

TAC Report

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| NPRR Number | 644 | NPRR Title | Operating Reserve Demand Curve Phase 2 Revisions |
| Timeline | Normal | Action | Recommended Approval |
| Date of Decision | September 25, 2014 | | |
| Proposed Effective Date | Upon system implementation of NPRR568, Real-Time Reserve Price Adder Based on Operating Reserve Demand Curve, Phase 2. | | |
| Priority and Rank Assigned | Not applicable. | | |
| Nodal Protocol Sections Requiring Revision | 6.5.5.2, Operational Data Requirements 8.1.1.2, General Capacity Testing Requirements 8.1.1.2.1, Ancillary Service and Online and Offline Reserve Technical Requirements and Qualification Criteria and Test Methods 8.1.1.2.1.6, OFF10 Reserve Qualification 8.1.1.2.1.7, OFF30 Reserve Qualification 8.1.1.4.4, OFF10 Reserve Energy Deployment Criteria 8.1.1.4.5, OFF30 Reserve Energy Deployment Criteria | | |
| Other Binding Documents Requiring Revision or Related Revision Requests | None. | | |
| Revision Description | This Nodal Protocol Revision Request (NPRR) revises previously approved Protocol language related to Operating Reserve Demand Curve (ORDC) Phase 2. The language to implement ORDC Phase 2 is being revised in order to streamline the validation process of the telemetered OFF10 and OFF30 values. Correspondingly, the qualification and testing procedures are bolstered in the interest of a more efficient overarching process. | | |
| Reason for Revision | <input type="checkbox"/> Addresses current operational issues. <input type="checkbox"/> Meets Strategic goals (tied to the ERCOT Strategic Plan or directed by the ERCOT Board). <input checked="" type="checkbox"/> Market efficiencies or enhancements <input type="checkbox"/> Administrative <input type="checkbox"/> Regulatory requirements <input type="checkbox"/> Other: (explain) <i>(please select all that apply)</i> | | |
| Credit Work Group Review | ERCOT Credit Staff and the Credit Work Group (Credit WG) have reviewed NPRR644 and do not believe that it requires changes to credit monitoring activity or the calculation of liability. | | |

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| Procedural History | <ul style="list-style-type: none"> ➤ On 7/30/14, NPRR644 and an Impact Analysis were posted. ➤ On 8/14/14, PRS considered NPRR644. ➤ On 9/11/14, PRS considered the 8/14/14 PRS Report and Impact Analysis for NPRR644. ➤ On 9/25/14, TAC considered NPRR644. |
| PRS Decision | <p>On 8/14/14, PRS unanimously voted to recommend approval of NPRR644 as submitted. All Market Segments were present for the vote.</p> <p>On 9/11/14, PRS unanimously voted to endorse and forward the 8/14/14 PRS Report and Impact Analysis for NPRR644 to TAC. All Market Segments were present for the vote.</p> |
| Summary of PRS Discussion | <p>On 8/14/14, Market Participants requested ERCOT provide training related to the implementation and reporting of the new telemetered values.</p> <p>On 9/11/14, there was no discussion.</p> |
| TAC Decision | On 9/25/14, TAC unanimously voted to recommend approval of NPRR644 as recommended by PRS in the 9/11/14 PRS Report. All Market Segments were present for the vote. |
| Summary of TAC Discussion | On 9/25/14, there was no discussion. |
| ERCOT Opinion | ERCOT supports approval of NPRR644. |

| Business Case | |
|----------------------------------|--|
| Qualitative Benefits | <ul style="list-style-type: none"> • Provides for a more efficient, accurate procedure |
| Quantitative Benefits | <ul style="list-style-type: none"> • This NPRR eliminates impacts to Resource Asset Registration Form (RARF), Network Model Management System (NMMS), and Common Information Model (CIM) from NPRR568, Phase 2. |
| Impact to Market Segments | |
| Credit Implications | No. |
| Other | |

| Sponsor | |
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| Cell Number | |
| Market Segment | Not applicable. |

| Market Rules Staff Contact | |
|----------------------------|--|
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| Comments Received | |
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| Comment Author | Comment Summary |
| None. | |

Comments

Please note that the baseline Protocol language in the following Section has been updated to reflect the incorporation of the following NPRR into the Protocols.

