



ERCOT CRR Market Overview

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CRR Market Operations

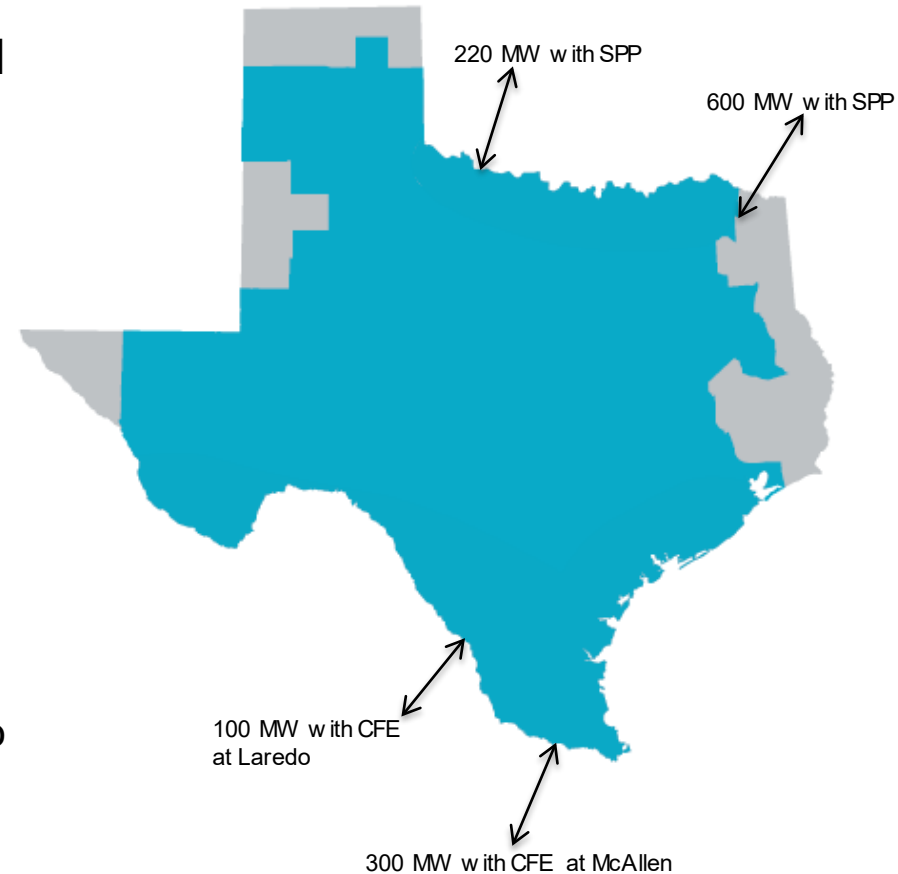
April 1, 2025

The ERCOT Region

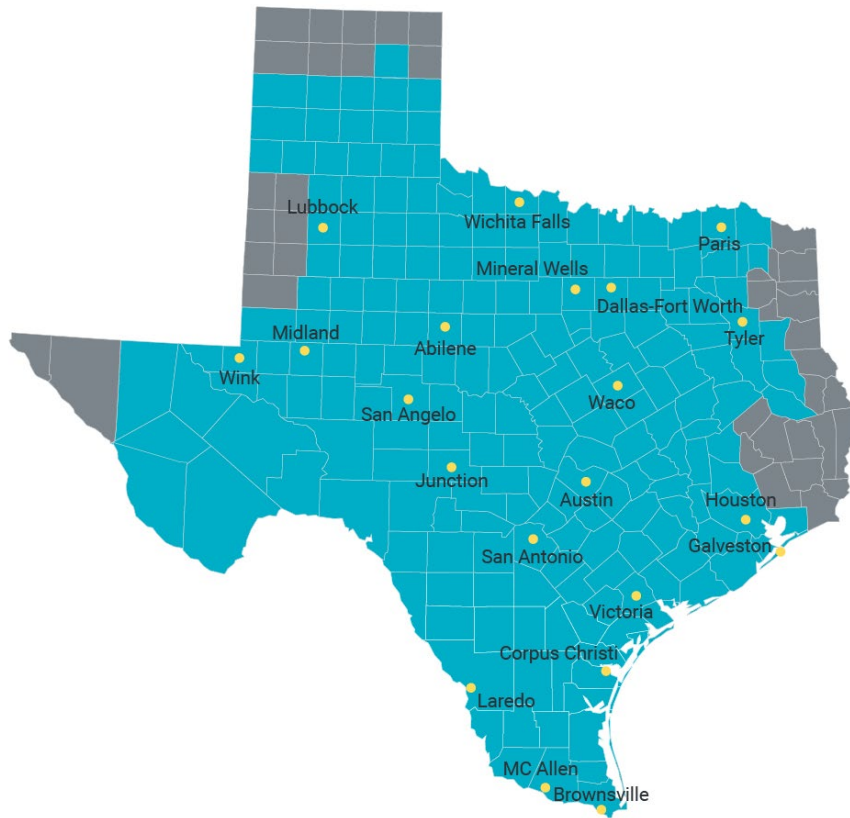
The interconnected electrical system serving most of Texas, with limited external connections

