



Control Number: 24055



Item Number: 115

Addendum StartPage: 0

PROJECT NO. 24055

PROTOCOL REVISION
INFORMATIONAL FILINGS BY THE
ELECTRIC RELIABILITY
COUNCIL OF TEXAS

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PUBLIC UTILITY COMMISSION
OF TEXAS

NOTICE OF ERCOT NODAL PROTOCOL REVISIONS
(AUGUST 1, 2006)

COMES NOW Electric Reliability Council of Texas, Inc. (ERCOT) and respectfully informs the Public Utility Commission of Texas of revisions to the ERCOT Nodal Protocols.

Summary of Revisions

In accordance with the process set forth in Section 21 of the ERCOT Protocols, ERCOT adopted NPRRs 001, 004, 005, 006 and 007 (effective upon Texas Nodal Market implementation). These Nodal Protocol revisions were developed in the ERCOT committee process and approved by the ERCOT Board of Directors on July 18, 2006. These Nodal Protocol revisions are described below.

NPRR	Description	ERCOT Protocols Section Modified
001	<p><u>Section 1 - Zonal PRR Synchronization and ERCOT Staff Clarifications.</u> This NPRR incorporates into Section 1, Overview, relevant language from the following PRRs that were approved by the Board between April 2004 and February 2006: PRR573, Mothballed Generation Resource Definition and Time to Service Updates; PRR591, Switchable Unit Declaration; PRR593, Reporting of Net Generation and Load (FKA Behind the "Fence" Reporting of Load); and PRR611, Reporting of Operation Reserve Capability Under Severe Gas Curtailments. This NPRR also incorporates TPTF determinations regarding ERCOT Staff clarification questions as discussed by TPTF and documented in the</p>	<p>Section 1 (Attachment A) <i>(Effective Upon Texas Nodal Market Implementation)</i></p>

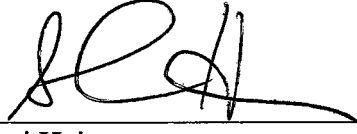
	ERCOT Clarification Matrix for Section 1 (11/30/05) and discussed at the 3/28/06 and 3/29/06 TPTF meetings.	
004	<p><u>Section 8 - Zonal PRR Synchronization and ERCOT Staff Clarifications.</u> This NPRR incorporates into Section 8, Performance Monitoring and Compliance, relevant language from the following PRRs that were approved by the Board between April 2004 and February 2006: PRR468, Frequency Response Requirements and Monitoring; PRR487, Black Start Resources; PRR490, LaaR Annual Testing Description; PRR535, Reactive Testing; PRR542, Clarifying the LaaR Three-Hour Limit; PRR628, ERCOT Operation Performance – Non-Spinning Reserve Service Deployments; and PRR644, Ancillary Service Re-qualification. This NPRR also incorporates TPTF determinations regarding ERCOT Staff clarification questions as discussed by TPTF and documented in the ERCOT Clarification Matrix for Section 8 on and discussed at the TPTF meeting on 1/9/06.</p>	<p>Section 8</p> <p>(Attachment B)</p> <p><i>(Effective Upon Texas Nodal Market Implementation)</i></p>
005	<p><u>Section 7 – ERCOT Staff and TPTF Clarifications.</u></p> <p>This NPRR incorporates into Section 7, Congestion Revenue Rights, TPTF determinations regarding ERCOT Staff clarification questions as discussed by TPTF on 1/23/06 and 2/6/06. This NPRR also incorporates the consensus reached by TPTF during discussions on 4/10/06, 4/24/06, 5/8/06 and 5/23/06 regarding revisions to Sections 7.4.2, PCRR Allocation Terms and Conditions, 7.5, CRR Auctions, 7.7.3, Allocation of McCamey Flowgate Rights (MCFRIs) and 7.8, Bilateral Trades and ERCOT CRR Registration System.</p>	<p>Section 7</p> <p>(Attachment C)</p> <p><i>(Effective Upon Texas Nodal Market Implementation)</i></p>

006	<u>Section 4 - ERCOT Staff Clarifications.</u> This NPRR incorporates into Section 4, Day-Ahead Operations, TPTF determinations regarding ERCOT Staff clarification questions as discussed by TPTF on 1/9/06, 5/22/06 and 6/5/06, and documented in the ERCOT Clarification Matrix for Section 4.	Section 4 (Attachment D) <i>(Effective Upon Texas Nodal Market Implementation)</i>
007	<u>Section 9 - Zonal PRR Synchronization and ERCOT Staff Clarifications.</u> This NPRR incorporates into Section 9, Settlement and Billing, relevant language from: PRR638, Change Settlement Invoice Due Date from 16 Calendar Days to 5 Bank Business Days, that was approved by the Board on 2/21/06; and PRR642, Lower Limit to IDR Meters in MRE for True-Up Settlement IDR Threshold, that was approved by the Board on 3/21/06. This NPRR also incorporates TPTF determinations regarding ERCOT Staff clarification questions as discussed by TPTF on 3/6/06, 4/10/06, 4/24/06, 5/8/06, and 6/5/06, and documented in the ERCOT Clarification Matrix for Section 9.	Section 9 (Attachment E) <i>(Effective Upon Texas Nodal Market Implementation)</i>

The changes to the Nodal Protocol language as revised by the above NPRRs are shown in Attachment A through E in redline format.

The ERCOT Nodal Protocols, including these revisions, may be accessed on ERCOT's website at <http://nodal.ercot.com/protocols/index.html>.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'S. Heino', written over a horizontal line.

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LIST OF ATTACHMENTS

ATTACHMENT A - Section 01-080106 Redline

ATTACHMENT B - Section 08-080106 Redline

ATTACHMENT C - Section 07-080106 Redline

ATTACHMENT D - Section 04-080106 Redline

ATTACHMENT E - Section 09-080106 Redline

ERCOT Nodal Protocols

Section 1: Overview

~~May 5, 2006~~ August 1, 2006

(Effective Upon Texas Nodal Market Implementation)

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1 OVERVIEW

1.1 Summary of the ERCOT Protocols Document

- (1) The Electric Reliability Council of Texas (ERCOT) Protocols, created through the collaborative efforts of representatives of all segments of Market Participants, means the document adopted by ERCOT, including any attachments or exhibits referenced in these Protocols, as amended from time to time, that contains the scheduling, operating, planning, reliability, and settlement (including Customer registration) policies, rules, guidelines, procedures, standards, and criteria of ERCOT. To determine responsibilities at a given time, the version of the ERCOT Protocols in effect at the time of the performance or non-performance of an action governs with respect to that action. These Protocols are intended to implement ERCOT's functions as the Independent Organization for the ERCOT Region as certified by the Public Utility Commission of Texas (PUCT) and as the "Program Administrator" appointed by the PUCT that is responsible for carrying out the administrative responsibilities related to the Renewable Energy Credit Program as set forth in subsection (g) of P.U.C. SUBST. R. 25.173, Goal for Renewable Energy. Market Participants, the Wholesale Electric Market Monitor (WEMM), and ERCOT shall abide by these Protocols.
- (2) The ERCOT Board, Technical Advisory Committee (TAC), and other ERCOT subcommittees authorized by the Board or TAC ("ERCOT's Committees") or ERCOT staff may develop policies, guidelines, procedures, forms, and applications for the implementation of and operation under, these Protocols and to comply with applicable rules, laws, and orders of a Governmental Authority. A policy, guideline, procedure, form, or application described above is an "Other Binding Document" if it meets the requirements set forth below. ERCOT shall post all Other Binding Documents to a part of the MIS Secure Area that is reserved for posting of Other Binding Documents. "Other Binding Documents" means:
 - (a) The Operating Guides, the Retail Market Guide, the Settlement Metering Operating Guides, the Power System Planning Charter and Process, Texas SET, the Texas Market Test Plan, and the ERCOT Creditworthiness Standards; and
 - (b) The policies, guidelines, procedures, forms, and applications that satisfy all the requirements listed below:
 - (i) Before the policy, guideline, procedure, form, or application takes effect, ERCOT must e-mail it to all affected registered Market Participants and must post it to the part of the MIS Secure Area that is reserved for posting of Other Binding Documents. ERCOT must use reasonable efforts to e-mail and post the policy, guideline, procedure, form, or application at least 30 days before it takes effect, but ERCOT must e-mail and post the policy, guideline, procedure, form, or application at least 15 Business Days before it takes effect, unless ERCOT reasonably determines that an urgent

circumstance necessitates a shorter notice period or the ERCOT Board approves a shorter notice period.

- (ii) If either the e-mail or posting under Section 1.1(2)(b)(i) occurs less than 30 days before the policy, guideline, procedure, form, or application takes effect, ERCOT must include in the e-mail and posting an explanation of why it was not able to give 30 days' advance notice before the policy, guideline, procedure, form, or application takes effect.
 - (iii) ERCOT must label the policy, guideline, procedure, form, or application at the top of its first page with the words "Other Binding Document under Section 1.1 of the Protocols."
 - (iv) The policy, guideline, procedure, form, or application must expressly state how long it will be in effect.
- (3) Any revision of an Other Binding Document must follow the revision process set forth in that Other Binding Document. If an Other Binding Document does not specify a revision process, the requirements of Section 1.1(2)(b)(i) through (iv) apply to any revision of that Other Binding Document. To the extent that Other Binding Documents are not in conflict with these Protocols or with an Agreement to which it is a party, each Market Participant, the WEMM, and ERCOT shall abide by the Other Binding Documents.
- (4) Taken together, these Protocols and the Other Binding Documents constitute all of the "scheduling, operating, planning, reliability, and settlement policies, rules, guidelines, and procedures established by the independent system operator in ERCOT," as that phrase is used in subsection (j) of the Public Utility Regulatory Act, TEX. UTIL. CODE ANN. § 39.151 (Vernon 1998 & Supp. 2003) (PURA), Essential Organizations, that bind Market Participants.
- (5) Except as provided below, if the provisions in any attachment to these Protocols or in any of the Other Binding Documents conflict with the provisions of Protocols Section 1, Overview, through Section 21, Process for Protocols Revision, Section 23, Texas Plan Team - Retail Market Testing, through Section 24, Point to Point Communications, then the provisions of Protocols Section 1 through Section 21, Section 23 through Section 24 prevail to the extent of the inconsistency. If any provision of any Agreement conflicts with any provision of the Protocols, the Agreement prevails to the extent of the conflict. Any Agreement provision that deviates from the standard form for that Agreement in Section 22 must expressly state that the Agreement provision deviates from the standard form in Section 22. Agreement provisions that deviate from the Protocols are effective only upon approval by the ERCOT Board on a showing of good cause.
- (6) These Protocols are not intended to govern the direct relationships between or among Market Participants except as expressly provided in these Protocols. ERCOT is not responsible for any relationship between or among Market Participants to which ERCOT is not a party.

