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Efficient Electricity Market: Overview of Texas

October 15, 2013

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Public Utility Commission of Texas

www.puc.texas.gov



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5. Consumers protection from volatility in electricity prices in competitive markets
6. Incentives for new generation investments and providing the correct economic signals for users to manage their demand



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“In Texas we refuse to rest on our laurels and have every intention of remaining number one by continuing to add features in our nation’s leading electricity market. We keep finding ways to increase customer value in the marketplace through smart grid innovations and ongoing improvements in the shopping experience, just to name a few.”

**Chairman Donna L. Nelson, Public Utility Commission of Texas
(ABACCUS, 2012)**



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1. Jurisdiction and Responsibilities

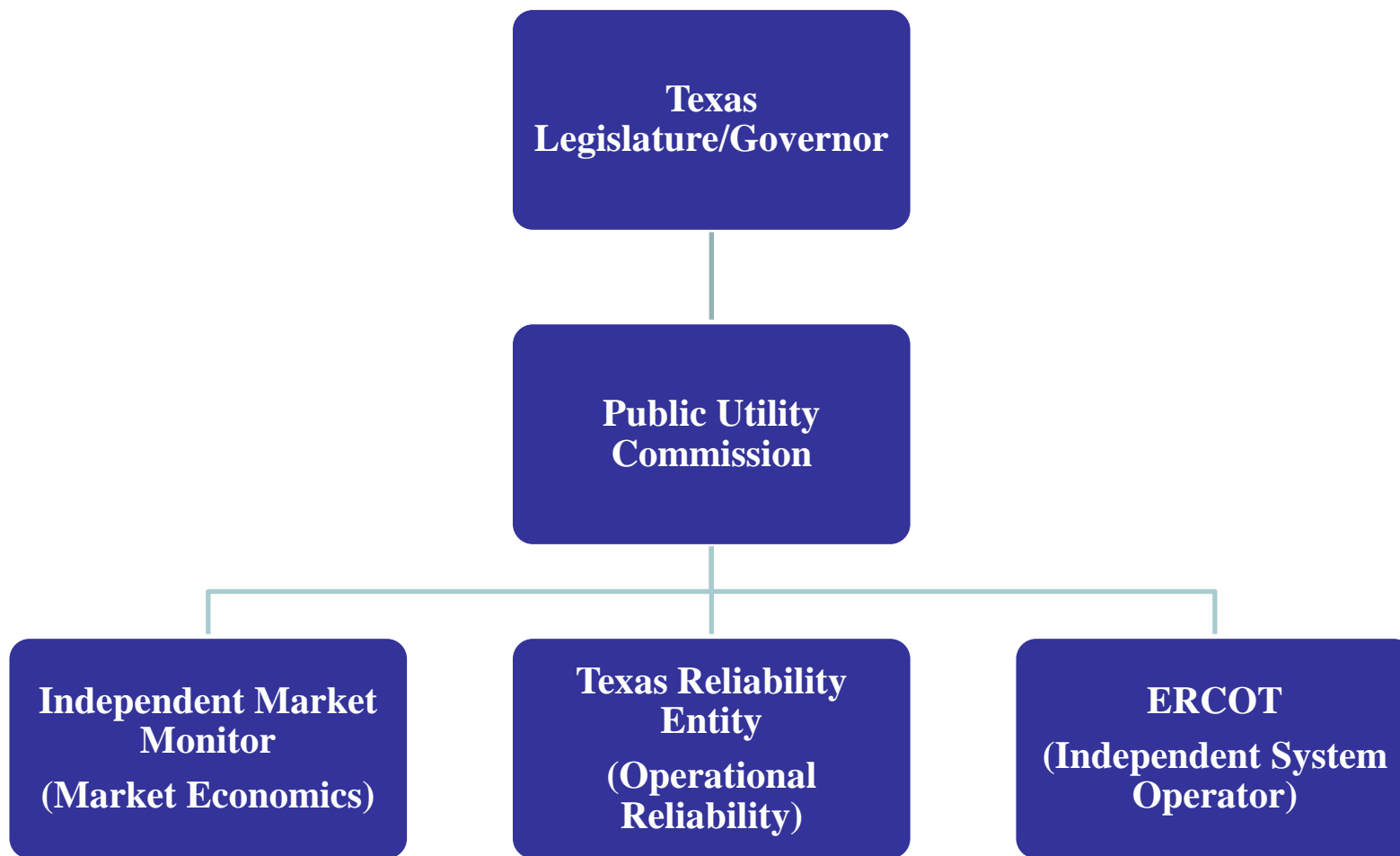


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Regulatory Organization in Texas



