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NPRR1328 Generation Firming Program: Discussion of Draft Comments

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Overview

Accompanying 'Discussion Draft' ERCOT Comments for stakeholder review and feedback.

Revised Firming Capacity Formulas

Updates to the following:

- **Firming Capacity Penalty Quantity** (FCPQ)
- **Firming Capacity Requirement Quantity** (FCRQ)
- **Firming Capacity Availability** (FCAV)

Obligated Resources

Appropriately capture exemptions and avoid double penalization.

Non-obligated Resources

Ensure that penalties apply only to any obligation assumed through sales and not their own Seasonal Average Generation Capability (SAGC).

Other Changes

Revised program timelines and the attestation form.

Key Takeaway

ERCOT is targeting Sept. 2026 Board approval of NPRR1328.

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NPRR1328 Discussion Draft Comments — For Stakeholder Feedback

2023	Dec 2025	Early 2026	Apr–Aug 2026	Sep–Oct 2026	Dec 1, 2027	Mar 1, 2028
Firming requirement enacted in HB 1500	PUCT final rule	NPRR posted (Apr 2)	NOW Stakeholder review	Board & PUCT approval	Statutory implementation deadline	First compliance season begins

- ERCOT is planning to file comments to NPRR1328 next week ahead of the July 8, 2026 WMS meeting.
- Today ERCOT will review the ‘Discussion Draft’ comments ahead of next week’s filing.
- Draft comments are in response to stakeholder feedback and incorporate refinements to the firming formulas, program timelines, and clarifications.

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Formulas for Resource subject to firming performance obligations

Issue: Both the current formula and TSSA proposal fail to produce the correct result in at least one scenario

Current Formula

FCAV = HATHSL + FTCP → Availability = Telemetered HSL + Purchases

FCRQ = SAGC + FTCS → Requirement = Obligation + Sales

FCPQ = Max(0, FCRQ − Max(FCAV, DAESR + DAASQ, RCCRS))

→ Penalty quantity = Requirement – Max(Availability, Exemptions)

Example 1: SAGC = 100 MW, FTCS = 0 MW, FTCP = 50 MW, HATHSL = 10 MW, DAESR + DAASQ = 50 MW, RCCRS = 0 MW

FCPQ = Max(0, 100 + 0 − Max (10 + 50, 50, 0)) = Max (0, 100 – 60) = **40 MW** ⚠

Additional penalty: Resource incurs 40 MW firming penalty in addition to imbalance settlement.

Desired Result: DAM Award of 50 MW plus Firming Capacity Purchase of 50 MW should cover the 100 MW SAGC obligation, so no penalty

TSSA Proposal

FCAV = HATHSL ~~+ FTCP~~ → Availability = Telemetered HSL

FCRQ = SAGC + FTCS → Requirement = Obligation + Sales

FCPQ = Max(0, FCRQ − Max(FCAV, DAESR + DAASQ, RCCRS) − FTCP)

→ Penalty quantity = Requirement – Max(Availability, Exemptions) – Purchases

Example 2: SAGC = 100 MW, FTCS = 40 MW, FTCP = 10 MW, HATHSL = 120 MW, Full Exemption from SAGC

FCPQ = Max(0, 0 + 40 − Max (120, 0, 0) − 10) = Max (0, 40 − 120 − 10) = **0 MW** ⚠

Does not accurately account for case with exemption and Firming Transfers.

