

**ERCOT BUSINESS PRACTICE**

**CURRENT OPERATING PLAN PRACTICES BY QUALIFIED SCHEDULING ENTITIES**

**Version 2.6**

Document Revisions

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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/>, 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.

APPROVED

Title: Director System Operations

Name: Jeff Billo

Date: 6/28/24

Title: Director Market Design & Analysis

Name: Gordon Drake

Date: 6/28/24

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# Background and Purpose

Consistent with the ERCOT Nodal Protocols, the term “Resource” is used throughout this document, without qualification, to refer to both a Generation and Load Resources. Nodal Protocol Subsection 3.9 (1) requires each Qualified Scheduling Entity (QSE) representing Resources to submit a Current Operating Plan (COP). Protocol Section 3.9 includes the following requirements:

* The QSE must reflect in its COP the expected operating conditions for each Resource (including RMR, Black Start Units, Qualifying Facilities (QF), etc) that it represents for each hour in the next seven Operating Days [Subsections 3.9 (7) and (8) and 3.9.1 (1) and (2)].
* The QSE must update its COP to reflect changes in availability of any Resource as soon as reasonably practicable, but in no event later than 60 minutes after the event that caused the change [Subsection 3.9.1 (2)].
* The QSE must notify ERCOT, by means of the COP, of its plans to have a Resource On-Line by using the Resource Status codes listed in Section 3.9.1, Current Operating Plan (COP) Criteria. To reflect changes to a Resource’s capability, each QSE is required to report by exception, changes to the COP for all hours after the Operating Period through the rest of the Operating Day [Subsection 3.9 (5)]. When a QSE updates its COP to show changes in Resource Status, the QSE shall update for each On-Line Resource, either an Energy Offer Curve under Section 4.4.9, Energy Offers and Bids, or Output Schedule under Section 6.4.2, Output Schedules [Subsection 3.9 (6)].

Real Time telemetry provides information for the Operating Hour. COP entries always refer to forward hours beginning in the Operating Day with the prompt hour (the hour immediately following the Operating Period) and extending to all hours in the following six Operating Days (for a total of seven Operating Days). For these hours, the COP entries are determined solely by the QSE. The assignment of Resource Status, the operating parameters, High Sustained Limit (HSL), Low Sustained Limit (LSL), High Emergency Limit (HEL), Low Emergency Limit (LEL), and Ancillary Service Resource Responsibilities is expected to be consistent with the QSE’s expected or anticipated operating conditions for each Resource in each hour of the COP reporting period.

The purpose of this document is to communicate to the QSEs, ERCOT’s expectations regarding COP entries based on the usage of the COP data by the various ERCOT market and operations systems. The COP is an artifact created in the ERCOT Nodal Protocols that belongs wholly to the QSE, consequently, ERCOT does not proscribe COP entries made by QSE and it is not the intention of this document to do so.

# Principles and Definitions

1. ERCOT expects each QSE to submit a COP that is based on the QSE’s best estimate of the anticipated or expected operating conditions of each of its Generation Resources and Load Resources in each of the hours covered by the updated COP. The nature of the Protocol requirements related to the COP timeline and content suggests that each QSE should have an operator task that periodically (e.g. top of the hour) requires the operator(s) to review and update the COP.
2. QSEs are responsible for notifying ERCOT of a change in Resource Status (availability) via telemetry and through changes in the current COP as soon as practicable following the change [Protocol Subsection 6.5.5.1 (1)] but in no event later than 60 minutes after the event that caused the change.
3. QSE are responsible for assuring that COP entries and Outage Scheduler entries are consistent and meet Protocol requirements.
4. A Generation Resource is “unavailable” if that Generation Resource is unable to start or synchronize to the ERCOT Transmission Grid due to a physical or regulatory impairment. For example, a Generation Resource can be unavailable because it or the associated transmission equipment necessary to interconnect the Generation Resource to the grid is undergoing an outage. In other words, a Resource may be “unavailable” because of a forced or maintenance outage, 100% fuel curtailment, or emissions limit exceedance, or other impairments to operation as determined by the QSE or Resource Owner.
5. A Load Resource is “unavailable” if it is not available for dispatch as determined by the Load Resource Owner and its QSE.
6. A Resource is “available” if it is not “unavailable”.
7. COP entries are used in ERCOT system applications for study periods that include the COP reporting period. These applications include Resource Adequacy Reporting, all Reliability Unit Commitment (RUC) studies (DRUC, HRUC and WRUC) and Network Security Analysis with extended time horizons (e.g. studies that are related to voltage support, dynamic system response, etc).
8. If a Generation Resource is offered into the DAM, the DAM will honor the Generation Resource’s temporal constraints including start times. The DAM implementation includes logic to initialize, for each Generation Resource, the startup temporal conditions at the beginning of the DAM study period (HE0001). The initialization logic implementation relies on EMS and COP Resource Status entries to determine the applicability of a temporal constraint for hours preceding HE0001.
9. Generation Resources with start times longer than 24 hours must be on-line prior to HE0001 for their Three Part Offer (3PO) to be considered in the DAM optimization.
10. The HRUC process will honor available Generation Resource temporal constraints, including start times. The HRUC implementation includes logic to initialize, for each Generation Resource, the startup temporal conditions at the beginning of the HRUC study period. HRUC relies on the Resource operating history from EMS for On-Line and Off-Line times to initialize Resource temporal constraints. HRUC uses the COP entries to determine the Resource Status during the HRUC study period. Protocols require the QSE to notify ERCOT that it plans to have a Resource On-Line by using the Resource Status codes for the COP. Similarly, Protocols require the QSE to request a Resource decommitment for the remaining hours in the Adjustment Period using the Resource Status codes in the COP. QSEs may also call ERCOT and request a decommitment if the decommitment is to occur in the Operating Period. In the Operating Period, if a QSE desires to change a Resource’s Ancillary Service Resource Responsibility, that responsibility can only be transferred, with the verbal concurrence of ERCOT, within the QSE’s Resource portfolio. If approved by ERCOT, the QSE is required to update both its Real Time telemetry (Resource Status, AS Resource Responsibility, AS Schedule and any Participation Factors) and its COP, for future hours as necessary, to show the AS move.
11. ERCOT uses the information provided in the COP to calculate the High and Low Ancillary Service Limits (HASL and LASL) for each Resource including Load Resources in all of the RUC processes [Protocol subsection 3.9 (2)].
12. ERCOT uses the HSL and LSL Resource capability reported in the COP during the validation of DAM Resource Energy Offer Curves and Ancillary Service Offers. While the Resource Status reported in the COP is not used in the DAM, Resources reported as being OFF in a COP reporting hour that are offered in the DAM for that hour must have Resource capability entries consistent with the QSE DAM energy or Ancillary Service offers.

# Discussion and ERCOT Expectations

The Nodal Protocols provide the following definition of the COP in Section 2, “Definitions and Acronyms”:

“A plan by a QSE reflecting anticipated operating conditions for each of the Resources that it represents for each hour in the next seven Operating Days, including Resource operational data, Resource Status, and Ancillary Service Schedule.”

Furthermore, the Section 3.9.1(1) requires the following:

“Each QSE that represents a Resource must submit a COP to ERCOT that reflects expected operating conditions for each Resource for each hour in the next seven Operating Days.”

Common to both of these statements in the Nodal Protocols is the idea that the COP represents the QSE’s anticipated or expected operating conditions. The expectation is that the amount or level of uncertainty starts low and increases as the time horizon of the plan is extended. This distinction is important, for example, the ERCOT Day-Ahead Market (DAM) and the Day-Ahead and Hourly Reliability Unit Commitment (DRUC & HRUC) applications use data from the COP as needed for the remaining hours in the current Operating Day and next or prompt Operating Day while other applications such as Resource Adequacy Reporting, WRUC, and Outage Evaluation, use data extending beyond the prompt Operating Day to the last COP reporting hour. The ability of these applications to provide solutions that best represent the expected conditions during the study period of the application is directly related to the QSE’s diligence in keeping ERCOT informed of its current plans for the operation of its Resources during the COP reporting period.

