

**Business Procedures**

**Load Resource Qualification**

**Initial Qualification and Periodic Testing**

**Controllable Load Qualification Test Procedure**

**for Ancillary Services**

**Version 2.0**

**Effective June 1, 2014**

Document Revisions

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Document Approvals

|  |  |  |
| --- | --- | --- |
| Date | Approved By | Approval Documented In (select) |
|  | <Mark Patterson><Manager Demand Integration> | \_X\_ Approval email on file\_\_\_ Signature |

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# Introduction

## Purpose

Nodal Protocol Revision Requests 532 and 555 made significant changes to the Protocols for how Controllable Load Resources (CLRs) would participate in the ERCOT markets. As a result, CLRs that are providing Responsive Reserve Service and Non-Spinning Reserve Service would be deployed similar to Generation Resources in that ERCOT would issue a deployment instruction and the QSE would then change their schedules releasing their AS capacity to Security Constrained Economic Dispatch (SCED) and be subject to Base Point Instructions that would dispatch the CLRs economically. This procedure has been rewritten to incorporate those changes for CLRs providing RRS, NSRS and/or participating in the ERCOT Real Time Energy Market. The qualification test requirements for Regulation Service have been removed from this document and are included in a separate test document for CLRs providing Regulation Up Service, Regulation Down Service, Fast Response Regulation Up Service and Fast Response Regulation Down Service.

ERCOT Protocol, 8.1.1.1, states that a QSE may only provide Ancillary Services (AS) on those Resources for which it has met the qualification criteria. ERCOT develops and operates its qualification testing program to meet the requirements for participation in the Ancillary Service and real time energy market. A QSE shall be qualified and tested to provide any of the AS services prior to initial operation. In addition to the QSE qualification, each CLR must successfully pass a qualification test for each Ancillary Service that they plan to provide. Since they will also be dispatched using Base Point Instruction they will also need to pass a SCED qualification test in order to provide either RRS or NSRS.

This procedure is intended to provide the detail instructions that will be used to initially test the operability of CLR to provide those services and to document the results of any testing that is conducted by ERCOT Staff. The intent of this procedure is to make sure the qualification tests are done consistently and in accordance with the AS Qualification Criteria set forth in the ERCOT Protocols.

## Protocols References Summary

|  |  |
| --- | --- |
| ERCOT Protocols affected Sections | 3.17 Ancillary Service Capacity Products[3.17.2 Responsive Reserve Service](#_Toc205092646)[3.17.3 Non-Spinning Reserve Service](#_Toc205092647)[3.18 Resource Limits in Providing Ancillary Service](#_Toc205092648)6.5.5.2 Operational Data Requirements8.1.1.1 Ancillary Service Qualification and Testing 8.1.1.2 General Capacity Testing Requirements8.1.1.2.1 Ancillary Service Technical Requirements and Qualification Criteria and Test8.1.1.2.1.2 Responsive Reserve Service8.1.1.2.1.3 Non-Spinning Reserve 8.1.1.4 QSE Ancillary Service Energy Deployment Compliance Monitoring Criteria8.1.1.4 Ancillary Service and Energy Deployment Compliance Criteria8.1.1.4.2 Responsive Reserve Service Energy Deployment Criteria8.1.1.4.3. Non-Spinning Reserve Service Energy Deployment Criteria |

##  Acronyms

ALR Aggregated Load Resource

BP Base Point

CLR Controllable Load Resource

IDR Interval Data Recorder (meter)

LPC Low Power Consumption (MW)

MPC Maximum Power Consumption (MW)

NSRS Non-Spinning Reserve Service

QSE Qualified Scheduling Entity

RARF Resource Asset Registration Form

RE Resource Entity

RGL Regulation Reserve Service, Up or Down

RRS Responsive Reserve Service

SAMR Special Action Modeling Request

SCED Security Constrained Economic Dispatch

SPC Scheduled Power Consumption (MW)

SPC+2 Estimate of the Schedule Power Consumption 2 hours in the future (MW)

Initial Qualification

## Resource Asset Registration

Resource Entities must first register their CLRs using the RARF. The Demand Integration team will coordinate with other affected departments including Network Modeling, EMMS Production Support, Settlements and Billing, and Wholesale Client Services to insure that the Load Resource Registration information is valid.

There is a separate procedure that will govern the management and submission of data for ALRs. These procedures will govern population management; file specifications and transfer methods; and in the case of a NOIE, submission of interval data for the individual loads or premises.