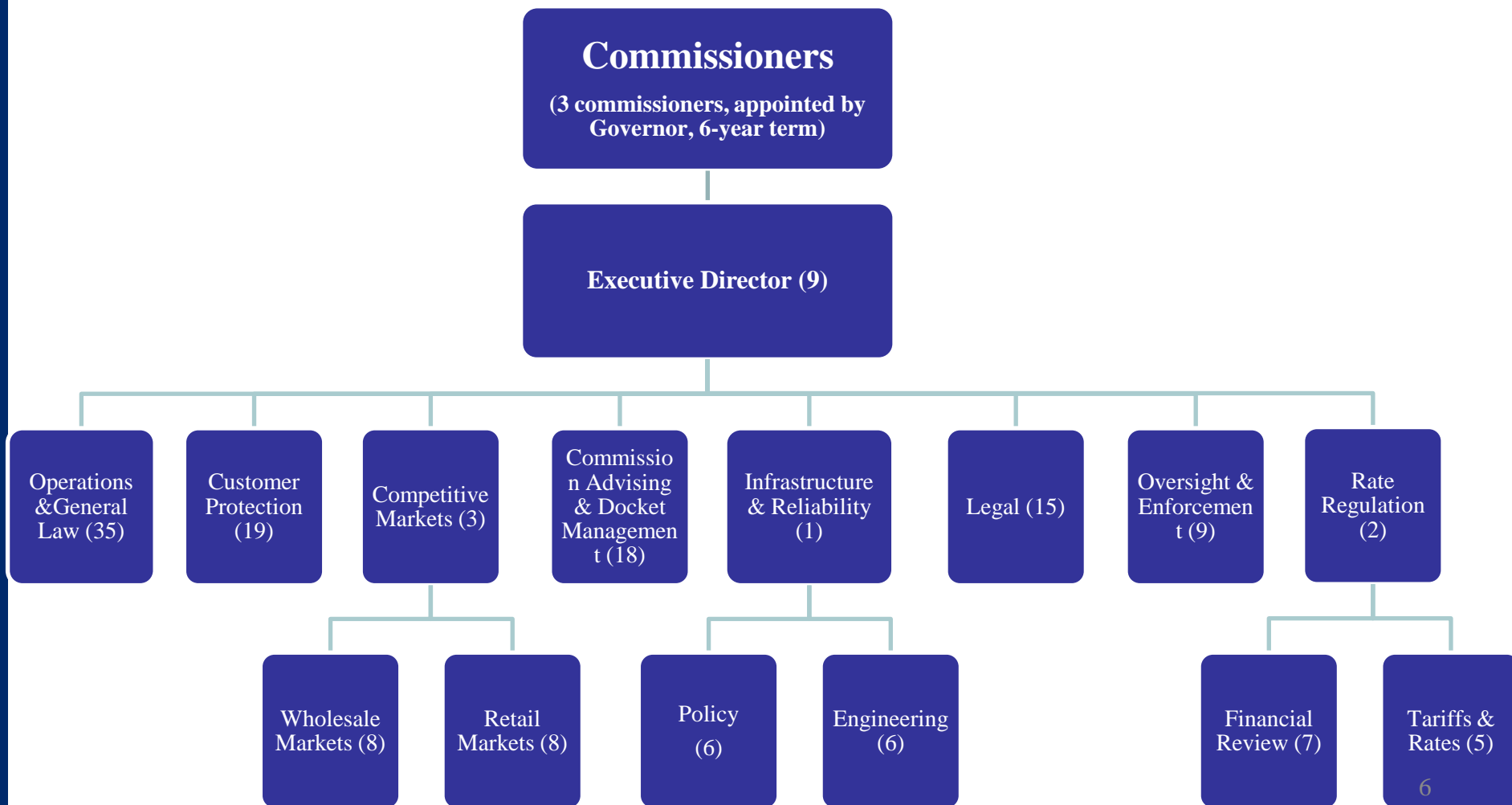


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PUCT Organization





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About the PUCT

- **Mission**
 - Protect customers, foster competition, and promote high quality infrastructure.
- **What We Do?**
 - Regulate Texas electric and telecommunications utilities, implement legislation, and offer customer assistance in resolving consumer complaints.
- **Our History**
 - Created in 1975 by Texas Legislature to regulate rates and services of electric and telecommunications utilities
 - Texas Legislation in 1995
 - Federal Telecommunications Act of 1996
 - Texas Legislation in 1999
 - January 1, 2002 electric market opened to competition



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About the PUCT

- What do we regulate?
- Incumbent local telephone providers that have not elected incentive regulation;
- Rates and Services of transmission and distribution utilities (TDUs) in markets opened to competition and of investor-owned electric utilities in markets not opened to competition;
- Service quality of traditional telephone providers and retail electric providers;
- Oversight and Enforcement of competitive electric and telecommunications companies.