- NPRR614, Clarification of Telemetered Value of HSL for Combined Cycle Generation Resources providing RRS (September 1, 2014 Nodal Protocols)
 - Section 6.5.5.2

Please also note that the following Revision Requests also propose revisions to the following Sections:

- NPRR190, Clarification of Resource Definitions and Resource Registration of Self-Serve Generators for Reliability Purposes
 - Section 6.5.5.2
- NPRR340, Introduction and Definition of Duration-Limited Resources (formerly “Unannounced HSL test for Duration-Limited Resources”)
 - Section 8.1.1.2
- NPRR625, Clarification of Non-Spin Requirements and Operational Procedures
 - Section 8.1.1.4.4
 - Section 8.1.1.4.5

Proposed Protocol Language Revision

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Comment [KPL1]: Please note that NPRR190 also propose revisions to this Section.

6.5.5.2 Operational Data Requirements

- (1) ERCOT shall use Operating Period data to monitor and control the reliability of the ERCOT Transmission Grid and shall use it in network analysis software to predict the short-term reliability of the ERCOT Transmission Grid. Each TSP, at its own expense, may obtain that Operating Period data from ERCOT or directly from QSEs.
- (2) A QSE representing a Generation Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each Generation Resource. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:
 - (a) Net real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process. Net real power represents the actual generation of a Resource for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), determination of the High Ancillary Service Limit (HASL), High Dispatch Limit (HDL), Low Dispatch Limit (LDL) and Low Ancillary Service Limit (LASL), and is consistent with telemetered HSL, LSL and Non-Frequency Responsive Capacity (NFRC);
 - (b) Gross real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversions constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process;
 - (c) Gross Reactive Power (in Megavolt-Amperes reactive (MVar));
 - (d) Net Reactive Power (in MVar);
 - (e) Power to standby transformers serving plant auxiliary Load;
 - (f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;
 - (g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;
 - (h) Generation Resource breaker and switch status;
 - (i) HSL (Combined Cycle Generation Resources shall submit the HSL of the current operating configuration);

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[NPRR614: Replace item (i) above with the following upon testing completion:]

- (i) HSL (Combined Cycle Generation Resources) shall:
 - (i) Submit the HSL of the current operating configuration; and
 - (ii) When providing RRS, update the HSL as needed, to be consistent with Resource performance limitations of RRS provision;

[NPRR527: Insert item (j) below upon system implementation and renumber accordingly:]

- (j) NFRC currently available (unloaded) and included in the HSL of the Combined Cycle Generation Resource's current configuration;
- (j) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;
- (k) Low Emergency Limit (LEL), under Section 6.5.9.2;
- (l) LSL;
- (m) Configuration identification for Combined Cycle Generation Resources;
- (n) Ancillary Service Schedule for each quantity of RRS and Non-Spin which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;
- (o) Ancillary Service Resource Responsibility for each quantity of Regulation Up (Reg-Up), Regulation Down (Reg-Down), RRS and Non-Spin. The sum of Ancillary Service Resource Responsibility for all Resources in a QSE is equal to the Ancillary Service Supply Responsibility for that QSE; and

[NPRR524: Replace paragraph (2)(o) above with the following upon implementation of a manual workaround:]

- (o) Ancillary Service Resource Responsibility for each quantity of Regulation Up (Reg-Up), Regulation Down (Reg-Down), RRS and Non-Spin. The sum of Ancillary Service Resource Responsibility for all Resources in a QSE is equal to the Ancillary Service Supply Responsibility for that QSE. For a Generation Resource that is providing RRS using supplemental capacity through power augmentation technology that is not frequency responsive as described in paragraph (3)(a) of Section 3.18, Resource Limits in Providing Ancillary Service,

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the QSE shall separately telemeter the portion of RRS capacity in MW that is not frequency responsive;

