Nodal Operating Guide Revision Request

NOGRR Number	025	NOGRR Title	Monitoring Programs for QSEs, TSPs, and ERCOT
Date Posted		February 6, 2009	

Nodal Operating Guide Sections Requiring Revision	2.2.10, QSE/Resource Monitoring Program (deleted) 2.2.11,TSP Monitoring Program (deleted) 9, Monitoring Programs for QSEs, TSPs, and ERCOT (new)
Protocol Section(s) Requiring Revision, if any	None.
Requested Resolution	Normal
Revision Description	This Nodal Operating Guide Revision Request (NOGRR) adds Section 9 to incorporate metrics to be monitored and reported on for Qualified Scheduling Entities (QSEs), Resources, Transmission Service Providers (TSPs), and ERCOT by ERCOT.
Reason for Revision	Nodal Protocol Section 8, Performance Monitoring, requires ERCOT to develop for TAC approval, a monitoring program for inclusion in the Nodal Operating Guides.
Overall Market Benefit	Information transparency.
Overall Market Impact	Unknown.
Consumer Impact	Unknown.

Quantitative Impacts and Benefits

Assumptions	1		
	2		
	3		
	4		
Market Cost		**Impact Area**	**Monetary Impact**
	1		
	2		
	3		
	4		
Market Benefit		**Impact Area**	**Monetary Impact**
	1	*Transparency of information.*	
	2		
	3		
	4		
Additional Qualitative Information	1		
	2		
	3		
	4		

Nodal Operating Guide Revision Request

Other Comments	1	
	2	
	3	
	4	

Sponsor	
Name	Isabel Flores
E-mail Address	iflores@ercot.com
Company	ERCOT
Phone Number	(512) 248-6531
Cell Number	(512) 565-9117
Market Segment	Not applicable.

Market Rules Staff Contact	
Name	Yvette M. Landin
E-Mail Address	ylandin@ercot.com
Phone Number	(512) 248-4513

Proposed Guide Language Revision

Deleted: *2.2.10 - QSE/Resource Monitoring Program*¶
RESERVED¶
¶
2.2.11 - TSP Monitoring Program¶
RESERVED¶

Nodal Operating Guide Revision Request

ERCOT Nodal Operating Guides

Section 9: Monitoring Programs for QSEs, Resources, TSPs, and ERCOT

<date approved>

(Effective Upon Texas Nodal Market Implementation)

Nodal Operating Guide Revision Request

9 QSE/Resource Monitoring Program 5

9.1 Net dependable real power capability testing 5
9.2 Reactive testing 5
9.3 Real-Time data 5
9.4 Compliance with Valid Dispatch Instructions 6
9.5 Supplying and Validating Data for Generator Models Such as CIM Performance Monitor 6
9.6 Resource Outage Scheduling and Reporting 6
9.7 Backup control for Resource Energy Deployment 7
9.8 Qualified staffing requirement 7
9.9 Automatic Voltage Regulator (AVR) and Power System Stabilizer (PSS) 7
9.10 Current Operating Plan Metrics for QSEs 8
9.11 TSP Monitoring Program 9
9.11.1 Rating Methodology Reporting Program 9
9.11.2 Real-Time data Monitor 9
9.11.3 Outage Scheduling and Reporting 9
9.11.4 CIM Performance Monitor 10
9.11.5 Compliance with Valid Dispatch instructions monitoring 10
9.12 ERCOT Performance Monitoring Program 10
9.12.1 Transmission Control 10
9.12.2 Resource Control 12
9.12.3 Load Forecasting 13
9.12.4 System Operating Constraints 13
9.12.5 Network Operations Model update implementation performance 13
9.12.6 Back-up control plan 14
9.12.7 ERCOT Black-Start Plan 14
9.12.8 Computer and communication systems Real-Time availability and systems security 14
9.12.9 Voltage and Reactive Control Performance Monitoring 14
9.13 Ancillary Services Monitoring Program 15
9.13.1 Regulation Control Performance 15
9.13.2 Hydro Responsive Testing for QSEs 15
9.13.3 Black Start Service Requirements for TSPs, QSEs, and Generation Resources 15
9.13.4 Resource-Specific Responsive Reserve Performance for QSEs and Resources 15
9.13.5 Constant Frequency Control 15
9.13.6 Resource-specific Non-Spinning Reserve 16

Nodal Operating Guide Revision Request

9 QSE/Resource Monitoring Program

This Section complies with the requirement outlined in Protocol Section 8, Performance Monitoring and Compliance, for the development of a Qualified Scheduling Entity (QSE), Resource, Transmission Service Provider (TSP) and ERCOT monitoring program.