Desired Result: Generation Resource can only provide the excess of HSL above SAGC to others. Given net sales of 30 MW and 20 MW excess above SAGC, penalty should be 10 MW

Proposed ERCOT formulas for obligated resources address both issues

FCAV = HATHSL → Availability = Hourly Avg. Telemetered HSL

FCRQ = Max(0, (SAGC – Max(DAESR + DAASQ, RCCRS, Full exemption flag *SAGC)))

Where, Full exemption flag: 1 = full, 0 = else

→ Requirement = SAGC Obligation – Exemptions (either partial or full)

FCPQ = Max(0, Max(0,FCRQ – FCAV) – Max(0,HATHSL – SAGC) + FTCS – FTCP)

→ Penalty quantity = Shortfall against own requirement – Excess above SAGC to cover sales + Net transfers

Example 1: DAM award should reduce penalty

SAGC = 100 MW, FTCS = 0 MW, FTCP = 50 MW, HATHSL = 10 MW, DAESR + DAASQ = 50 MW, RCCRS = 0 MW

FCRQ = Max(0, (100 – Max(50, 0, 0 * 100))) = 50 MW

FCPQ = Max(0, Max(0, 50 – 10) – Max(0, 50 – 100) + 0 – 50)
= Max(0, 40 – 0 + 0 – 50)
= 0 MW ✓

DAM award of 50 MW reduces requirement to 50 MW; then covered by firming purchase of 50 MW, so no penalty.

Example 2: Full exemption and net sales obligation

SAGC = 100 MW, FTCS = 40 MW, FTCP = 10 MW, HATHSL = 120 MW, Full Exemption from SAGC

FCRQ = Max(0, (100 – Max(0, 0, 1 * 100))) = 0 MW

FCPQ = Max(0, **Max(0, 0 – 120)** – Max(0, 120 – 100) + 40 – 10)
= Max(0, 0 – 20 + 40 – 10)
= 10 MW ✓

HSL exceeds SAGC by 20 MW; resource sold 30 MW net → 10 MW penalty for the uncovered sales.

Additional examples in Appendix

Formulas for Resource not subject to firming performance obligations

Issues: Resource which is not subject to firming performance obligations and fails to perform incurs a disproportionate penalty. Penalty should be only for any assumed firming obligation, and not for failing to meet its own SAGC.

Current Formula

For Transmission Generation Resource:
FCAV = HATHSL − SAGC + FTCP
FCRQ = FTCS

FCPQ = Max(0, FCRQ – FCAV)

Example: Generation Resource SAGC=100, forced OUT (i.e., HATHSL = 0)
FTCS = 1 MW, FTCP = 1 MW

FCRQ = FTCS = 1 MW

FCAV = 0 − 100 + 1 = −99 MW

FCPQ = Max(0, FCRQ − FCAV)
= Max(0, 1−(−99)) = 100 MW ⚠

Resource incurs 100 MW penalty for selling only 1 MW. Purchases would need to cover SAGC before covering sales.

Proposed ERCOT Revision

For Transmission Generation Resource:
FCAV = Max(0, HATHSL − SAGC ~~+ FTCP~~) → Excess of SAGC
FCRQ = FTCS → Requirement is only what is sold

FCPQ = Max(0, FCRQ – FCAV – FTCP)
→ Penalty quantity = Sales – Excess of SAGC – Purchases

Example: same

FTCS = 1 MW, FTCP = 1 MW

FCRQ = FTCS = 1 MW

FCAV = Max(0, 0 − 100) = 0 MW

FCPQ = Max(0, FCRQ − FCAV − FTCP)
= Max(0, 1 − 0 − 1) = 0 MW ✓

Resource incurs no penalty since purchases net with sales.

ERCOT has made additional revisions to address stakeholder feedback

- **Private Use Network (PUN) attestation**: Deadline changed to 15 days before the Generation Firming Season. Notice of Change of Information (NCI) form should be submitted when no longer exempt.
- **Pre-Season**: SAGC and Baseline Period posting requirement changed from 10 days to 30 days before the Generation Firming Season.
- **Ramp-hour selection methodology**: Added description of approach ERCOT used to select the ramping hours which form part of the Generation Firming Baseline Period.
- **High-risk hours**: Specified high-risk hours as those from the NERC Probabilistic Assessment with Expected Unserved Energy (EUE) ≥ 3% of annual EUE.
- **Exemptions**: Clarified that Resources retain any applicable exemptions for their own firming obligation when assuming additional obligations through Generation Firming Transfers, but may be penalized for any additional firming obligation taken on; i.e., exemptions do not extend to assumed firming obligations. Clarified that that no generation firming penalties will be applied if a Market Suspension event occurs.
- **Firming Capacity Incentive Payment (FCIQ)**: Removal of FTCP from FCAV and change to FCRQ required a corresponding change to the FCIQ formula to keep it consistent.