##  One Line Diagrams and Drawings

Single Site CLRs:

Resource Entities must submit a simplified one-line diagram that shows the CLR and the associated interconnecting hardware. The Demand Integration team will review the drawing and insure that it contains at a minimum:

* Load Type, Name and Rated Capacity
* IDR Meter with ESI ID
* Transformer, including Hi and Lo Voltage
* Substation Name and TDSP
* Feeder and Bus ID’s

## Provisional Qualification of Load Resources

Resource Entities may request that their CLRs be provisionally qualified to provide services for the Ancillary Services Market. To request provisional qualification the Resource Entity must submit an Affidavit Requesting Provisional Qualification for the Service they would like to provide (Responsive Reserve Service, Non-Spinning Reserve Service or Real Time Market Energy Service). That Affidavit is attached to this procedure. The Provisional Qualification will be good for 90 days from the time it is approved and issued. During that time the CLR will be required to successfully perform a CLR Qualification Test for the Services they plan to provide. The Demand Integration Team will review the application to insure that it is complete. The following checklist will be used to determine whether a Provisional Qualification will be approved.

* Resource Entity (RE) Registration is complete and has been filed with ERCOT Legal
* Qualified Scheduling Entity (QSE) Acknowledgement is complete and on file with Legal
* Partnerships established in ERCOT Settlements Systems between the RE and QSE
* Resource Asset Registration Form is complete and has been submitted using RE Digital Certificate. ERCOT Registration will confirm that the RARF has met key business rules and send an email to key ERCOT staff informing them that the RARF has been accepted and input into the ERCOT systems.
* Telemetry is in place and tested from the QSE to ERCOT showing:
* CLR net real power consumption (MW)
* Any data mutually agreed to by ERCOT and the QSE to adequately manage

system reliability

* Load Resource breaker status
* LPC (MW)
* MPC (MW)
* Ancillary Service Resource Schedule (MW) for each quantity of RRS and NSRS
* Ancillary Service Resource Responsibility (MW) for each quantity of RRS and NSRS
* SPC that represents zero Ancillary Service Deployments
* SPC+2 (MW) for ALR type CLRs carrying NSRS Responsibility
* Net Reactive Power (MVar) for single site CLRs with a capacity greater than 10 MW
* Resource Status (Resource Status shall be ONRGL when also available for dispatch of Regulation service or ONCLR when available for dispatch of RRS, NSRS and/or energy)
* Affidavit for provisional qualification of Loads to provide RRS is executed and provided to the ERCOT Market Operation Support Team

The Demand Integration Team will submit a SAMR to request that the Network Operations Modeling Group and EMS Production Support Group setup and complete telemetry testing of the new CLR in the Network Operations Model and EMS System. As part of the Network Operations Model database load, all downstream systems including the MMS, EMS, and Settlements and Billing will be updated to reflect the addition or change to the system for the CLR. The Demand Integration Team will validate telemetry for ALRs that are registered as CLRs and confirm that the Load Resource conforms to one of the approved ERCOT Baseline Methodologies.

At this point the CLR will have met all of its initial set up and qualification requirements. The Demand Integration Team will notify key personnel in System Operations, Wholesale Client Relations, and Settlements that the CLR has been provisionally qualified to provide RRS, NSRS and/or is qualified for SCED dispatch. They will also notify the Resource Entity and QSE that the CLR has been provisionally qualified. The Demand Integration Team will update the Master Load Resource Qualification Spreadsheet showing the key operating parameters for the Resource.

Provisional qualification as described herein may be revoked by ERCOT at any time for non-compliance with provisional qualification requirements or the Resource fails to follow SCED Base Point instructions.

##  Qualification Testing for new CLRs

Once the CLR has completed setup and in the EMS and MMS Systems, the QSE should schedule a qualification test by coordinating with the Resource Entity and the Demand Integration Test Coordinator. The QSE will select a day to perform the test and provide an 8 hour window for ERCOT to perform the Qualification Test.