1.2 Functions of ERCOT

- (1) ERCOT is the Independent Organization certified by the PUCT for the ERCOT Region. The major functions of ERCOT, as the Independent Organization, are to:
 - (a) Ensure access to the ERCOT Transmission Grid and Distribution Systems for all buyers and sellers of electricity on nondiscriminatory terms;
 - (b) Ensure the reliability and adequacy of the ERCOT Transmission Grid;
 - (c) Ensure that information relating to a Customer's choice of Retail Electric Provider in Texas is conveyed in a timely manner to the persons who need that information; and
 - (d) Ensure that electricity production and delivery are accurately accounted for among the All-Inclusive Generation Resources and wholesale buyers and sellers, and Transmission Service Providers and Distribution Service Providers, in the ERCOT Region.
- (2) ERCOT is the Control Area Operator for the ERCOT interconnection and performs all Control Area functions as defined in the Operating Guides and the North American Electric Reliability Council (NERC) policies.
- (3) ERCOT is the PUCT-appointed Program Administrator of the Renewable Energy Credits Program.
- (4) These Protocols are intended to implement the above-described functions.
- (5) In exercising any functions related to deployment of energy or Ancillary Service as described in these Protocols, ERCOT acts only as an agent on behalf of the various Market Participants in fulfilling these duties, subject to the settlement process in these Protocols. All references in these Protocols to provision, procurement, purchase, deployment, or Dispatch of energy or Ancillary Service or any other similar action must be interpreted to mean that ERCOT is taking such action on behalf of Market Participants as an agent. Nothing in these Protocols may be construed as causing ERCOT to take title to any energy or Ancillary Service or to cause TSPs, DSPs, or Resources to transfer any control of their facilities to ERCOT. In the exercise of its sole discretion under these Protocols, ERCOT shall act in a reasonable, nondiscriminatory manner.
- (6) ERCOT may not profit financially from its activities as the Independent Organization in the ERCOT Region. ERCOT may not use its discretion in the procurement of Ancillary Service capacity or deployment of energy to influence, set or control prices.

1.3 Confidentiality

1.3.1 *Restrictions on Protected Information*

Section 1.3, Confidentiality, applies to Protected Information disclosed by a Market Participant to ERCOT or the WEMM or by ERCOT to a Market Participant or the WEMM. ERCOT, the WEMM, or any Market Participant (“Receiving Party”) may not disclose Protected Information received from one of the others (“Disclosing Party”) to any other Entity except as specifically permitted in this Section and in these Protocols. A Receiving Party may not use Protected Information except as necessary or appropriate in carrying out its responsibilities under these Protocols. To disclose means to directly or indirectly disclose, reveal, distribute, report, publish, or transfer Protected Information to any party other than to the Disclosing Party.

1.3.1.1 Items Considered Protected Information

Subject to the exclusions set out in Section 1.3.1.2, Items Not Considered Protected Information, “Protected Information” is information containing or revealing any of the following:

- (a) Base Points, as calculated by ERCOT;
- (b) Bids, offers, or pricing information identifiable to a specific QSE or Resource;
- (c) Status of Resources, including outages, limitations, or scheduled or metered Resource data;
- (d) Current Operating Plans;
- (e) Ancillary Service Trades, Energy Trades, Capacity Trades, and Ancillary Service Schedules identifiable to a specific QSE or Resource;
- (f) Dispatch Instructions identifiable to a specific QSE or Resource, except for RUC commitments and decommitments as provided in Section 5.5.3, Communication of RUC Commitments and Decommitments;
- (g) Raw and Adjusted Metered Load data (demand and energy) identifiable to a specific QSE or Customer;
- (h) Settlement Statements and Invoices identifiable to a specific QSE;
- (i) Aggregated raw and Adjusted Metered Load data (demand and energy), and number of Electric Service Identifiers (ESI IDs) identifiable to a specific Load Serving Entity (LSE);
- (j) Information related to generation interconnection requests, to the extent such information is not otherwise publicly available;
- (k) Resource-specific costs, design and engineering data;

- (l) Congestion Revenue Rights (CRR) credit limits, the identity of bidders in a CRR Auction, or other bidding information identifiable to a specific CRR Account Holder;
- (m) Renewable Energy Credit (REC) account balances;
- (n) Credit limits identifiable to a specific QSE;
- (o) Any information that is designated as Protected Information in writing by Disclosing Party at the time the information is provided to Receiving Party except for information:
 - (i) submitted to or collected by ERCOT under the Protocols or Other Binding Documents; or
 - (ii) provided to ERCOT in support of a Reliability Must-Run (RMR) application under Section 3.14.1, Reliability Must Run;
- (p) Any information compiled by a Market Participant on a Customer that in the normal course of a Market Participant's business that makes possible the identification of any individual Customer by matching such information with the Customer's name, address, account number, type of classification service, historical electricity usage, expected patterns of use, types of facilities used in providing service, individual contract terms and conditions, price, current charges, billing record, or any other information that a Customer has expressly requested not be disclosed ("Proprietary Customer Information") unless the Customer has authorized the release for public disclosure of that information in a manner approved by the PUCT. Information that is redacted or organized in such a way as to make it impossible to identify the Customer to whom the information relates does not constitute Proprietary Customer Information;
- (q) Any software, products of software, or other vendor information that ERCOT is required to keep confidential under its agreements;
- (r) QSE, TSP, and DSP backup plans collected by ERCOT under the Protocols or Other Binding Documents;
- (s) Direct Current (DC) Tie information provided to a TSP or DSP under Section 4.4.4, DC Tie Schedules; and
- (t) Any Texas Standard Electronic Transaction (SET) transaction submitted by an LSE to ERCOT or received by an LSE from ERCOT. This paragraph does not apply to ERCOT's compliance with:
 - (i) PUCT Rules on performance measure reporting;
 - (ii) these Protocols or Other Binding Documents; or

- (iii) any TAC-approved reporting requirements.
- (u) Mothballed Generation Resource updates and supporting documentation submitted pursuant to Section 3.14.1.6, Mothballed Generation Resource Time to Service Updates.
- (v) For purposes of Capacity Demand Reserve Reporting, the unavailability of Switchable Generation Resources to the ERCOT System and supporting documentation submitted pursuant to Section 16.5.4(2), Maintaining and Updating Resource Entity Information, except for reporting the aggregate capacity.
- (w) Information provided by Entities under Section 10.3.2.4, Reporting of Net Generation Capacity.
- (x) Alternative fuel reserve capability and firm gas availability information submitted pursuant to Section 6.5.9.3.1, Operating Condition Notice, Section 6.5.9.3.2, Advisory, and Section 6.5.9.3.3, Alert; and as defined by the Operating Guides.

1.3.1.2 Items Not Considered Protected Information

- (1) Notwithstanding the definition of “Protected Information” in Section 1.3.1.1, Items Considered Protected Information, the following items are not Protected Information even if so designated:
 - (a) Data comprising Load flow cases, which may include estimated peak and off-peak demand of any Load;
 - (b) RMR Agreements;
 - (c) Studies, reports and data used in ERCOT’s assessment of whether an RMR Unit satisfies ERCOT’s criteria for operational necessity to support ERCOT System reliability but only if they have been redacted to exclude Protected Information under Section 1.3.1.1, Items Considered Protected Information;
 - (d) Status of RMR Units;
 - (e) Information provided to ERCOT in support of an “Application for Reliability Must Run (RMR) Status” according to Section 3.14.1, Reliability Must Run;
 - (f) Black Start Agreements;
 - (g) Signed generation interconnection agreements, and
 - (h) Any other information specifically designated in these Protocols as information to be posted to the MIS Public Area or MIS Secure Area that is not specified as information that is subject to the requirements of Section 1.3, Confidentiality.

- (2) Protected Information that Receiving Party is permitted or required to disclose or use under the Protocols or under an agreement between Receiving Party and a Disclosing Party does not cease to be regarded as Protected Information in all other circumstances not encompassed by these Protocols or such agreement by virtue of the permitted or required Disclosure or use under these Protocols or such agreement.

1.3.2 *Procedures for Protected Information*

- (1) The Receiving Party shall adopt procedures within its organization to maintain the confidentiality of all Protected Information. Such procedures must provide that:
 - (a) The Protected Information may be disclosed to the Receiving Party's directors, officers, employees, representatives, and agents only on a "need to know" basis;
 - (b) The Receiving Party shall make its directors, officers, employees, representatives, and agents aware of Receiving Party's obligations under this Section;
 - (c) If reasonably practicable, the Receiving Party shall cause any copies of the Protected Information that it creates or maintains, whether in hard copy, electronic format, or other form, to identify the Protected Information as such; and
 - (d) Before disclosing Protected Information to a representative or agent of the Receiving Party, the Receiving Party shall require a nondisclosure agreement with that representative or agent. That nondisclosure agreement must contain confidentiality provisions substantially similar to the terms of this Section.

