

Renewable Energy in Texas

**National Association of Regulatory Utility Commissioners
Energy Regulatory Partnership Program**

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February 25 – 28, 2008
Managua, Nicaragua**

A Century of Wind Power in Texas



Topics

- Renewable Energy Policy in Texas
- Policy Choices in Renewable Energy Development
- Renewable Energy and Transmission
- Political Considerations

Renewable Energy in a Market Environment

- 1999 legislation introduced retail competition in much of Texas
- Legislation resulted in unbundling, sale of assets, and significant market entry
 - Separation of production, delivery and retail sales operations

Texas Renewable Energy Program

- Renewable Portfolio Standard--1999
 - Goal of 2000 MW of renewables by 2009
 - REC trading program
 - Transmission policies facilitated interconnection and transmission service
- Renewable energy amendments--2005
 - Higher goal for renewables—5000 MW by 2015
 - Target for non-wind renewable resources
 - Identification of renewable zones and transmission to serve the zones

Results of Renewable Policies

- Producers decide what and where to build
- Producers favor large wind projects—low cost in Texas
- Insufficient incentive for high-cost technologies
- RECs support voluntary renewable energy products
- Transmission built to interconnect resources and relieve constraints but not for future projects

Year	Goal	Actual	Non-Wind
2003	400	990	45
2005	850	1190	45
2007	1400	3100	77
Today	1400	4600	108

Where is the value?

- Sources of value for developer
 - Energy market
 - Regional electricity prices have tracked natural gas prices
 - RECs
 - REC prices have fallen as supply of RECs has increased, relative to demand
 - 2006, 6.5 million RECs generated, 3.4 million required for compliance, 780 thousand retired for renewable energy verification
 - Tax credits
 - Fixed value, indexed to inflation
 - Developer must have a need for credits
 - Periodic lapses of credits, based on national legislation

Policy Choices for Renewable Energy

- What is the goal?
 - Energy independence, clean air, climate change, rural development, universal electric service
- What resources qualify for support?
- What are the support mechanisms?
 - Income tax, import duties, portfolio standard, direct support payments, standard offer (feed-in tariff), government procurement, green pricing

Renewable Resource Qualities

- What qualities provide advantages or disadvantages?
 - Cost
 - Air emissions
 - Net CO₂ emissions
 - Availability of energy source
 - Location of energy source
 - Intermittence
 - Dispatchability
 - Maturity of technology

Characteristics of Support Mechanisms

- Amount
- Variability
- Certainty
 - To provider
 - To government or utility
- Duration
- Value to various types of market participants
- Ease of administration

Other Policy Issues

- In a competitive environment
 - How can generation and transmission development be coordinated?
- In a regulated environment
 - How can regulated company be induced to invest in non-traditional resource?