The terms “availability, available, and unavailable” as used in the Protocols are intended to differentiate between Resources that can be operated versus those that cannot be operated because of a physical or regulatory impairment associated with the Resource itself, or the transmission equipment necessary to the interconnection of the Resource to the ERCOT Transmission Grid. The QSE is required to use the Resource Status in its COP to reflect the availability/unavailability of the Resource and provide the details concerning the nature and type of physical impediment to ERCOT through the Outage Scheduler. Generation Resource Outages extending longer than the COP timeframe are only reported in the Outage Scheduler. Consequently, for the COP, ERCOT interprets availability as follows: “A Resource is available if it is not unavailable”.

The term “resource capability” as used in the Protocols is intended to describe the injection limits reflected by the Resource’s HSL/LSL/HEL/LEL values. If the HSL/LSL/HEL/LEL values provided in the COP result from a Generation Resource derating, then the detail of the derating is provided to ERCOT through the Outage Scheduler. Generation Resource deratings that occur in Real Time are provided to ERCOT via telemetry of actual Generation Resource capability (i.e. the HSL/LSL/HEL/LEL telemetry values).

QSEs provide COPs to ERCOT through the MMS applications. QSEs also receive notices and other messages via MIS system for ERCOT detected errors in QSE submissions. Please see Appendix I, Selected Excerpts from MIS Business Requirements for Notices, Notifications, Alarms and Alerts Version 1.0 Applicable to Current Operating Plans for detail of error messages.

## Intermittent Renewable Resources

Nodal Protocol 3.13 (1) requires ERCOT to produce forecasts of Renewable Production Potential for Wind-powered Generation Resources (WGRs) and PhotoVoltaic Generation Resources (PVGR) to be used as input into the Day-Ahead and Hour‑Ahead Reliability Unit Commitment processes (DRUC and HRUC).

Additionally, Protocols require QSE’s to provide a Resource Status in the COP reporting hours to indicate the availability of the WGR/PVGR and its LEL/LSL/HSL/HEL capability. If the WGR/PVGR is available the expected Resource Status is either ON (indicating that the WGR/PVGR has submitted an EOC) or ONOS (indicating that the WGR/PVGR will operate under the Protocol provisions for a WGR/PVGR with/without an Output Schedule). A WGR/PVGR reporting a Resource Status OFF may be subject to a Reliability Unit Commitment Dispatch Instruction.

As described in Protocol 4.2.2 (1), ERCOT provides for each WGR a rolling Short Term Wind Power Forecast (STWPF) in the form of an hourly forecast for the next 168 hours. Also Protocol 4.2.3 (1) requires ERCOT to produce a Short-Term PhotoVoltaic Power Forecast (STPPF) every hour that provides a rolling 168-hour hourly forecast of PhotoVoltaic production potential for each PVGR.

Upon implementation of NPRR 785, per protocol 3.9.1 (8), for hours which fall within the 168 hour rolling window for forecasting, ERCOT will automatically update the HSL in the COPs for WGRs with the most recently updated STWPF and HSL values in COPs for PVGRs with the most recently updated STPPF. An Extensible Markup Language (XML) message will be sent every time when a WGR’s or PVGR’s COP HSL value is updated with the forecast value to its corresponding Qualified Scheduling Entity (QSE).

For hours which fall within the 168-hour rolling window for forecasting and have a forecast from ERCOT, QSEs for WGRs and PVGRs will only be able to update the COP HSL values with values that are lower than the most recent forecast for the resource. For any hour where a QSE update exists, ERCOT’s automatic COP HSL update logic will retain the lower of the most recent forecast and the QSE’s submitted HSL value.

QSEs that submit COPs for WGRs and/or PVGRs for hours which do not have a forecast from ERCOT, it is recommended that the resource’s High Reasonability Limit (HRL) be used as its COP HSL value for these hours. Once these hours fall within the 168-hour rolling window for forecasting, ERCOT’s systems will automatically start updating the COP HSL value with the most recent forecast for the resource.

Outages and de-rates should be first entered into the Outage Scheduler. Outages entered prior to a specific hour’s adjustment period and that hour’s forecast delivery will be taken into account, however outages later in the hour will not be. Given a scenario where the timing doesn’t permit this, QSEs representing WGRs or PVGRs are required to adjust the pre-populated COP and potentially its Resource Status in its COP to account for WGR/PVGR deratings or availability reductions due to outages not captured by STWPF/STPPF. Updates to COP entries represent the QSE’s best estimate of the anticipated or expected deratings, expected meteorological, regulatory, and physical conditions for WGRs/PVGRs for the next 168 hours. Updates by the QSE to the forecasted HSL should not be necessary in the event of properly timed outages.

## COP Reporting for Combined Cycle Trains (CCT)

In ERCOT, the CCT owner must submit a Resource Asset Registration Form to register each of the operating configurations that will participate in the ERCOT market as an individual Combined Cycle Generation Resource with a unique Resource ID (i.e. each of the CCT registered configurations are referred to a Combine Cycle Generation Resource (CCGR)). For those CCGRs that are injecting power into the ERCOT Grid, the COP is expected to show an appropriate On-Line Resource Status such as ON.

The following rules should be applied by the QSE when reporting the Resource Status for CCGR configurations in its COP:

* For those COP reporting hours that the QSE expects to commit a CCGR configuration, the QSE should show the committed CCGR configuration to be in an appropriate On-Line Resource Status (i.e. ON, ONREG, etc). All other CCGRs configurations in the CCT should be shown with a Resource Status of OFF or OUT, as appropriate to the CCGR configuration availability, in that hour.
* If the QSE does not intend to commit a CCT in a COP reporting hour, the CCGR configurations that are available should be reported in the COP as OFF and those CCGR configurations that are unavailable should be reported as OUT.
* If a CCGR configuration is RUC committed in a COP reporting hour, the QSE should show the Resource Status for the committed CCGR configuration as ONRUC, if the QSE is not intending to opt of RUC settlement. All other CCGR configurations should be reported as OFF or OUT, as appropriate to the CCGR configuration availability, in that hour..
* If a CCGR configuration is RUC committed in a COP reporting hour, the QSE may opt out of the RUC Settlement by setting the COP status of any Combined Cycle Generation Resource within the same Combined Cycle Train as the RUC-committed Resource to ONOPTOUT for the first hour of a contiguous block of RUC-Committed Hours in the Opt Out Snapshot, as per protocol 2.1 and 5.5.2 (14). All other CCGR configurations should be reported as OFF or OUT, as appropriate to the CCGR configuration availability, in that hour.

The protocol requirements for the decommitment of a Resource apply.

The QSE should report an appropriate Resource Capability (HSL/LSL/HEL/LEL) and Ancillary Service Responsibility in its COP in accordance with the guidelines described in Section 4 below. The QSE/CCT Owner for facilities with the ability to interconnect to either ERCOT or another Control Area must assure that the combined commitment of its Generation Resource capacity in each Control Area is not greater than the actual capability of the generation facility.

## RUC-Committed Resources Providing Ancillary Services

For Resources that are committed in specific hours of an Operating Day by a RUC process for the purpose of meeting ERCOT System capacity requirements, the QSE must report a COP Resource Status of ONRUC or ONOPTOUT in the commitment hours. If the resource is a CCGR that was RUC-committed to transition from one On-Line configuration to a different configuration with additional capacity, it may have a non-zero Ancillary Service Resource Responsibility and shall report a COP Resource Status of ONRUC or ONOPTOUT rather than using other online statuses which indicate the resource is providing ancillary services (such as ONREG). Other resources RUC-committed for providing capacity must report in its COP an Ancillary Service Resource Responsibility Capacity for each Ancillary Service equal to zero MW. Failure to do so will result in the COP update being rejected.

If the Resource is committed by a RUC process for the purpose of providing a specified Ancillary Service, the QSE must report a Resource Status of ONRUC or ONOPTOUT in the commitment hours. In each RUC commitment hour the QSE must report in its COP the commitment specified Ancillary Service Resource Responsibility in the amount specified in the ERCOT RUC commitment. Failure to do so will result in the COP update being rejected. Resources that receive a RUC instruction to provide an Ancillary Service may not move that Ancillary Service (AS) Responsibility to another Resource or QSE during the RUC commitment period.

## Reliability Must Run Resources

In accordance with Protocol Section 4.4.8, ERCOT shall decide when to make a Reliability Must Run (RMR) Unit available for commitment in the DRUC or HRUC. By 1430 hours in the Day Ahead ERCOT shall submit Three-Part Supply Offers based on the RMR Agreement and any other relevant information as provided under contract on behalf of RMR Units for any RMR Units to be considered in the DRUC or HRUC.