9.1 Net Dependable Real Power Capability Testing

ERCOT shall produce reports annually which summarize the seasonal test results provided by Qualified Scheduling Entities (QSEs). The QSE shall provide these results to ERCOT upon completion of Net Dependable Capability testing.

9.2 Reactive Testing

(1) The Qualified Scheduling Entity (QSE) shall provide the following information:

(a) Unit name;

(b) QSE;

(c) Date;

(d) Time;

(e) Tested generation capability;

(f) Reported time; and

(g) Corrected Unit Reactive Limit (CURL) and Unit Reactive Limit (URL).

(2) ERCOT shall produce reports annually which describe when the last reactive capability test took place, what the MW and MVAR outputs were during the test period, how long the output was held, and a minimum of four MW/MVAR pairs describing the CURL of the unit. This data shall be provided by the QSE to ERCOT when reactive testing indicates a change in unit capability and at a minimum of once every two years.

9.3 Real-Time Data

ERCOT shall produce monthly reports describing Real-Time telemetry performance of Qualified Scheduling Entities (QSEs) in accordance with the following:

(a) Telemetry Performance:

(i) ERCOT shall produce monthly reports as required describing the compliance with the Protocols and the Technical Advisory Committee

(TAC) approved Telemetry Standards. Included in these reports shall be telemetry availability statistics.

(b) Communication System Performance:

(i) ERCOT shall produce monthly reports describing the percentage availability of each participants Inter-Control Center Protocol (ICCP) data link to ERCOT.

(c) Operational Data Requirements:

(i) ERCOT shall produce monthly telemetry availability reports for Dynamically Scheduled Resource (DSR) Loads. A DSR Load telemetry failure greater than five minutes will be recorded as an unavailable period.

(ii) ERCOT shall produce monthly telemetry availability reports for Resources and the reports shall at a minimum consist of the following: Resource status, Resource Gross MWs, Resource Net MWs, and Resource High Sustained Limit (HSL).

Deleted: .

9.4 Compliance with Valid Dispatch Instructions

ERCOT shall produce monthly reports describing Qualified Scheduling Entity (QSE) and Resource valid Dispatch Instruction performance. A valid Dispatch Instruction is a Security-Constrained Economic Dispatch (SCED) Base Point.

9.5 Supplying and Validating Data for Generator Models Such as CIM Performance Monitor

(1) ERCOT shall prepare monthly reports summarizing the performance of the Common Information Model (CIM) modeling process. Included in these reports shall be:

(a) Number of Network Operations Model Change Requests (NOMCRs) submitted by the Qualified Scheduling Entity (QSE);

(b) Number of invalid NOMCRs rejected by ERCOT and returned to the QSE; and

(c) Number of Notices of interim updates submitted to the Public Utility Commission of Texas (PUCT) accumulated by QSE.

(2) ERCOT shall post reports showing individual QSE and Transmission Service Provider (TSP) performance on the Market Information System (MIS) Secure Area.

9.6 Resource Outage Scheduling and Reporting

(1) Monthly Resource Outage reporting by owner:

(a) Number of Outage requests submitted in the ERCOT Outage Scheduler greater than 335 days (11 months) in advance;

(b) Number of Outage requests submitted in the ERCOT Outage Scheduler between 90 and 334 days in advance of the desired Outage date;

(c) Number of Outage requests submitted in the ERCOT Outage Scheduler between eight and 89 days in advance of the desired Outage date;

(d) Number of Outage requests submitted in the ERCOT Outage Scheduler between three and seven days in advance of the desired Outage date;

(e) Number of Outage requests submitted less than three days in advance;

(f) Number of Outages by Outage type; and

(g) Total number of Outages that were requested, accepted, approved, cancelled, and withdrawn.

(2) ERCOT shall post reports showing individual owner performance on the Market Information System (MIS) Secure Area.

9.7 Backup Control for Resource Energy Deployment

ERCOT shall produce a report identifying the date of backup control testing and the success or failure of that test. Results shall be provided by the Qualified Scheduling Entity (QSE) to ERCOT at the completion of all tests. Backup control tests shall be conducted at least annually.

9.8 Qualified Staffing Requirement

A Qualified Scheduling Entity (QSE) shall maintain a 24x7 scheduling center with qualified personnel with the authority to commit and bind the QSE. ERCOT shall report to the Texas Regional Entity (TRE), instances of suspected non-performance following ERCOT's investigation.