Next Steps

- ERCOT plans to file comments to revise NPRR 1328 language ahead of the July 8, 2026 Wholesale Market Subcommittee (WMS) meeting.
- Continue discussions in stakeholder meetings.

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Glossary

- AS – Ancillary Services
- DAASQ – Day-Ahead Awarded Ancillary Services Quantity
- DAESR – Day-Ahead Energy Sale from Resource
- DAM – Day-Ahead Market
- EUE – Expected Unserved Energy
- FCAV – Firming Capacity Availability
- FCIQ – Firming Capacity Incentive Payment
- FCPQ – Firming Capacity Penalty Quantity
- FCRQ – Firming Capacity Requirement Quantity
- GR – Generation Resource
- HSL – High Sustained Limit
- HATHSL – Hourly Average Telemetered High Sustained Limit
- HB – House Bill
- NCI – Notice of Change of Information
- NERC – North American Electric Reliability Corporation
- NPRR – Nodal Protocol Revision Request
- PUCT – Public Utility Commission of Texas
- PURA – Public Utility Regulatory Act
- PUN – Private Use Network
- QSE – Qualified Scheduling Entity
- RCCRS – Resource Capacity Contracted for Reliability Service
- RTM – Real-Time Market
- PRS – Protocol Revision Subcommittee
- SAGC – Seasonal Average Generation Capability
- WMS – Wholesale Market Subcommittee
- WMWG – Wholesale Market Working Group

Examples for Resource subject to firming performance obligations

Examples using Revised formulas under various scenarios

Example	No DAM/Reliability exemptions			Partial exemption			Full exemption		
Scenario #	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Description	HSL < SAGC	HSL > SAGC	HSL > SAGC, FTCP > 0, FTCS > 0	HSL < SAGC	HSL > SAGC	HSL > SAGC, FTCP > 0, FTCS > 0	HSL < SAGC	HSL < SAGC, FTCP = 0, FTCS > 0	HSL > SAGC, FTCP > 0, FTCS > 0
SAGC	100	100	100	100	100	100	100	100	100
HATHSL	40	110	110	40	110	110	40	40	110
DAESR+ DAASQ	0	0	0	50	50	50	0	0	0
RCCRS	0	0	0	0	0	0	0	0	0
FTCP	0	0	5	0	0	5	0	0	10
FTCS	0	0	20	0	0	20	0	20	40
FCRQ	100	100	100	50	50	50	0	0	0
FCAV	40	110	110	40	110	110	40	40	110
FCPQ	**60**	**0**	**5**	**10**	**0**	**5**	**0**	**20**	**20**

Performance requirement is based on historical data on availability

- ERCOT must calculate the SAGC for all Generation Resources:

$$SAGC = min\left\{\left(\frac{1}{n}\sum_{i=1}^{n}\frac{HSL_i}{SRC_i}\right), 0.75\right\} \times SRC_t$$

For example, a wind plant with SRC = 100 MW and 5-year avg HSL/SRC ratio of 0.35:

SAGC = min(0.35, 0.75) *100 MW = 35 MW.

Where:

- SAGC = Seasonal Average Generation Capability
- HSL = Real-Time telemetered High Sustained Limit
- SRC = Seasonal Rated Capacity (i.e., the applicable Seasonal net maximum sustainable rating, as registered with ERCOT)
  - SRC_t = SRC at the start of the compliance season *t*
  - SRC_i = SRC in the historic interval i
- n = Total number of SCED intervals from same season for up to previous 5 years

- To ensure that high-performing generators are not overly penalized, the Public Utility Commission of Texas (PUCT) created an upper bound on the SAGC of 75%.