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About the PUCT

- What do we not regulate?
 - Wireless telecommunications services;
 - Long distance telephone providers, except in instances of slamming and cramming;
 - Natural gas rates or service;
 - Water rates or service;
 - Internet rates or service;
 - Cable or satellite rates or service;
 - Municipally owned electric utility rates or services, except wholesale transmission rates
 - Electric cooperative rates and services, except wholesale transmission rates



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Decisions in a Contested Case

- Commission as a body is primary decision maker, acting in public meeting
- Limited authority to make final decisions is delegated to administrative judges
- Administrative judges have broad discretion to manage contested cases, but decision is made by Commission
- Commissioners rely on record in contested cases
- Commissioners may communicate only with advisory staff on contested case



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2. Role of utility regulator in the context of a retail market, including mechanisms for setting rates and tariffs



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Market Structure: 4 Scenarios

- Retail Electric Providers (REPs): interact with end-use customers to sell electricity. REPs are largely unregulated except for certification and disclosure requirements. (TXU Energy, Reliant Energy, Direct Energy)
- Transmission and distribution utilities (TDUs) operate the wires portion of the business and are fully regulated by the PUC. (Oncor ED, CenterPoint Energy, AEP)
- Electric generation is largely unregulated except for market power issues.
- Municipals & Cooperatives (ex. Austin Energy, CPS Energy, Bluebonnet Electric)
- Fully-Integrated Investor-Owned Utility (ex. Entergy, SWEPCO). Investor Owned Utilities exist only outside of ERCOT.
- **The PUC has limited authority over Municipals and Co-Ops.**
- **The PUC regulates Investor-Owned Utilities (IOUs). PUC sets retail rates for integrated utilities and delivery rates for Transmission and Distribution Utilities.**

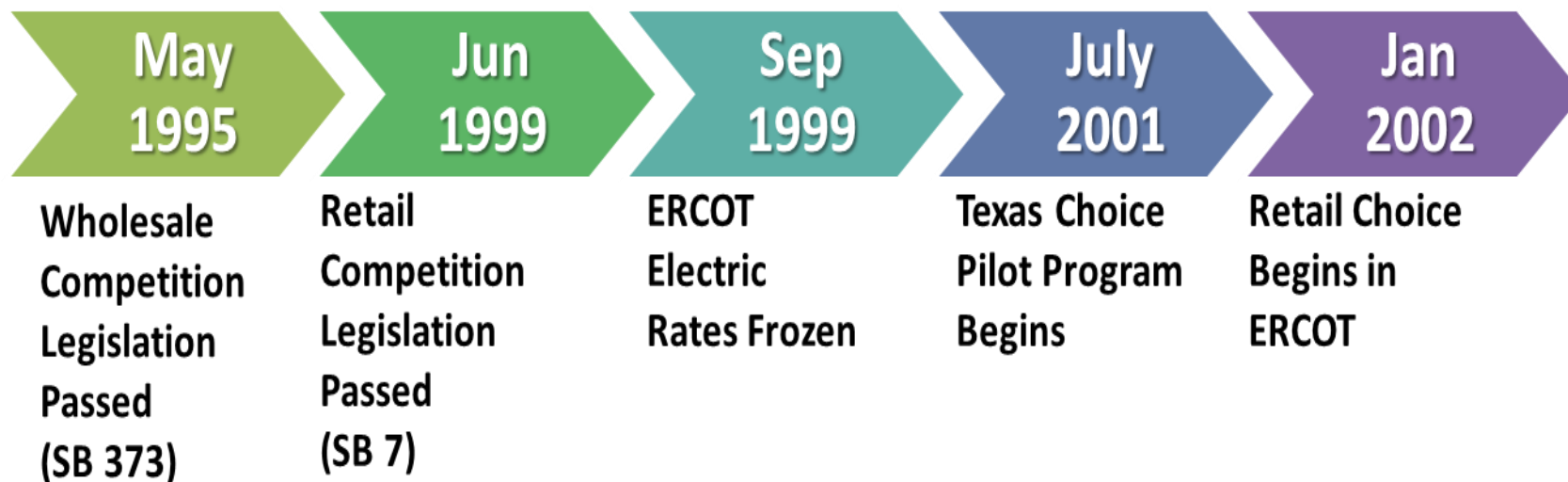


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Steps to Electric Competition





