



Nodal Protocol Revision Request (NPRR) 1309

DRRS ASDC Shortage Floor Price

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Outline:

- How AS prices are set under normal conditions
- How minimum prices help to shape the ASDC
- Adding DRRS to AORDC
- Background on shortage floor price
- Shortage floor price for DRRS

Key Takeaways

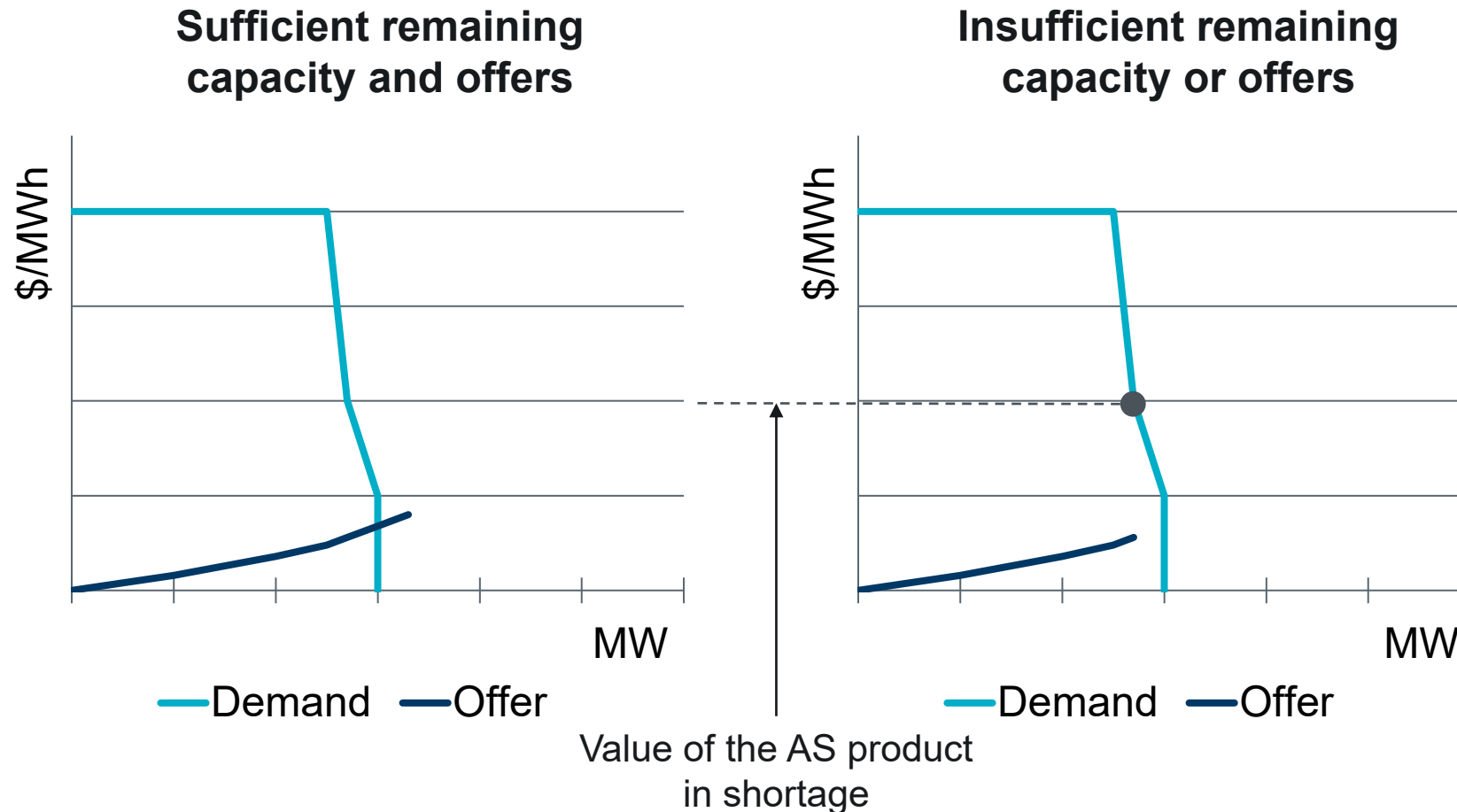
- Under normal conditions AS offers set the prices.
- The ASDCs and shortage floor prices apply under AS shortages.
- A \$10 floor for DRRS maintains rational relative pricing hierarchy and aligns with previous studies.