- 85,508 MW peak load on August 10, 2023
- 1250+ generation units
- 54,100+ miles of high-voltage transmission
- 103,105+ MW expected capacity for Summer 2025

ERCOT connections to other grids are limited to ~1,220 MW of direct current (DC) ties with Southwest Power Pool (SPP) and Comision Federal de Electricidad (CFE), which allow control over the flow of electricity



ERCOT includes Competitive, Municipal, and Cooperative service areas



ERCOT covers 75% of the state of Texas land, including 90% of the state's electric load

- More than 27 million consumers in ERCOT
- 75% of ERCOT's load is made up of competitive choice customers

ERCOT FTR market structure

- ERCOT uses the term Congestion Revenue Rights (CRRs)
 - Point-to-Point (PTP) Obligation
 - PTP Option (CRR only)
- Certain Non-Opt-In Entities (municipals/co-ops) get Pre-Assigned CRRs (PCRRs) at a discounted price through an annual allocation process
- CRRs may be acquired in long-term (6-month) auctions, monthly auctions, and can be traded bilaterally

ERCOT FTR market structure cont.

- Both options and obligations are available on any combination of 900+ settlement points for Peak Weekday (5x16), Off-peak (7x8), and Peak Weekend (2x16) times-of-use (TOU); excluding points deemed to be electrically similar.
 - A 24-hour TOU is available for monthly auctions only
 - Current CRR ownership is approx. 70% options and 30% obligations

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Off-Peak (0100 – 0600)						
Peak Weekday (0700 – 2200)					Peak Weekend (0700 – 2200)	
Off-Peak (2300 – 0000)						

Annual PCRR Allocations

- PCRR eligibility is based on the Non-Opt-In Entity (NOIE) generator-to-load contracts that have been in place since before September 1, 1999 (pre-Texas electric market deregulation)
- Eligibility is evaluated prior to each annual allocation and can be reduced or eliminated based on unit retirements, unit seasonal rating changes, or contract changes
 - Retirements and ratings or contract changes can also impact currently owned PCRRs if they occur outside of the annual allocation process cycle
- Allocations are held annually for the calendar year associated with the upcoming CRR first offering long-term auctions
 - For example, this summer we will allocate for calendar year 2028.

Annual PCRR Allocations - continued

- NOIEs only submit nominations for MW (less than or equal to their eligible amount); they do not submit a bid price
- Allocations are run using the same network model as our furthest long-term auction (3 years out)
- Awarded PCRRs are charged a percentage of the path clearing price (generator source to load zone sink) in the associated Seq6 CRR first offering auctions
 - % is based on type of generator and whether PCRR is an Obligation or Option (range from 5-20% of clearing price)
- Once a PCRR is owned, it settles in the Day-Ahead Market (DAM) just like other CRRs
 - They are also tradeable like other CRRs

CRR market credit requirements

- Each CRR Account Holder (CRRAH) must have an associated Counter-Party (CP) who is responsible for allocating credit for each auction
- Allocated credit should be enough to cover the estimated bid exposures for all CRRAHs associated with the same CP
 - Bid exposure is calculated by multiplying the bid MW by the bid price
 - An adder is applied to Obligation bids to account for their potential negative value
 - The adder = $-\text{[Min (0, ACI99, ACP)]}$
 - Negative values for ACI99 and ACP result in a higher credit requirement
 - ACI99 = 99th percentile confidence interval for the previous three years of DAM settlement point prices for the source/sink path in each bid
 - ACP = most recent auction clearing price for the source/sink path in each bid
- If allocated credit does not cover the estimated bid exposure, the CP will have a budget constraint, which could result in fewer awards in the auction

CRR market credit requirements - continued

- Awarded CRRs are invoiced the next Business Day after the auction results are posted
- Invoice payments are due four Bank Business Days after the invoices are posted
 - Invoices must be paid in order for a CRRAH to take ownership of the awarded CRRs
 - Ownership is required to:
 - Settle CRRs in the DAM
 - Offer CRRs into future auctions
 - Trade CRRs bilaterally

CRR market credit requirements - continued

- CPs must maintain daily credit to cover their Total Potential Exposure (TPE), which accounts for all associated ERCOT market activity (CRR, DAM, Real-Time)
 - The CRR portion of the TPE also uses the ACI99 and ACP adders when calculating the Future Credit Exposure (FCE) for all owned Obligation CRRs
 - The CP's FCE is calculated for all owned CRRs, including the remaining TOU hours of the current month and all TOU hours for future months
- CPs that do not maintain enough credit to cover their TPE will receive a collateral call from ERCOT Credit