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Customer Benefits

- Price offers are substantially lower than prices available just before competition began, especially when adjusted for inflation.
- Retail electric prices have fallen even as other energy commodity prices – such as gasoline, crude oil, natural gas and coal – have risen.
- Texas' national electric price ranking has improved since the market opened in 2001.
- Every competitive area in ERCOT has variable and 1-year lock offers available that are far lower than the national average price and nearly all state averages.
- Among states like Texas that depend heavily on natural gas for power generation, Texas prices compare favorably, with even lower prices available to those in the competitive market.
- The ERCOT market provides efficient market prices that track natural gas prices.
- Since 2007, Texas' prices have fallen while other states' prices have risen.



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Market Participants

- Power Generation Companies
- Transmission and Distribution Utilities (TDUs)
- Retail Electric Providers (REPs)
- Aggregators
- Third Parties
- Customers
 - Residential, Small Non-Residential
 - Medium Non-Residential, Large Non-Residential



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Role with Generators

- Monitor activities
 - Compliance with ERCOT procedures and PUCT rules
 - Does not create artificial congestion
 - Reliability products
 - No fraudulent participation
 - No collusion
 - No market power abuse
- Enforcement action with penalties and any other legal remedy



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Role with Utilities (TDUs)

- Regulate rates and terms of service for transmission service (Tariffs & Rules)
- Promote high quality infrastructure
- Approve transmission and distribution facilities
- Monitor and review market power
- Foster development of wholesale markets outside of ERCOT
- Enforcement action with penalties and any other legal remedy



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Role with REPs, Aggregators and Third Parties

- Certification
- Establish and amend rules
 - Protect customers
 - Foster competition
 - Promote quality service
- Enforcement action



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Role with Customers

- Customer protection
 - REP selection
 - Discrimination
 - Deceptive practices
 - Connection, disconnection, reconnection
 - Bills, deposits, credit requirements
 - Privacy of customer information
 - Provider of last resort
- Dispute resolution
- Customer education



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Rate Mechanisms

- Rulemaking Process
- Rate Cases
- Streamlined Ratemaking
 - Transmission Cost of Service (TCOS)
 - Distribution Cost of Service (DCOS)
- Tariff Riders as directed by legislation
 - System Benefit Fund
 - Energy Efficiency
 - Advanced Meters



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3. ERCOT ISO: Status, functions and authority



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ERCOT'S Primary Mandate

As the designated independent organization under Senate Bill 7, ERCOT was assigned the following responsibilities [Public Utility Regulatory Act (PURA) 39.151]

System Reliability

- Ensure reliability and adequacy of regional electric network

Open Access to Transmission

- Ensure nondiscriminatory access to transmission/distribution systems for all buyers and sellers

Competitive Retail Market

- Facilitate retail registration and switching

Competitive Wholesale Market

- Ensure accurate accounting for electricity production and delivery among the generators and wholesale buyers and sellers in the region

