

**ERCOT BUSINESS PRACTICE**

**Non-Spinning Reserve Service and Responsive Reserve Service Deployment and Recall Procedure**

**Effective, 2014**

**Version \_0.6**

**Document Revisions**

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| 03/30/2007 | 0.1 | TAC approved version |  |
| 08/11/2010 | 0.2 | Updated to reflect changes to protocol and Current system implementation | **Colleen Frosch**  **John Dumas**  **Resmi Surendran** |
| 10/4/2010 | 0.3 | Included Non-Spinning Reserve Service Deployment and Recall Procedure Revision Process | **Market Rules** |
| 04/16/2012 | 0.4 | Updated to synchronize with the Protocol requirements introduced by NPRR426, to change the deployment and recall trigger mechanisms, and to remove language covered by other Binding Documents | **Market Operations Support** |
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| 11/07/2013 | 0.5 | TAC approved version. Updated to reflect changes to Protocols pursuant to NPRR555, with new language grey-boxed pending implementation of NPRR555. | **ERCOT** |
|  | 0.6 | Updated to reflect to reflect RRS deployment | **ERCOT** |

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**PROTOCOL DISCLAIMER**

This Business Practice describes ERCOT Systems and the response of these systems to Market Participant submissions incidental to the conduct of operations in the ERCOT Texas Nodal Market implementation and is not intended to be a substitute for the ERCOT Nodal Protocols (available at <http://www.ercot.com/mktrules/nprotocols/current>), as amended from time to time. If any conflict exists between this document and the ERCOT Nodal Protocols, the ERCOT Nodal Protocols shall control in all respects.

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## Nodal Market Non-Spinning Reserve Service Deployment and Recall Procedure

For any Non-Spinning Reserve (Non-Spin) Service that is not continually deployed to Security-Constrained Economic Dispatch (SCED) as part of a standing On-Line Non-Spin deployment, there are four situations that will cause Non-Spin to be deployed:

* Detection of insufficient capacity for energy dispatch during periodic checking of available capacity.
* Disturbance conditions such as a unit trip, sustained frequency decay or sustained low frequency operations.
* SCED not having enough energy available to execute successfully.
* When Off-Line Generation Resource providing Non-Spin are the only reasonable option available to the Operator for resolving local issues.

In each of these cases, the ERCOT operator will make the final decision and initiate the deployment. The ERCOT operator shall deploy Non-Spin in amounts sufficient to respond to the operational circumstances. This means that Non-Spin may be deployed partially over time or may be deployed in its entirety. If Non-Spin is deployed partially, it shall be deployed in increments of 100% of each Resource’s capacity. To support partial deployment, ERCOT shall, following the Day-Ahead Market (DAM), rank, for each hour of the Operating Day, the Resources supplying Non-Spin in an economic order based on DAM Settlement Point Prices. Partial Non-Spin deployment and recall decisions shall be based on each Resource’s economic cost order.

## Non-Spin Deployment

ERCOT may deploy Non-Spin, which has not been deployed as part of a standing On-Line Non-Spin deployment, under the following conditions:

* When (HASL –Gen) – (30-minute load ramp) < 0 MW, deploy the available Non-Spin capacity.
* When PRC < 2500 MW deploy all of the available Non-Spin capacity.
* When the North-to-Houston (N\_H) Voltage Stability Limit Reliability Margin < 300 MW, deploy Non-Spin (all or partial) in the Houston area as needed to restore reliability margin.
* When Off-Line Generation Resources providing Non-Spin are the only reasonable option available to the Operator for resolving local issues, deploy available Non-Spin capacity on only the necessary individual Resources.

If a condition other than those listed above indicates that additional capacity may need to be brought On-Line to manage reliability, operators will evaluate the system condition and deploy Non-Spin as needed if no other better options are available to resolve the system condition. Under emergency, the emergency process will govern the deployment of Non-Spin.