1.3.3 *Expiration of Confidentiality*

- (1) The following applies to the expiration of confidentiality for Protected Information:
 - (a) The Protected Information status of data specified under item (a) of Section 1.3.1.1, Items Considered Protected Information, expires seven days after the applicable Operating Day.
 - (b) The Protected Information status of part of the data specified under Section 1.3.1.1(b) expires 180 days after the applicable Operating Day, and ERCOT at that time shall make that part of the data available on the MIS Secure Area in a standard reporting format. That part of the data for which the Protected Information status expires and which is to be posted is as follows:
 - (i) Ancillary Service Offers by Operating Hour for each QSE for all Ancillary Service submitted for the DAM or any SASM;
 - (ii) The quantity of Ancillary Service offered by Operating Hour for each QSE for all Ancillary Service submitted for the DAM or any SASM; and

- (iii) Energy Offer Curve prices and quantities for each Settlement Interval by Resource.
- (c) The Protected Information status of data specified under Section 1.3.1.1(c) through (h) expires 180 days after the applicable Operating Day. One hundred eighty days after the Operating Day, ERCOT shall make the following information available on the MIS Secure Area in a standard reporting format:
 - (i) Ancillary Service Obligation and Ancillary Service Supply Responsibility for each QSE;
 - (ii) Actual metered Resource values for each QSE by Resource by Settlement Interval;
 - (iii) Complete Current Operating Plan data for each QSE snapshot on each hour; and
 - (iv) Adjusted Metered Load for each QSE by LSE, by Load Zone and by Settlement Interval, both from the initial settlement and all subsequent settlements. ERCOT shall post each subsequent Adjusted Metered Load within seven days after the subsequent settlement operation is finished. Data from the first posting and all subsequent settlement postings must remain accessible for at least 24 months after the Operating Day.
- (c) The Protected Information status of data specified under Section 1.3.1.1(i) expires 365 days after the applicable Operating Day.
- (d) REC account balances specified in Section 1.3.1.1(m) cease to be Protected Information three years after the REC Settlement period ends.
- (e) The Protected Information status of data specified under paragraph 1.3.1.1(j) expires when the generation interconnection agreement is executed or a financial arrangement for transmission construction is completed with a TSP.
- (f) The Protected Information status of data specified under Section 1.3.1.1(l) expires as follows:
 - (i) The Protected Information status of the identities of CRR bidders that become CRR Owners and the number and type of CRRs that they each own expire at the end of the CRR Auction in which the CRRs were first sold;
 - (ii) The Protected Information status of all other information identified in Section 1.3.1.1(l) expires six months after the end of the year in which the CRR was effective.

- (2) Upon the expiration of the Protected Information status of any data as specified in Section 1.3.3, Expiration of Confidentiality, paragraph (1), that data must be made available to the extent required under Section 12, Market Information System.
- (3) Information that is no longer Protected Information, but not posted, including Dispatch Instructions, is available on request under the ERCOT Request for Records and Information Policy. Requested information must be provided within a reasonable timeframe. For Dispatch Instructions, the information may be requested with respect to a specific Resource, where applicable, and by service type and Settlement Interval or as integrated over each Settlement Interval for Dispatch Instructions with sub-Settlement Interval frequency.

1.3.4 *Protecting Disclosures to the PUCT and Other Governmental Authorities*

Any disclosure that a Receiving Party makes to the PUCT must be made under applicable PUCT rules. For any disclosure of Protected Information to the PUCT outside the scope of subsection (e) of P.U.C. SUBST. R. 25.362, Electric Reliability Council of Texas (ERCOT) Governance, the Receiving Party must file that Protected Information as confidential pursuant to subsection (d) of P.U.C. PROC. R. 22.71, Filing of Pleadings, Documents, and Other Materials. Before making a disclosure under order of a Governmental Authority other than the PUCT, the Receiving Party shall seek a protective order from such Governmental Authority to protect the confidentiality of Protected Information. Nothing in Section 1.3.4 authorizes any disclosure of Protected Information to the PUCT or other Governmental Authority; this section merely creates requirements on disclosures that are authorized under other sections of these Protocols.

1.3.5 *Notice Before Permitted Disclosure*

Before making any disclosure under Section 1.3.4, Protecting Disclosures to the PUCT and Other Governmental Authorities, or under Section 1.3.6, Exceptions, Receiving Party shall promptly notify Disclosing Party in writing and shall assert confidentiality and cooperate with the Disclosing Party in seeking to protect the Protected Information from disclosure by confidentiality agreement, protective order, aggregation of information, or other reasonable measures. ERCOT is not required to provide notice to the Disclosing Party of disclosures made under Section 1.3.6(1)(b).

1.3.6 *Exceptions*

- (1) The Receiving Party may, without violating Section 1.3, Confidentiality, disclose Protected Information:
 - (a) To governmental officials, Market Participants, the public, or others as required by any law, regulation, or order, or by these Protocols, but any Receiving Party must make reasonable efforts to restrict public access to the disclosed Protected Information by protective order, by aggregating information, or otherwise if reasonably possible; or

- (b) If ERCOT is the Receiving Party and disclosure to the PUCT of the Protected Information is required by ERCOT pursuant to applicable Protocol, law, regulation, or order; or
- (c) If the Disclosing Party has given its prior written consent to the disclosure, which consent may be given or withheld in Disclosing Party's sole discretion; or
- (d) If the Protected Information, before it is furnished to the Receiving Party, is in the public domain; or
- (e) If the Protected Information, after it is furnished to the Receiving Party, enters the public domain other than as a result of a breach by the Receiving Party of its obligations under Section 1.3, Confidentiality; or
- (f) If reasonably deemed by the disclosing Receiving Party to be required to be disclosed in connection with a dispute between the Receiving Party and the Disclosing Party, but the disclosing Receiving Party must make reasonable efforts to restrict public access to the disclosed Protected Information by protective order, by aggregating information, or otherwise if reasonably possible; or
- (g) To a TSP or DSP engaged in the ERCOT Transmission Grid or Distribution System planning and operating activities, provided that the TSP or DSP has executed a confidentiality agreement with requirements substantially similar to those in Section 1.3, Confidentiality; or
- (h) To a vendor or prospective vendor of goods and services to ERCOT so long as such vendor or prospective vendor:
 - (i) is not a Market Participant; and
 - (ii) has executed a confidentiality agreement with requirements substantially similar to those in Section 1.3, Confidentiality;
- (i) To the North American Electric Reliability Council (NERC) if required for compliance with any applicable NERC requirement, but any Receiving Party must make reasonable efforts to restrict public access to the disclosed Protected Information as reasonably possible; or
- (j) To ERCOT and its consultants, the WEMM, and members of task forces and working groups of ERCOT, if engaged in performing analysis of abnormal system conditions, disturbances, unusual events, and abnormal system performance. Notwithstanding the foregoing sentence, task forces and working groups may not receive Ancillary Service offer prices or other competitively sensitive price or cost information before expiration of its status as Protected Information, and each member of a task forces or working group shall execute a confidentiality agreement with requirements substantially similar to those in Section 1.3, Confidentiality, prior to receiving any Protected Information. Data to be disclosed under this exception to task forces and working groups must be limited

to clearly defined periods surrounding the relevant conditions, events, or performance under review and must be limited in scope to information pertinent to the condition or events under review and may include the following:

- (i) QSE Ancillary Service awards and deployments, in aggregate and by type of Resource;
 - (ii) Resource facility availability status, including the status of switching devices, auxiliary loads, and mechanical systems that had a material impact on Resource facility availability or an adverse impact on the transmission system operation;
 - (iii) Individual Resource information including Base Points, maximum/minimum generating capability, droop setting, real power output, and reactive output;
 - (iv) Resource protective device settings and status;
 - (v) Data from Current Operating Plans; and
 - (vi) Resource Outage schedule information.
- (2) Such information may not be disclosed to other Market Participants prior to 10 days following the Operating Day under review.

1.3.7 *Specific Performance*

It will be impossible or very difficult to measure in monetary terms the damages that would accrue due to any breach by Receiving Party of Section 1.3, Confidentiality, or any failure to perform any obligation contained in Section 1.3 and, for that reason, among others, a Disclosing Party affected by a disclosure or threatened disclosure is entitled to specific performance of Section 1.3. In the event that a Disclosing Party institutes any proceeding to enforce any part of Section 1.3, Confidentiality, the affected Receiving Party, by entering any agreement incorporating these Protocols, now waives any claim or defense that an adequate remedy at law exists for such a breach.

1.3.8 *Commission Declassification*

After providing reasonable notice and opportunity for hearing to ERCOT and a Disclosing Party, to the extent that the Disclosing Party is known by the PUCT, the PUCT may reclassify Protected Information as non-confidential in accordance with applicable PUCT rules.

1.3.9 *Expansion of Protected Information Status*

A Market Participant may petition the PUCT to include specific information not listed in Section 1.3.1.1, Items Considered Protected Information, within the definition of Protected Information

for good cause. In addition, a Market Participant may petition the PUCT to expand the time period for maintaining Protected Information status of specific information, or prohibit disclosure altogether, for good cause. After reasonable notice and opportunity for hearing, the PUCT may grant or deny such petition.

1.4 Operational Audit

1.4.1 *Materials Subject to Audit*

ERCOT's records and documentation pertaining to its operation as the certified Independent Organization for the ERCOT Region are subject to audit in the manner prescribed herein. The rights of Market Participants to audit ERCOT are limited to the provisions in Section 1.4, Operational Audit.

1.4.2 *ERCOT Audit Committee*

The ERCOT Board has overall audit responsibility for ERCOT. The ERCOT Board may fulfill the responsibilities of the ERCOT Audit Committee or it may create a subcommittee made up of Board members to function as an ERCOT Audit Committee. The ERCOT Audit Committee shall appoint an external independent certified public accounting firm or firms ("Appointed Firm") to conduct an Operations Audit and a Code of Conduct Audit as described herein and shall make recommendations to the ERCOT Board in relation to the approval, initiation, and scheduling of such audits. ERCOT shall require such firm to sign a confidentiality agreement, with terms substantially similar to terms in Section 1.3, Confidentiality, with ERCOT before appointing the firm or firms.

1.4.3 *Operations Audit*

1.4.3.1 External Audit

At least annually, the Appointed Firm shall review ERCOT management's compliance with its operations policies and procedures. The scope of the audit must include the following:

- (a) Examination of the processing of ERCOT's receipts and disbursements as the agent on behalf of Market Participants in compliance with these Protocols;
- (b) Verification that ERCOT in its administration of these Protocols is operating independently of control by any Market Participant or group of Market Participants; and
- (c) Verification that ERCOT is operating in compliance with the following:
 - (i) The confidentiality and Protected Information provisions of these Protocols;

- (ii) ERCOT's policies that prohibit employees from:
 - (A) being involved in business decisions where the individual stands to gain or lose personally from the decision;
 - (B) having a direct financial interest in a Market Participant;
 - (C) serving in an advisory, consulting, technical or management capacity for any business organization that does significant business with ERCOT (other than through service on ERCOT Committees); and
 - (D) accepting any gifts or entertainment of significant value (not to exceed \$100.00 annually) from employees or representatives of any Market Participant doing business in ERCOT.
- (iii) ERCOT's policies and agreements requiring substantially full time consultants and contractors to comply with:
 - (A) the confidentiality and Protected Information provisions of these Protocols; and
 - (B) high standards of legal and ethical conduct in their activities in ERCOT's service.