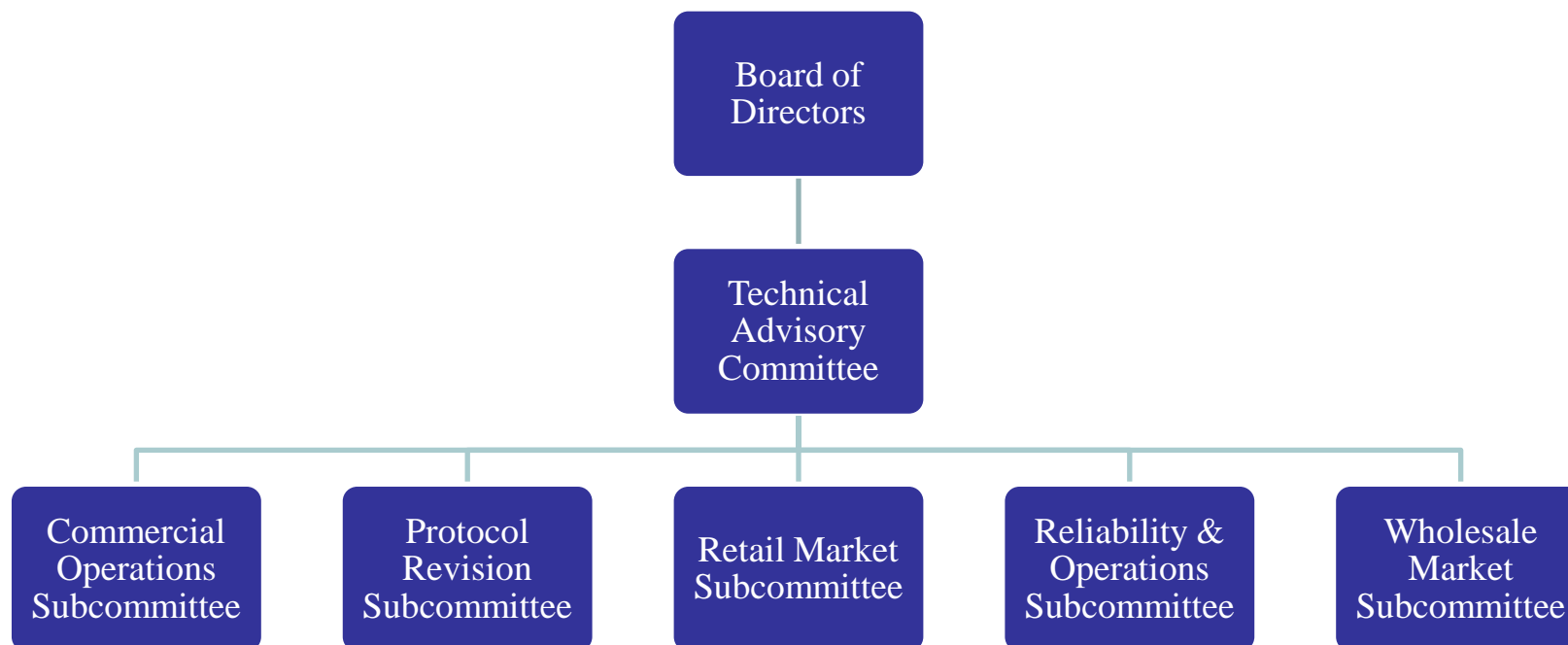


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ERCOT Stakeholder Organization





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ERCOT ISO

ERCOT ‘directs traffic’ on the grid to maintain reliability and ensure supply of electricity:

- 75% of Texas land
- 85% of Texas load
- More than 40,000 miles of transmission lines
- 550+ generation units
- Physical assets that are owned by transmission providers and generators
- 68,379 MW Summer peak demand (set August 3, 2011)
- 57,315 MW Winter peak demand (set February 10, 2011)



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ERCOT Responsibilities

- Coordinates scheduling of power by market participants
- Analyzes grid conditions continuously in real-time
- Dispatches generation to ensure power production matches load at all times
 - *Balancing Energy Service*
 - *Load Frequency Control*
- Secures available generation capacity to meet reliability requirements including contingencies
- Coordinates planned outages of generators and transmission lines
- Relieves transmission system congestion
- Coordinates emergency actions & recovery
- Operates markets to meet regional energy & capacity requirements not met through bilateral arrangements



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State of the Grid

Transmission Investment and Development

- \$7.9 billion in transmission added since 1999
- 9,302 circuit miles of transmission improvements since 1999
- 6,900 circuit miles of transmission planned
- \$8.9 billion under development in five-year plan;
- ~\$5-7 billion to support 18,000 MW of wind

Generation Development

- 47,000 MW new generation added since 1999
- 137 older units decommissioned
- 8,145 MW generation committed for the future (with transmission contract and air permit)
- 40,600 MW of active generation requests under review, including more than 20,000 MW of wind (December 2012)



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Transition to Nodal Market

- **Improved price signals**
 - More granular pricing will encourage additional generation and/or transmission investment in the proper locations
- **Improved dispatch efficiencies**
 - Dispatching at the resource level yields a lower overall cost of power supply and more efficient congestion management
- **More direct assignment of local congestion**
 - Settlement prices are based on locational marginal costs



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4. Centralized Market Model vs Bilateral Contracts



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Texas Model – Bilateral Contracts

- History:
 - AB 1890
 - SB 7
- Over 90% of the market is handled through bilateral agreements
- Agreements are not regulated through PUCT rules or ERCOT Protocols
- Centralized markets *can* bring about greater transparency, but may also result in more risk
- REPs are not required to hedge



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5. Consumer protection from volatility in electricity prices in competitive markets



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Regulatory Mechanisms

- **Education is KEY**
- Electricity Fact Labels (EFLs)
- Authorized Rate Products
 - Fixed
 - Indexed
 - Variable
- Provider of Last Resort (POLR)
- Role of the Independent Market Monitor