Following a Non-spin deployment, the following steps should be taken:

* 1. Off-Line Generation Resource reserved for Non-Spin
* The QSE will be sent a Resource specific Dispatch Instruction that Non-Spin has been deployed.
* The Dispatch Instruction must include the expected amount of *capacity* that will be available for SCED and the anticipated duration of the deployment.
* The QSE will ensure that the Non-Spin Ancillary Service Schedule telemetry for that unit has been reduced to zero within 20 minutes of the Dispatch Instruction.
* The QSE must have the Resource On-Line with an Energy Offer Curve and the telemetered net generation must be greater than or equal to the Resource’s telemetered LSL multiplied by P1 where P1 is defined in the “ERCOT and QSE Operations Business Practices During the Operating Hour” within 25 minutes of the Dispatch Instruction.
* SCED will respond to the changes in Resource Status that are received by telemetry from the QSE.
* Once the Resource is On-Line it is Dispatched as any other Generation Resource including any provisions for processing generation less than the Resource’s LSL.
* The Resource must, at a minimum, be capable of providing all the Non-Spin energy to SCED within 30 minutes of the Dispatch Instruction.
  1. On-Line Generation Resource with an Energy Offer Curve
* For a Resource that *will not* *use power augmentation* to provide any portion of its Non-Spin Ancillary Service Resource Responsibility:
  + The QSE shall set the value of the Non-Spin Ancillary Service Schedule to zero within the 30-second window prior to the start of the delivery hour.
  + ERCOT will automatically calculate new HASL constraints for SCED using the telemetry of the Resource’s Non-Spin Ancillary Service Schedule.
  + The total amount of capacity reserved on that Resource for Non-Spin shall be considered as a standing Non-Spin deployment Dispatch Instruction for the duration of the Operating Hour.
  + A Non-Spin deployment Dispatch Instruction from ERCOT is not required for standing Non-Spin deployments.
* For a Resource that *will use power augmentation* to provide a specific MW portion of its Non-Spin Ancillary Service Responsibility:
  + The QSE shall set the value of the Non-Spin Ancillary Service Schedule to the appropriate value within the 30-second window prior to the start of the delivery hour.
  + The QSE may set the value of the Non-Spin Ancillary Service Schedule equal to the MW amount of Non-Spin that will be provided via power. augmentation; otherwise, the QSE may set the value of the schedule to zero.
  + If the Non-Spin Ancillary Service Schedule is set to zero, then the total amount of capacity reserved on that Resource for Non-Spin shall be considered as a standing Non-Spin deployment Dispatch Instruction for the duration of the Operating Hour.
  + If the Non-Spin Ancillary Service Schedule is set to a non-zero value, then the QSE will be sent a Resource specific Dispatch Instruction indicating that Non-Spin has been deployed for the total amount of the Non-Spin Schedule.
    - The Dispatch Instruction must include the expected amount of *capacity* that will be available for SCED and the anticipated duration of the deployment.
    - The QSE shall reduce the Resource’s Non-Spin Ancillary Service Schedule to zero within 20 minutes following a deployment instruction.
  + ERCOT will automatically calculate new HASL constraints for SCED using the telemetry of the Resource’s Non-Spin Ancillary Service Schedule.
* The QSE must, at a minimum, ensure that the Normal Ramp Rate represented by the Resource’s ramp rate curve is sufficient to allow SCED to fully Dispatch the Resource’s Non-Spin Resource Responsibility within 30 minutes, regardless of whether or not the Resource uses power augmentation to provide the service.
  1. On-Line Generation Resource with Output Schedules
* The QSE shall set the value of the Non-Spin Ancillary Service Schedule to zero within the 30-second window prior to the start of the delivery hour.
* ERCOT will automatically calculate new HASL constraints for SCED using the telemetry of the Resource’s Non-Spin Ancillary Service Schedule.
  + If the QSE is sent a Resource-specific Dispatch Instruction indicating that Non-Spin has been deployed:
  + The Dispatch Instruction must include the additional amount of *energy* (MW) that needs to be produced by the Resource and the estimated duration of the deployment.
  + For DSRs providing Non-Spin, as soon as the QSE receives the deployment, the QSE shall adjust the telemetry Output Schedule to reflect the Non-Spin deployment. A DSR QSE with a Load Resource that has provided Non-Spin will ensure that the Output Schedule is not reduced to reflect the Load deployment if the Load Resource is part of the DSR Load that the Resource follows.
  + For non-DSRs (with Output Schedules) providing Non-Spin, ERCOT shall increase the Output Schedule used in SCED by the difference between telemetered Non-Spin Ancillary Service Resource Responsibility and Ancillary Service Schedule to reflect the amount of Non-Spin energy that is to be provided by the Resource in response to the Non-Spin deployment.
  1. Load Resource reserved for Non-Spin
* The QSE will be sent a Resource specific Dispatch Instruction that Non-Spin has been deployed.
* The Dispatch Instruction must include the MW level of Load *energy* to be interrupted by the Load Resource and the estimated duration of the deployment.
* Non-Spin procured from a Load Resource block offer must be deployed as a block.
* The Load Resource must, at a minimum, interrupt not less than 95%, nor more than 150% of the requested deployment energy within 30 minutes of the Dispatch Instruction.