Because ERCOT is responsible for all RMR commitments, ERCOT requests that the QSE show a Resource Status of either EMR for all COP reporting hours during which the RMR is available or OUT in those hours in which the RMR is expected to be unavailable. QSEs comply with Protocol 4.3(2) (“By 0600 hours in the Day Ahead, each QSE representing RMR Units must indicate the availability of the RMR Units for the Operating Day”) by updating their COP for the next Operating Day, by 0600 in the Day Ahead, to reflect the expected availability of the RMR Unit during the next Operating Day.

ERCOT shall notify the QSE representing a RMR Unit of any RMR Unit that is being committed by the DRUC or HRUC at the same time it notifies other Market Participants of the results of these processes. Within 1 hour of the notification, the QSE is expected to update the RMR COP Resource Status to ONRUC for commitments by the RUC processes.

In all hours for the COP reporting Period, the QSE should report LEL/LSL/HSL/HEL values consistent with the RMR Agreement, such as the specified RMR Capacity.

## Quick Start Generation Resources Available For Deployment by SCED

Nodal Protocol Section 2.1 defines a Quick Start Generation Resource (QSGR) as Generation Resource that can come On-Line from a cold start state within ten minutes of receiving a notice or instruction from ERCOT. Before engaging in the activities described in this section, a Generation Resource must be qualified by ERCOT as a QSGR in accordance with Protocol Section 8.1.1.2, General Capacity Testing Requirements, paragraph (15).

A QSE may offer a QSGR into the ERCOT Day-Ahead Market in the same manner as it would offer any other Generation Resource into this market (i.e. by submitting a Three Part Supply Offer). If a QSGR Three Part Supply Offer is struck in the DAM, then all Nodal Protocol requirements related to a DAM awarded Three Part Supply Offer apply. For example, the QSGR committed by DAM may be eligible for a DAM make whole payment provided it is started by either the QSE, or a SCED Dispatch Instruction, if the QSGR is provided by the QSE for deployment by SCED during a DAM commitment period.

The QSE shall provide entries in its COP consistent with:

* a DAM award and its decision to operate the QSGR during the DAM committed hours, or
* the QSE’s intent to provide the QSGR for deployment by SCED during a COP reporting hour.

A QSE may offer to sell Ancillary Services on a QSGR in the Day-Ahead Market or a Supplemental Ancillary Services Market, or may assign self-arranged Ancillary Service to a QSGR, subject to the following limitations:

* In any COP reporting hour in which the QSE expects to provide a QSGR for deployment by SCED in accordance with Protocol Section 3.8, Quick Start Generation Resources, the QSGR may not be assigned Regulation or Responsive Reserve AS Resource Responsibility in that hour;
* In any COP reporting hour in which the QSGR is assigned Off-Line Non-Spin AS Resource Responsibility ≤ (HSL –LSL) and the QSE expects to provide the QSGR for deployment by the SCED in that hour, the QSGR Resource Status shall be set to “OFFQS” and the Non-Spin AS Resource Responsibility shall be set to the QSE assigned amount of Off-Line Non‑Spin AS Responsibility;
* In any COP reporting hour in which the QSGR is assigned Off-Line Non-Spin AS Resource Responsibility > (HSL-LSL) and the QSE expects to provide the QSGR for deployment by the SCED in that hour, the QSGR Resource Status shall be set to “OFFNS” and the Non-Spin AS Resource Responsibility shall be set to the QSE assigned amount of Off-Line Non-Spin AS Responsibility. This is required to avoid a COP validation error and does not restrict the ability of the QSE to provide this QSGR for deployment by SCED in the Operating Hour; and
* If the QSE does not intend to provide the QSGR for deployment by the SCED in accordance with Protocol Section 3.8, Quick Start Generation Resources during a COP reporting hour and the QSGR is assigned Non-Spin AS Resource Responsibility, the QSGR Resource status shall be set to “OFFNS” and the Non-Spin AS Resource Responsibility shall be set to the amount of Non-Spin AS assigned by the QSE.

Whether or not the QSE submits a Three Part Supply Offer for its QSGR in the Day-Ahead Market, the QSE may provide the QSGR for deployment during an Operating Hour in the Nodal Real-Time Market through the operation of SCED as described in Nodal Protocol 3.8.3; however, the Real-Time Settlement Intervals in which the QSGR was provided for SCED deployment are considered as QSE‑Committed Settlement Intervals for purposes of Settlement and Billing.

For those hours in the COP reporting period during which the QSE intends to provide the QSGR for deployment by the SCED in accordance with Protocol Section 3.8.3, Quick Start Generation Resources, the QSE shall report the following in the COP:

* QSGR Resource Status set to “OFFQS” if the Non-Spin AS Responsibility is less than or equal to (HSL-LSL); or “OFFNS” if the Non-Spin AS Responsibility is greater than (HSL-LSL);
* LSL/HSL values set to the QSE’s expected QSGR low and high sustained limits in the COP reporting hour;
* LEL/HEL values set to the QSE’s expected QSGR capability at each of these limits (Note, LEL/HEL may equal LSL/HSL, respectively);
* Regulation and Responsive Reserve AS Resource Responsibility set to 0; and
* Non-Spin AS Resource Responsibility set to the amount of Non-Spin AS assigned to the QSGR by the QSE.

A QSE must submit and maintain an Energy Offer Curve for their QSGRs for each COP reporting hour in which the QSGR has an “OFFQS” or “OFFNS” Resource Status.

## Switchable Generation Resources

Nodal Protocol Section 2.1 defines a Switchable Generation Resource (SWGR) as A Generation Resource that can be connected to either the ERCOT Transmission Grid or a non-ERCOT Control Area.

SWGRs are required to submit COPs just like all other Resources. Protocol Section 3.9.1, Current Operating Plan (COP) Criteria, requires each QSE representing a Resource to submit a COP for all hours for the next seven operating days to reflect the QSE’s expected operation of the Resource. A QSE representing a SWGR shall submit its COP for the hours to reflect its intentions to operate in ERCOT grid or in another grid.

If the QSE’s intent is to operate the SWGR synchronized to ERCOT grid, the QSE shall submit its COP in the same manner of any other ERCOT Generation Resource, to reflect the Resource’s On-Line status, as described in Protocol Section 3.9.1 (5) (b) (i).

If the QSE’s intent is to operate the SWGR in another grid, the QSE shall submit its COP to report the status as “EMRSWGR”, for the hours when the Resource operating in non-ERCOT grid.

If the QSE’s intent is to operate the SWGR Off-Line, the QSE shall submit its COP as one of the following to reflect the Resource’s Off-Line status: “OFFNS”, “OFF”, “EMR”, as described in Protocol Section 3.9.1 (5) (b) (ii). Resource status code of OUT in COP should be used when the Resource is on outage.

As describe in Section 3.2, the QSE representing a Combined Cycle Train (CCT) is required to submit its COP for each Combined Cycle Generation Resource (CCGR) (i.e. each CCT operating configuration) in each operating hour, to reflect the intended operating conditions of CCT.

When a CCT is registered as SWGR, the QSE representing the CCT shall submit its COPs with the following rules:

* If the QSE intends to operate the CCT in a COP reporting hour, and the CCT is only synchronized to ERCOT grid, the QSE shall submit On-Line status (i.e. ON, ONREG, etc.) for the committed CCGR configuration, and OFF or OUT status for all other CCGR configurations, as appropriate to the CCGR configuration availability, in that hour.
* If the QSE intends to not operate the CCT in a COP reporting hour, either in ERCOT grid or non-ERCOT grid, the QSE shall submit OFF or OUT (during outage) status for its all CCGR configurations, as appropriate to the CCGR configuration availability, in that hour.
* If the QSE intends to operate the CCT in a COP reporting hour, and the CCT is only synchronized to non-ERCOT grid, the QSE shall submit:
* EMRSWGR for the CCGR configurations that are available but require switching back the part of CCT committed to non-ERCOT grids;
* OFF for the CCGR configurations that are available without switching back the parts of CCT committed to non-ERCOT grids;
* OUT for the CCGR configurations that are unavailable due to outages.
* If the QSE intends to operate the CCT in a COP reporting hour, part of the CCT is synchronized to ERCOT grid, and other part of the CCT is synchronized to non-ERCOT gird, the QSE shall submit:
* On-Line status (i.e. ON, ONREG, etc.) for the CCGR configuration that is committed to operate in ERCOT grid in that operating hour;
* EMRSWGR for the CCGR configurations that are available but require switching back the part of CCT committed to non-ERCOT grids;
* OFF for the CCGR configurations that are available without switching back the parts of CCT committed to non-ERCOT grids;
* OUT for the CCGR configurations that are unavailable due to outages.