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6. Incentives for new generation investments and providing the correct economic signals for users to manage their demand



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Attracting Investments

- A major concern when opening the market to competition was for the regulatory authorities to make it attractive to invest in our state by:
 - Not allowing established utility companies to continue to build power plants
 - Making sure established utility companies did not favor their affiliates when purchasing power contracts



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Attracting Investments

- Ensuring non-discriminatory access to transmission
- Facilitating Interconnections
- Not requiring lengthy approval process for new entrants
- Acknowledging the need for regulatory certainty
- Striving to establish rules that allow for fair recovery of investment costs for efficient producers -- but do not protect inefficient investments



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Facilitating Competition

- In a restructured market, competition is the best customer protection and the best insurance against unduly high prices. To facilitate competition:
 - Eliminate barriers to entry so that many suppliers enter the market;
 - No supplier should be so large that the market cannot clear without its power;
 - If a large supplier is able to influence prices, impose price mitigation on this supplier only;
 - If a price mitigation tool is applied to all suppliers, such as a price cap, make sure it is high enough to not interfere with the need for scarcity pricing.



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Prices in ERCOT market

- Prices for electricity in Texas are driven by natural gas prices
- Relatively high prices in 2009 and 2010 reflected relatively high price of gas
- Extreme weather in 2011 pushed prices much higher, as demand approached available capacity
- Lower prices in 2012-13 reflect steady decrease in the price of natural gas



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Appendices



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PUC 2012 Conservation Initiative

- The Commission hired a consultant to assist in developing and managing an education program that emphasizes the benefits of energy conservation, particularly during peak usage periods. Project includes:
 - a new energy conservation website to be hosted by the PUCT,
 - a summer peak energy savings challenge
- The education program targets the Texas population served by the present ERCOT IOUs and some areas served by co-operatives that have opted into electric deregulation.



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ESPAÑOL



Save Money & Stay Comfortable



Set your AC to 78° or higher between 3-7 pm. Use fans to feel 4-6° cooler.





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History

Pre-1975

- Cities regulated electric utility service and rates.
- Generally, a declining cost industry – rate applications most often filed to decrease rates.

1975

- Inflation, construction costs and fuel costs drive electricity rates up.
- 64th Texas Legislature enacts Public Utility Regulatory Act (PURA) to implement state
- regulation of electric utility service and rates (Cities permitted to retain original jurisdiction).
 - Service area, transmission line and generating plant certification.
 - Rate regulation (based on cost of service plus reasonable return on investment).
 - Rates based on historical test year costs and original costs of infrastructure, less depreciation.
 - Service quality regulation.
 - Customer protection.



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History

1976-1995

- 1978 U.S. Fuel Use Act required utilities to discontinue use of natural gas and encouraged the use of coal and nuclear for fuel.
- Inflation, volatile fuel costs and the need to add new generating capacity continue to increase electricity rates.
- Rate proceedings at PUC become increasingly adversarial.
 - Consumer groups concerned about frequency and amount of rate increases.
 - Utilities concerned about increasingly large PUC cost disallowances that are at odds with the regulatory compact and erode rates of return.
- Large customers tire of subsidizing other ratepayers seek opportunities to by-pass regulated rates and obtain choice of suppliers.
- Cogeneration/self-generation.
- Advocate wholesale competition and transmission open access.
- Advocate “retail wheeling”.
- Natural gas was favored again when the 1978 U.S. Fuel Use Act was repealed in the 1990s.



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History

1995 – Texas Legislature Votes to Deregulate Wholesale Generation

- The Texas Legislature amended the Public Utility Regulatory Act to deregulate the wholesale generation market. The Commission began the process of expanding ERCOT's responsibilities to enable wholesale competition and facilitate efficient use of the power grid by all market participants.

1996 – ERCOT Becomes First ISO in US

- On August 21, 1996, ERCOT become the first Independent System Operator (ISO) in the US. Their job was to ensure an impartial, third-party organization was overseeing equitable access to the power grid among the competitive market participants.



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Market Conservation Initiative: Biggest Energy Saver



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[REGISTER NOW!](#)

Save energy and enter for a chance to win!

Register today for a chance to win prizes such as smart appliances and cash just by using data from your smart meter to reduce your electricity consumption. Just follow these simple steps:

1 Sign Up

Complete the Biggest Energy Saver online [registration](#) form. Register for the Contest, Sweepstakes or both!

2 Contest

Use Smart Meter Data to manage your electricity consumption and measure your progress. See our [Resources](#) page to learn how.