1.4.3.1.1 *Material Issues*

- (1) This audit may also include material issues raised by ERCOT Members or Market Participants if:
 - (a) Such issues have been presented to TAC, approved by TAC, and approved by the ERCOT Audit Committee for inclusion in the audit scope; or
 - (b) Such issues are part of a random sample of complaints selected by the auditors for review, and affected Market Participants have agreed in writing to the examination of their related information in the compliance audit.
- (2) Members and Market Participants shall send any requests regarding such issues to the ERCOT TAC Chairperson designee identified on the Market Information System for inclusion on the TAC agenda.

1.4.4 *Audit Results*

These audit reports must be prepared and finalized no later than four months after the initiation of the audit. All audit reports must be addressed to the ERCOT Board of Directors; copies must be provided to the ERCOT Audit Committee and, upon request, to Market Participants and ERCOT Members. Findings and recommended actions identified as a result of an audit must be reviewed by the ERCOT Audit Committee. The results of the audits and recommended actions

to be taken by ERCOT must be provided to ERCOT Members and Market Participants upon request. ERCOT shall post the availability of audit reports, results of audits, and recommended actions on the MIS Public Area within one week of availability.

1.4.5 *Availability of Records*

Subject to the requirements of Section 1.4.6, Confidentiality of Information, ERCOT shall provide the Appointed Firm full and complete access to all financial books, cost statements, accounting records, and all documentation pertaining to the requirements of the specific audits being performed. ERCOT shall retain records relating to audits for at least four years after the audit report is delivered to ERCOT and after that until the later of (1) when the otherwise-applicable records retention requirements of ERCOT are satisfied; or (2) when the audit issues are fully resolved; in any event, however, ERCOT is never required to keep the audit records longer than seven years after the audit report is delivered to ERCOT. Section 1.4, Operational Audit, is not intended to require ERCOT to create any new records, reports, studies, or evaluations.

1.4.6 *Confidentiality of Information*

All Protected Information as defined in these Protocols obtained by the Appointed Firm through any audits remains strictly confidential. To retain control of Protected Information, ERCOT shall require that each individual auditor of the Appointed Firm sign a confidentiality agreement with terms substantially similar to the terms of Section 1.3, Confidentiality, before being allowed access to any ERCOT records or documentation. Audit reports or results provided to Market Participants or ERCOT Members must not contain any Protected Information.

1.5 *ERCOT Fees and Charges*

Fees and charges to Market Participants for use of the ERCOT scheduling, settlement, registration, and other related systems and equipment are set forth in these Protocols. The ERCOT Board may adopt additional fees and charges as reasonably necessary to cover the additional costs of such systems and equipment. Market Participants are responsible for all such applicable fees and charges. ERCOT shall post a schedule of ERCOT fees and charges on the MIS Public Area within two Business Days of change.

1.6 *Open Access to the ERCOT Transmission Grid*

1.6.1 *Overview*

Open access to the ERCOT Transmission Grid must be provided to all Eligible Transmission Service Customers by Transmission Service Providers (TSPs) and ERCOT under these Protocols and the P.U.C. Substantive Rules, Chapter 25, Substantive Rules Applicable to Electric Service Providers, Subchapter I, Transmission and Distribution.

1.6.2 *Eligibility for Transmission Service*

Transmission Service is available to all Eligible Transmission Service Customers. Energy may be transmitted and Ancillary Service may be provided on behalf of an Eligible Transmission Service Customer through the ERCOT System only through a QSE.

1.6.3 *Nature of Transmission Service*

Transmission Service allows all Eligible Transmission Service Customers to deliver and receive Energy using the Transmission Facilities of all of the Transmission Service Providers in ERCOT under P.U.C. Substantive Rules.

1.6.4. *Payment for Transmission Access Service*

ERCOT may not collect Transmission Access Service fees for the TSPs' cost of service. ERCOT shall provide volumetric data, pursuant to Section 9, Settlement and Billing, to the TSPs so that the TSPs can calculate their Transmission access fees. ERCOT's collection and settlement process associated with ERCOT's scheduling and deployment of Ancillary Service is addressed separately in these Protocols.

1.6.5 *Interconnection of New Generation*

Interconnection of new All-Inclusive Generation Resources to the ERCOT Transmission Grid must be in accordance with the ERCOT Standard Generation Interconnection Agreement (SGIA) and associated procedures.

1.7 Rules of Construction

- (1) Capitalized terms and acronyms used in the Protocols have the meanings set out in Section 2, Definitions and Acronyms, of these Protocols or the meanings expressly set out in another Section of the Protocols. If a capitalized term or acronym is defined in both Section 2, and another Section of these Protocols, then the definition in that other Section controls the meaning of that term or acronym in that Section, but the definition in Section 2, controls in all other Sections of the Protocols; and
- (2) In these Protocols, unless the context clearly otherwise requires:
 - (a) The singular includes the plural and vice versa;
 - (b) The present tense includes the future tense, and the future tense includes the present tense;
 - (c) Words importing any gender include the other gender;

- (d) The words “including,” “includes,” and “include” are deemed to be followed by the words “without limitation;”
 - (e) The word “shall” denotes a duty;
 - (f) The word “will” denotes a duty, unless the context denotes otherwise;
 - (g) The word “must” denotes a condition precedent or subsequent;
 - (h) The word “may” denotes a privilege or discretionary power;
 - (i) The phrase “may not” denotes a prohibition;
 - (j) Reference to a Section, Attachment, Exhibit, or Protocol means a Section, Attachment, Exhibit, or provision of these Protocols;
 - (k) References to any statutes, regulations, tariffs, or these Protocols are deemed references to such statute, regulation, tariff, or Protocol as it may be amended, replaced, or restated from time to time;
 - (l) Unless expressly stated otherwise, references to agreements and other contractual instruments include all subsequent amendments and other modifications to the instruments, but only to the extent that the amendments and other modifications are not prohibited by these Protocols;
 - (m) References to persons or Entities include their respective successors and permitted assigns and, for governmental Entities, Entities succeeding to their respective functions and capacities;
 - (n) References to “writing” include printing, typing, lithography, and other means of reproducing words in a tangible visible form;
 - (o) Any reference to a day, week, month, or year is to a calendar day, week, month, or year unless otherwise noted; and
 - (p) Any reference to time is to Central Prevailing Time; the 24-hour clock is used unless otherwise noted.
 - (q) Any reference to dollars is U.S. currency dollars unless otherwise noted.
 - (r) All Settlement calculations are in dollars (USD), unless otherwise noted.
 - (s) Any reference to energy is electrical energy, unless otherwise noted.
- (3) These provisions apply to giving notice under the Protocols:
- (a) Whenever these Protocols require an Entity to send a notice to another Entity and do not specify the method by which that notice should be sent, then the notice may be sent by:

- (i) Hand-delivery;
 - (ii) Electronic mail;
 - (iii) Facsimile transmission;
 - (iv) Overnight delivery service (e.g., Federal Express, DHL or similar service) that requires a signed receipt;
 - (v) The ~~ERCOT~~-Messaging System or other electronic means provided for by these Protocols; or
 - (vi) U.S. Mail, first class postage prepaid, registered (or certified) mail, return receipt requested, properly addressed.
- (b) Notice by facsimile, electronic mail, the ~~ERCOT~~-Messaging System, or other electronic means provided for by these Protocols is considered received when sent unless transmitted after 5:00 p.m. local time of the recipient or on a non-Business Day, in which case it is considered received one Business Day after it was sent.
- (c) Notice by overnight delivery service that requires a signed receipt is considered received on the day that it was received.
- (d) Notice by U.S. Mail is considered received three days after the date it was deposited in the U.S. Mail, first class postage prepaid, registered (or certified) mail, return receipt requested, properly addressed.
- (e) For any notice sent by facsimile or electronic mail, the sender must promptly confirm the notice, in writing, by delivering the notice by:
- (i) U.S. Mail, first class postage prepaid, registered (or certified) mail, return receipt requested, properly addressed;
 - (ii) Overnight delivery service requiring a signed receipt; or
 - (iii) Hand-delivery.
- (f) If the Protocols require notice to a registered Market Participant by ERCOT, ERCOT must send the notice to the then-current Authorized Representative, if any, for the Market Participant as set forth in the Market Participant's Application for Registration on file with ERCOT or another representative designated in writing by the Authorized Representative for the purpose of receiving communications from ERCOT.

- (g) When the Protocols require a notice to be in writing, sending it by electronic mail, the ~~ERCOT~~ Messaging System, or other electronic means ~~does not satisfy~~ satisfies the requirement that the notice be in writing. ~~Sending it by facsimile transmission does satisfy the requirement that the notice be given in writing.~~
- (4) Nothing in these Protocols may be construed to grant any jurisdiction or authority to NERC or FERC that they do not otherwise have.

1.8 Effective Date

Provisions of these Protocols approved through the process set forth in Section 21, Process for Protocol Revision, but not implemented until a specified later date or in accordance with other specified prerequisites to implementation, must be set forth, and the approved but not yet implemented provision must be set forth in boxes within the Protocols.

ERCOT Nodal Protocols

Section 8: Performance Monitoring and Compliance

~~September 23, 2005~~August 1, 2006
(Effective Upon Texas Nodal Market Implementation)

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8 PERFORMANCE MONITORING AND COMPLIANCE

This Section describes how the performance of ERCOT, TSPs and QSEs are measured against the requirements of these Protocols. Section 8.1 addresses QSE performance measures, Section 8.2 addresses ERCOT performance measures, Section 8.3 addresses TSP performance measures, and Section 8.4 addresses the consequences of nonperformance. Some of the performance measures are specified in this Section, but in some instances Section 8 requires ERCOT to develop other performance measures that must be approved by the Technical Advisory Committee (TAC) and included in the Operating Guides before implementation. Summaries of the performance of each TSP and QSE and of ERCOT are to be made available to all Market Participants.