Long-term and monthly auctions

- Each calendar month, ERCOT holds a long-term auction and a monthly auction
- Long-term auction sequences offer CRRs for the next three years in 6-month blocks (Jan-Jun or Jul-Dec)
 - Seq1 with 70% network capacity
 - Nearest block of Jan-Jun or Jul-Dec
 - Seq2 with 55% network capacity
 - Seq3 with 40% network capacity
 - Seq4 with 30% network capacity
 - Seq5 with 20% network capacity
 - Seq6 with 10% network capacity
 - Furthest block of Jan-Jun or Jul-Dec (going 3 years out)
- Monthly auctions at 90% of network capacity

CRRs for each month are available in 7 different auctions

Each calendar month is included in 6 long-term auctions and 1 monthly auction

Available % of network capacity for each auction*

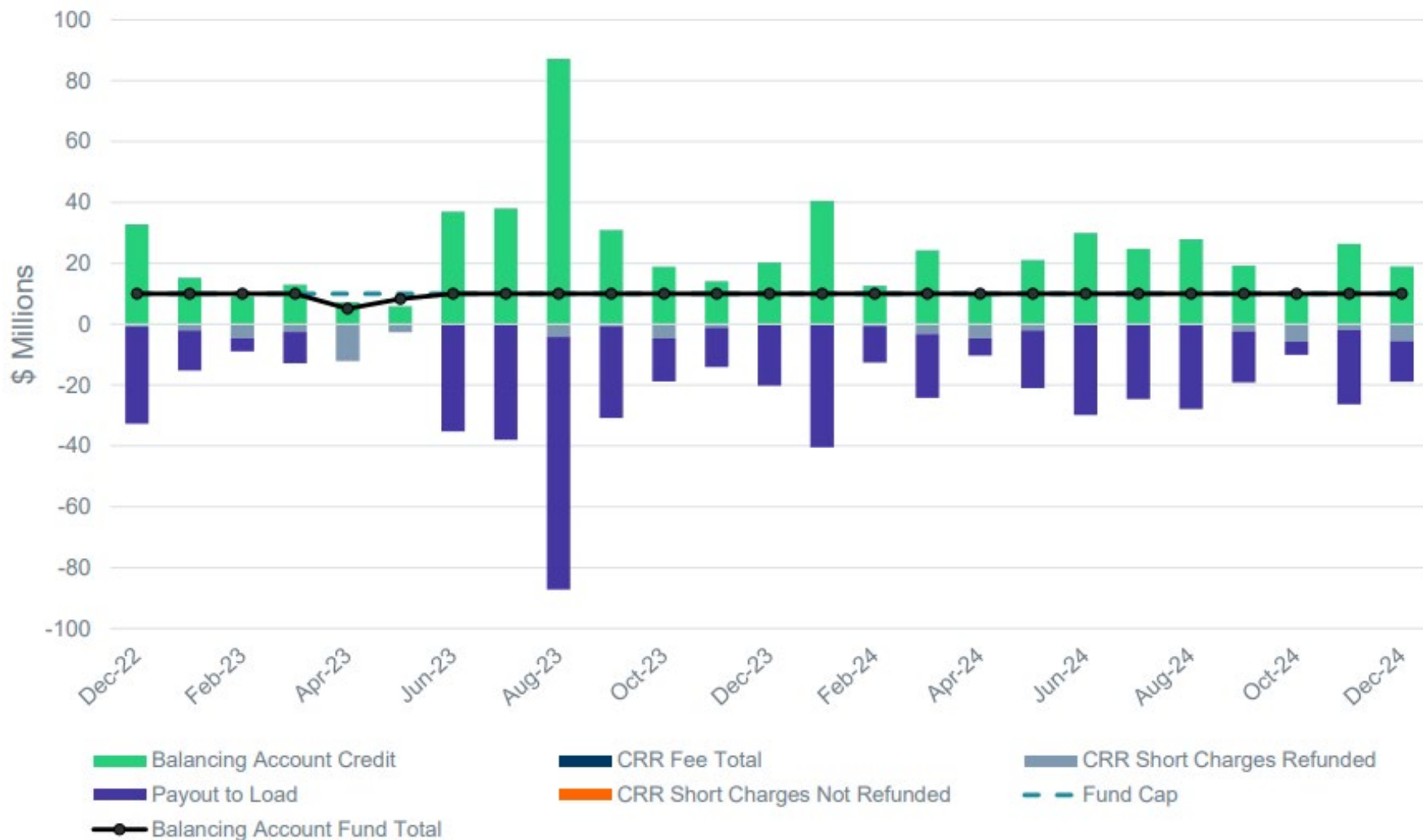


*Existing CRRs are included in the capacity. The remaining % is available in the auction.

More on the ERCOT market structure

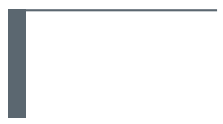
- All auction revenue is uplifted to load
- CRRs are funded from Day-Ahead Market (DAM) congestion rent
 - Congestion rent = charges to load – payments to generators
 - Excess congestion rent is put in a balancing account with \$10M cap, which is used to cover monthly shortfalls. The remaining is uplifted to load each month.

CRR Funding



CRR Value vs Cost





Questions?