9.9 Automatic Voltage Regulator (AVR) and Power System Stabilizer (PSS)

(1) ERCOT shall record Qualified Scheduling Entity (QSE) provided Automatic Voltage Regulator (AVR) test reports which will include:

(a) The minimum and maximum excitation limiters settings and associated time limits;

(b) Volts/hertz settings;

(c) Gain and time constants;

(d) Date tested; and

(e) Voltage regulator control setting;

(2) ERCOT shall produce a report that will identify Resources that have not submitted test reports within the last 60 months.

9.10 Current Operating Plan Metrics for QSEs

(1) ERCOT shall report the number of times that telemeter limits captured by Security Constrained Economic Dispatch (SCED) differ by greater than 5% with the Current Operating Plan (COP) limits as captured in a snapshot five minutes before the Operating Hour begins. The report shall be prepared monthly and shall include Resource names, deviations greater than 5%, and total number of SCED intervals analyzed.

(2) ERCOT shall report when a Resource has not submitted a COP for seven consecutive Operating Days by 1500 of each day. This report shall be prepared monthly and posted on the Market Information System (MIS) Secure Area.

(3) ERCOT shall report in the Day Ahead when the capacity of Resources in the Operating Day COP at 1430 is not sufficient to supply Ancillary Service requirements. ERCOT shall provide a monthly summary of the total days failed and total days analyzed.

(4) ERCOT shall report deviations between the Day Ahead COP at 1530 and actual committed Resources for the same hour in the Operating Day COP of Resources with Energy Offer Curves and Output Schedules and that are supplying Ancillary Service requirements.

(5) ERCOT shall report when an Energy Offer Curve or Output Schedule is not provided for a Generation Resource that is scheduled On-Line in COP for the next hour.

(6) ERCOT shall report the number of instances when a Resource's Outage Schedule does not match its COP.

Nodal Operating Guide Revision Request

9.11 TSP Monitoring Program

9.11.1 Rating Methodology Reporting Program

Transmission Service Providers (TSPs) shall submit their equipment rating methodology to ERCOT in the first quarter of each year or provide notice that the rating methodology has not changed since the previous year. ERCOT shall keep records describing the rating methodologies of each TSP in the ERCOT Region. ERCOT shall prepare an annual report summarizing these rating methodologies and submit this information to the Texas Regional Entity (TRE).

9.11.2 Real-Time Data Monitor

ERCOT shall produce monthly reports describing Real-Time data performance of TSPs. These reports shall include measurements as detailed in the Technical Advisory Committee (TAC) approved Telemetry Standards.

9.11.3 Outage Scheduling and Reporting

(1) Monthly Transmission Outage reporting by owner:

(a) Number of Outage requests submitted in the ERCOT Outage Scheduler greater than 335 days (11 months) in advance;

(b) Number of Outage requests submitted in the ERCOT Outage Scheduler between 90 and 334 days in advance of the desired Outage date;

(c) Number of Outage requests submitted in the ERCOT Outage Scheduler between eight and 89 days in advance of the desired Outage date;

(d) Number of Outage requests submitted in the ERCOT Outage Scheduler between three and seven days in advance of the desired Outage date;

(e) Number of Outage requests submitted less than three days in advance;

(f) Number of Outages by Outage type; and

(g) Total Number of Outages that were requested, accepted, approved, cancelled, and withdrawn.

(2) ERCOT shall post reports showing individual owner performance on the Market Information System (MIS) Secure Area.

9.11.4 CIM Performance Monitor

(1) ERCOT shall prepare monthly reports summarizing the performance of the Common Information Model (CIM) modeling process. Included in these reports shall be:

(a) Number of Network Operations Model Change Requests (NOMCRs) submitted during the month by the TSP;

(b) Number of invalid NOMCRs rejected by ERCOT and returned to the TSP; and

(c) Number of interim reports submitted to the Public Utility Commission of Texas (PUCT) accumulated by TSP.

(2) ERCOT shall post monthly reports showing individual TSP performance on the MIS Secure Area.

9.11.5 Compliance with Valid Dispatch Instructions Monitoring

ERCOT shall produce monthly reports describing Transmission Service Provider (TSP) valid Dispatch Instruction performance.

9.12 ERCOT Performance Monitoring Program

9.12.1 Transmission Control

(1) ERCOT shall prepare a report describing the operating violations on every transmission line and autotransformers operated at voltages greater than 60 kV.

(a) ERCOT shall prepare monthly reports on the following:

(i) Transmission equipment ratings that are exceeded;

(ii) Violations of system operating limits or power transfer limitations set by ERCOT to guard against post-contingency stability exceedance for over ten minutes;

(iii) Violations of system operating limits or power transfer limitations set by ERCOT to guard against post-contingency stability exceedance for over thirty minutes;

(iv) N-1 post-contingency violations of equipment ratings provided by Transmission Service Providers (TSPs) and Qualified Scheduling Entities (QSEs) for over 30 minutes; and

(v) Base power violations detected during the month, the time duration of the loading above normal operating limit or, the average operating limit

exceeded if the element was dynamically rated, and the average percentage loading.