Recommendation: ERCOT recommends that TAC approve NPRR 1309 with a \$10 shortage floor price for DRRS.

- This presentation:
 - Highlights the nature of the Ancillary Service Demand Curves (ASDCs) and shortage floor prices
 - Compares and contrasts the competing proposals
 - Presents ERCOT's recommended ASDC curve and shortage floor price for NPRR 1309

How AS prices are set under normal conditions

- When there is sufficient capacity and offers, Ancillary Service (AS) prices are set through a competitive, market-based clearing process, where prices are determined by the intersection of offers from resources (supply) and AS Plan amount (demand).



Role of ASDCs and shortage floor price

- **What is an ASDC?** The Ancillary Service Demand Curves (ASDCs) reflect the penalty price for going short on the Ancillary Service products relative to their volumes as defined by the AS Plan.
 - ASDCs are inputs into the optimization and represent a willingness to procure a volume of an AS at a given price (higher on the curve = higher shortage penalty)
- **What is a shortage floor price?** Applies when offers are insufficient to meet the AS plan. Prevents the ASDC 'tail' from approaching \$0.
- **Critical distinction:** When competitive offers are sufficient, they set the price – neither the ASDC shape nor the shortage floor price comes into play. Both mechanisms are shortage-only safeguards.

Minimum prices help to shape the individual ASDCs per their relative reliability value

- **Minimum price** – a lower bound on the non-linear (curved) segment of an ASDC.
 - It ensures the shape of each curve reflects the relative reliability value of that product.
 - Higher-value products have higher minimum prices, keeping their curves above lower-value products throughout the non-linear range.
 - The shortage floor prices are a different element which apply to tail end (lowest segment) of the ASDC as the final step in the methodology for shaping the curves.
- Currently, minimum prices are defined for Reg-Up and RRS:
 - **Reg-Up: \$250**
 - **RRS: \$100**
 - These minimum prices signal the operational value of Reg-Up and RRS for frequency control.
 - Additionally, they anchor the bottom of the non-linear ASDC segments for Reg-Up and RRS.
 - The Apr 9, 2026 Joint ERCOT/IMM Comments propose minimum prices as follows:
 - **ECRS: \$15**
 - **Non-Spin: \$5**
 - **DRRS: \$0.01**

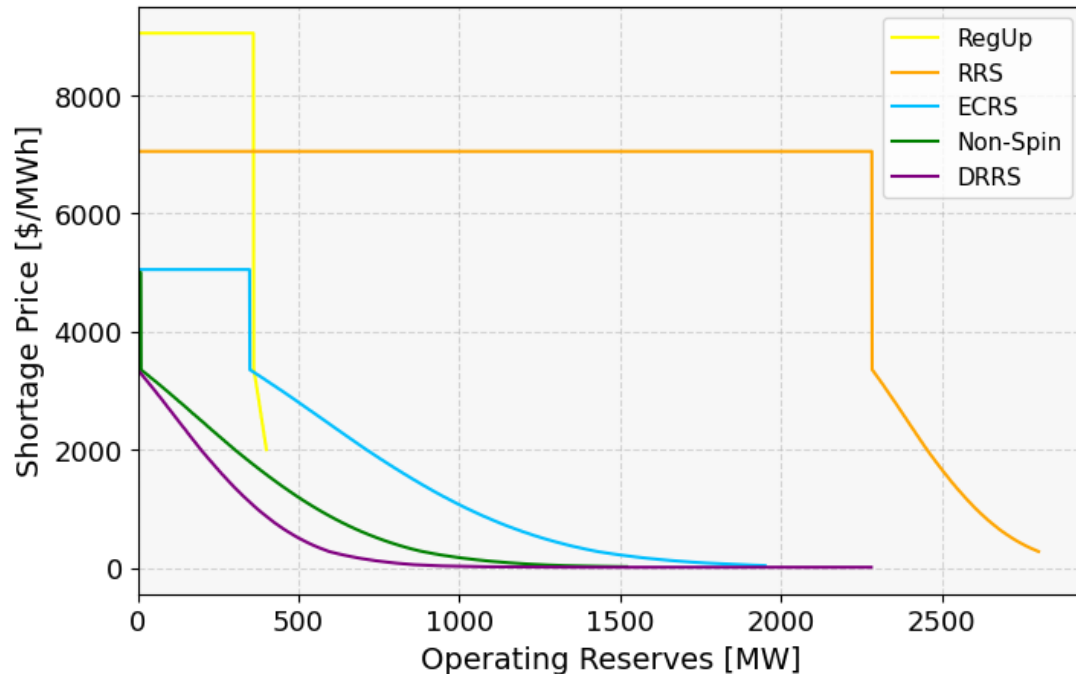
Example: Comparison of ASDC curves given different proposals of min price