## Energy Storage Resources

Nodal Protocol 2.1 defines an Energy Storage Resource as an Energy Storage System (ESS) registered with ERCOT for the purpose of providing energy and/or Ancillary Service to the ERCOT System. In addition, 2.1 includes the following definitions related to State of Charge (SOC) for an ESR.

* State of Charge (SOC): The stored energy in MWh, of an ESR, that can be injected into the grid at the Point of Interconnection (POI) or Point of Common Coupling (POCC)
  + Hour Beginning Planned SOC: The planned State of Charge, in MWh, at the beginning of an hour, as communicated to ERCOT by the QSE for the Resource.
  + Minimum State of Charge (MinSOC): The minimum amount of State of Charge, in MWh of an ESR
  + Maximum State of Charge (MaxSOC): The maximum State of Charge, in MWh of an ESR

As described in Protocol Section 3.9.1 (3), for a COP provided by an ESR, the QSE shall ensure that the Hour Beginning Planned SOC for any two consecutive hours shall be feasible based on the ESR’s maximum rate of charge or discharge. In addition, as described in Protocol Section 3.9.1 (5) (h), the COP for ESRs must include:

* Minimum State of Charge (MinSOC);
* Maximum State of Charge (MaxSOC); and
* Hour Beginning Planned SOC

As described in Protocol Section 3.9.1 (17), a QSE representing an ESR shall ensure that the COP values for a given hour follow the following rules:

* MinSOC is greater than or equal to the nameplate minimum MWh operating SOC limit;
* MaxSOC is less than or equal to the nameplate maximum MWh operating SOC limit; and
* Hour Beginning Planned SOC is a value between the corresponding COP values of MinSOC and MaxSOC.

