



## ERCOT Market 101

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## Texas Competitive Model

ERCOT plays an integral role in all areas.



### Generation

Competitive Production

- Generation resources are owned by privately owned companies, with the exception of municipal and cooperative resources. They operate and compete in the ERCOT market to serve load.



### Transmission & Distribution

Regulated Open Access

- Transmission and distribution lines and related facilities are owned and operated by regulated utilities. They operate in the ERCOT market.

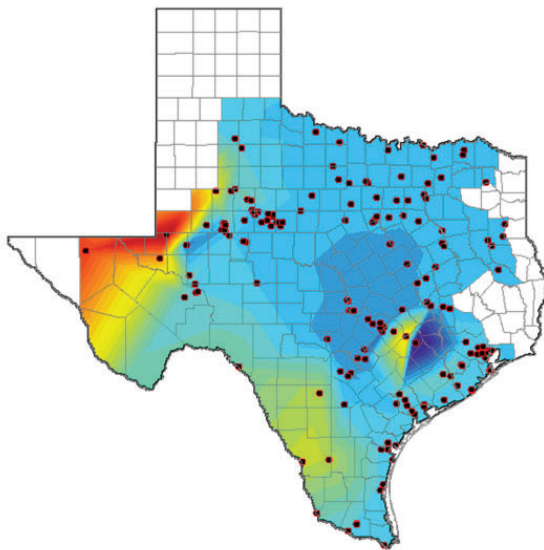


### Retailers

Competitive Sales

- Retailers compete to serve consumers' electric load in ERCOT.
- Municipal and cooperative utilities sell power to one fourth of the ERCOT market.
- Nearly 100% smart meters

## Market operations at-a-glance



\$2.54 Prices \$86.46

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Source: ERCOT



Market participants may submit offers to buy and sell energy on an hourly basis in the voluntary Day-Ahead Market.



In the Real-Time Market, market participants submit offers to provide generation output and bring generation on-line as needed.



Every five minutes, ERCOT's Security-Constrained Economic Dispatch system selects the most efficient generation resource options to serve customer demand effectively within the limits of the transmission system.



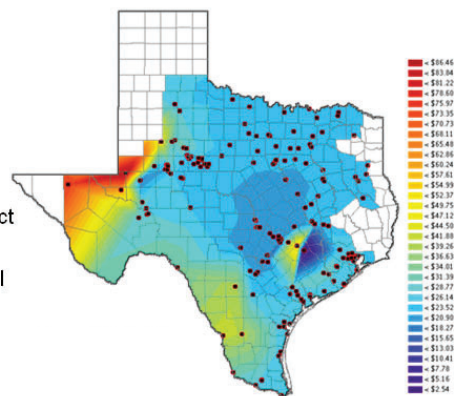
Energy prices reflect the availability of resources during each interval, adjusting as needed to reflect the value of energy during scarcity conditions.



The Real-Time Market is settled every 15 minutes. Generators are paid settlement point prices, which reflect locational prices. Load-serving entities pay load zone prices, which can include costs associated with transmission congestion.

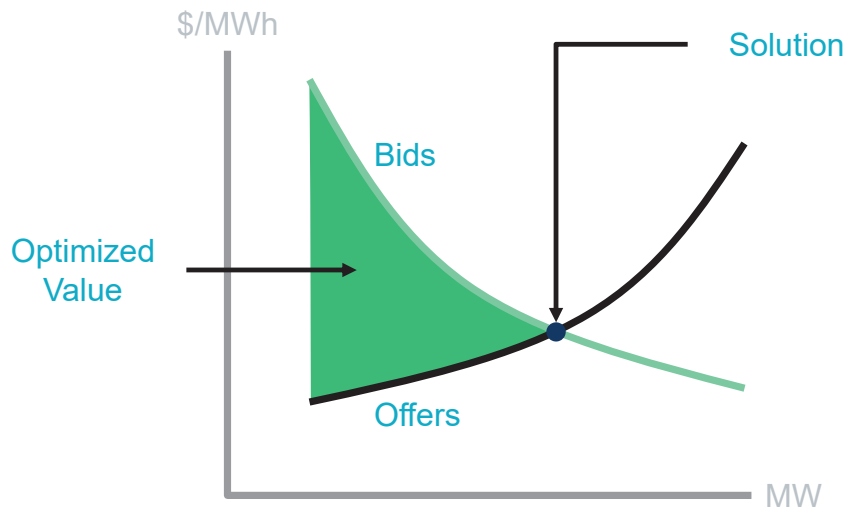
## Energy Market Construct

- Energy-only market; \$5,000 price cap with operating reserve scarcity adder
- Generator self-commitment; ERCOT makes residual reliability commitments if needed
- Voluntary Day-Ahead Market (DAM); Ancillary Services procured and co-optimized with energy in DAM
- All generators (including renewables) submit offers for generation output
- Real-Time Market clears every five minutes, using generation with the lowest offers to serve the load, subject to unit operational and transmission constraints
- All generators (including renewables) receive output level instructions and Locational Marginal Prices

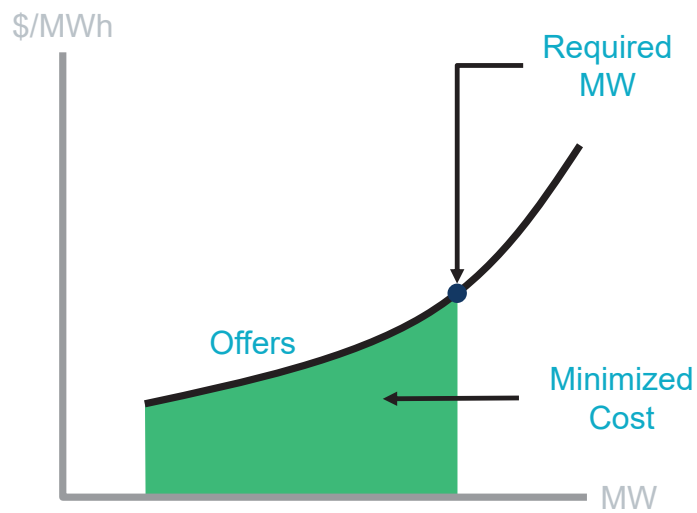


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## Forward markets are optimized for social welfare (value)



## Real-time is mainly cost-minimizing



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"ERCOT 101 Market Overview"