- (p) Reg-Up and Reg-Down Services participation factors represent how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s). The Reg-Up and Reg-Down Services participation factors for a Resource providing Fast Responding Regulation Up Service (FRRS-Up) or Fast Responding Regulation Down Service (FRRS-Down) shall be zero.
- (q) The designated Master QSE of a Generation Resource that has been split to function as two or more Split Generation Resources shall provide Real-Time telemetry for items (a), (b), (c), (d), (e), (g), and (h) above, PSS and AVR status for the total Generation Resource in addition to the Split Generation Resource the Master QSE represents.
- (3) For each Wind-powered Generation Resource (WGR), the QSE shall set the HSL equal to the current net output capability of the facility. The net output capability should consider the net real power of the WGR, turbine availability, weather conditions, and whether the WGR net output is being affected by compliance with a SCED Dispatch Instruction.

[NPRR588: Replace paragraph (3) above with the following upon system implementation:]

- (3) For each Intermittent Renewable Resource (IRR), the QSE shall set the HSL equal to the current net output capability of the facility. The net output capability should consider the net real power of the IRR generation equipment, IRR generation equipment availability, weather conditions, and whether the IRR net output is being affected by compliance with a SCED Dispatch Instruction.
- (4) For each Aggregate Generation Resource (AGR), the QSE shall telemeter the number of its generators online.
- (5) A QSE representing a Load Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time data to ERCOT for each Load Resource and ERCOT shall make the data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to the Load Resource's host TSP or DSP at the TSP's or DSP's expense. The Load Resource's net real power consumption, Low Power Consumption (LPC) and Maximum Power Consumption (MPC) shall be telemetered to ERCOT using a positive (+) sign convention:
 - (a) Load Resource net real power consumption (in MW);

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- (b) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;
 - (c) Load Resource breaker status;
 - (d) LPC (in MW);
 - (e) MPC (in MW);
 - (f) Ancillary Service Schedule (in MW) for each quantity of RRS and Non-Spin, which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;
 - (g) Ancillary Service Resource Responsibility (in MW) for each quantity of Reg-Up and Reg-Down for Controllable Load Resources, and RRS and Non-Spin for all Load Resources;
 - (h) The status of the high-set under-frequency relay, if required for qualification;
 - (i) For a Controllable Load Resource providing Non-Spin, the Scheduled Power Consumption that represents zero Ancillary Service deployments;
 - (j) For a single-site Controllable Load Resource with registered maximum Demand response capacity of ten MW or greater, net Reactive Power (in MVar);
 - (k) Resource Status (Resource Status shall be ONRL if high-set under-frequency relay is active);
 - (l) Reg-Up and Reg-Down services participation factor, which represents how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s). The Reg-Up and Reg-Down services participation factors for a Resource providing FRRS-Up or FRRS-Down shall be zero; and
 - (m) For a Controllable Load Resource providing Non-Spin, the “Scheduled Power Consumption Plus Two Hours,” representing the QSE’s forecast of the Controllable Load Resource’s instantaneous power consumption for a point two hours in the future.
- (6) A QSE with Resources used in SCED shall provide communications equipment to receive ERCOT-telemetered control deployments.
- (7) A QSE providing any Regulation Service shall provide telemetry indicating the appropriate status of Resources providing Reg-Up or Reg-Down, including status indicating whether the Resource is temporarily blocked from receiving Reg-Up and/or Reg-Down deployments from the QSE. This temporary blocking will be indicated by the enabling of the Raise Block Status and/or Lower Block Status telemetry points.