# Specific COP Protocol Requirements and ERCOT Expectations

| **Protocol Requirement** | **ERCOT Discussion** | **Resource Status Expectation** | **Resource Capability Expectation** |
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| 2.0 Definitions |  |  |  |
| Ancillary Service Schedule -  The MW of each Ancillary Service that each Resource is providing in Real-Time and the MW of each Ancillary Service for each Resource for each hour in the Current Operating Plan (COP). |  | ERCOT expects the QSE to report, through its COP, the expected MW of each Ancillary Service that a Resource is required or expected to provide for each hour in the COP.  Note: In accordance with Nodal Protocol requirements, Resources that are awarded Ancillary Service Resource Responsibility in the DAM or Resources that are designated as providing self-arranged Ancillary Service Resource Responsibility in the COP immediately preceding the DRUC are required to provide that service in each awarded hour of the Operating Day unless the QSE, subject to ERCOT concurrence, moves that Ancillary Service Resource Responsibility from the COP designate Resource to another Resource or QSE. |  |
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| Current Operating Plan (COP) -  A plan by a QSE reflecting anticipated operating conditions for each of the Resources that it  represents for each hour in the next seven Operating Days, including Resource operational data,  Resource Status and Ancillary Service Schedule. |  |  |  |
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| Resource Status -  The operational state of a Resource as provided in Section 3.9, Current Operating Plan (COP). |  |  |  |
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| 3.9 Current Operating Plan (COP) |  |  |  |
| (1) Each Qualified Scheduling Entity (QSE) that represents a Resource must submit a Current Operating Plan (COP) under this Section. |  |  |  |
| (2) ERCOT shall use the information provided in the COP to calculate the High Ancillary Service Limit (HASL) and Low Ancillary Service Limit (LASL) for each Resource for the Reliability Unit Commitment (RUC) processes. | ERCOT RUC applications use the COP reported HSL less the total of On-Line Ancillary Service Resource Responsibility for Non-Spin, RRS, and Reg-Up to set the Resource’s HASL during the RUC study periods.  ERCOT RUC applications use the COP reported LSL plus On-Line Ancillary Service Resource Responsibility for Reg-Down to set the Resource’s LASL during the RUC study periods. |  |  |
| (3) ERCOT shall monitor the accuracy of each QSE’s COP as outlined in Section 8, Performance Monitoring. |  |  |  |
| (4) A QSE must notify ERCOT that it plans to have a Resource On-Line by means of the COP using the Resource Status codes listed in paragraph (5)(b)(i) of Section 3.9.1, Current Operating Plan (COP) Criteria. The QSE must show the Resource as On-Line with a Resource Status of ONRUC, indicating a RUC process committed the Resource for all RUC-Committed Intervals when the QSE has not elected to opt out of RUC Settlement,. The QSE must use a Resource Status of ONOPTOUT for the first hour of a contiguous block of RUC-Committed Hours in the Opt Out Snapshot in paragraph 2.1 and 5.5.2 (14), to opt out of the RUC Settlement. A QSE may only use a RUC-committed Resource during that Resource’s RUC-Committed Interval to meet the QSE’s Ancillary Service Supply Responsibility if the Resource has been committed by the RUC process to provide Ancillary Service. | Also, see the discussion for the ONRUC Resource Status. | The QSE is expected to use one of the Protocol designated Resource Status (see Protocol 3.9.1 (5)) for each hour in the COP reporting period that describes the planned/expected operation of each of its Resources.  It is imperative that the expected availability of each Resource be accurately represented in the QSE’s COP.  During the Operating Day, the MMS validates changes to the COP against Resource Status, and Ancillary Service Resource Responsibilities for those hours in the current and next Operating Day. |  |
| (5) To reflect changes to a Resource’s capability, each QSE shall report by exception, changes to the COP for all hours after the Operating Period through the rest of the Operating Day. | ERCOT suggests that the phrase “report by exception” indicates that the QSE may update specific COP entries without having to resubmit the entire COP. The ERCOT Market Manager implementation is accomplished to accommodate updates for individual COP entries by Resource. |  | Resource capabilities reported in the COP are the HSL/LSL/HEL/LEL and the Ancillary Service Resource Responsibility values for each Resource.  The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit during the remaining hours in the Operating Day. |
| (6) When a QSE updates its COP to show changes in Resource status, the QSE shall update for each On-Line Resource, either an Energy Offer Curve under Section 4.4.9, Energy Offers and Bids, or Output Schedule under Section 6.4.2, Output Schedules. |  |  |  |
| (7) Each QSE, including QSEs representing Reliability Must-Run (RMR) Units, or Black Start Resources, shall submit a revised COP reflecting changes in Resource availability as soon as reasonably practicable, but in no event later than 60 minutes after the event that caused the change. | The DRUC and HRUC applications are most sensitive to availability changes within the study periods for each of these applications. Consequently, the 60-minute update time limit is critical to allowing ERCOT the maximum amount of time to recognize the loss of a previously committed Resource and react as needed to such loss. |  |  |
| (8) Each QSE representing a Qualifying Facility (QF) must submit a Low Sustained Limit (LSL) that represents the minimum energy available, in MW, from the unit for economic dispatch based on the minimum stable steam delivery to the thermal host plus a justifiable reliability margin that accounts for changes in ambient conditions. |  |  |  |
| 3.9.1 Current Operating Plan (COP) Criteria |  |  |  |
| (1) Each QSE that represents a Resource must submit a COP to ERCOT that reflects expected operating conditions for each Resource for each hour in the next seven Operating Days. |  | Except for Forced Outages, QSE’s are expected to honor the Resource’s temporal constraints when designating a Resource Status in the COP (e.g. the designated hour in which a Resource Status changes from OFF to ON is reachable from the current Resource operational condition). |  |
| (2) Each QSE that represents a Resource shall update its COP reflecting changes in availability of any Resource as soon as reasonably practicable, but in no event later than 60 minutes after the event that caused the change. | The DRUC and HRUC applications are most sensitive to availability changes within the study periods for these applications. Consequently, the 60-minute update time limit is critical to allowing ERCOT the maximum amount of time to recognize the loss of previously committed capacity and react as needed to such loss. |  |  |
| (3) The Resource capacity in a QSE’s COP must be sufficient to supply the Ancillary Service Supply Responsibility of that QSE. Additionally, for a COP provided for an ESR, the QSE shall ensure that the Hour Beginning Planned State of Charge (SOC) for any two consecutive hours shall be feasible based on the ESR’s maximum rate of charge or discharge. |  |  |  |
| (5) A COP must include the following for each Resource represented by the QSE: |  |  |  |
| (a) The name of the Resource; |  |  |  |
| (b) The expected Resource Status:  (i) Select one of the following for Generation Resources synchronized to the ERCOT System that best describes the Resource’s status: |  |  |  |
| (A) ONRUC – On-Line and the hour is a RUC-Committed Interval; | Resources that receive a RUC dispatch Instruction to provide an Ancillary Service may not move that AS Responsibility to another Resource or QSE during the RUC commitment period. | Use ONRUC for Resources that are committed in response to an ERCOT RUC instruction and the QSE does not expect to opt out of RUC settlement.  ONRUC cannot be an expected Resource Status for hours beyond the current and next Operating Day, unless the QSE is directed otherwise by ERCOT. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  For those hours in the COP reporting period with an ONRUC Resource Status, the Ancillary Service Resource Responsibility for…  A Combined Cycle Generation Resource that was RUC-committed to transition from one On-Line configuration to a different configuration with additional capacity may be non-zero.  A Resource subject to a RUC Dispatch Instruction to provide a specified Ancillary Service must report an Ancillary Service Resource Responsibility for that service in the amount specified in the ERCOT Dispatch Instruction    All other resources must equal 0 |
| (B) ONREG – On-Line Resource with Energy Offer Curve providing Regulation Service; |  | Use ONREG for Resources that the QSE expects to commit with an Energy Offer Curve and designates as providing Regulation Ancillary Service (either self-arranged or purchased by ERCOT) during the current and next Operating Day.    Do not use ONREG for Resources committed to provide Regulation Service by the RUC process.  The Resource may also be providing RRS and on-line Non-Spin AS.  ERCOT assumes that an ONREG Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource, with an Energy Offer Curve, to provide self-arranged and/or ERCOT purchased Regulation Ancillary Services in the amounts reported for Ancillary Service Resource Responsibilities. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for Regulation Up and/or Regulation Down equals the amount of QSE assigned Regulation Service.  The QSE may also assign Ancillary Service Resource Responsibility for RRS and On-Line Non-Spin.    For each Resource, (HSL – LSL) must be ≥ total of all AS Resource Responsibilities assigned by the QSE. |
| (C) ON – On-Line Resource with Energy Offer Curve; |  | Use ON for Resources that are available or expected to be available in a forward COP hour and that the QSE expects to commit with an Energy Offer Curve.  Resources that the QSE expects to be in a startup sequence and in normal operating range (at or above LSL) at some point within that operating hour.  Resources that the QSE expects to be in a shutdown sequence and is expected to be in a normal operating range (above LSL) at some point within that operating hour.  For those COP reporting hours during which the QSE expects to provide a QSGR for Deployment by SCED see Section 3.5 for guidance.  Do not use ON Resource Status for Resources committed by the RUC process.  Do not use the ON Resource Status if the Resource is assigned Regulation Up and/or Down Responsibility.  ERCOT assumes that an ON Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource, with an Energy Offer Curve, to provide self-arranged and/or ERCOT purchased Ancillary Services in the amounts reported for Ancillary Service Resource Responsibilities. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for RRS and On-Line Non-Spin equals the amount of the QSE assigned service.  For each Resource, (HSL – LSL) must be ≥ total of all AS Resource Responsibilities assigned by the QSE. |
| (D) ONDSR – On-Line Dynamically Scheduled Resource; |  | Use ONDSR for Resources that are available or expected to be available and that are being used by the QSE as a DSR in the current Operating Day or that the QSE expects to operate as a DSR in the next Operating Day and beyond.  Do not use ONDSR if the Resource is assigned Regulation Service Responsibility.  ERCOT assumes that an ONDSR Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available DSR, to provide self-arranged and/or ERCOT purchased Regulation Ancillary Services in the amounts reported for Ancillary Service Resource Responsibilities. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for RRS and On-Line Non-Spin equals the amount of the QSE assigned service    For each Resource, (HSL – LSL) must be ≥ total of all AS Resource Responsibilities assigned by the QSE. |
| (E) ONOS – On-Line Resource with Output Schedule; |  | Use ONOS for Resources that are available or expected to be available in a forward COP hour and that the QSE expects to commit with an Output Schedule.  Do not use ONOS Resource Status for Resources committed by the RUC process.  Do not use the ONOS Resource Status if the Resource is assigned Regulation Up and/or Down Responsibility.  The Resource may be designated to provide RRS and On-Line Non-Spin.  ERCOT assumes that an ONOS Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource, with an Output Schedule, to provide self-arranged and/or ERCOT purchased Regulation Ancillary Services in the amounts reported for Ancillary Service Resource Responsibilities. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for RRS and on-line Non-spin equals the amount of the QSE assigned service    For each Resource, (HSL – LSL) must be ≥ total of all AS Resource Responsibilities assigned by the QSE.  . |