8.1 QSE/Resource Performance Monitoring and Compliance

- (1) ERCOT shall develop a TAC-approved QSE/Resource monitoring Program to be included in the Operating Guides. Nothing in this Section changes the process for amending the Operating Guides. The metrics developed by ERCOT and approved by TAC must include the provisions of this Subsection.
- (2) Each QSE shall meet, and shall cause each Resource that it represents to meet, performance measures as described in this Subsection and in the Operating Guides. The QSE performance measures assess the Real-Time delivery of Ancillary Service by the QSE. Resource performance measures assess the capability of a Resource to meet the requirements of these Protocols and the Operating Guides.
- (3) ERCOT shall monitor the following categories of performance and compliance;
 - (a) Net dependable real power capability testing, for QSEs and Generation Resources;
 - (b) Reactive testing, for Generation Resources;
 - (c) Real-Time data, for QSEs:
 - (i) Telemetry standards;
 - (ii) Communications system;
 - (iii) Operational Data Requirements required under Section 6.5.5.2, Operational Data Requirements.
 - (d) Written Black Start procedures, for QSEs that represent Generation Resources and for Generation Resources;
 - (e) Regulation control performance, for QSEs and as applicable, Resource-specific performance (See also Section 8.1.2.1, QSE Ancillary Service Performance Standards ~~Ancillary Service Qualification and Testing~~);

- (f) Compliance with Dispatch Instructions, for QSEs;
- (g) Hydro responsive testing, for QSEs;
- (h) Black Start Service requirements, for QSEs and Generation Resources;
- (i) Supplying and validating data for generator models, as requested, for Generation Resources;
- (j) Twelve-month Outage scheduling, for QSEs and ~~Generation Resources~~;
- (k) Resource-specific Responsive Reserve performance for QSEs and Resources;
- (l) Voltage and Reactive support performance for QSEs and Generation Resources;
- (m) Generation under-frequency relay coordination as specified in the Operating Guides for Generation Resources;
- (n) The backup control for Resource energy deployment due to loss of communication with ERCOT, for QSEs to be tested by ERCOT randomly at least once for a year for QSEs with Resources;
- (o) Resource-specific Non-Spinning Reserve (Non-Spin) performance, for QSEs and Resources;
- (p) Twenty-four hours per day, seven days per week qualified staffing requirement, as described in the Operating Guides, for QSEs;
- ~~(q) Load Resource and QSE testing, for Load Resources providing Ancillary Service;~~
- (qr) Automatic Voltage Regulator (AVR) and Power System Stabilizer (PSS) requirements, for QSEs and Generation Resources;
- (rs) Staffing plan for a backup control facility or procedures in the event that the primary facility is unusable, for QSEs;
- (st) Outage reporting, by QSEs for Resources;
- (tu) Current Operating Plan metrics, for QSEs;
- (uv) Testing and performance of governor under the Operating Guides, for Generation Resources;
- (vw) Other NERC or ERCOT reliability-related assessments, for QSEs and Generation Resources; and,
- (wx) DRUC and HRUC commitment performance by QSEs for Generation Resources.

8.1.1 *Generating Resource Governor Response Deployment Compliance Monitoring Criteria for Frequency Disturbances*

Each Resource not providing Responsive Reserve must meet the following criteria when it is On-Line:

- (a) For all frequency deviations exceeding 0.1 Hz, ERCOT shall use recorded two-second scan rate values of real power output for each Resource to evaluate governor response or response to Dispatch Instructions. ERCOT shall use the recorded MW data beginning one minute before the start of the frequency excursion event or Dispatch Instruction until 20 minutes after the start of the frequency excursion event or Dispatch Instruction. Satisfactory performance must be measured by comparing the actual response to the frequency response capability required in the Operating Guides, using methods detailed therein.
- (b) ERCOT shall monitor energy that is delivered by a Resource during major frequency disturbances primarily based on the methodology described in the Operating Guides and analyzed using the metric described in the Operating Guides.

8.1.2 *QSE Ancillary Service Performance Standards*

Each QSE and its Resources that provides Ancillary Service must meet performance measures set out in these Protocols and the Operating Guides. ERCOT shall develop a TAC-approved Ancillary Service monitoring program to evaluate the performance of QSEs and Resources providing Ancillary Services ~~providers~~. This program must include monitoring of capacity availability and energy deployments as described below and in Section 6.5.7.5 Ancillary Service Capacity Monitor.

8.1.2.1 Ancillary Service Qualification and Testing

- (1) Each QSE and the Resource providing Ancillary Service must meet qualification criteria to operate satisfactorily with ERCOT. ERCOT shall use the Ancillary Service qualification and testing program that is approved by the ERCOT Technical Advisory Committee and included in the Operating Guides. Each QSE for the Resources that it represents may only provide Ancillary Services on those Resources for which it has met the qualification criteria. General capacity testing must be used to verify a Resource's Net Dependable Capability. Net Dependable Capability is the maximum sustained capability of a Resource as demonstrated by performance testing. Each QSE for the Generation Resources that it represents may not submit to ERCOT an HSL greater than that Resource's Net Dependable Capability without a text description indicating the reason for the increase. Each QSE for the Load Resources that it represents may not provide ERCOT a MPC, greater than that Resource's Net Dependable Capability without a text description indicating the reason for the increase. Qualification tests allow the potential provider's portfolio to demonstrate the minimum capabilities necessary to deploy an Ancillary Service.

- (2) A Load Resource may be provisionally qualified for a period of 90 days and may be eligible to participate as a Resource. Load Resources that have installed the appropriate equipment with verifiable testing data may be provisionally qualified as providers of Ancillary Service.
- (3) A Load Resource may be provisionally qualified for a period of 90 days to participate as a Resource providing Ancillary Service, if the Load Resource is metered with an Interval Data Recorder (IDR) to ERCOT's reasonable satisfaction. A Load Resource providing Ancillary Service in Real-Time, if the Load Resource meets the following requirements:
 - (a) ESI ID registration of Load Resources providing Ancillary Service by the QSE; and
 - (b) Load Resource telemetry is installed and tested between QSE and ERCOT.
- (4) Provisional qualification as described herein may be revoked by ERCOT at any time for any non-compliance with provisional qualification requirements.

8.1.2.2 General Capacity Testing Requirements

- (1) Before the start of each season, a QSE shall provide ERCOT a list identifying each Generation Resource that is expected to operate more than 168 hours in a season as a provider of energy or Ancillary Service. ERCOT shall evaluate during each season of expected operation the Net Dependable Capability of each Resource expected to operate more than 168 hours during that season, except for Generation Resources used solely for energy services and whose capacity is less than ten MW. Prior to the beginning of each season, QSEs shall identify the Generation Resources to be tested during the season and the specific week of the test if known. This schedule may be modified by the QSE (including retests) during the Season. QSEs not identifying a specific week for a Generation Resource test must test the Resource within the first 168 hours of operation during the season or operate with a Net Dependable Capability equal to the highest integrated hourly MWh output demonstrated during the first 168 hours of operation. QSEs do not have to bring On-Line or shut down Resources solely for the purpose of the seasonal verification. Any Resource for which the QSE desires qualification to provide Ancillary Service shall have its Net Dependable Capability verified prior to providing services using the Generation Resource even if it fits the less-than-168-hour or small-size capacity exception. The capability of hydro Resources operating in the synchronous condenser fast response mode to provide hydro Responsive Reserve must be evaluated by season.
- (2) ERCOT shall annually verify the telemetry attributes of ~~a each qualified~~ Load Resource ~~providing Ancillary Service~~. In addition, once every two years, any Load Resource qualified to providing provide Responsive Reserve Service shall test the correct operation of the under-frequency relay or the output from the solid-state switch, whichever applies. However, if the 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.

- (3) A specific Load Resource to be used for the first time to provide Regulation, Responsive Reserve or Non-Spin must be tested to ERCOT's reasonable satisfaction (tripped or simulated trip, if required and approved by ERCOT) before its qualification to provide Ancillary Service. 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 simulation of Load interruption required under this Section on the MIS Public Area. A Load Resource used to provide Responsive Reserve must be qualified for correct relay operation by its host TSP and DSP, if applicable.
- (4) Any changes to a Load Resource including changes to its capability to providing-provide Ancillary Service requires updates by the Load Resource to the registration information detailing the change. For 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.
- (5) Generation Resources and Load Resources must be evaluated at least annually by ERCOT for the following:
 - (a) Correct operation of all required telemetry as described in these Protocols including the telemetry of the breakers and switches controlling the Resource;
 - (b) Correct Mapping-mapping of QSE-provided telemetry of Ancillary Service energy to the appropriate energy Settlement Meter; and
 - (c) Data rate update requirements and any other required telemetry attributes.
- (6) Generation Resources and Load Resources must meet the requirements specified in the Operating Guides for proper response to system frequency. ERCOT may reduce the amount a Resource may contribute toward Ancillary Service if it determines unsatisfactory performance of the Resource as defined in these Protocols and the Operating Guides.
- (7) 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.

8.1.2.2.1 *Ancillary Service Technical Requirements and Qualification Criteria and Test Methods*

A QSE and the Resource that it represents that has-have been qualified and tested may provide Ancillary Service. ERCOT shall develop and operate its qualification and testing program to meet the following requirements for each Ancillary Service.

- (a) A QSE must be qualified and tested to provide Ancillary Service prior to initial operation and every five years thereafter. ERCOT may conduct two unannounced, unscheduled qualification tests after presenting to the QSE supporting information that a Generation

Resource or Load Resource may not be able to meet its stated Net Dependable Capability during any year.

- (b) A QSE may request a test for re-qualification at any time, but no later than the expiration of its Resource's current Ancillary Service qualification, and no more frequently than once every twelve months. At the time of a request by a QSE for re-qualification of its Resources, ERCOT may approve the re-qualification based on the Ancillary Service performance metrics using the following criteria:
- (i) For the QSE and for the Resources that it represents that are qualified for Regulation Service, the performance scores in Section 8.1.2.4.1, Regulation Service Energy Deployment Criteria, were passing for five out of the previous six months.
 - (ii) For each Resource qualified to provide RRS, the RRS criteria in Section 8.1.2.4.2, Responsive Reserve Service Energy Deployment Criteria, were passing for five out of the previous six deployment measurements.
 - (iii) For each resource qualified to provide Non-Spin, the Non-Spin monitoring criteria in Section 8.1.2.4.3, Non-Spinning Reserve Energy Deployed under Dispatch Instruction Criteria, were passing for five out of the previous six deployment measurements without retest.