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- (a) Raise Block Status and Lower Block Status are telemetry points used in transient unit conditions to communicate to ERCOT that a Resource's ability to adjust its output has been unexpectedly impaired.
 - (b) When one or both of the telemetry points are enabled for a Resource, ERCOT will cease using the regulation capacity assigned to that Resource for Ancillary Service deployment.
 - (c) This hiatus of deployment will not excuse the Resource's obligation to provide the Ancillary Services for which it has been committed.
 - (d) These telemetry points shall only be utilized during unforeseen transient unit conditions such as plant equipment failures. Raise Block Status and Lower Block Status shall only be enabled until the Resource operator has time to update the Resource limits and Ancillary Service telemetry to reflect the problem.
 - (e) The Resource limits and Ancillary Service telemetry shall be updated as soon as practicable. Raise Block Status and Lower Block Status will then be disabled.
- (8) Real-Time data for reliability purposes must be accurate to within three percent. This telemetry may be provided from relaying accuracy instrumentation transformers.
- (9) Each QSE shall report the current configuration of combined-cycle Resources that it represents to ERCOT. The telemetered Resource Status for a Combined Cycle Generation Resource may only be assigned a Resource Status of OFFNS if no generation units within that Combined Cycle Generation Resource are On-Line.
- (10) A QSE representing Combined Cycle Generation Resources shall provide ERCOT with the possible operating configurations for each power block with accompanying limits. Combined Cycle Train power augmentation methods may be included as part of one or more of the registered Combined Cycle Generation Resource configurations. Power augmentation methods may include:
- (a) Combustion turbine inlet air cooling methods;
 - (b) Duct firing;
 - (c) Other ways of temporarily increasing the output of Combined Cycle Generation Resources; and
 - (d) For Qualifying Facilities (QFs), an LSL that represents the minimum energy available for Dispatch by SCED, in MW, from the Combined Cycle Generation Resource based on the minimum stable steam delivery to the thermal host plus a justifiable reliability margin that accounts for changes in ambient conditions.

[NPRR568: Insert paragraphs (11), (12), and (13) below upon Phase 2 system implementation:]

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- (11) Each QSE qualified to provide OFF10 capacity shall accurately report the current availability of On-Line (OFF10) reserve capacity for each of Resources it represents to ERCOT through Real-Time telemetry.
- (a) For On-Line Resources and Quick Start Generation Resources (QSGRs) that are available for deployment by SCED, the values provided shall only include capacity that has been tested by ERCOT to be available in the appropriate time frame and is not already captured in the telemetered HSL or telemetered OFF30 capacity of the Resource.
- (b) For Off-Line Resources, the OFF10 capacity provided shall only include capacity that has been tested by ERCOT to be available within ten minutes and is not already captured in the telemetered OFF30 capacity of the Resource. For a Combined Cycle Train providing OFF10 capacity, the QSE shall telemeter the configuration from which it will provide the OFF10 capacity.
- ~~(a)(c)~~ ERCOT shall validate during the qualification process that the telemetered OFF10 capacity is viable in ten minutes before it is used in the Real Time reserve calculation. The telemetered OFF10 capacity shall be capped at the OFF10 MW quantities qualified pursuant to Section 8.1.1.2.1.6, On-Line (OFF10) Reserve Qualification, or tested pursuant to Section 8.1.1.2, General Capacity Testing Requirements, as communicated via the Resource asset registration information for the Resource. For an Off Line Generation Resource providing OFF10 capacity other than a Combined Cycle Train, ERCOT shall verify the telemetered OFF10 capacity is viable in ten minutes based on the current warmth state and the corresponding start up time of the Resource. For a Combined Cycle Train providing OFF10 capacity, ERCOT shall verify that the transition from current configuration to the telemetered configuration providing OFF10 capacity is viable in ten minutes based on the transition times and transition matrix communicated via the Resource asset registration information and the warmth state of the current configuration. The telemetered OFF10 capacity shall be capped at the ERCOT-calculated maximum MW the Resource can provide in ten minutes based on the Resource asset registration information, COP and telemetry information.
- (12) Each QSE qualified to provide OFF30 capacity shall accurately report the current availability of Off-Line (OFF30) reserve capacity of Resources it represents to ERCOT through Real-Time telemetry.
- (a) For On-Line Resources and QSGRs that are available for deployment by SCED, the values provided shall only include capacity that has been tested by ERCOT to be available in the appropriate time frame and is not already captured in the telemetered HSL or telemetered OFF10 capacity of the Resource.
- (b) For Combined Cycle Train providing OFF30 capacity, the QSE shall telemeter the configuration from which it will provide the OFF30 capacity. For Off-Line Resources, the OFF30 capacity provided shall only include capacity that has been

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tested by ERCOT to be available in the appropriate time frame and is not already captured in the telemetered OFF10 capacity of the Resource.

