Premise is vacated, the Stop Date should reflect that date; and if a new customer later moves into that Premise and joins the ALR, a new start date should be used.
	+ In the competitive choice areas, QSEs will manage the ALR population by ESI ID, which ERCOT will then cross-reference to its internal systems. In the NOIE territories, QSEs shall provide unique meter identifiers consistent with the requirements detailed elsewhere in this attachment.

# 5 Network Modeling

Opening the ERCOT markets to participation by aggregations of distribution-connected small commercial and residential Loads will require development of alternative Network Modeling provisions. This section of the requirements attachment sets forth the criteria for the initial rollout of those provisions.

The location of a Load Resource in the Network Model is identified in the Resource Asset Code. During the initial phase of ALR participation in the ERCOT markets, membership in an ALR shall be limited to metered Load sites within the same ERCOT Load Zone. Consistent with current practice for distribution-level single-site Load Resources, the TDSP in collaboration with the Resource Entity and ERCOT will assign each ALR to a single Load point in the ERCOT Common Information Model (CIM).  The total Demand response capability of all ALRs assigned to any single Load point shall be capped at 100% of the rating of the Load point. The rating of a Load point is defined as the value estimated by the ERCOT State Estimator for that Load point at the time of the ERCOT historic coincident peak Demand.

In the long-term, ALR participation in the markets may require an ALR to associate with multiple Loads in the ERCOT CIM while preserving the ability of the ERCOT Independent System Operator (ISO) to dispatch Resources for congestion management based on their location. ERCOT will engage with stakeholders during the phase 1 of ALR participation to identify workable options for this phase 2 approach. Because phase 2 will require changes to market rules and potentially Substantive Rules, and is certain to require significant ERCOT system upgrades, ERCOT hereby establishes a set of caps on initial ALR participation. These caps are implemented in order to avoid system degradation (which could occur if large numbers of ALRs begin are participating) and potential challenges to effective congestion management and grid reliability (due to dispersion of participating Loads with insufficient locational specificity). The caps shall be lifted upon development and implementation of phase 2 of the ALR network modeling approach.

* System-wide ALR participation shall be capped at 250 ALRs.
* The combined Demand response capability of all ALRs within any single ERCOT Load Zone shall be capped at 5% of the Load Zone’s highest historic summer peak Demand.

If ERCOT or a TDSP determines that any of the caps described in this section are insufficient to prevent an operational challenge, ERCOT commits to working with stakeholders to determine appropriate changes and seek expedited approval of an amended version of this attachment.

# 6 Measurement & Verification

As part of the qualification process for an ALR to provide Non-Spin, ERCOT will assign the ALR to its appropriate performance evaluation methodology based on an analysis of the ALR’s historical meter data. This process will be similar to the baseline assignment process used by ERCOT in the administration of ERS. In order to qualify to provide Non-Spin, an ALR must be deemed by ERCOT to be eligible for measurement and verification via either the Meter Before/Meter After or Baseline performance evaluation methodologies per Protocol Sections 8.1.1.2.1.3, Non-Spinning Reserve Qualification, and 8.1.1.4.3, Non-Spinning Reserve Service Energy Deployment Criteria.

Performance evaluation methodology assignments will depend on the following factors:

* The predictability of the Load as determined through analysis of historical meter data.
* The amount of historical interval meter data available.
* The ability of ERCOT to distinguish between historic event days and non-event days. The QSE shall provide ERCOT with a history of QSE-initiated ALR deployments that are not in response to SCED deployment instructions, including start and stop dates and times for each such QSE-initiated deployment.
* Whether the ALR’s membership is dynamic (subject to migration in either direction) or static.
	+ If the ALR membership is dynamic, the following provisions are in effect:
		- Any ALR consisting entirely of residential sites will be considered eligible for assignment to a Baseline methodology and will retain that designation so long as any sites added to the ALR are residential.
		- An ALR consisting of commercial and industrial sites and also subject to migration will be subject to baseline review by ERCOT any time a site is added. This review provision may be waived by ERCOT if ERCOT, in consultation with the QSE, determines that the added sites meet a uniformity test consistent with the existing sites in the ALR. To avoid ongoing baseline reviews, the ALR should be composed of Loads with similar Load shapes and, depending on the size of the Aggregation, Load magnitude. Uniformity (a.k.a. homogeneity) enables scalable growth, statistical sampling consistent with industry standard Load research practices, and acceptable migration management. ERCOT may revoke an ALR’s Non-Spin qualification if ERCOT determines that the composition of the ALR fails to meet a uniformity standard consistent with good utility practice.
* If the ALR membership is static (not subject to migration), the ALR will retain the performance evaluation methodology assigned at the time of registration and qualification. ERCOT may annually review a static ALR’s Load characteristics to ensure the performance evaluation methodology assignment continues to apply.

ERCOT shall deny Non-Spin qualification for an ALR if it fails to qualify using either the Meter Before/Meter After, or Baseline methodologies. For the latter, ERCOT may evaluate the ALR against any of the four baseline types described in document entitled “Emergency Response Service Default Baseline Methodologies,” available on the ERCOT website.

As described in Protocol Section 8.1.1.4.3, the data used for primary measurement and verification of Load Resource performance in a Non-Spin event are the telemetry values for net real power consumption (net power flow), scheduled power consumption, and scheduled power consumption plus two. As a secondary validation step, ERCOT may use interval meter data from the ALR to verify an ALR’s performance in a Non-Spin deployment event. If the interval meter data evaluation indicates that the ALR met its performance obligations in the Non-Spin event, the ALR will be considered in compliance for that event irrespective of the telemetry values. If the interval meter data evaluation indicates that the ALR failed to meet its performance obligations in the Non-Spin event, the ALR will be deemed to have failed to meet its responsibility for that event irrespective of the telemetry values. ERCOT may revoke the ALR’s qualification to provide Non-Spin if the ALR demonstrates a continuing pattern of failure to perform.

1. Load Resource provision of Non-Spin may be provided only by Controllable Load Resources qualified for SCED. [↑](#footnote-ref-1)
2. NOIE Advanced Meter data submission must meet formatting requirements in place for Emergency Response Service (ERS). See document entitled “Interval Data File Format Descriptions” available on the ERCOT website. [↑](#footnote-ref-2)
3. Further explanation of industry best practice can be found in Load Profiling Guide. [↑](#footnote-ref-3)
4. See “Default Baseline Methodologies” document available on the ERCOT website. [↑](#footnote-ref-4)
5. PR 117-01, Requirements for Data Submission to Support Aggregate Load Resource Participation in the ERCOT Markets. [↑](#footnote-ref-5)