3 Sweepstakes

Watch your email or newsfeeds for Lighten Your Load sweepstakes events.

[REGISTER NOW!](#)

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Biggest Energy Saver Program

- Consumer contest and sweepstakes
- State-wide effort to reduce electricity consumption during peak periods and compete for valuable prizes
- Contest entrants compete by reducing their monthly electricity usage for July, August, and/or September compared to similar periods previous year while using information from their smart meter



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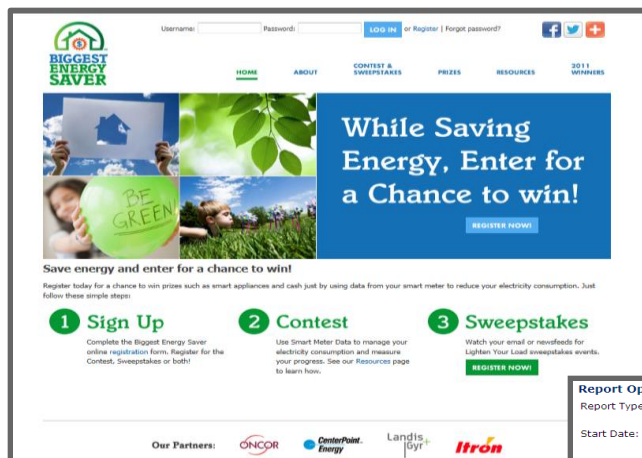


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BES Contest Operations

Customer ---

- Registers for the Biggest Energy Saver Program
- Registers on the Smart Meter Texas portal
- Downloads their energy consumption in the Green Button XML format
- Registers on OPOWER Facebook program
- Uploads their Green Button-formatted energy consumption



Customer ---

Actively manages energy consumption in a social environment





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ERCOT ISO Conservation & Outreach



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ERCOT Energy Saver app:

System operations

- Chart showing hourly demand and generation (Today's Outlook on landing page)
- Alternate chart with real-time demand and generation data (5-minute refresh)

Wholesale pricing

- Hub and load zone settlement point prices
- Map with four main load zone prices

Conservation tips

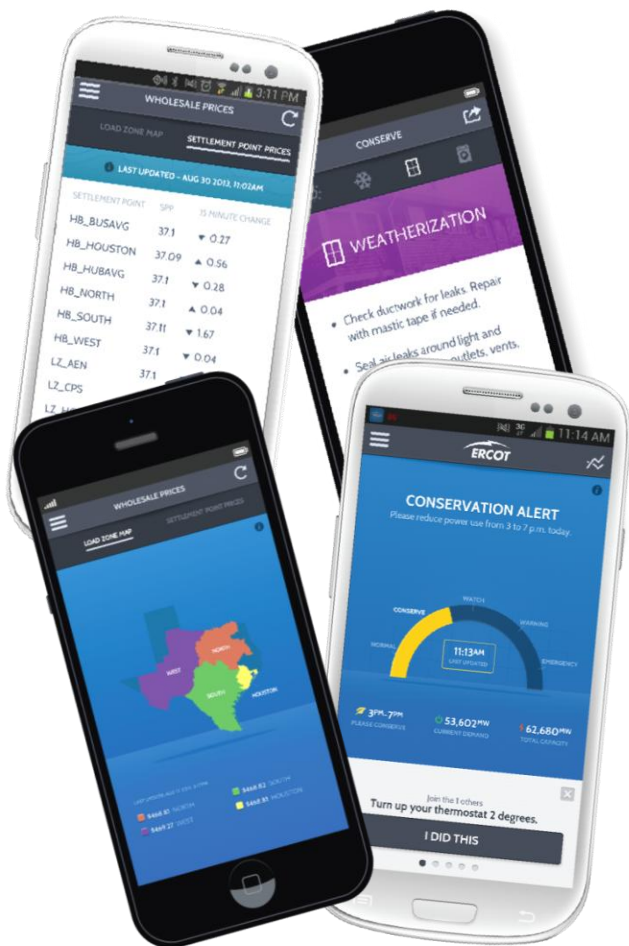
- Tips for appliance use, hot- and cold-weather practices and overall weatherization

Helpful information

- Quick Facts and Q&A, with links to Transmission Providers' websites
- Options for news releases, updates and sharing

Emergency alerts

- Continued push notifications, with interactive components (access to system conditions, reporting on conservation actions)