- ~~(a)(c)~~ ERCOT shall validate during the qualification process that the telemetered OFF30 capacity is viable in 30 minutes. before it is used in the Real Time reserve calculation. The telemetered OFF30 shall be capped at the OFF30 MW quantities qualified pursuant to Section 8.1.1.2.1.7, Off Line (OFF30) Reserve Qualification, or tested pursuant to Section 8.1.1.2, as communicated via the Resource asset registration information for the Resource. For an Off Line Generation Resource providing OFF30 capacity other than a Combined Cycle Train, ERCOT shall verify the telemetered OFF30 capacity is viable in 30 minutes based on the current warmth state and the corresponding start up time of the Resource. For a Combined Cycle Train providing OFF30 capacity, ERCOT shall verify that the transition from current configuration to the telemetered configuration providing OFF30 capacity is viable in 30 minutes based on the transition times and transition matrix communicated via the Resource asset registration information and the warmth state of the current configuration. The telemetered OFF30 capacity shall be capped at the ERCOT calculated maximum MW the Resource can provide in 30 minutes based on the Resource asset registration information, COP and telemetry information.

- (13) A QSE representing a Resource that is capable of storing energy and releasing that energy at a later time to generate electric energy as both a Load Resource and a Generation Resource is expected to manage the state of charge of the Resource in order to accurately report the HSL, the amount of capacity that can be provided simultaneously from both the Generation Resource and the Load Resource through OFF10 and OFF30, and the net real power consumption data to ERCOT.

8.1.1.2 General Capacity Testing Requirements

- (1) Within the first 15 days of each Season, each QSE shall provide ERCOT a Seasonal High Sustained Limit (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.

Comment [KPL2]: Please note that NPRR340 also proposes revisions to this Section.

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- (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 Low Sustained Limit (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.

[NPRR568: Insert paragraph (3) below upon Phase 2 system implementation and renumber accordingly:]

- (3) To verify that the OFF10 and/or OFF30 values reported by telemetry are achievable, ERCOT may, at its discretion, conduct an unannounced OFF10 [and](#)/or OFF30 test.
- [\(a\)](#) At a time determined solely by ERCOT, ERCOT will issue a VDI to the QSE to operate the designated Generation Resource at its specified capacity, which would be HSL + (OFF10 or OFF30). The OFF10 and OFF30 capacity would be 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 Generation Resource to be tested and shall telemeter a Resource Status of "ONTEST." The QSE shall be required to start the designated Generation Resource when it is providing OFF10 or OFF30 capacity, if it is not already On-Line when ERCOT announces its intent to test the Generation Resource.
- [\(i\)](#) 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 Generation Resource to reach 90% of its HSL as

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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.

(ii) 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.

(iii) 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.

(b) For On-Line Resources, Once the designated Generation Resource reaches its HSL, the QSE shall reach its HSL+ OFF10 capacity within an additional ten minutes or HSL+ OFF10 + OFF30 capacity within an additional 30 minutes. For On-Line Resources, the sum of HSL, OFF10, and OFF30 shall not exceed the sum of the tested value of HSL, OFF10, and OFF30.

(c) For Off-Line Resources, once the QSE receives the VDI, the Resource shall reach its OFF10 capacity within ten minutes or OFF10 + OFF30 capacity within 30 minutes. For both On-Line and Off-Line tests, the QSE shall sustain at or above the current output level for a minimum of the 30 minutes in order to meet the testing requirements. The OFF10 or OFF30 value for the designated Generation Resource shall be determined based on the maximum Real-Time MW telemetered by the Resource at the end of 10 minutes for OFF10 and at the end of 30 minutes for OFF30.

(d) After each test, the QSE representing the Generation Resource will complete and submit the test form using the NDCRC application located on the MIS within two Business Days. The tested value of OFF10 or OFF30 for Off-Line Resources shall be the basis for telemetered OFF10 or OFF30 capacity for the remainder of the Season unless the QSE seeks requalification.

- (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 and wind 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.

[NPRR588: Replace paragraph (3) above with the following upon system implementation:]

- (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

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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 under way 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.