If the QSE passes the criteria, the QSE's Resource will be exempt from re-qualification testing for five years from the date of the exemption request. ERCOT shall provide monthly performance updates to the QSE for the above performance measures.

- (bc) ERCOT may grant a "Provisional Qualification," for a period not to exceed 90 days, to a Load Resource that has performed an Ancillary Service qualification test (or tests) in good faith but failed to qualify due to problems that, in the sole discretion of ERCOT, are determined to be non-critical for the purpose of providing one or more Ancillary Service. Notwithstanding the failure of a Load Resource with Provisional Qualification to meet the applicable Ancillary Service criteria, such Load Resource may provide such Ancillary Service to the extent permitted by the terms of the Provisional Qualification.

8.1.2.2.2 *Regulation Service*

- (1) A QSE control system must be capable of receiving digital control signals from ERCOT's control system, and of directing its Resources to respond to the control signals, in an upward and downward direction to balance Real-Time Demand and Resources, consistent with established NERC and ERCOT operating criteria. A QSE providing Reg-Up or Reg-Down shall provide communications equipment to receive telemetered control deployments of power from ERCOT.

- (2) A QSE shall demonstrate to ERCOT that they have the ability to switch control to constant frequency operation as specified in the Operating Guides using telemetry at the QSE's control center. ERCOT-authorized operations of the QSE's regulation control system on constant frequency will be considered a Dispatch Instruction.
- (3) A QSE providing Reg-Up or Reg-Down shall provide ERCOT with the data requirements of Section 6.5.5.2, Operational Data Requirements, and a feedback signal meeting the requirements of ERCOT. Resources providing Reg-Up or Reg-Down must be capable of delivering the full amount of regulating capacity offered to ERCOT within five minutes.
- (4) Each Resource providing Reg-Up or Reg-Down must meet technical requirements specified in these Protocols. Each Generation Resource providing Reg-Up or Reg-Down must have their governors in service.
- (5) A Resource providing Reg-Up and Reg-Down must be able to respond in the Operating Hour for which it has been selected to provide the Ancillary Service.
- (6) A Reg-Up and Reg-Down qualification test for each Resource is conducted during a continuous 60-minute period agreed on in advance by the QSE and ERCOT. QSEs may qualify a Resource to provide Reg-Up or Reg-Down, or both, in separate testing. ERCOT shall administer the following test requirements:
 - (a) ERCOT shall confirm the date and time of the test with the QSE using both the primary and alternate voice communication circuits to validate the voice circuits.
 - (b) For the 60-minute duration of the test, when market and reliability conditions allow, the ERCOT Control Area Operator shall send a random sequence of raise, hold, and lower control signals to the QSE for a specific Resource. To facilitate accurate measurements, each signal (raise, lower, or hold) must remain unchanged for at least two minutes. The control signals may not request Resource performance beyond the HASL, LASL, and ramp rate limit agreed on prior to the test. During the test, a ten-minute period is used to test the Resource's ability to achieve the entire amount of Reg-Up requested for qualification during the period. A ten-minute period is used to test the QSE's ability to achieve the entire amount of Reg-Down requested for qualification during the period.
 - (c) ERCOT shall measure and record the average real power output for each minute of the Resource(s) being tested represented by the QSE. The correlation coefficient between the expected average power from one minute to the next (limited to no more than the initial value + [request "1/2 " stated ramp rate]), and the actual measured real power output of the Resource(s) during those minutes must be statistically significant to two positive standard deviations in order to pass the test.
 - (d) On successful demonstration of all test criteria, ERCOT shall qualify that the Resource is capable of providing Regulation Service and shall provide a copy of the certificate to the QSE and the Resource.

8.1.2.2.3 *Responsive Reserve Service*

- (1) Responsive Reserve Service (RRS) may be provided by:
 - (a) Unloaded Generation Resources that are On-Line;
 - (b) Load Resources controlled by high-set under-frequency relays;
 - (c) Hydro Responsive Reserves;
 - (d) DC Tie response that stops frequency decay; or,
 - (e) From Load Resources capable of controllably reducing or increasing consumption under Dispatch control (similar to AGC) and that immediately respond proportionally to frequency changes (similar to generator governor action).
- (2) The amount of RRS provided by individual Generation Resources and Load Resources capable of controllably reducing or increasing consumption under Dispatch control (similar to AGC) and that immediately respond proportionally to frequency changes (similar to generator governor action) is specified in the Operating Guides. Each Resource providing RRS must be On-Line and capable of ramping the Resource's Ancillary Service Schedule for RRS within ten minutes of the notice to deploy energy, must be immediately responsive to system frequency, and must be able to maintain the scheduled level for the period of service commitment. The amount of RRS on a Generation Resource may be further limited by requirements of the Operating Guides.
- (3) A QSE's Load Resource must be loaded and capable of unloading the scheduled amount of RRS within ten minutes of instruction by ERCOT and must either be immediately responsive to system frequency or be interrupted by action of under-frequency relays with settings as specified by the Operating Guides.
- (4) Any QSE providing RRS shall provide communications equipment to receive ERCOT telemetered control deployments of RRS energy.
- (5) Generation Resources providing RRS shall have their governors in service.
- (6) Load Resources on high-set under-frequency relays providing RRS must provide a telemetered output signal, including breaker status and status of the under-frequency relay.
- (7) Each QSE shall ensure that each Resource is able to meet the Resource's obligations to provide the Resource's Ancillary Service Schedule. Each Generation Resource and Load Resource providing RRS must meet additional technical requirements specified in this Section.
- (8) A Resource that has been qualified to provide Reg-Up is also qualified to provide RRS and separate qualification testing is not required. For other Resources requesting qualification for RRS, a qualification test for each Resource to provide RRS is conducted

during a continuous eight-hour period agreed to by the QSE and ERCOT. 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 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 using the Messaging System requesting it to provide an amount of RRS from each Resource equal to the amount that the QSE is requesting qualification. The QSE shall acknowledge the start of the test.
- (b) For the ten-minute duration of the test, each of the QSE's Resource's output must be measured as one-minute average outputs for:
 - (i) the minute prior to the instructions being received from ERCOT; and
 - (ii) the minute following receipt of instructions from ERCOT and continuing for ten minutes.
- (c) Each measurement must confirm the additional delivery of energy due to the deployment of RRS in an amount requested by ERCOT equal to at least 95% and no more than 105% at the tenth minute.
- (d) On successful demonstration of all test criteria, ERCOT shall qualify that the Resource is capable of providing RRS and shall provide a copy of the certificate to the QSE and the Resource.

8.1.2.2.4 *Non-Spinning Reserve*

- (1) Each Resource providing Non-Spinning Reserve (Non-Spin) must be capable of being synchronized and ramped to its Ancillary Service Schedule for Non-Spin within 30 minutes. Non-Spin may be provided from Generation Resource capacity that can ramp within 30 minutes or Load Resources capable of unloading within 30 minutes. Non-Spin may only be provided from capacity that is not fulfilling any other energy or capacity commitment.
- (2) A Load Resource providing Non-Spin must provide a telemetered output signal, including breaker status.
- (3) Each Generation Resource and Load Resource providing Non-Spin must meet additional technical requirements specified in this Section.
- (4) QSEs using a Load Resource to provide Non-Spin must be capable of responding to ERCOT Dispatch Instructions in a similar manner to QSEs using Generation Resource to provide Non-Spin.

- (5) Each QSE shall ensure that each Resource is able to meet the Resource's obligations to provide the Resource's Ancillary Service Schedule. Each Generation Resource and Load Resource providing Non-Spin must meet additional technical requirements specified in this Section.
- (6) For any Resource requesting qualification for Non-Spin, a qualification test for each Resource to provide Non-Spin is conducted during a continuous eight hour period agreed to by the QSE and ERCOT. 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 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 using the Messaging System requesting it to provide an amount of Non-Spin from each Resource equal to the amount that the QSE is requesting qualification. The QSE shall acknowledge the start of the test.
 - (b) For the 60-minute duration of the test, each of the QSE's Resources output must be measured as one-minute average outputs for:
 - (i) the minute prior to the instructions being received from ERCOT; and
 - (ii) the minute following receipt of instructions from ERCOT and continuing for 30 minutes.
 - (c) All measurements shall confirm the additional delivery of energy due to the deployment of Non-Spin in an amount equal to at least 95% and no more than 105% of the amount requested by ERCOT at the end of the 30th minute.
 - (c) On successful demonstration of all test criteria, ERCOT shall qualify that the Resource is capable of providing Non-Spin and shall provide a copy of the certificate to the QSE and the Resource.

8.1.2.2.5 *Reactive Supply from Generation Resources providing Voltage Support Service (VSS)*

- (1) The Generation Entity must verify and maintain its stated Reactive Power ~~capacity~~ capability for each of its Generation Resources providing VSS, as required by the Operating Guides. Generation Resources providing VSS reactive capability limits shall be specified considering nominal substation voltage.
- (2) The Generation Resource Entity shall conduct reactive capacity qualification tests to verify the maximum leading and lagging reactive ~~capacity~~ capability of all Generation Resources required to provide VSS. Reactive ~~capacity~~ capability tests are performed on initial qualification and ~~periodically at a minimum of once every two years. -at an ERCOT set interval no more often than once every two years, unless ERCOT may require additional testing if it has information indicating that current data is inaccurate.~~

The Generation Resource Entity is not obligated to place Generation Resources On-Line solely for the purposes of testing. The reactive capability-capacity tests must be conducted at a time agreed on in advance by the Generation Resource Entity, its QSE, the applicable TDSP, and ERCOT.

- (3) Maximum lagging power factor reactive operating limit must be demonstrated during peak Load Season, at or above 95% of the most currently tested Net Dependable Capability, insofar as system voltage conditions and other factors will allow. The Generation Resource providing VSS is required to maintain this level of Reactive Power for 15 minutes.
- (4) Maximum leading power factor reactive operating limit must be demonstrated during light Load conditions, with the Generation Resource operating at its minimum a typical output for that condition Load, or the normal expected output level for solid fuel Generation Resources during light Load conditions, insofar as system voltage conditions and other factors will allow. The Resource is required to maintain this level of Reactive Power for 15 minutes.
- (5) The Generation Resource Entity shall perform the Resource Automatic Voltage Regulator (AVR) tests and shall supply AVR data as specified in the Operating Guides. The AVR tests must be performed on initial qualification and periodically at an ERCOT-set interval no more often than once every five years. The AVR tests must be conducted at a time agreed on in advance by the Generation Resource Entity, its QSE, the applicable TSP and ERCOT.

