

Hour Start Unit RUC Clawback Proposed NPRR

Executive Summary

Topaz proposes revising the Nodal Protocols to remove the clawback provisions related to Reliability Unit Commitment Dispatch Instructions issued to Hour Start Units¹. This white paper articulates the proposal.

Background

ERCOT has over 8,500 MW of Wind Generation Resources (WGR) and 44,000 MW of wind with active interconnection requestsⁱ. By 2012, ERCOT expects almost 10,800 MW of installed WGR, based on signed Interconnection Agreements. Various development scenarios, which consider the implementation of CREZ transmission lines, include 15,000 MW of WGR by 2015.

Although WGRs provide low-cost energy, wind is “inherently variable and incompletely predictable”². Because electricity cannot currently be economically stored on a large-scale basis, the characteristics of wind will present operational challenges to meet the constraint of instantaneously matching generation and load.

To address these operational challenges, several Market Participants have made substantial capital investments in Hour Start Units, which create the ability to make the decision to deliver energy shortly before Real Time. Some Market Participants utilize their investment to directly serve load, thereby managing exposure to Real Time prices. Others utilize the operational flexibility to sell late notice energy.

Regardless of the justification for the capital investment, this operational flexibility is unique, significant and inherently valuable. It is unique because other thermal Generation Resources, like combined cycle and Rankine cycle technologies, though more efficient, require longer Start-Up time. It is significant because several original equipment manufacturersⁱⁱ (OEM) have heavily invested research and development efforts into commercializing flexible technology. It is inherently valuable because, by making the Generation Resource available (without any energy) in the Current Operating Plan, the QSE inherently provides ERCOT with a short term call optionⁱⁱⁱ to ensure the reliability and adequacy of the ERCOT Transmission Grid^{iv}. Hour Start Units also provide inherent value as Off-line reserves that avoid costs otherwise incurred from On-line reserves, including sub-optimal operation, fuel, water and emissions.

When making these capital investment decisions, Market Participants considered trade-offs between flexibility and efficiency. The energy-only structure of ERCOT

¹ The proposed NPRR includes a definition of Hour Start Unit as follows:

A Resource capable of starting, synchronously interconnecting to the ERCOT System and producing energy at its HSL in 60 minutes or less from an Off-line state. Hour Start Units must meet qualification requirements as set forth by ERCOT.

² Analysis of Wind Generation Impact on ERCOT Ancillary Services Requirements, GE Energy, March 30, 2008. Section 1.1.

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encourages efficiency-based investment, as evidenced by the large fleet of combined cycle Generation Resources. Despite these incentives, Market Participants have deliberately invested in Hour Start Units, signaling the *explicit intention* to acquire operational flexibility. Because of the value provided by such Generation Resources, the Nodal Protocols should utilize the operational flexibility provided by Hour Start Units. Indeed, in light of the existing and future Wind Generation Resources, Topaz respectfully submits that the Protocols should encourage future investment in operational flexibility.

The current Nodal Protocols accomplish exactly the opposite. For example, the Protocols have no Real Time Economic Unit Commitment^v (RTEUC) process for Hour Start Units. In lieu of such a competitive, transparent process, the Nodal Protocols rely on QSE self-commitment and Reliability Unit Commitment. In order for the Market Participant to recognize the value of its capital investment, it must retain the decision to deliver energy from its Hour Start Unit into the Operating Period. ERCOT issues Day-Ahead Reliability Unit Commitment (DRUC) Dispatch Instructions 8 to 31 hours and Hourly Reliability Unit Commitment^{vi} (HRUC) Dispatch Instructions 1 to 29 hours in advance of the Operating Hour. Therefore, RUC deprives Market Participants of their ability to make the decision to deliver energy from Hour Start Units in the hour preceding Real Time.

ERCOT actions to ensure reliability are paramount; the surrender of operational flexibility itself is not the core problem. Instead, as the Protocols are written, some revenues are clawed back. The Market Participant is therefore mitigated for its operational flexibility.

The current Nodal Protocols send precisely the wrong message to Market Participants, capital markets and OEMs, especially in light of operational challenges from variable renewable generation.

Proposed Nodal Protocols Revision Request

Topaz proposes categorically removing clawback for all Hour Start Units, regardless of the QSE's participation in the DAM or the existence of an Energy Emergency Alert. Mitigation for providing valuable operational flexibility, *under any circumstance*, is inequitable; the proposed NPRR would remedy the situation.

This section discusses the further justification for removing clawback.

Energy Emergency Alert, 5.7.2(3)

Topaz proposes revisions to Nodal Protocols Section 5.7.2, RUC Clawback Charge, paragraph (3). In addition to the rationale articulated above, Topaz notes NERC Standard EOP-002-2.1 Section 2.6.1, Energy Emergency Alerts^{vii}, which reads (*emphasis added*):

2.6.1 All available generation units are on line. All generation capable of being on line in the time frame of the emergency is on line including quick-start and peaking units, *regardless of cost.*

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The current Nodal Protocols clearly consider cost by clawing back revenues depending on how the QSE participated in the DAM. This is inconsistent with the language “regardless of cost” in the NERC Standard, particularly given the Standard explicitly mentions quick-start and peaking units. The proposed NPRR would remove clawback during EEA, consistent with the NERC Standard.