[NPRR568: Insert paragraph (5) below upon Phase 2 system implementation and renumber accordingly:]

- (5) Should the designated Generation Resource fail to reach its OFF10 [and/or](#) OFF30 values shown in its telemetry within the time frame set forth herein, the Real-Time averaged MW telemetered during the test ~~once the designated time for reaching HSL expires~~, shall be the basis for the new [HSL or](#) OFF10 [and/or](#) OFF30 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. After a retest, the MW capability of the Generation Resource above HSL based on the maximum of the MW production telemetered during the test shall be the basis for the new OFF10 [and/or](#) OFF30 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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- (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 Service 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, 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

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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 MIS Public Area.
- (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.

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- (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.

8.1.1.2.1 Ancillary Service and On-Line and Off-Line Reserve Technical Requirements and Qualification Criteria and Test Methods

- (1) A QSE and the Resource that it represents must be qualified to provide Ancillary Services and On-Line and Off-Line reserves. ERCOT shall develop and operate a qualification and testing program that meets the requirements of this Section for each Ancillary Service. Prior to the Texas Nodal Market Implementation Date, a QSE and the Resources that it represents that are qualified to provide an Ancillary Service in accordance with an effective Protocol, are deemed to be qualified to provide Ancillary Services after the Texas Nodal Market Implementation Date, provided that the QSE and the Resource have been certified capable of providing an Ancillary Service by a responsible Market Participant, as determined by ERCOT. Resources that are thus certified to provide Ancillary Services and that have a performance history determined in accordance with this Section, and that fail to meet the performance metrics described in this Section on the Texas Nodal Market Implementation Date, or thereafter, will be required to qualify in accordance with this Section before providing the Ancillary Service.
- (2) A QSE and the Resource that it represents must be qualified in accordance with this Section as an Ancillary Service and reserve provider and at ERCOT's discretion will be required to re-qualify to provide Ancillary Service or reserve if acceptable performance as determined in accordance with this Section has not been maintained.

[NPRR568: Insert Section 8.1.1.2.1.6 below upon Phase 2 system implementation:]

8.1.1.2.1.6 ~~On-Line~~(OFF10) Reserve Qualification

- (1) Each qualified Resource providing On-Line reserves must be capable of providing the designated capacity within ten minutes of an ERCOT request as a part of EEA Level 1 operations.
- (2) Each Generation Resource providing OFF10 shall specify capability achievable in ten minutes in ~~its ERCOT-approved the NDCRC application located on the MIS Secure Area. Resource asset registration form information (independent of the primary Resource).~~
- (3) Capacity designated as OFF10 shall not be used for SCED or any Ancillary Service and cannot be included in the telemetered HSL of the On-Line Resource.
- (4) For any Generation Resource requesting qualification for OFF10, a qualification test for

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each Resource to provide OFF10 is conducted during a continuous eight hour period agreed to by the QSE and ERCOT. ERCOT shall test the unit at the operating level above which it is expected to carry OFF10 reserve if applicable. ERCOT shall confirm the date and time of the test with the QSE, ~~using both the primary and alternate voice circuits to validate the voice circuits.~~ ERCOT and the QSE shall confirm the nature of the test as it relates to Resource configuration changes or use of power augmentation capacity. ERCOT shall administer the following test requirements.