8.1.2.2.6 System Black Start Capability

- (1) A Resource is qualified to be a Black Start Resource if it has met the following requirements:
 - (a) Verified control communication path performance;
 - (b) Verified primary and alternate voice circuits for receipt of instructions;
 - (c) Passed the basic starting test;
 - (d) Passed the line-energizing test; and
 - (e) Passed the Load-carrying test; and
 - (f) Has started the next-start unit, or has started the next-start unit's largest required motor and satisfied the next-start unit's minimum startup Load requirements; or has been demonstrated to the satisfaction of ERCOT staff through simulation studies conducted by the Black Start Service provider or a qualified third party, to be capable of starting the next-start unit's largest required motor while meeting the next-start unit's minimum startup Load requirements. Potential Black Start Service bidders may request next-start unit information from ERCOT prior to the

selection process to satisfy this requirement. ERCOT shall require this information from the designated next-start unit as follows: ERCOT may require any Generation Resource to provide largest motor startup information and unit startup energy requirements as needed to validate black start proposals or plans submitted by other Generation Resources. Such data, if requested by ERCOT, shall be provided by the QSE representing the Generation Resource, or the Generation Resource Entity to ERCOT within 30 days or less;

- (g) If not starting itself, has an ERCOT-approved firm standby power contract with deliverability under ERCOT blackout circumstances from a non-ERCOT Control Area that can be finalized upon selection as a Black Start Resource;
 - (h) If not starting itself, has an ERCOT approved agreement with the necessary TDSPs for access to another power pool, for coordination of switching during a black-start event, for coordination of maintenance through the ERCOT Outage scheduler for all non-redundant transmission startup feeds; and
 - (i) If dependent upon non-ERCOT transmission resources, agreements providing this Transmission Service have been provided in the proposal.
- (2) On successful demonstration of system Black Start Service capability, ERCOT shall certify that the Black Start Resource is capable of providing system Black Start Service capacity and shall provide a copy of the certificate to the Black Start Resource. Qualification is valid for one year from the date of the last successful Basic Starting test, three years from the date of the last successful line-energizing test, or six years from the date of the last successful Load-carrying test, whichever is earliest. ERCOT shall revoke the Resource's qualification if the Black Start Resource fails to perform successfully during an actual restoration event, until the Black Start Resource is successfully retested. Retesting is required only for the aspect of system Black Start Service capability (basic starting, line-energizing, or Load-carrying) for which the Black Start Resource failed.
- (a) The "Basic Starting Test" includes the following:
 - (i) The basic ability of the Black Start Resource to start itself, or start from a normally open interconnection to another non-ERCOT Control Area, without support from the ERCOT System;
 - (ii) Annual testing, either as a stand-alone test or part of the line energizing and Load carrying tests, and the test is preformed during a one-week period agreed to in advance by the Black Start Resource and ERCOT and must not cause outage to ERCOT Customer Load or the availability of other Resources to the ERCOT market;
 - (iii) Confirmation of the dates of the test with the Black Start Resource by ERCOT;

- (iv) Initiation of the test at a time during a previously agreed test week window not previously disclosed to the Black Start Resource;
 - (v) Isolation of the Black Start Resource, including all auxiliary Loads, from the ERCOT power-sSystem, except for the transmission that connects the Resource to a non-ERCOT Control Area if the startup power is supplied by a firm standby contract. Black Start Resources starting with the assistance of a non-ERCOT Control Area through a firm standby agreement will connect to the non-ERCOT Control Area, start-up, carry internal Load, disconnect from the non-ERCOT Control Area if not supplied through a black-start capable DC Tie, and continue equivalently to what is required of other Black Start Resources;
 - (vi) The ability of the Black Start Resource to start without assistance from the ERCOT systemSystem, except for the transmission that connects the Resource to a non-ERCOT Control Area if the startup power is supplied by a firm standby contract; and
 - (vii) The ability of the Black Start Resource to remain stable (in both frequency and voltage) while supplying only its own auxiliary Loads or Loads in the immediate area for at least 30 minutes; and
 - (viii) The Black Start Resource must have verified that its Volts/Hz relay, over-excitation limiter, and under-excitation limiter are set properly and that no protection devices will trip the Black Start Resource within the required reactive range. The Resource Entity for the Black Start Resource shall provide ERCOT with data to verify these settings.
- (b) The "Line-Energizing Test" must be conducted at a time agreed on by the Black Start Resource, TSP or DSP, and ERCOT and includes the following:
- (i) Energizing transmission with the Black Start Resource when conditions permit as determined by the TSP or DSP but at least once every three years;
 - (ii) De-energizing sufficient transmission in such manner that when energized by the Black Start Resource it demonstrates the Black Start Resource's ability to energize enough transmission to deliver to the Loads the Resource's output that ERCOT's restoration plan requires the Black Start Resource to supply. ERCOT shall be responsible for transmission connections and operations that are compatible with the capabilities of the Black Start Resource;
 - (iii) Conducting a Basic Starting Test;
 - (iv) Energizing transmission with the Black Start Resource of the previously de-energized transmission, while monitoring frequency and voltages at both ends of the line. Alternatively, if ERCOT agrees, the transmission

- line may be connected to the Black Start Resource before starting, allowing the Resource to energize the line as it comes up to speed; and
- (v) Stable operation of the Black Start Resource (in both frequency and voltage) while supplying only its auxiliary Loads or external Loads for at least 30 minutes.
- (c) The “Load-Carrying Test” shall be tested as conditions permit, but at least once every six years and includes the following:
- (i) Stable operation of the Black Start Resource (in both frequency and voltage) while supplying restoration power to Load specified by ERCOT’s restoration plan for the Black Start Resource.
 - (ii) Conducting a Basic Starting Test;
 - (iii) Conducting a Line-Energizing Test; and
 - (iv) The TSP or DSP operator for the Black Start Resource shall direct picking up sufficient Load to demonstrate the Black Start Resource’s capability to supply the required power identified in ERCOT’s restoration plan, while maintaining voltage and frequency for at least 30 minutes.
- (3) ERCOT shall revoke the Resource’s qualification as a Black Start Resource for that year in the event the Black Start Resource fails to perform successfully during an actual ERCOT System blackout event and the Resource has been declared available, as defined in Section 9B(1) of Section 22, Attachment A, Standard Form Black Start Agreement.

8.1.2.3 QSE Ancillary Service Capacity Compliance Monitoring Criteria

ERCOT shall continuously measure the overall performance of each provider of Ancillary Service including estimates of remaining Ancillary Service capacity reserves that can be deployed.

8.1.2.3.1 Regulation Service Capacity Monitoring Criteria

ERCOT shall continuously monitor the capacity of each Resource to provide Reg-Up and Reg-Down. When determining this available capacity, ERCOT shall consider for each Resource with REG status, the actual generation or load, the Ancillary Service Schedule for Reg-Up and Reg-Down, the HSL, the LSL, ramp rates, any other commitments of Ancillary Service capacity, and the amount of Regulation energy currently deployed on the Resource.

8.1.2.3.2 Responsive Reserve Service Capacity Monitoring Criteria

- (1) ERCOT shall continuously monitor the capacity of each Resource to provide Responsive Reserve. ERCOT shall consider for each Resource providing Responsive Reserve capacity, the actual generation, or load, the Ancillary Service Schedule for RRS, the HSL, the LSL, ramp rates, any other commitments of Ancillary Service capacity, and any Responsive Reserve energy currently deployed on the Resource.
- (2) For Load Resources not deployed by a Dispatch Instruction from ERCOT, the amount of Responsive Reserve capacity provided must be measured as the Load Resource's average Load level in the last five minutes.
- (3) A hydro Resource that is capable of providing Hydro Responsive Reserve and that has a status code of ONRR is considered to be providing responsive capability to the extent that it is not using that capacity to provide energy.
- (4) For the purpose of monitoring Responsive Reserve performance by individual Resources, the Base Point must be adjusted assuming Responsive Reserve is deployed proportionately or as re-assigned by the QSE on the individual Resources.

8.1.2.3.3 Non-Spinning Reserve Capacity Monitoring Criteria

- (1) ERCOT shall continuously monitor the capacity of each Resource to provide Non-Spinning Reserve. ERCOT shall consider for each Resource providing Non-Spin capacity, the actual generation, or load, the Ancillary Service Schedule for Non-Spin, the HSL, the LSL, ramp rates, any other commitments of Ancillary Service capacity, and any Responsive Reserve energy currently deployed on the Resource. ERCOT shall also monitor Non-Spinning Reserve provided on Resources with OFFNS status.
- (2) For Load Resources not affected by a Dispatch Instruction from ERCOT, the amount of Non-Spin capacity provided must be measured as the Load Resource's average Load level during the hour.

8.1.2.4 QSE Ancillary Service Energy Deployment Compliance Monitoring Criteria

ERCOT shall measure the performance of each QSE and the Resources that it represents in providing Ancillary Service energy in response to Dispatch Instructions according to the following requirements.

8.1.2.4.1 Regulation Service Energy Deployment Criteria

- (1) For each QSE, ERCOT shall calculate one-minute and ten-minute averages of the "Provided Regulation" equal to the sum of (a) and (b) where:
 - (a) for all of the QSE's Resources in ONREG or ONOSREG status:

- (i) the sum of the QSE's actual generation for each Generation Resource or load for each Load Resource; minus
 - (ii) the sum of the QSE's Base Points for each Resource; minus
 - (iii) for Generation Resources, the sum of the total expected Governor Response of each Resource; and
- (b) for all of the QSE's Resources in ONDSRREG status ("DSRQSE"):
 - (i) the sum of the DSRQSE's actual generation for each Generation Resource; plus
 - (ii) the sum of the DSRQSE's awarded DAM Energy Bid quantities; plus
 - (iii) the sum of the DSRQSE's Energy Trades where the DSRQSE is the buyer and another QSE is the seller; plus
 - (iv) the sum of the DSRQSE's Energy Trades where the DSRQSE is both the buyer and the seller in the same Energy Trade (*i.e.* creating a static schedule of non-Dynamically Scheduled Resource(s) to meet DSR Load); minus
 - (v) the DSRQSE's actual load; minus
 - (vi) the sum of the DSRQSE's awarded energy offers in the DAM; minus
 - (vii) the sum of the DSRQSE's Energy Trades where the DSRQSE is the seller and another QSE is the buyer; minus
 - (viii) for Generation Resources, the total expected Governor Response of the Resources.
- (2) ERCOT shall also calculate each QSE's participation factor as the ratio for each ten-minute interval of:
 - (a) the sum of the ten-minute average of the Base Points for a QSE's Regulation Generation Resources plus deployed Ancillary Service; to
 - (b) the sum of the ten-minute averages for all Base Points for all Generation Resources plus all deployed Ancillary Service.
- (3) ERCOT shall limit the deployment of Regulation Service of each QSE for each control cycle equal to 125% of the total amount of Regulation Service in ERCOT divided by the number of control cycles in five minutes. Regulation Service performance must be calculated only for a Resource during intervals for which the Resource shows an ONREG or ONOSREG status in the COP.