* + 1. **Responsive Reserve Service Qualification Test Procedure**
			1. Prior to running the RRS qualification test, the AS Testing Coordinator will confirm that the CLR has completed a Primary Frequency Response Test and submitted data and a test results form as shown in the Nodal Operating Guide Section 8 – Attachment C: Turbine Governor Tests.
			2. The RRS test is performed during a continuous eight (8) hour window as stipulated in the Protocols (8.1.1.2.1.2).
			3. The Resource Entity/QSE arranges the test with the Demand Integration AS Testing Coordinator who schedules it on the AS Testing Calendar.
			4. The AS Testing Coordinator will work with the ERCOT Operator who will deploy the CLR using the AS Deployment Manager for the full amount of the RRS Schedule.
				1. Within one minute following a deployment instruction, the QSE must update the telemetered AS Schedule for RRS to reflect the deployment amount and should show zero (0) MW.
				2. At this point the CLR should be capable of following SCED Base Point instructions.
				3. Using the USERCALC function, have the system issue a series of SCED Base Point instructions as define in section 2.4.3 of this procedure and confirm the CLR is SCED Qualified.
			5. At the end of the SCED qualification test, the AS Testing Coordinator will work with the ERCOT Operator to recall the RRS deployment using the AS Deployment Manager.
				1. The AS Testing Coordinator will confirm that the CLR RRS Schedule is changed so that it equals the RRS Responsibility.
		2. **Non-Spinning Reserve Service Qualification Test Procedure**
			1. The NSRS test is performed during a continuous eight (8) hour window as stipulated in the Protocols (8.1.1.2.1.3).
			2. The Resource Entity/QSE arranges the test with the Demand Integration AS Testing Coordinator who schedules it on the AS Testing Calendar.
			3. The AS Testing Coordinator will work with the ERCOT Operator who will deploy the CLR using the AS Deployment Manager for the full amount of the NSRS Schedule.
				1. Within 20 minutes following a deployment instruction, the QSE must update the telemetered AS Schedule for NSRS to reflect the deployment amount and should show zero (0) MW.
				2. Twenty Five minutes after receiving the NSRS deployment instruction, the CLR should be capable of following SCED Base Point instructions.
				3. Using the USERCALC function, have the system issue a series of SCED Base Point instructions as define in section 2.4.3 of this procedure and confirm the CLR is SCED Qualified.
			4. At the end of the SCED qualification test, the AS Testing Coordinator will work with the ERCOT Operator to recall the NSRS deployment using the AS Deployment Manager.
				1. The AS Testing Coordinator will confirm that the CLR NSRS Schedule is changed so that it equals the RRS Responsibility.
		3. **Loads in SCED Qualification Test**
			1. This test can be run independent of the RRS and NSRS qualification for those Load Resources that are interested in only being SCED Qualified. Any CLR that is trying to become RRS or NSRS qualified will also need to be SCED qualified and this test is mandatory but may be done independent of the RRS and NSRS qualification test(s).
			2. The spreadsheet shown below is intended to show what a typical deployment test would look like for a CLR that is carrying half of its telemetered load as NSRS.
			3. The performance evaluation will look at all intervals in which the CLR Base Points were less than the value of the SPC and MPC. The CLR will be evaluated using the following criteria: 1) during periods in which the CLR was being issued Base Points associated with their AS Responsibility the CLREDP must be less than the greater of 15% or 2 MW in order for the CLR to have passed that interval and 2) during periods in which the CLR was being issued Base Points associated with a time when they were not carrying an AS Responsibility, the CLREDP must be less than the greater of 25% or 2 MW in order for the CLR to have passed that interval. A CLR cannot fail more than three 5 minute clock intervals during the test.

#  Periodic Testing and Recertification of Load Resources

## Annual Telemetry Testing

All Load Resources, including CLRs, are subject to an annual test of its telemetry attributes. The telemetry test will be based on the actual operation of the Load Resource and include a verification of the telemetry attributes. CLR telemetry test may use actual Load Resource deployment, comparison of the SPC and SPC+2 and comparison of actual Net Power Consumption to their SPC and interval metering. The results of this test will be documented.

## Annual Recertification Testing of Load Resources

CLRs are subject to an annual recertification test that will require the actual dispatch of their Load up to an including full deployment of their Load from the telemetered MPC to their LPC at any given time. If a CLR has performed satisfactorily to a Load Resource deployment that was initiated by a Dispatch Instruction, that performance may be used in lieu of an actual interruption test. The results of the testing will be documented on the Load Resource Qualification Test Report. That test report is shown in Section 4.2 of this Procedure.

# Change Control and Retirement of Load Resources

##  Change Control for Load Resources

If a Resource Entity makes a significant change to a Load Resource, they will submit a revised RARF indicating what changes are being proposed. Depending on the nature of the change, they may need to submit new one-line diagram.

Demand Integration staff will coordinate with EMS Production Support and the Network Modeling groups to update the EMS and Network Operations Modeling systems. Significant changes of the Load Resource may require another qualification test.

##  Retirement of Load Resources

When a market participant decides to discontinue participation in the ERCOT Ancillary Service Market or Energy Market, they will submit a revision to the RARF that will indicate a new stop date for the Load Resource. Demand Integration staff will coordinate with the EMS, Network Model and Settlements staff to remove the Load Resource from the ERCOT software systems.