- (a) At any time during the window (selected by ERCOT when market and reliability conditions allow and not previously disclosed to the QSE), ERCOT shall notify the QSE by ~~using the Messaging System and~~ requesting that the QSE provide an amount of OFF10 from each Resource equal to the amount for which the QSE is requesting qualification. The QSE shall update its OFF10 telemetry to reflect the requested qualification amount and acknowledge the start of the test.
- (b) During the test window, ERCOT shall send a message to the QSE representing the Generation Resources to deploy OFF10. ERCOT shall monitor the release of the reserve capacity adjustment of the Generation Resource's OFF10 telemetered value ~~Schedule~~ within one minute ~~for Resources.~~ ERCOT shall measure the test Generation Resource's response as described under Section 8.1.1.4.4, OFF10 Reserve Energy Deployment Criteria. ERCOT shall evaluate the response of the Generation Resource given the current operating conditions of the system and determine the Generation Resource's qualification to provide OFF10. ERCOT shall qualify the Resource to provide the requested OFF10 MW if the Resource satisfies the following conditions:
 - (i) If the Resource is On-Line, the output of the Resource shall increase from HSL to HSL plus the OFF10 qualification request amount within ten minutes. The QSE shall change the OFF10 telemetered value according to the increase in output.
 - (ii) If the Resource is Off-Line, the Resource shall come On-Line and the output of the Resource shall increase from zero to the OFF10 qualification request amount within ten minutes. The QSE shall change the OFF10 telemetered value according to the increase in output.
- (c) On successful demonstration of all test criteria, ERCOT shall qualify that the Resource is capable of providing OFF10 and shall provide a copy of the certificate to the QSE and the Resource Entity.
- (d) The ~~Resource asset registration~~ information for any unit that has passed a certified OFF10 test shall be updated in the NDCRC application located on the MIS Secure Area to show the ~~status or configuration change and the~~ corresponding capacity certified in the test.

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[NPRR568: Insert Section 8.1.1.2.1.7 below upon Phase 2 system implementation:]

8.1.1.2.1.7 ~~Off-Line~~ (OFF30) Reserve Qualification

- (1) Each qualified Resource providing ~~Off-Line~~OFF30 reserves must be capable of providing the designated capacity within 30 minutes of an ERCOT request during or in order to avoid an emergency, as a part of EEA Level 1 operations.
- (2) Each Generation Resource providing OFF30 shall specify capability achievable in 30 minutes in the NDCRC application located on the MIS Secure Area, its ERCOT approved Resource asset registration form (independent of the primary Resource).
- (3) Capacity designated as OFF30 shall not be used for SCED or any Ancillary Service and cannot be included in the telemetered HSL of the On-Line Resource or the HSL of the Off-Line Resource providing Non-Spin or OFF10.
- (4) For any Generation Resource requesting qualification for OFF30, a qualification test for each Resource to provide OFF30 is conducted during a continuous eight hour period agreed to by the QSE and ERCOT. ERCOT shall test the unit at the operating level above which it is expected to carry OFF30 reserve if applicable. ERCOT shall confirm the date and time of the test with the QSE using both the primary and alternate voice circuits to validate the voice circuits. ERCOT and the QSE shall confirm the nature of the test as it relates to Generation Resource configuration changes or use of power augmentation capacity. ERCOT shall administer the following test requirements.
 - (a) At any time during the window (selected by ERCOT when market and reliability conditions allow and not previously disclosed to the QSE), ERCOT shall notify the QSE by using the Messaging System and requesting that the QSE provide an amount of OFF30 from each Generation Resource equal to the amount for which the QSE is requesting qualification. The QSE shall update its OFF30 telemetry to reflect the requested qualification amount and acknowledge the start of the test.
 - (b) During the test window, ERCOT shall send a message to the QSE representing a Generation Resources to deploy OFF30. ERCOT shall monitor the adjustment of the Generation Resource's OFF30 Schedule within five minutes for Resources On-Line and within 20 minutes for Resources Off-Line. ERCOT shall measure the test Generation Resource's response as described under Section 8.1.1.4.5, OFF30 Reserve Energy Deployment Criteria. ERCOT shall evaluate the response of the Generation Resource given the current operating conditions of the system and determine the Generation Resource's qualification to provide OFF30. ERCOT shall qualify the Resource to provide the requested OFF30 MW if the Resource satisfies the following conditions:
 - (i) If the Resource is On-Line, the output of the Resource shall increase from HSL to HSL + OFF10 + OFF30 qualification request amount within thirty

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minutes. The QSE shall change the OFF30 telemetered value according to the increase in output.

- (ii) If the Resource is Off-Line, the Resource shall come online and the output of the Resource shall increase from zero to the OFF10 + OFF30 qualification request amount within thirty minutes. The QSE shall change the OFF30 telemetered value according to the increase in output.
- (c) On successful demonstration of all test criteria, ERCOT shall qualify that the Generation Resource is capable of providing OFF30 and shall provide a copy of the certificate to the QSE and the Resource Entity.
- (d) The ~~Resource asset registration~~ information for any unit that has passed a certified OFF30 test shall be updated in the NDCRC application on the MIS Secure Area to show the ~~status or configuration change and the~~ corresponding capacity certified in the test.