- (4) Satisfactory control performance of the QSE providing Regulation Service must be deemed acceptable when:
- (a) The one minute averages of the QSE's Provided Regulation meet the criteria in paragraph (5) below over the calendar month, and
 - (b) The ten minute averages of the QSE's Provided Regulation meet the criteria in paragraph (5) below for 90% of the ~~10~~ten minute periods over the calendar month.
- (5) The criterion for the one-minute average is:

$$AVG_{month} \left[\left(\frac{\text{Provided Regulation}_1}{\text{ParticipationFactor}} \right) * \left(\frac{\Delta F_1}{(10 * \text{Bias}_1) * \varepsilon_1^2} \right) \right] \leq 1$$

and the criterion for the ~~10~~ten-minute average is:

$$|\text{Provided Regulation}_{10}| \leq L_{10} * K \sqrt{\text{ParticipationFactor}}$$

Where:

Provided Regulation₁ is the one-minute average of Provided Regulation.

Provided Regulation₁₀ is the ~~10~~ten-minute average of Provided Regulation.

Bias₁ is the one -minute average of the ERCOT total bias used in the ACE calculation.

ΔF₁ is the one -minute average of frequency deviation from schedule.

ε₁ is a constant derived from the targeted frequency bound. It is the targeted Root Mean Square of one minute average frequency error from a schedule based on frequency performance over a given year as established according to NERC Performance Requirements by ERCOT and the appropriate ERCOT Subcommittee as assigned by TAC.

L₁₀ is a limit to recognize the desired performance of frequency for ERCOT as established according to NERC performance requirements. L₁₀ is defined as (1.65 * E₁₀ * Bias₁₀) where E₁₀ is 0.01315 Hz and Bias₁₀ is the ~~10~~ten minute average of the ERCOT total bias used in the Area Control Error (ACE) calculation for the ERCOT Control Area.

K is a constant that is set to 0.81 to ensure correlation between passing the NERC CPS2 criteria and passing the ~~10~~ten minute control limit and can be adjusted by the appropriate ERCOT Subcommittee as assigned by TAC.

- (6) ERCOT shall determine the performance of providers of Ancillary Service under normal operating conditions. ERCOT shall not consider average performance of a QSE any

period during which any of the following events has occurred and for which the QSE does not have a passing score:

- (a) The 20-minute period in which the QSE has experienced a Forced Outage causing an ERCOT frequency deviation of greater than 0.03 Hz;
- (b) Settlement Intervals in which ERCOT has issued Emergency Base Points to the QSE;
- (c) The period in which ERCOT issues instructions to the QSE to deploy its Resources at ramp rates in excess of Normal Ramp Rates; and
- (d) Certain other periods of abnormal operations as determined by ERCOT in its sole discretion.

8.1.2.4.2 *Responsive Reserve Service Energy Deployment Criteria*

- (1) Each QSE providing Responsive Reserve Service shall so indicate by appropriate entries in the Resource's Ancillary Service Schedule for each Resource providing that service. When deploying any Responsive Reserve Service, the QSE shall control its Resources to operate to the Resource's Base Point at the time of the Dispatch Instruction plus the instructed Responsive Reserve Service power (in MW) requirement. ERCOT shall adjust the Resource's Base Point for any requested Responsive Reserve energy in the next cycle of SCED as specified in Section 6.5.7.6.2.2, Deployment of Responsive Reserve Service. Control performance of a Resource providing Responsive Reserve Service is acceptable when:
 - (a) Not less than 95%, nor more than 150% of the requested MW deployment is provided within ten minutes of ERCOT's deployment Dispatch Instruction and maintained until recalled or the Resource obligation to provide Responsive Reserve expires; and
 - (b) A Generation Resources providing Responsive Reserve Service must return to within 95% to 105% of its Base Point as adjusted by ERCOT on recall of Responsive Reserve energy, subject to Normal Ramp Rates of the Resource, within ten minutes following a Responsive Reserve Service recall instruction from ERCOT.
 - (c) A Load Resource providing the Responsive Reserve Service must return to within at least 95% to 105% of its committed obligation for RRS within three hours following a recall instruction from ERCOT. Each Load Resource unable to return to its committed obligation for RRS or pre-deployment capability that was specified in the COP at the time of the deployment in three hours may be replaced by the QSE providing Responsive Reserve on other Generation Resources or other Load Resources not previously committed. Ancillary Service Supply Responsibility in three hours may be replaced by the QSE providing Responsive

Reserve on other Generation Resources or other Load Resources not previously scheduled.

- (d) During periods when the Load level of a Load Resource has been affected by a Dispatch Instruction from ERCOT, the performance of a Load Resource in response to a Dispatch Instruction must be determined by subtracting the Load Resource's actual Load response from its Baseline. "Baseline" capacity is calculated by measuring the average of the real power consumption for five minutes before the Dispatch Instruction if the Load level of a Load Resource had not been affected by a Dispatch Instruction from ERCOT. The actual Load response is the average of the real power consumption data being telemetered to ERCOT during the Settlement Interval indicated in the Dispatch Instruction.
- (2) For all frequency deviations exceeding 0.1 Hz, ERCOT shall use the recorded data for each two-second scan rate value of real power output for each Resource providing Responsive Reserve Service. ERCOT shall use the recorded MW data beginning one minute before the start of the frequency excursion event until ten minutes after the start of the frequency excursion event. Satisfactory performance must be measured by comparing the actual response to the frequency response capability required in the Operating Guides.
- (3) ERCOT shall monitor the frequency response component of Responsive Reserve Service that is delivered during major frequency disturbances primarily based on a droop calculation for Generators, a relay response for Loads and Hydro Responsive Reserve. Responsive Reserve Service performance must be analyzed by a TAC and a performance metric must be provided in the Operating Guides.

8.1.2.54.43 *Non-Spinning Reserve Energy Deployed under Dispatch Instruction Criteria*

- (1) ERCOT shall, as part of its Ancillary Service deployment procedure under Section 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment, include all performance metrics for a Resource receiving a Non-Spin recall instruction from ERCOT.
- (2) A Non-Spin Dispatch Instruction from ERCOT must respect the minimum runtime of a Generation Resource. After the recall of a Non-Spin Dispatch Instruction, any Generation Resource previously Off-Line providing Non-Spin is allowed to remain On-Line for 30 minutes following the recall. During that time period, the On-Line Generation Resource is treated as if the Non-Spin is being provided.
- (3) Control performance of a Resource providing Non-Spin through a Dispatch Instruction other than a SCED Base Point is acceptable when:
 - (a) Not less than 95%, nor more than 150% of the requested energy deployment, is provided within 30 minutes after ERCOT's deployment Dispatch Instruction and maintained until recalled or the Resource Obligation to provide Non-Spin expires.

- (b) A Load Resource providing Non-Spin must return to ~~within at least 95% to 105%~~ of its committed obligation for Non-Spin no more than three hours following a recall instruction from ERCOT. Each Load Resource unable to return to its committed obligation for Non-Spin or pre-deployment capability that was specified in the COP at the time of the deployment, in three hours may be replaced by the QSE providing Non-Spin on other Generation Resources or other Load Resources not previously committed.
- (c) During periods when the MW load level of a Load Resource has been affected by a Dispatch Instruction from ERCOT, the performance of a Load Resource in response to a Dispatch Instruction will be determined by subtracting the Load Resource's actual Load response from its Baseline. "Baseline" capacity is calculated by measuring the average of the real power consumption for five minutes before the Dispatch Instruction if the Load level of the Resource had not been affected by a Dispatch Instruction from ERCOT. The actual Load response is the average of the real power consumption data being telemetered to ERCOT during the Settlement Interval indicated in the Dispatch Instruction.

8.1.2.24.4.5 Combinations of Reliability Service Energy Deployment Criteria

Each QSE providing combined services shall control each of its Resources to the Resource's additive result of the Dispatch Instructions deployed simultaneously. When deploying any Regulation, Responsive Reserve, or Non-Spinning Reserve Service, the QSE shall control its Resources to operate to the sum of the final Base Points plus any deployed Ancillary Service. Control performance of the QSE providing combined services must be determined by the criteria for each service outlined in Section 8.1.2.4, QSE Ancillary Service Energy Deployment Compliance Monitoring Criteria assuming actual Resource deployments first provide Regulation Service, then Responsive Reserve, and finally Non-Spin, as applicable.

8.2 ERCOT Performance Monitoring and Compliance

- (1) The Wholesale Electric Market Monitor (WEMM) shall continuously assess ERCOT operations and report to all Market Participants on the MIS Secure Area. The WEMM shall report on ERCOT's compliance with its duties and obligations under these Protocols without undue discrimination, including its performance of the following activities:
 - (a) Coordinating the wholesale electric market transactions;
 - (b) System-wide transmission planning; and
 - (c) Network reliability functions in the ERCOT Region.
- (2) TAC, or a subcommittee designated by TAC, shall continually review the WEMM's assessments of ERCOT's operations and ERCOT's performance in controlling the ERCOT Control Area according to requirements and criteria established by the Operating Guides and NERC policy and standards operating of Control Areas. Any reports that the WEMM delivers to TAC on ERCOT's operations and performance must be posted to the MIS Secure Area by ERCOT. Reports of all substandard ERCOT operations must be