- **ERCOT's proposal (left chart):** Setting DRRS min price at \$0.01 keeps the DRRS curve (purple) below Non-Spin (green) throughout the shortage range – correctly reflecting that Non-Spin has greater short-term reliability value (30-min response vs. DRRS's 2-hour deployment).
- **HEN/TCPA proposal (right chart):** Setting DRRS min price at \$15 causes the DRRS curve to sit above or equal to Non-Spin over much of the range. This overstates DRRS's relative reliability value and could divert resources away from Non-Spin when both compete for the same capacity.

ERCOT proposal

Min price: DRRS = \$0.01, Non-Spin = \$5

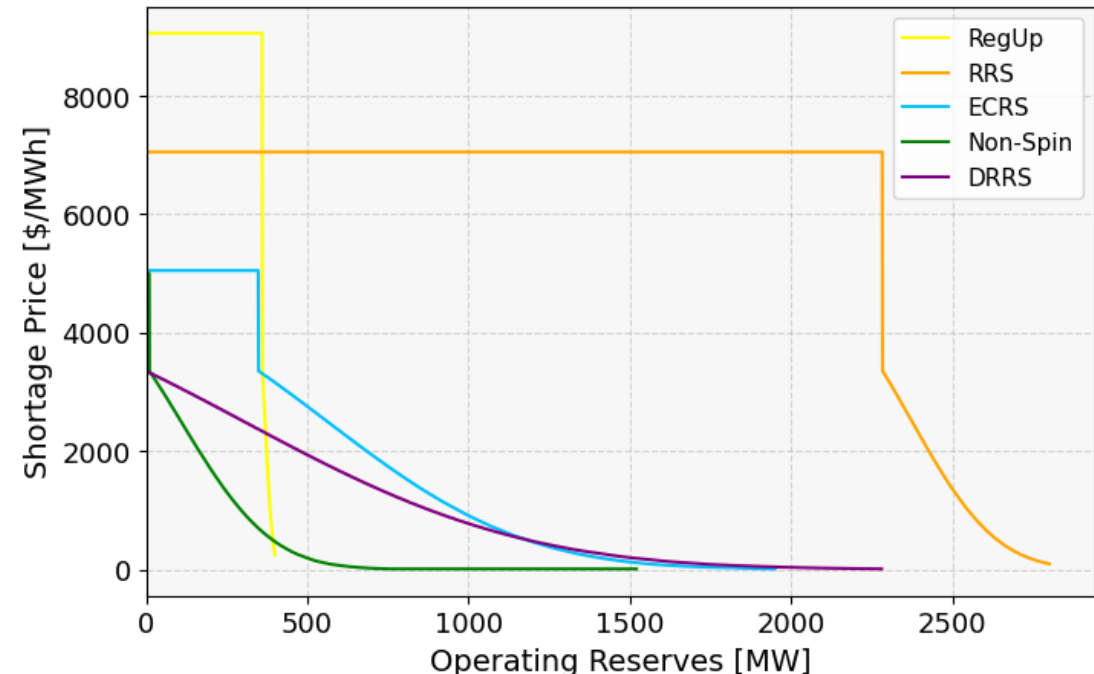
ASDCs



HEN & TCPA proposal

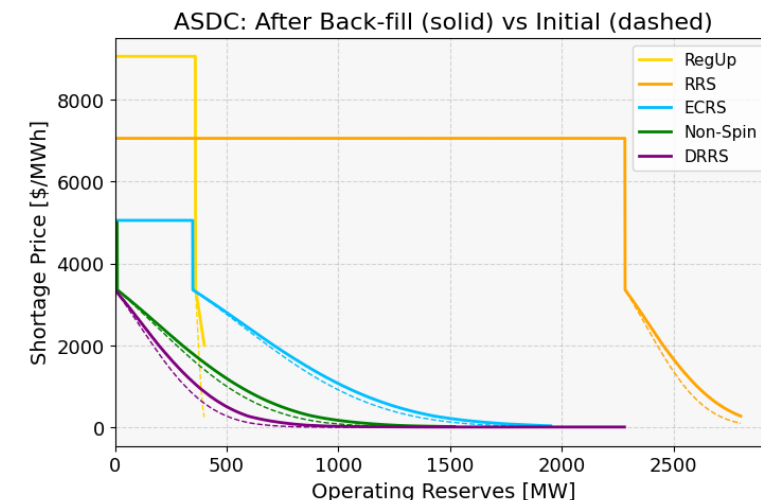
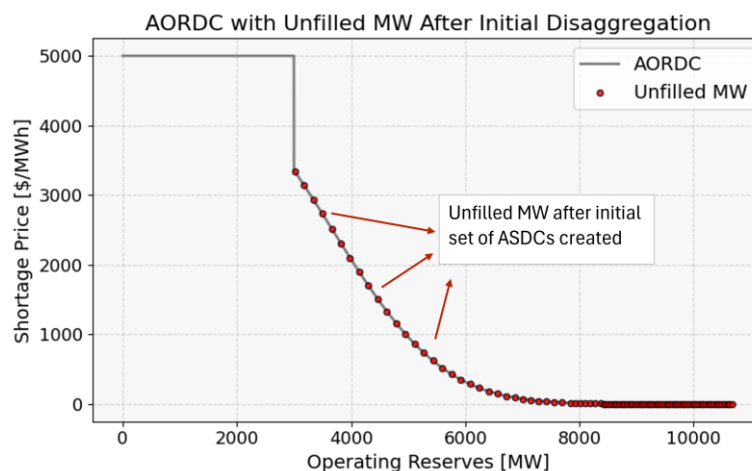
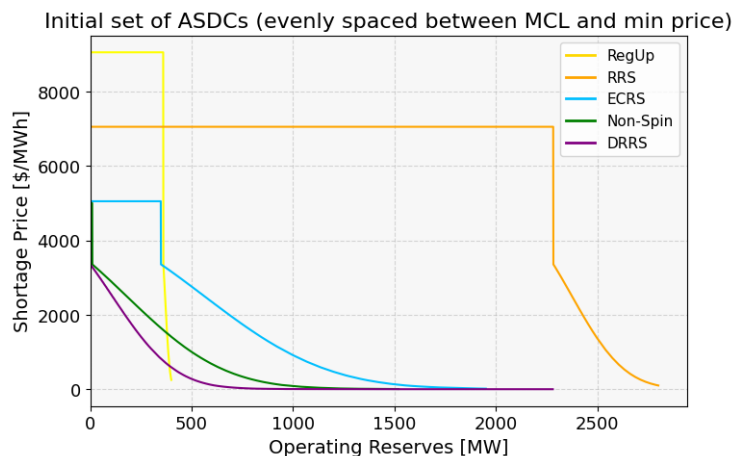
Min price: DRRS = \$15, Non-Spin = \$0.01

ASDCs



Adding DRRS to AORDC

- Adding DRRS requires modifying the existing method for carving individual ASDCs out of the Aggregate Operating Reserve Demand Curve (AORDC). The AORDC represents the combined value of all operating reserves; the individual ASDCs are derived from it.
- The “backfill” approach works in three steps (shown in charts below): (1) Create initial individual ASDCs evenly spaced between the Minimum Contingency Level (MCL) and each product’s min price. (2) Identify gaps – points on the AORDC not yet covered. (3) Redistribute points from the tail of each ASDC (lowest-value segment) to fill the highest-value AORDC gaps, cycling through products in order: Reg-Up, RRS, ECRS, Non-Spin, then DRRS, until no gaps remain. **The result: solid lines (after) sit slightly higher than dashed lines (before), reflecting this redistribution.**