(2) Other transmission monitoring and control metrics:

(a) ERCOT shall prepare reports describing the number of Forced Outages by TSP by month;

(b) ERCOT shall post on the Market Information System (MIS) Secure Area its performance in processing TSP Outage requests in accordance with the following table including justification for rolling Outages from one timeline to another:

Amount of time between the request for approval of the proposed Outage and the scheduled start date of the proposed Outage:	**ERCOT shall approve or reject no later than:**
Three days	1800 hours, two days before the start of the proposed Outage
Between three and eight days	1800 hours, three days before the start of the proposed Outage
Between nine days and 45 days	Four days before the start of the proposed Outage
Between 46 and 90 days	40 days before the start of the proposed Outage
Greater than 90 days	75 days before the start of the proposed Outage

(c) ERCOT shall post on the MIS Secure Area its performance in sending TSPs rejection Notices. The report will include specific concerns that caused the rejection.

(d) ERCOT shall post on the MIS Secure Area, by TSP, the number of withdrawals of approved Outages.

(e) ERCOT shall post on the MIS Secure Area, by TSP, the number of approved Outages that were rescheduled by ERCOT.

(3) Minimizing uplift to markets caused by transmission operations:

(a) ERCOT shall report monthly on:

(i) Reliability Unit Commitment (RUC) charges uplifted;

(ii) Voltage support charges uplifted; and

(iii) Uplift payments due to Base Point deviations charges.

(4) State Estimator Performance Metrics:

(a) ERCOT shall report State Estimator performance in accordance with the Protocols and the Technical Advisory Committee (TAC)-approved standard and post such report on the MIS Secure Area.

9.12.2 Resource Control

(1) Resource Control Metrics:

(a) Average sum of Regulation Up (Reg-Up) and Regulation Down (Reg-Down) energy - ERCOT shall report for each month the difference between the 5-minute average monthly sum of Reg-Up energy deployed and the 5-minute average monthly sum of Reg-Down energy deployed for each 5-minute interval of the Operating Day.

(b) Total Reg–Up and Reg-Down per interval - ERCOT shall develop a monthly report detailing the total amount of Reg-Up energy deployed in the Settlement Interval and the total amount of Reg-Down energy deployed for each Settlement Interval of the Operating Day.

(2) Reserve Monitoring:

(a) ERCOT shall prepare monthly reports describing amounts of time that it operated without sufficient operating reserves as defined in the Protocols.

(3) RUC commitments and deployments:

(a) For each month, ERCOT shall report, Generation Resources committed in the RUC process, including Resource name, intervals deployed, process in which the Resource was committed, and any deviation from Resources committed and actual Resource performance.

(4) Dynamically Scheduled Resource (DSR) Performance:

(a) ERCOT shall produce monthly reports for DSR Load signal failures of more than five minutes.

(5) Conflicting Instructions to Generation Resources from interval to interval:

(a) ERCOT shall record and report, on a monthly basis, instances of Dispatch Instructions to Resources not providing Regulation Service in which there is an inflection in the instruction for four consecutive Security-Constrained Economic Dispatch (SCED) intervals for validation and review. Inflection is defined as a reversal in ramp direction between consecutive intervals.

(6) ERCOT-wide frequency response to measurable frequency events:

(a) ERCOT shall report monthly the resulting system performance for each measurable frequency event.

9.12.3 Load Forecasting

ERCOT shall report the Mean Absolute Percent Error (MAPE) each month for the following:

(a) The accuracy of each day's System Load forecast posted at 0600 in the Day Ahead of the Operating Day as compared with the actual average ERCOT Load for each hour of the Operating Day;

(b) Accuracy of the system Load forecast used for Day Ahead Reliability Unit Commitment (RUC) compared to the actual average ERCOT Load for each hour of the Operating Day; and

(c) The accuracy of the Load forecast for the following items compared to the average of the State Estimated Load at each Electrical Bus with a modeled Load for each hour:

(a) Hourly Load forecast used in the Day Ahead RUC by Weather Zone;

(b) Hourly Load forecast used in the Hourly RUC by Weather Zone; and

(c) The accuracy of the Load forecast used in the Day Ahead RUC for the largest MW and MVA differences between the hourly Bus Load Forecast and the Real-Time Load at each Electrical Bus, by Weather Zone.