[NPRR568: Insert Section 8.1.1.4.4 below upon Phase 2 system implementation:]

8.1.1.4.4 OFF10 Reserve Energy Deployment Criteria

Control performance during periods in which ERCOT has deployed OFF10 shall be based on the requirements below and failure to meet any one of these requirements for the greater of one or 5% of OFF10 deployments during a year shall be reported to Texas RE as non-compliance:

- (a) Within one minute following a deployment instruction, the QSE must update the telemetered HSL of the Resource to reflect the deployment amount.
- (b) The telemetered value shall not exceed the value demonstrated by a certified test and recorded in the NDCRC application located on the MIS Secure Area. ~~qualified Resource asset registration of the Resource.~~
- (c) If an Off-Line Generation Resource experiences a Startup Loading Failure (excluding those caused by operator error), the Generation Resource may be considered for exclusion from performance non-compliance if the QSE provides to ERCOT the following documentation regarding the incident:
 - (i) Its generation log documenting the Startup Loading Failure; and
 - (ii) Equipment failure documentation such as, but not limited to, GADS reports, plant operator logs, work orders, or other applicable information.
- (~~d~~e) OFF10 capacity shall be subject to deployment by ERCOT (during or in order to avoid an emergency) through Dispatch Instructions for Generation Resources, which may be concurrent with automatic Dispatch Instructions for RRS.

Comment [KPL3]: Please note that NPRR625 also proposes revisions to this section.

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- (ed) Following deployment by Dispatch Instruction, the QSE shall adjust the OFF10 reserve resource status to an online status and have a valid Energy Offer Curve or accept a proxy Energy Offer Curve for the additional capacity.
- (fe) The QSE's telemetered ramp rate for the Generation Resource shall be capable of deploying the full OFF10 capacity within ten minutes of receipt of the Dispatch Instruction.

[NPRR568: Insert Section 8.1.1.4.5 below upon Phase 2 system implementation:]

8.1.1.4.5 OFF30 Reserve Energy Deployment Criteria

Comment [KPL4]: Please note that NPRR625 also proposes revisions to this section.

Control performance during periods in which ERCOT has deployed OFF30 shall be based on the requirements below and failure to meet any one of these requirements for the greater of one or 5% of OFF30 deployments during a year shall be reported to Texas RE as non-compliance:

- (a) Off-Line Generation Resources, within 25 minutes following a deployment instruction, must be On-Line with an Energy Offer Curve and the telemetered net generation must be greater than or equal to the Generation Resource's telemetered LSL multiplied by P1 where P1 is defined in the "ERCOT and QSE Operations Business Practices During the Operating Hour." The Resource Status that must be telemetered, indicating that the 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.
- (b) The telemetered value shall not exceed the value demonstrated by a certified test and recorded in the NDCRC application located on the MIS Secure Area.
- (c) If an Off-Line Generation Resource experiences a Startup Loading Failure (excluding those caused by operator error), the Generation Resource may be considered for exclusion from performance non-compliance if the QSE provides to ERCOT the following documentation regarding the incident:
 - (i) Its generation log documenting the Startup Loading Failure; and
 - (ii) Equipment failure documentation such as, but not limited to, GADS reports, plant operator logs, work orders, or other applicable information.
- (de) OFF30 capacity shall be subject to deployment by ERCOT (during or in order to avoid an emergency) through Dispatch Instructions for Generation Resources, which may be concurrent with automatic Dispatch Instructions for Non-Spin.
- (ed) Following deployment by Dispatch Instruction, the QSE shall adjust the OFF30 reserve resource status to an online status have a valid Energy Offer Curve or accept a proxy Energy Offer Curve for the additional capacity.

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(fe) The QSE's telemetered ramp rate for the Generation Resource shall be capable of deploying the full OFF30 capacity within 30 minutes of receipt of the Dispatch Instruction.