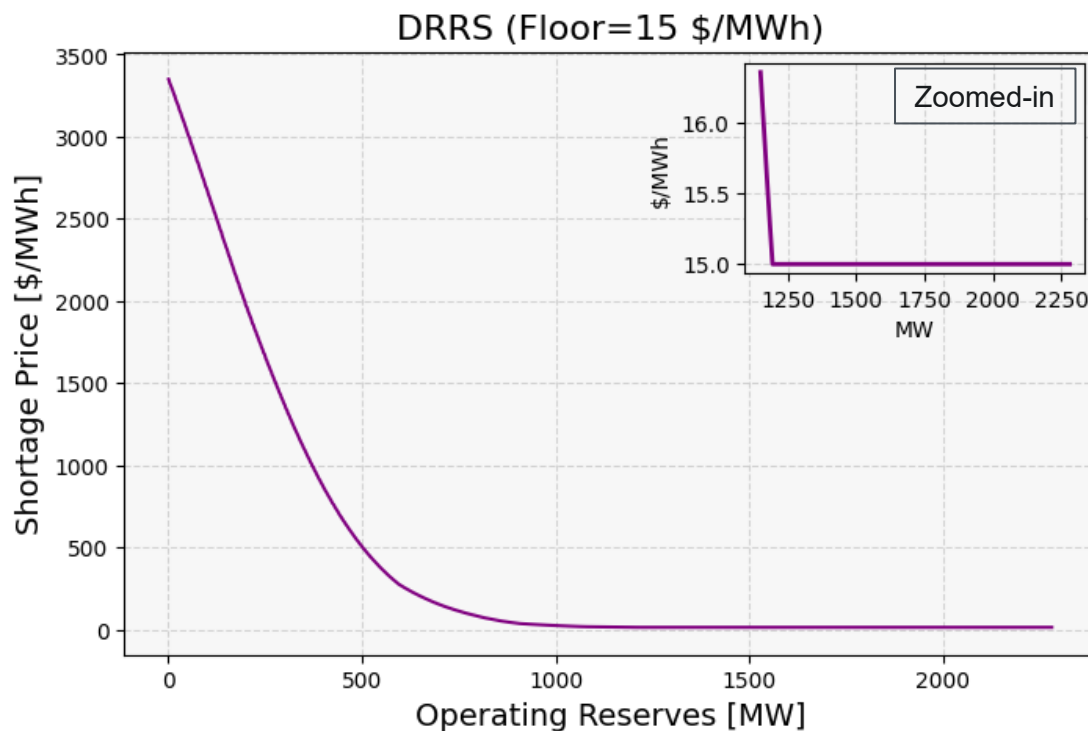
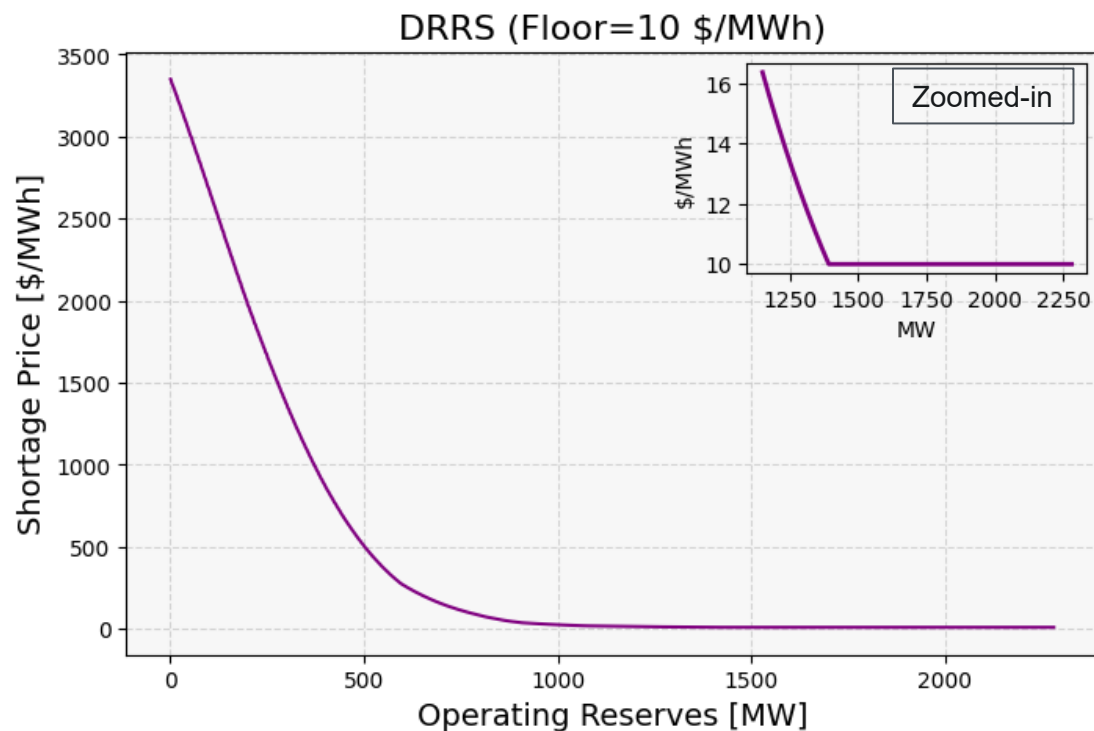