| (F) ONOSREG – On-Line Resource with Output Schedule providing Regulation Service; |  | Use ONOSREG for Resources that the QSE expects to commit with an Output Schedule and designates as providing Regulation Ancillary Service (either self-arranged or purchased by ERCOT) during the current and next Operating Day.    Do not use ONOSREG Resource Status for Resources committed to provide capacity or Regulation Service by the RUC process.  The Resource may also be providing RRS and On-Line Non-Spin AS.  ERCOT assumes that an ONOSREG Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource, with an Output Schedule, to provide self-arranged and/or ERCOT purchased Regulation Ancillary Services in the amounts reported for Ancillary Service Resource Responsibilities. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for Regulation Up and/or Regulation Down equals the amount of QSE assigned Regulation Service.  The QSE may also assign Ancillary Service Resource Responsibility for RRS and On-Line Non-Spin.    For each Resource, (HSL – LSL) must be ≥ total of all AS Resource Responsibilities assigned by the QSE.  . |
| (G) ONDSRREG – On-Line Dynamically Scheduled Resource providing Regulation Service; |  | Use ONDSRREG for Resources that the QSE expects to commit as a DSR unit and designates as providing Regulation Ancillary Service (either self-arranged or purchased by ERCOT) during the current and next Operating Day.    Do not use ONDSRREG for Resources committed to provide capacity or Regulation Service by the RUC process.  The Resource may also be providing RRS and On-Line Non-Spin AS.  ERCOT assumes that an ONDSRREG Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource as a DSR unit and to provide self-arranged and/or ERCOT purchased Regulation Ancillary Services in the amounts reported for Ancillary Service Resource Responsibilities. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for Regulation Up and/or Regulation Down equals the amount of QSE assigned Regulation Service.  The QSE may also assign Ancillary Service Resource Responsibility for RRS and On-Line Non-Spin.    For each Resource, (HSL – LSL) must be ≥ total of all AS Resource Responsibilities assigned by the QSE.  . |
| (I) ONTEST – On-Line blocked from Security Constrained Economic dispatch (SCED) or performing an operations test or a Resource is in a start-up or shut-down sequence; | For Resources with a telemetered Resource Status of ONTEST, the SCED implementation sends a Base Point equal to the Resource’s current telemetered output (HDL=LDL=RT Telemetered Output). | Use ONTEST for:   1. Resources that the QSE expects to be On-Line in an hour solely for the purpose of conducting a specific test (e.g., initial startup test for new units, QSE scheduled performance testing, or units returning from an outage).   Do not use ONTEST if the Resource has assigned AS Resource Responsibility. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility should be set to 0 for all of the Ancillary Services. |
| (J) ONEMR – On-Line EMR (available for commitment or dispatch only for ERCOT-declared Emergency Conditions; the QSE may appropriately set LSL and HSL to reflect operating limits); and | ONEMR Resources are considered as “ON” in the ERCOT RUC application.  ONEMR Resources require ERCOT/QSE Operator action before commitment. | Use ONEMR for a Resource that is or will be connected to the ERCOT Grid but is available for dispatch by ERCOT systems only during an ERCOT declared Emergency Condition.  An example of a Resource that could use this Resource Status is a Hydro facility that is On-Line with limiting water conditions for some period of time.  ERCOT Operations manages the commitment of ONEMR Resources manually. Per Protocol requirements, the QSE is expected to submit either an Energy Offer Curve or Output Schedule for those COP reporting hours showing an ONEMR status. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit. The QSE is expected to set each of these limits according to the resource’s expected capability for normal (LSL/HSL) and emergency operations (HEL/LEL).  The Ancillary Service Resource Responsibility for all Ancillary Services must be set equal to 0. |
| (K) ONRR – On-Line as a synchronous condenser (hydro) providing Responsive Reserve but unavailable for dispatch by SCED and available for commitment by RUC. | Note:  For Resource Status = ONRR, the SCED sends a Base Point = 0 MW if RRS is not deployed,  Otherwise, the BP equals the current telemetered power output. | Use ONRR for Hydro-Resources that the QSE expects to be On-Line and connected to the ERCOT Transmission Grid to provided RRS but that is not available for SCED dispatch .  ERCOT assumes that an ONRR Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource in synchronous condenser mode to provide self-arranged and/or ERCOT purchased Responsive Reserve Ancillary Service in the amounts reported for Ancillary Service Resource Responsibilities. | For those hours in the COP reporting period with an ONRR Resource Status, the Ancillary Service Resource Responsibility Capacity for RRS must equal the RRS Capacity responsibility and the HSL and LSL for each Resource must meet the criteria (HSL-LSL) ≥ RRS.  All other Ancillary Service Resource Responsibilities must be set equal to 0. |
| (L) ONOPTOUT – On-Line and the hour is a RUC Buy-Back Hour; |  | Use ONOPTOUT for Resources that are committed in response to an ERCOT RUC instruction and the QSE expects to opt out of RUC settlement  ONOPTOUT cannot be an expected Resource Status for hours beyond the current and next Operating Day, unless the QSE is directed otherwise by ERCOT. | For those hours in the COP reporting period with an ONOPTOUT Resource Status, the Ancillary Service Resource Responsibility for each AS may be greater than 0. |
| (O) OFFQS – Off-Line but available for SCED deployment. Only qualified QSGRs may utilize this status |  |  | For a QSGR provided for deployment by SCED under Protocol Section 3.8.3 the AS Resource Responsibility for Regulation and RRS must equal zero and the Off-Line Non-Spin AS Responsibility must equal the amount of the QSE assigned Non-Spin service and the Non-Spin AS Resource Responsibility is less than or equal to (HSL-LSL),. |
| (ii) Select one of the following for Off-Line Generation Resources not synchronized to the ERCOT System that best describes the Resource status: |  |  |  |
| (A) OUT – Off-Line and unavailable; | ERCOT expects this Resource Status to be used for Resources that meet the description of unavailable described in Sections 2 and 3 above.  ERCOT systems do not use the resource capabilities reported in the COP for Generation Resources reported as OUT.  Consequently, ERCOT suggests that providing COP HSL/LSL/HEL/LEL values that would be expected if the Resource were available reduces reporting churn, which will help reduce errors and will help quantify the amount of unavailable capability on an ongoing basis. | Use OUT only for Resources that the QSE knows to be unavailable to ERCOT or expects to be unavailable at some time in the COP reporting period. | Set HSL=HEL=LSL=LEL = normal expected values if the Resource were available and all Ancillary Service Resource Responsibility for each AS type = 0. |
| (B) OFFNS – Off -Line but reserved for Non-Spinning Reserve (Non-Spin) or Off-Line QSGR available for SCED Dispatch; |  | Use OFFNS for a Resource that is available and that the QSE expects to be Off-Line during the current and next Operating Day and designated to provide Off-Line Non-Spin Ancillary Service (either self-arranged or purchased by ERCOT).  ERCOT assumes that an OFFNS Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource (such as a fast start Off-Line Generation Resource or Load Resources ) to provide self-arranged and/or ERCOT purchased OFF-Line Non-Spin Ancillary Service in the amounts reported for Ancillary Service Resource Responsibilities.  For those COP reporting hours during which the QSE expects to provide a QSGR for Deployment by SCED see Section 3.5 for guidance. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for Off-Line Non-Spin Ancillary Services must equal the amount of Non-Spin AS capacity assigned to the Resource by the QSE.  For each Resource, (HSL – LSL) must be ≥ amount of Non-Spin AS Resource Responsibility. |
| (C) OFF – Off-Line but available for commitment by DAM and RUC; and |  | Use OFF for a Resource that is available (or is expected to be available by the QSE in a forward COP hour) but that the QSE is not planning for the Resource to be On-Line.  Resources that the QSE expects to be in a startup sequence but not expected to be in normal operating range (at or above LSL) at any point within that Operating Hour.  Resources that the QSE expects to be in a shutdown sequence below normal operating range (below LSL) for the entirety of the Operating Hour. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The Ancillary Service Resource Responsibility for all Ancillary Services should be equal to 0. |
| (D) EMR – Available for commitment as a Resource contracted by ERCOT under Section 3.14.1, Reliability Must Run, or under paragraph (2) of Section 6.5.1.1, ERCOT Control Area Authority, or Available for commitment only for ERCOT-declared Emergency Condition events; the QSE may appropriately set LSL and HSL to reflect operating limits; and | ONEMR Resources are not considered in the ERCOT RUC and SCED applications.  ONEMR Resources require Operator action before commitment. | EMR is an expected Resource Status to indicate that the Resource is available but expected to be Off-Line and either:   1. upon an ERCOT declaration of emergency, the Resource is capable of being connected to the ERCOT Transmission Grid; or 2. the Resource is contracted by ERCOT under Section 3.14.1, Reliability Must Run, or under paragraph (2) of Section 6.5.1.1, ERCOT Control Area Authority.   EMR is one of the Off-Line Resource Status Codes; however, Generation Resources assigned this Status Code are not provided as an available resource for use by the RUC application. ERCOT Operations manages the commitment of EMR Resources manually. The QSE is expected to submit either an Energy Offer Curve or Output Schedule for those COP reporting hours showing an EMR status.  Examples of Resources that may use this Resource Status includes:  Hydro facilities that can operate around water limiting conditions for some period of time.  Facilities that have fully exhausted environmental emissions limits but could operate under a regulatory exemption. Alternately, without a Regulatory, exemption the QSE could report Resource Status of OUT. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit. The QSE is expected to set each of these limits according to the resource’s expected capability for normal (LSL/HSL) and emergency operations (HEL/LEL).  The Ancillary Service Resource Responsibility for all Ancillary Services should equal 0. |
| (E) EMRSWGR – Switchable Generation Resource (SWGR) operating in a non-ERCOT Control Area; and |  | Use EMRSWGR for a Switchable Generation Resource (SWGR) that is not synchronized in ERCOT grid, but is On-Line and operating in a non-ERCOT Control Area.  EMRSWGR can only be used for SWGR. |  |
| (iii) Select one of the following for Load Resources: |  |  |  |
| (A) ONRGL – Available for dispatch of Regulation Service; |  | Use ONRGL for a Controllable Load Resource that is available for dispatch to provide the amount of Regulation Service indicated by the Ancillary Service Resource Responsibility for Regulation in the current and next operating Day.  ERCOT assumes that an ONRGL Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Controllable Load Resource to provide self-arranged and/or ERCOT purchased Regulation Ancillary Service in the amounts reported for Ancillary Service Resource Responsibilities.  This Resource Status should only be used for Controllable Load Resources.  Use ONRGL if Regulation Service is being provided along with RRS.  Use ONRGL if providing a subset of Regulation called Fast Responding Regulation Service Up or Down. In real time the telemetered status code should be FRRSUP or FRRSDN. FRRS can only be provided in one direction at any given time. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The QSE should report HSL and LSL such that for each Resource, (HSL-LSL) is ≥ total amount of Ancillary Service Resource Responsibilities.  The Ancillary Service Resource Responsibility for Reg-Up and Reg-Down must equal the amount of Regulation AS Responsibility that is provided or expected to be provided including any expectation of providing FRRS. A Resource that intends to provide FRRS may not simultaneously provide RRS. |
| (B) ONCLR – Available for dispatch of Responsive Reserve Service or Non-Spinning Reserve Service as a Controllable Load Resource; |  | Use ONRRCLR for a Controllable Load Resource that is available for dispatch to provide the amount of Responsive Reserve Service or Non-Spinning Reserve Service Responsibility in the current and next operating Day.  Do not use this Resource code if the Controllable Load Resource will also provide Regulation Service.  ERCOT assumes that an ONCLR Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource to provide self-arranged and/or ERCOT purchased RRS Ancillary Services in the amounts reported for Ancillary Service Resource Responsibilities for RRS. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The QSE should report HSL and LSL such that for each Resource, (HSL-LSL) is ≥ total amount of Ancillary Service Resource Responsibilities.  When using this status code, the CLR must also be SCED qualified and capable of following their Base Point as instructed by ERCOT. |