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| ***[Replace Section 2.4 above with the following upon system implementation of NPRR555:]***  2.4 Controllable Load Resource with Non-Spin Ancillary Service Resource Responsibility   * The QSE will be sent a Resource specific Dispatch Instruction that Non-Spin has been deployed. * The Dispatch Instruction must include the expected amount of capacity that will be available for SCED and the anticipated duration of the deployment. * The QSE will ensure that the Non-Spin Ancillary Service Schedule telemetry for that Controllable Load Resource has been reduced to zero within 20 minutes of the Dispatch Instruction. * The QSE must have the Controllable Load Resource’s telemetered Resource Status as On-Line (ONRGL and/or ONCLR, whichever is applicable) with an RTM Energy Bid, and the Controllable Load Resource’s telemetered net real power consumption must be greater than or equal to the Controllable Load Resource’s telemetered LPC plus its total upward Ancillary Service Resource Responsibility. * ERCOT will automatically calculate new LASL constraints for SCED using the telemetry of the Resource’s Non-Spin Ancillary Service Schedule. * Once the Controllable Load Resource’s Non-Spin capacity has been released to SCED, this capacity is Dispatched as any other Resource available to SCED. * The Controllable Load Resource must, at a minimum, be capable of providing all the Non-Spin energy to SCED within 30 minutes of the Dispatch Instruction. |

## Recall of Non-Spin Deployment

The manually deployed Non-Spin may be recalled when all manually deployed RRS is fully recalled and (HASL- Gen) – (30-minute load ramp) > 1000 MW and PRC is > 2800 MW.

Following the recall of a Non-spin deployment, the following steps should be taken:

* After recall, the QSE will be allowed to use normal shutdown procedures to take the Resource Off-Line if the QSE wants to shut down the Resource. In this case, the Non-Spin Ancillary Service Schedule for that Resource will be reset to equal the Non-Spin Ancillary Service Responsibility for that Resource for that hour. A QSE with a Generation Resource that was previously Off-Line will be allowed to keep the Resource On-Line after the minimum On-Line time, provided that the difference between its HSL and LSL is greater than or equal to its Ancillary Service Resource Responsibility.
* A QSE with a Generation Resource (with an Energy Offer Curve) that will stay On-Line may set the value of the Non-Spin Ancillary Service Schedule equal to the MW amount of Non-Spin that will be provided via power augmentation; otherwise, the QSE will ensure that the value of the Non-Spin Ancillary Service Schedule for that Resource is set to 0 MW.
* A QSE with a DSR Generation Resource (with an Output Schedule) that will stay On-Line will back out the Non-Spin addition that was made to the Output Schedule. This can be incrementally deleted depending on the size of the deployment and Normal Ramp Rate. For non-DSR Generation Resources, SCED will use the QSE submitted non-DSR Output Schedule once the Non-Spin has been recalled.
* A QSE with a Load Resource that has provided Non-Spin will ensure that the Load energy and Non-Spin capability is restored within three hours from the expiration of the Non-Spin deployment. If it is not, the Non-Spin capability must be replaced by the QSE on other Generation or Load Resources capable of providing the service.