RUC Clawback with DAM Participation, 5.7.2(2)

As the Nodal Protocols are currently written, a QSE representing an Hour Start Unit, could, in good faith, participate in the DAM but, as a result of competition, emerge without any energy or Ancillary Service awards. Assuming bilateral markets also assign no value, the QSE would then proceed into the Adjustment Period, making the Hour Start Unit available in the Current Operating Plan. In the event the QSE receives an HRUC Dispatch Instruction, the QSE is deprived of its ability to self commit and is mitigated for its operational flexibility. This NPRR remedies this situation.

RUC Clawback without DAM Participation, 5.7.2(2)

Because Hour Start Units inherently provide value, regardless of how the QSE participated in the DAM, the reasons for clawback removal articulated herein are categorical.

By market design, other incentives to participate in the DAM exist in addition to clawback. Sufficient incentives remain as follows:

Mitigated Offer Cap

An important incentive is the Mitigated Offer Cap^{viii} in the Real-Time Security Constrained Economic Dispatch^{ix} process. Because no such mitigation exists in the Day-Ahead Market, the Market Participant has a compelling incentive to participate in the DAM.

Price Risk

Because the Nodal Protocols currently have no RTEUC process for Hour Start Units, Market Participants that self-commit have price risk. That is, to the extent the Market Participant is not hedged with load or a bilateral transaction and the Real Time Settlement Point Price falls below cost, the Hour Start Unit incurs losses. Furthermore, the self-commitment decision requires Start-Up costs to be recovered via RTSP as well. These price risks do not exist for DAM-Committed or RUC-Committed Intervals. Therefore, the Market Participant is incented to make the decision to deliver energy from the Hour Start Unit well in advance of its capabilities, thereby surrendering its unique, significant and inherently valuable operational flexibility. This significant price risk creates a compelling incentive to participate in the DAM or otherwise self-commit in the Adjustment Period to the extent the Market Participant forecasts positive margins from exposure to Real-Time prices.

Liquidity

Although bilateral transactions will continue to exist under the Texas Nodal Market, the DAM will likely represent the most liquid, transparent venue to execute energy and Ancillary Service transactions in ERCOT. Given the

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significant illiquidity risk outside the DAM, Market Participants with Hour Start Units, acting rationally in accordance with prudent risk management procedures, will be strongly encouraged to participate in the DAM.

In addition to sufficient existing incentives to incent participation in the DAM, the Protocols as written establish punitive clawback for good faith efforts.

Emergence from Outages

There are completely legitimate reasons that could prevent the QSE from making an Hour Start Unit available in the DAM. For example, if the Hour Start Unit experiences an outage^x that is expected to last into the following Operating Day or beyond, the QSE would prudently abstain from making the Hour Start Unit available in the DAM. This represents an appropriate decision, given the information known before 10:00 in the Day-Ahead, which is up to 38 hours in advance of Real Time. Should the Hour Start Unit emerge from the outage ahead of those expectations, the QSE would immediately make the Generation Resource available in the Current Operating Plan. As established above, this action alone, regardless of how the QSE participated in the DAM, inherently provides valuable operational flexibility to ERCOT. In this case, should the Hour Start Unit receive an HRUC Dispatch Instruction, not only would the QSE surrender its ability to self commit in the Operating Period, all revenues in excess of cost are clawed back. This reduces incentives for Hour Start Units to engage in efforts to shorten outages. Such punitive clawback is inequitable.

Conclusion

Hour Start Units provide unique, significant and inherently valuable operational flexibility. As the Nodal Protocols are currently written, RUC deprives Market Participants of their ability to make the decision to deliver energy from Hour Start Units and mitigates them for not doing so in advance of their capabilities, despite the substantial capital investment to create *that very operational flexibility*.

The proposed NPRR would categorically remove RUC Clawback for all Hour Start Units. Sufficient incentives remain to encourage DAM participation. The proposed NPRR would send a more appropriate message to Market Participants, capital markets and OEMs.

ⁱ Monthly Status Report to Reliability and Operations Subcommittee for September 2009, System Planning Division, ERCOT, October 15, 2009.

ⁱⁱ A sample of these OEMs includes Cummins, General Electric, Pratt-Whitney, Rolls-Royce, Siemens and Wärtsilä.

ⁱⁱⁱ See ERCOT Zonal Frequency Control Desk Operating Procedure Manual, V4R6, Section 2.6.6, Provide Advance Notice of Diminishing Responsive Reserve, Step 7. Also, Nodal Protocols Section 6.5.9.4.1, General Procedures Prior to EEA Operations, paragraph (b) reads:

(b) Commit available Resources as necessary that can respond in the timeframe of the emergency. Such commitments will be settled using the HRUC process;

^{iv} Nodal Protocols, Section 1.2, Functions of ERCOT, paragraph (b).

^v Such RTEUC processes exist in CAISO, ISO-NE, MISO and NYISO.

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^{vi} Nodal Protocols Section 6.3, Adjustment Period and Real-Time Operations Timeline, paragraph (2): Activities for the Adjustment Period being at 1800 in the Day-Ahead and end one full hour before the start of the Operating Hour.

^{vii} NERC Standard EOP-002 is referenced in Section 2.6.6 Provide Advanced Notice of Diminishing Responsive Reserve of the ERCOT Zonal Frequency Control Desk Operating Procedure Manual, V4R6.

^{viii} Nodal Protocols, Section 4.4.9.4.1, Mitigated Offer Cap.

^{ix} Nodal Protocols, Section 6.5.7.3, Security Constrained Economic Dispatch, paragraph (5).

^x Forced Outage, Planned Outage or Maintenance Outage.