| (C) ONRL – Available for dispatch of Responsive Reserve Service, excluding Controllable Load Resources; and |  | Use ONRL for a Load Resource (excluding Controllable Load Resources) that is available for dispatch to provide Responsive Reserve Service in the current and next operating Day.  ONRL may not be used for Controllable Load Resources  ERCOT assumes that an ONRL Resource Status in hours beyond the current and next Operating Day indicates the intention of the QSE to use the available Resource to provide self-arranged and/or ERCOT purchased Responsive Reserve Service in the amounts reported for Ancillary Service Resource Responsibilities. | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resource’s capability at each limit.  The QSE should report HSL and LSL such that for each Resource (HSL-LSL) is ≥ total amount of Ancillary Service Resource Responsibilities.  For Load Resources:  HSL=HEL=MPC ; LSL=LEL=LPC  Ancillary Service Resource Responsibility for RRS must equal the amount of RRS that the QSE expects the Load Resource to provide. |
| (D) OUTL – Not available; | ERCOT systems use the Resource Status OUTL in conjunction with the Resource Capabilities reported in the COP. Consequently, ERCOT suggests that providing HSL/LSL/HEL/LEL values that would be expected if the Resource is available reduces churn and will help quantify the amount of unavailable capability on an ongoing basis. | Use OUTL for a Load Resource that is not available for interruption or control. | ERCOT requests that the QSE report the HSL/HEL/LSL/LEL values that would normally be expected if the Resource were available.  Load Resources that that are not struck for AS in DAM and that desire to have their AS offers considered in a SASM must use a Resource Status of OUTL with HSL/LSL/HEL/LEL values consistent with their AS offers. |
| (c) The High Sustained Limit (HSL); | Section 2 Definitions  High Sustained Limit (HSL) for a Generation Resource  The limit established by the QSE, continuously updated in Real-Time that describes the maximum sustained energy production capability of the Resource.  High Sustained Limit (HSL) for a Load Resource  The limit calculated by ERCOT, using the QSE-established Maximum Power Consumption (MPC). |  | ERCOT expects the QSE to report HSL values that always represent the QSE’s expected Generation Resource maximum sustained energy production capability in each COP hour.  For Load Resources, ERCOT expects the QSE to report HSL values that always represent the QSE’s expected Maximum Power Consumption in each COP hour. |
| (d) The Low Sustained Limit (LSL); | Section 2 Definition  Low Sustained Limit (LSL) for a Generation Resource  The limit established by the QSE, continuously updatable in Real-Time, that describes the minimum sustained energy production capability of a Resource.  Low Sustained Limit (LSL) for a Load Resource  The limit calculated by ERCOT, using the QSE-established LPC. |  | ERCOT expects the QSE to report LSL values, whether through the COP that always represents the QSE’s expected Generation Resource minimum sustained energy production capability in each COP hour.  For Load Resources, ERCOT expects the QSE to report LSL values that always represent the QSE’s expected Minimum Power Consumption in each COP hour. |
| (e) The High Emergency Limit (HEL); | Section 2 Definition  High Emergency Limit (HEL)  The limit established by the QSE describing the maximum temporary unsustainable energy production capability of a Resource. This limit must be achievable for a time stated by the QSE, but not less than 30 minutes.  Protocols do not define HEL as applicable to Load Resources. However, ERCOT expects the QSE to report HEL for Load Resources as equal to the HSL for consistency purposes. |  | HEL values are used by ERCOT as informational input to the ERCOT Operators for their use in evaluating potential maximum capabilities that can be called upon if needed during emergency or off- normal operations. QSE action is required to extend an HSL to the HEL.  ERCOT expects the HEL values reported by the QSE in the COP reporting period to be equal to or greater than the reported HSL value for each Resource. |
| (f) The Low Emergency Limit (LEL); and | Section 2 Definition  Low Emergency Limit (LEL)    The limit established by the QSE describing the minimum temporary unsustainable energy production capability of a Resource. This limit must be achievable for a period of time indicated by the QSE but not less than 30 minutes.  Protocols do not define LEL as applicable to Load Resources. However, ERCOT expects the QSE to report LEL for Load Resources as equal to the LSL for consistency purposes. |  | LEL values are used by ERCOT as informational input to the ERCOT Operators for their use in evaluating potential minimum capabilities that can be called upon if needed during emergency or off-normal operations. QSE action is required to extend an LSL to the LEL.  ERCOT expects the LEL values reported by the QSE in the COP reporting period to be equal to or less than the reported LSL value for each Resource. |
| (g) Ancillary Service Resource Responsibility capacity in MW for: |  |  |  |
| (i) Reg-Up; |  |  | During the current and next Operating Day hours, this is the amount of MW of Reg-Up Ancillary Service that the Resource is responsible to provide in Real-Time rounded to the nearest MW.  In hours beyond the current and next Operating Day ERCOT assumes this indicates the intention of the QSE to use the available Resource to provide self-arranged and/or ERCOT purchased Regulation Ancillary Service. |
| (ii) Reg-Down; |  |  | During the current and next Operating Day hours, this is the amount of MW of Reg-Down Ancillary Service that the Resource is responsible to provide in Real-Time rounded to the nearest MW.  In hours beyond the current and next Operating Day ERCOT assumes this indicates the intention of the QSE to use the available Resource to provide self-arranged and/or ERCOT purchased Regulation Ancillary Service. |
| (iii) Responsive Reserve Service; and |  |  | During the current and next Operating Day hours, this is the amount of MW of Responsive Reserve Ancillary Service that the Resource is responsible to provide in Real-Time rounded to the nearest MW.  In hours beyond the current and next Operating Day ERCOT assumes this indicates the intention of the QSE to use the available Resource to provide self-arranged and/or ERCOT purchased Responsive Reserve Ancillary Service. |
| (iv) Non-Spin |  |  | During the current and next Operating Day hours, this is the amount of MW of Non-Spin Ancillary Service that the Resource is responsible to provide in Real-Time rounded to the nearest MW.  In hours beyond the current and next Operating Day ERCOT assumes this indicates the intention of the QSE to use the available Resource to provide self-arranged and/or ERCOT purchased Non-Spin Ancillary Service. |
| (6) For combined-cycle Resources, the above items are required for each operating configuration. | Refer to Subsection 3.2. |  |  |
| (7) ERCOT may accept a COP only from QSEs. |  |  |  |
| (8) For the first 168 hours of the COP, ERCOT will update the HSL values for Wind-powered Generation Resources (WGRs) with the most recently updated Short-Term Wind Power Forecast (STWPF), and the HSL values for PhotoVoltaic Generation Resources (PVGRs) with the most recently updated Short-Term PhotoVoltaic Power Forecast (STPPF). ERCOT will notify the QSE via an Extensible Markup Language (XML) message each time COP HSL values are updated with the forecast values. A QSE representing a WGR may override the STWPF HSL value but must submit an HSL value that is less than or equal to the amount for that Resource from the most recent STWPF provided by ERCOT; a QSE representing a PVGR may override the STPPF HSL value but must submit an HSL value that is less than or equal to the amount for that Resource from the most recent STPPF provided by ERCOT. | Refer to Subsection 3.1. |  |  |
| (9) A QSE representing a Generation Resource that is not providing Ancillary Service may only use a Resource Status of ONTEST to indicate to ERCOT in the COP and through telemetry that a Resources is operating in a start-up or shut-down sequence and is being manually dispatched by the QSE or to indicate the Generation Resource is performing a test of its operations either manually dispatched by the QSE or by ERCOT as part of the test. | For Resources with a telemetered Resource Status of ONTEST, the SCED implementation sends a Base Point equal to the Resource’s current telemetered output. (HDL=LDL=RT Telemetered Output) |  | HSL/HEL/LSL/LEL = the QSE’s expected sustainable limit.  All AS Resource Responsibilities = 0 |
| 3.9.2 Current Operating Plan Validation |  |  |  |
| (1) ERCOT shall verify that each COP, on its submission, complies with the criteria described in Section 3.9.1, Current Operating Plan (COP) Criteria. ERCOT shall notify the QSE by means of the Messaging System if the QSE’s COP fails to comply with the criteria described in Section 3.9.1 and this Section 3.9.2 for any reason. The QSE must then resubmit the COP within the appropriate market timeline. |  |  |  |
| (2) ERCOT may reject a COP that does not meet the criteria described in Section 3.9.1, Current Operating Plan (COP) Criteria. |  |  |  |
| (3) If a Resource is designated in the COP to provide Ancillary Service, then ERCOT shall verify that the COP complies with Section 3.16, Standards for Determining Ancillary Service Quantities. The Ancillary Service Supply Responsibilities as indicated in the Ancillary Service Resource Responsibility submitted immediately before the end of the Adjustment Period are physically binding commitments for each QSE for the corresponding Operating Period. | The ERCOT MMS system performs this validation for the hours in the current Operating Day and the next Operating Day.  QSEs are encouraged to validate the remaining entries in the COP for errors similar to ERCOT’s error checking systems. |  |  |
| (4) ERCOT shall notify the QSE if the sum of the Ancillary Service capacity designated in the COP for each hour, by service type) is less than the QSE's Ancillary Service Supply Responsibility for each service type for that hour. If the QSE does not correct the deficiency within one hour after receiving the notice from ERCOT, then ERCOT shall follow the procedures outlined in Section 6.4.8.1, Evaluation and Maintenance of Ancillary Service Capacity Sufficiency. |  |  |  |
| (5) A QSE may change Ancillary Service Resource designations by changing its COP, subject to Section 6.4.9.1. | Movement of an Ancillary Service Resource Responsibility from one Resource to another requires ERCOT approval.  During the Adjustment Period, a QSE requests that an Ancillary Service Resource Responsibility be moved from one Resource to another by changing its COP and updating the Resource Status Code, if necessary, and Ancillary Service Resource Responsibility entries for the losing and gaining Resources. Note: Ancillary Service Resource Responsibility can be transferred to another QSE via an Ancillary Service Trade.  The AS transfer is deemed approved unless ERCOT rejects the change by notifying the QSE typically through the ERCOT Messaging System. |  |  |
| (6) If ERCOT determines that it needs more Ancillary Service during the Adjustment Period, then the QSE’s allocated portion of the additional Ancillary Service may be Self-Arranged. |  |  |  |
| (7) ERCOT systems must be able to detect a change in status of a Resource shown in the COP and must provide notice to ERCOT operators of changes that a QSE makes to its COP. |  |  |  |
| (8) A QSE representing a Resource that has an Energy Offer Curve valid for an hour of the COP may not designate a Resource Status of ONTEST, ONOS or ONDSR for that hour for that Resource. | The MMS validation checks in the current and next Operating Day hours alarm the ERCOT Operator and the QSE if this validation test fails. |  |  |
|  |  |  |  |
| 6.4.7.2 QSE Request to Decommit Resources in the Adjustment Period  (1) To decommit an otherwise available Resource for hours other than the Operating Period, the QSE must update the COP indicating the change in Resource Status for each hour in the COP for the remaining hours in the Adjustment Period. On detection of a change from On-Line to Off-Line Available state in future hours for a Resource, ERCOT shall review all requests for decommitment using the next scheduled HRUC. The Resource must be shown as available for HRUC commitment. The next HRUC commitment must consider the Resource’s Minimum-Energy Offer excluding the Resource’s Startup Offer from the Three-Part Supply Offer.  (2) If HRUC continues to require the Resource to be committed, ERCOT shall notify the QSE, using the process described in Section 5.5.3, Communication of RUC Commitments and Decommitments, that the decommitment has been denied, and the affected intervals become RUC-Committed Intervals instead of QSE-Committed Intervals for RUC Settlement purposes. The QSE must update its COP to denote the RUC-Committed Intervals. | The QSE enters its request to decommit a previous committed Generation Resource in a COP reporting period hour by changing the COP Resource Status from ON to OFF.  Except for Forced Outages, the QSE is expected to honor the Generation Resource’s temporal constraint for startup time. In other words, the status change hour must be sufficiently far in the future such that if ERCOT rejects the decommitment sufficient time remains to start the Generation Resource if needed by RUC. | If ERCOT disapproves the decommitment, the QSE must update its COP prior to the end of the Adjustment Period and the Generation Resource will be considered RUC committed. In such cases, the QSE will use a Resource Status of ONRUC. The QSE may also potentially opt out of the RUC commitment | The HSL/LSL/HEL/LEL values are the QSE’s expectation for the Resources ‘capability at each limit. |