# Documentation and Reports

## Request for Provisional Qualification and Affidavit

**STATE OF TEXAS §**

 **§**

**COUNTY OF TRAVIS §**

**AFFIDAVIT**

**Request for provisional qualification of loads to provide Ancillary Services**

 **BEFORE ME,** the undersigned authority, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, being first duly sworn, deposes and states:

1. “My name is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. I am over the age of twenty-one and am competent to make the following statements.
2. I am employed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at [Entity], having its principal place of business at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. [Entity] is requesting that ERCOT provisionally certify the load known to ERCOT as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (“the Load”) as a Resource, pursuant to Section 8.1.1.1 of the ERCOT Nodal Protocols.
4. I have reviewed and fully understand the performance and compliance provisions in Section 8 of the ERCOT Protocols.
5. I acknowledge that the provisional qualification to provide Ancillary Serviceswhich [Entity] is requesting, is valid for a period of ninety (90) days from the date provisional qualification is awarded.
6. I also acknowledge that if either (a) provisional qualification may be revoked by ERCOT at any time for any non-compliance with provisional qualification requirements, or (b) after the provisional qualification period the Load has not successfully completed its Qualification Test, then in either event, the Load will no longer be qualified to provide Ancillary Services.

The foregoing statements offered by me are true and correct and the opinions stated therein are, in my judgment and based upon my professional experience, true and correct.”

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Affiant

 **SUBSCRIBED AND SWORN TO BEFORE ME** on this \_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, 20\_\_, by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Affiant named herein.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Notary Public, State of Texas

**5.2 Load Resource Qualification Test Report**

*RESULTS of LOAD RESOURCE ANCILLARY SERVICE TESTING*

Test Date**:** Asset Code:

Customer Common Name for the LR:

Resource Entity:  QSE:

TDSP: Transmission Substation name:

Registered Capacity (MW):

Type of Ancillary Service Test:

**Pre-deployment Telemetry**

|  |  |  |
| --- | --- | --- |
|  | QSE Reported Value | ERCOT Reported Value |
| CLR Net Real Power Flow(MW) |  |  |
| Scheduled Power Consumption (MW) |  |  |
| RRS Responsibility(MW) |  |  |
| RRS Schedule (MW) |  |  |
| NSRS Responsibility (MW) |  |  |
| NSRS Schedule (MW) |  |  |
| MPC |  |  |
| LPC |  |  |
| Current Base Point |  |  |

Time for XML Deployment Instruction from ERCOT:

CLR Schedule Change Occurs as Required: Pass Fail

CLREDP Deployment Metrics: Insert a table showing the 5 minute intervals for the test and the CLREDP results.

LR Time of Recall XML Instruction: Not able to issue XML instructions

**Post-deployment Telemetry**

|  |  |  |
| --- | --- | --- |
|  | QSE Reported Value | ERCOT Reported Value |
| CLR Net Real Power Flow(MW) |  |  |
| Scheduled Power Consumption (MW) |  |  |
| RRS Responsibility(MW) |  |  |
| RRS Schedule (MW) |  |  |
| NSRS Responsibility (MW) |  |  |
| NSRS Schedule (MW) |  |  |
| MPC |  |  |
| LPC |  |  |
| Current Base Point |  |  |

ERCOT Operator Ordering test:

QSE Representative Initiating Load Shed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

LR Authorized Representative: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Qualification Test Affidavit**

**STATE OF TEXAS §**

 **§**

**COUNTY OF TRAVIS §**

**AFFIDAVIT**

**Load Qualification Tests for Load Resources providing Responsive Reserve Service (RRS) and/or Non-Spinning Reserve Service**

 **BEFORE ME,** the undersigned authority, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, being first duly sworn, deposes and states:

1. “My name is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. I am over the age of twenty-one and am competent to make the following statements.
2. I am employed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, having its principal place of business at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. I have reviewed and fully understand the Load Resource Ancillary Service Qualification Test Procedures that govern load participation in the ERCOT Ancillary Service Markets.
4. I herby affirm and certify that the method used to dispatch and shed the load as part of that test is consistent with the method that will be used during an actual deployment of the Load Resource named \_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. I hereby affirm and certify that the facilities described in the Resource Entity’s Asset Registration, One-line diagram and if applicable the Under-Frequency Relay Test Report; attached hereto are to the best of my knowledge in compliance with all requirements specified in the ERCOT Protocols and Operating Guides.
6. The test results are attached to this Affidavit and represent an accurate assessment of the testing that was conducted and are a part of this Qualification Test documentation.

 The foregoing statements offered by me are true and correct and the opinions stated therein are, in my judgment and based upon my professional experience, true and correct.”

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Affiant

 **SUBSCRIBED AND SWORN TO BEFORE ME** on this \_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, 200\_\_, by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Affiant named herein.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Notary Public, State of Texas

Ancillary Service Qualification Certificate

**This certifies that**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**is qualified to provide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ service based on successful**

**demonstration of AS and SCED Qualification Testing Performed on \_\_\_\_\_\_\_\_\_\_\_\_.**

**Electric Reliability Council of Texas**

 **\_\_**

**Signature (Manager Demand Integration ) Date**

**Signature (AS Test Coordinator) Date**

 **Serial Number**