Background on ASDC shortage floor price

- The shortage floor price represents the minimum price at which the full AS Plan quantity will be procured.
- The shortage floor price takes effect when offers are insufficient to meet the AS plan. In the absence of this floor the ASDC tail can approach \$0/MW/h.
- During the discussions on NPRR 1269, ERCOT proposed a \$15/MW/h floor on Ancillary Service Demand Curves (ASDCs) for Reliability Unit Commitment (RUC).
 - The ASDC shortage floor price allows RUC optimization to make a different commitment decision and help ensure that sufficient capacity is committed to meet the AS plan. In particular, the concern was with Non-Spin.
 - Sensitivity analysis conducted by ERCOT showed that an ASDC shortage floor price of \$15 was able to resolve Non-Spin shortages.
- ERCOT supported a TCPA proposal to apply the \$15 ASDC shortage floor price to the Day-Ahead Market (DAM) and Real-Time Market (RTM).
 - Concern was that otherwise DAM and RTM pricing may be insufficient to incent resources.
 - The \$15 floor is a relatively modest ASDC price for low levels of shortages.

Example: Comparison of DRRS Shortage Floor Price Options

- Currently as it stands, the \$15 floor is applied for all ASDCs, except for DRRS.
- We propose adding a floor of \$10 per MW per hour for DRRS, for Day-Ahead and Real-Time Markets.



ERCOT's perspective on the DRRS Shortage Floor Price

- A \$10 floor for DRRS maintains rational relative pricing between the AS products, and reflects the unique characteristics of DRRS relative to other Ancillary Services.
- \$10 floor aligns with self-commitment incentives (and supports the unique statutory requirements around DRRS and RUC reduction)
 - In previous studies, ERCOT has estimated that a \$10/MWh Real-Time On-Line Reserve Price Adder (RTORPA) value is sufficient to cover the start-up costs of a marginal combustion turbine with a four-hour minimum run time.*
 - Increasing the floor for DRRS to \$15 could artificially inflate the value of DRRS relative to other products, in particular Non-Spin.
- A higher shortage floor price for DRRS of \$15 may lead to oversupply or misallocation of resources into DRRS. It could draw resources away from Non-Spin when both compete for similar reserve capacity.

Product	Min Price (\$/MW/h)	Price Floor (\$/MW/h)
Reg-Up	\$250	N/A (min price anchors)
RRS	\$100	N/A (min price anchors)
ECRS	\$15	\$15
Non-Spin	\$5	\$15
DRRS	\$0.01	\$10 (ERCOT proposed)

* "Impact Assessment of ORDC Changes," PUCT Control Number 52373, Item Number 246, received 2021-11-05.

Summary: ERCOT recommends that TAC approve NPRR 1309 with a \$10 shortage floor price for DRRS.

- **AS Price Setting:** Under normal conditions prices are set by competitive offers, not ASDCs or shortage floor prices.
- **Minimum price:** These help to shape the ASDC curve reflecting each product's relative reliability value. They rarely set the price under shortages directly.
- **Shortage floor price:** Applies when offers are insufficient to meet the AS plan. Prevents the ASDC tail from approaching \$0.
- **Add DRRS to AORDC:** Adding DRRS requires care to avoid distorting the relative pricing, in particular relative to Non-Spin.
- **\$10 floor for DRRS:** A \$10 floor is appropriate for small DRRS shortages and maintains a rational relative pricing hierarchy. Cited in previous study estimates as sufficient to cover the start-up costs of a marginal combustion turbine with a four-hour minimum run time.

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