9.12.4 System Operating Constraints

ERCOT shall report the following comparisons with respect to Real-Time operations as they occur:

(a) Three consecutive days of a particular congestion constraint (constraints passed to Security-Constrained Economic Dispatch (SCED) from Network Security Analysis (NSA)) in Real-Time not identified in the Day Ahead Market (DAM);

(b) Two consecutive hours of a particular congestion constraint in Real-Time not identified in the Hourly Reliability Unit Commitment (HRUC) process; and

(c) Two consecutive days of a particular congestion constraint in Real-Time not identified in the Day Ahead Reliability Unit Commitment (DRUC) process.

9.12.5 Network Operations Model Update Implementation Performance

ERCOT shall report monthly on the Network Operations Model update implementation performance. The report shall include the total number of Network Operations Model Change Requests (NOMCR) submitted, approved, rejected, withdrawn and any other status contained in

the Protocols or defined by ERCOT. The report shall also include the number of interim updates and reasons provided (previously included in Protocol-required Public Utility Commission of Texas (PUCT) reports)) for the interim updates provided by Market Participants. The timeline defined in the Protocols shall be used in the performance evaluation. The report should itemize any non-Generation Resource Transmission Element whose limits were changed outside of the NOMCR process.

9.12.6 Back-up Control Plan

(1) ERCOT shall report by the end of the 1st quarter of each year:

(a) Qualified Scheduling Entities (QSEs) and Transmission Service Providers (TSPs) which have approved back-up procedures on file with ERCOT and the date that the plan was last updated; and

(b) The status of ERCOT's back-up plan and the status of back-up training for QSEs and TSPs.

(2) ERCOT shall confirm that a staffing plan is part of the procedures submitted by QSEs and TSPs.

9.12.7 ERCOT Black Start Plan

ERCOT shall develop an annual Black Start Plan and post on the MIS Secure Area.

9.12.8 Computer and Communication Systems Real-Time Availability and Systems Security

ERCOT shall report monthly the performance of its computer and communications systems as compared to its standards.

9.12.9 Voltage and Reactive Control Performance Monitoring

ERCOT shall monitor voltage violations, N-1 voltage violations, reactive reserves, and import margins to voltage constrained areas not resolved within 15 minutes. ERCOT shall produce monthly reports for each Transmission Service Provider (TSP) summarizing:

(a) Number of Real-Time voltage violations and metrics describing duration of such violations;

(b) Number of N-1 voltage based security violations and metrics describing duration of such violations;

(c) Metrics describing reactive reserve in voltage constrained areas; and

(d) Metrics describing N-1 import limitations in voltage constrained areas.

9.13 Ancillary Services Monitoring Program

ERCOT shall monitor Ancillary Service energy deployment according to the criteria outlined in Protocol Section 8, Performance Monitoring and Compliance. Reports required by Protocol Section 8.1.1.4, QSE Ancillary Service Energy Deployment Monitoring Criteria, will be posted on the Market Information System (MIS) Certified Area.

9.13.1 Regulation Control Performance

ERCOT shall produce monthly and yearly reports of Qualified Scheduling Entity (QSE) and Resource specific regulation performance metrics as required in the Protocols.

9.13.2 Hydro Responsive Testing for QSEs

ERCOT shall produce monthly reports of Hydro responsive tests and verify results submitted by the QSE for qualification.

9.13.3 Black Start Service Requirements for TSPs, QSEs, and Generation Resources

ERCOT shall produce annual reports containing record(s) of if and when a black start procedure was last received at ERCOT including the QSE or Transmission Service Provider (TSP) name and date procedure received. The QSEs participating in Black Start Service and TSPs shall provide an updated black start procedure to ERCOT by the end of the 1st quarter and when the procedure has changed.

9.13.4 Resource-Specific Responsive Reserve Performance for QSEs and Resources

ERCOT shall develop monthly reports detailing Resource-specific Responsive Reserve performance, for both capacity deployment and energy delivered, as required in the Protocols.

9.13.5 Constant Frequency Control

ERCOT shall survey Qualified Scheduling Entities (QSEs) qualified to provide Regulation Services to attest that the QSEs have the capability to operate in constant frequency control mode. ERCOT shall develop annual summaries of QSEs surveyed.

Nodal Operating Guide Revision Request

9.13.6 Resource-specific Non-Spinning Reserve

ERCOT shall develop a monthly summary for Non-Spinning Reserve (Non-Spin) deployed by each Resource, and the Resource's response after 30 minutes. Each Resource shall meet at all times the Non-Spin energy deployment criteria as described in the Protocols.