If Non-Spin has been deployed in the Houston area to help manage the N\_H Voltage Stability Limit, the deployments will be recalled once reliability margins have been restored to a manageable level.

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| ***[Replace Section 3 above with the following upon system implementation of NPRR555:]***  The manually deployed Non-Spin may be recalled when all manually deployed RRS is fully recalled and (HASL- Gen) – (30-minute load ramp) > 1000 MW and PRC is > 2800 MW.  Following the recall of a Non-spin deployment, the following steps should be taken:   * After recall, the QSE for a Generation Resource will be allowed to use normal shutdown procedures to take the Generation Resource Off-Line if the QSE wants to shut down the Resource. In this case, the Non-Spin Ancillary Service Schedule for that Generation Resource will be reset to equal the Non-Spin Ancillary Service Responsibility for that Generation Resource for that hour. A QSE with a Generation Resource that was previously Off-Line will be allowed to keep the Generation Resource On-Line after the minimum On-Line time, provided that the difference between its HSL and LSL is greater than or equal to its Ancillary Service Resource Responsibility. * A QSE with a Generation Resource (with an Energy Offer Curve) that will stay On-Line may set the value of the Non-Spin Ancillary Service Schedule equal to the MW amount of Non-Spin that will be provided via power augmentation; otherwise, the QSE will ensure that the value of the Non-Spin Ancillary Service Schedule for that Resource is set to 0 MW. * A QSE with a DSR Generation Resource (with an Output Schedule) that will stay On-Line will back out the Non-Spin addition that was made to the Output Schedule. This can be incrementally deleted depending on the size of the deployment and Normal Ramp Rate. For non-DSR Generation Resources, SCED will use the QSE submitted non-DSR Output Schedule once the Non-Spin has been recalled. * A QSE with a Controllable Load Resource that has provided Non-Spin will ensure that the Load energy and Non-Spin capability is restored within three hours from the expiration of the Non-Spin deployment. If it is not, the Non-Spin capability must be replaced by the QSE on other Generation or Controllable Load Resources capable of providing the service.   If Non-Spin has been deployed in the Houston area to help manage the N\_H Voltage Stability Limit, the deployments will be recalled once reliability margins have been restored to a manageable level. |

## Responsive Reserve Service Manual Deployment and Recall

Responsive Reserve for capacity may be manually deployed when the system approaches scarcity conditions so that the capacity reserved behind HASL will be released to SCED for SCED to meet the system load, and help maintain frequency. The capacity may be released, under any of the following conditions::

* When HASL – (Gen + 5 minute load ramp) < =200 MW, deploy 500MWs of the available RRS capacity from Generation and Controllable Load Resources (CLRs) after all the available Non-Spin has been deployed;
* When PRC <= 2000 MW release all remaining RRS capacity from Generation and Controllable Load Resources (CLRs) after all the available Non-Spin has been deployed;

The manual deployment of Responsive Reserve for capacity from Generation and CLRs may be recalled when HASL- (Gen + 5 minute load ramp) > 1000 MW and PRC >= 2500 MW

The Operator will consider system conditions and ancillary services in releasing or recalling Responsive Reserve. Load ramp and factors such as Regulation Up vs. Regulation Down deployment status will be considered.

## Procedure Revision Process

Revisions to this procedure shall be made according to the approval process as prescribed in Protocol Section 6.5.7.6.2.3, Non-Spinning Reserve Service Deployment.