# Appendix I – MMS System Generated Notices

Selected Excerpts from

MIS Business Requirements for

Notices, Notifications, Alarms and Alerts Version 1.0

Applicable to Current Operating Plans

The following notices are system-generated and will display on the MMS market-facing user interface on the notices page and on MIS notices page. In addition to the protocol-required notices, the MMS system generates some additional notices that are documented below.

Note: Some notices appear more than once if there are multiple protocol requirements for the same notice

| **#** | **Description** | **Source of Req** | **Owner** | **Type** | **Priority** | **Audience** | **Text** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | ERCOT shall **notify the QSE if the sum of the Ancillary Service capacity designated in the COP for each hour, by service type) is less than the QSE's Ancillary Service Supply Responsibility for each service type for that hour**. If the QSE does not correct the deficiency within one hour after receiving the notice from ERCOT, then ERCOT shall follow the procedures outlined in Section 6.4.8.1, Evaluation and Maintenance of Ancillary Service Capacity Sufficiency. | 3.9.2 (4) | Sys. Ops. | COP Warning | High | A QSE | CM-ASCK-FAIL AS Responsibility Check failed for Trade Date: MM/DD/YYYY, Delivery Hour: HH for AS Type: AS\_TYPE. The Total COP is XX MW and the AS Difference = XX MW |
| 15 | Five minutes before the end of each hour, ERCOT shall identify inconsistencies between the telemetered Resource Status and the Resource Status stated in the COP for that Resource in the next hour. On detecting an inconsistency, ERCOT shall provide a notice of inconsistent Resource Status to the QSE using the Messaging System | 6.4.5 (2) (b) | Sys. Ops. | COP Warning | Med | A QSE |  |
| 16 | If HRUC continues to require the Resource to be committed, ERCOT shall notify the QSE, using the process described in Section 5.5.3, Communication of RUC Commitments and Decommitments, that the decommitment has been denied, and the affected intervals become RUC-Committed Intervals instead of QSE-Committed Intervals for RUC Settlement purposes. The QSE must update its COP to denote the RUC-Committed Intervals. | 6.4.6.2 (2) | Sys. Ops. | RUC Commitment | Low | A QSE |  |
| 37 | Notify QSEs who do not have complete COPs for all hours of the current operating day and the following day | MMS | Sys. Ops. | COP Warning | Med | A QSE |  |
| 4 | ERCOT will issue an Operating Condition Notice (OCN) to inform all QSEs of a possible future need for more Resources due to conditions that could affect ERCOT System reliability. | 6.5.9.3.1 (1) | Sys. Ops. | OCN | Medium | All QSEs |  |
|  | ERCOT shall reject the COP and notify the QSE if a QSE submits the COP with EMRSWGR for the Resource not qualified as SWGR | 3.9.1 (15) | Sys. Ops. | COP Warning | Med | A QSE | Resource can’t submit EMRSWGR status if it is not a qualified SWGR |
|  | ERCOT shall reject the COP and notify the QSE if a QSE submits the COP with EMRSWGR for the Resource carrying Ancillary Service | 3.9.1 (1) | Sys. Ops. | COP Warning | Med | A QSE | EMRSWGR can’t carry Ancillary Services |
|  | A Resource that has self-committed for an Operating Hour after the RUC Snapshot was taken but before the RUC commitment has been communicated through an XML message for that RUC process and that Operating Hour is included in a block of RUC-committed hours for that RUC process and will be treated as if the Resource Status was ONOPTOUT. ERCOT will send the QSE a notification stating the Operating Day and block of hours for which this occurred. | 5.5.2 (17) |  | Market Message | Med | A QSE | RES-RUC-OPTOUT-NOTF for XXXXXX has opted out of RUC block from HE HH to HE HH on MM/DD/YYYY. |