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Drought



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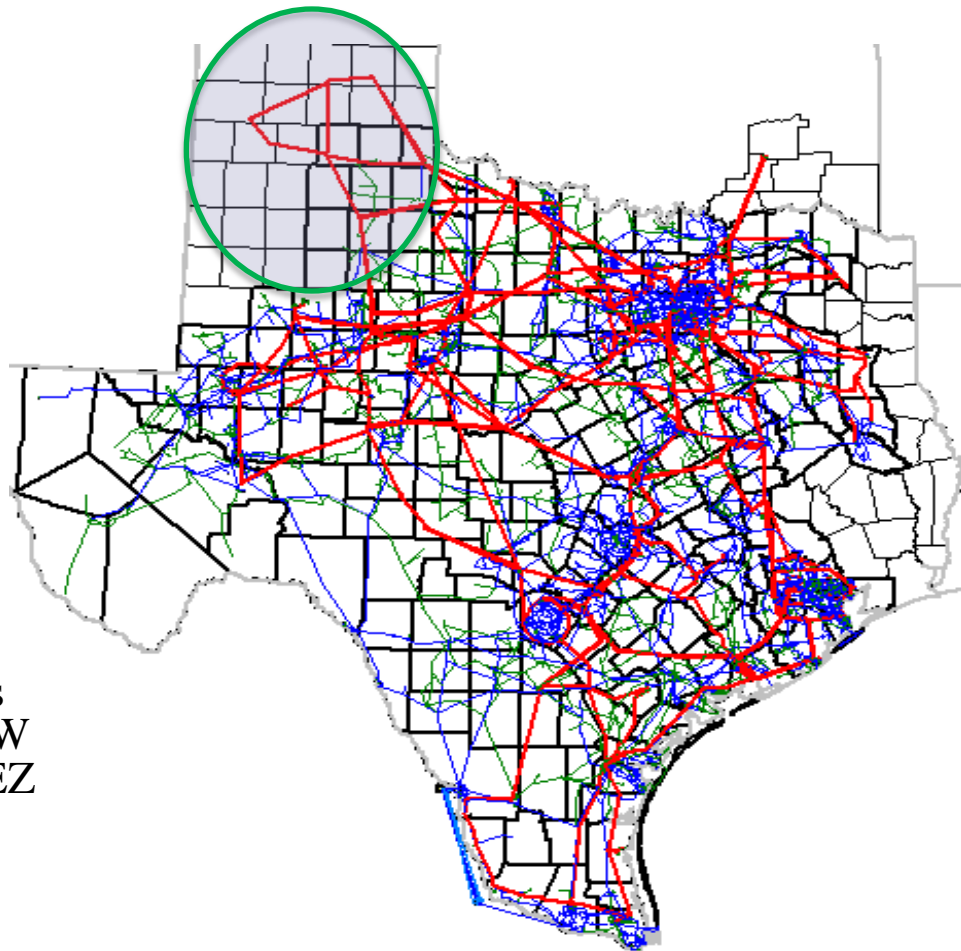
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ERCOT Actions on Drought Effects

- Meteorologist on staff that monitors/forecasts drought levels
- Monitor generator cooling reservoir water levels
- Communicate with and survey affected generators on their
 - assessment of impact on their plants
 - planned mitigation actions
- Engaged a drought consultant that is
 - developing a long term drought impact analysis
 - developing a model that will be used to assign levels of risk for individual generating plants going forward
- Share information with the Texas Commission on Environmental Quality (TCEQ) in support of their administration of water rights
 - Provided testimony in Texas Farm Bureau v. TCEQ hearing
- Incorporate drought limitations in Seasonal Assessments of Resource Adequacy (SARA)
- Have a representative on the state Drought Preparedness Council

ERCOT Panhandle Grid Characteristics

- Minimal to no nearby synchronous generation
- No local load
- These conditions lead to voltage stability and grid strength challenges
- Current wind generation development:
 - >3.4 GW of wind capacity in the Panhandle with signed interconnection agreements
 - >7.7 GW of additional wind generation in the interconnection study process
- Long Term Studies show a continued expansion of wind resources in the Panhandle under a range of future outcomes.
- CREZ Reactive Study Recommendations were designed to accommodate 2,400 MW of wind generation in the Panhandle CREZ regions





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Panhandle Renewable Energy Zones (PREZ) Study

The PREZ study will:

- Identify system constraints and potential upgrades to accommodate future wind generation projects
- Provide a project roadmap for ERCOT and TSPs to accommodate additional generation resources in the study area (both a list of potential system upgrades and triggers for when those projects will be recommended)
- Be completed by the end of 2013