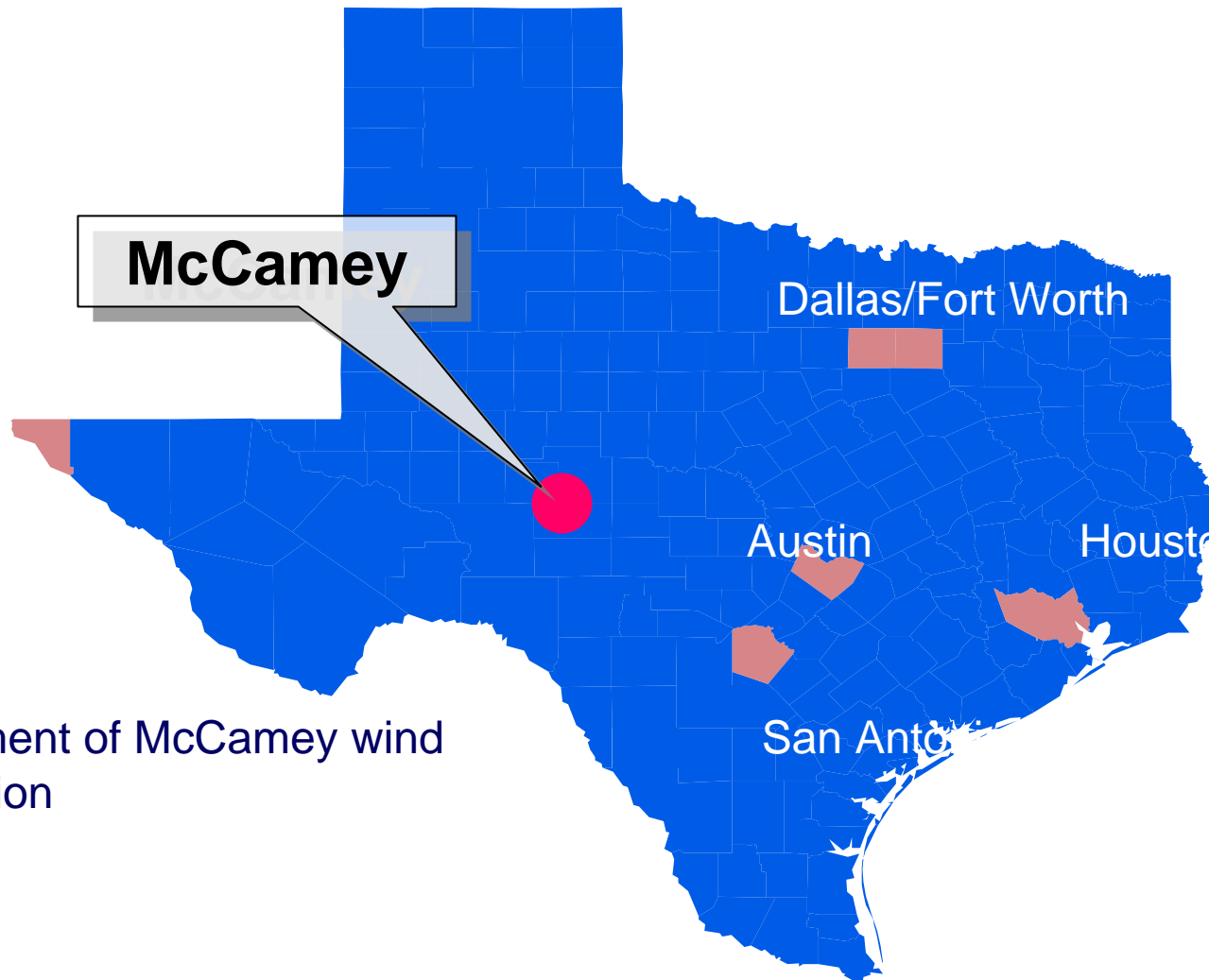
Integration of Renewables

- What is the cost of integrating the resource?
 - Intermittent, non-dispatchable resources can increase costs of matching supply and demand
 - Level of costs depend on level of renewable resource and other resources on system
 - Costs can be borne by control area operator or renewable energy generator
 - Additional risks for thermal generation

Texas Transmission Policies

- Regional postage-stamp rate
 - Distance not a factor in rate
 - Multiple utilities do not charge multiple rates
- Standard interconnection agreement
- Transmission upgrades in regional rates
- Neutral planning organization
- Cost-recovery mechanism for investment
- Congestion managed through energy prices, transmission revenue rights

Texas Wind Rush



Curtailment of McCamey wind generation

Competitive Renewable Energy Zones

- 2005 Legislation
 - Designate zones for renewable energy development
 - Coordinate transmission and generation development
 - Develop transmission plan
 - Pre-approval of need for transmission facilities
 - Consider level of financial commitment in designating zone and granting CCN

Politics of Wind in Texas

- Successful implementation of early steps of 2000 MW goal
- Communities and businesses that benefited wanted more
- Communities that had wind resource wanted to benefit from it
- Legislators in wind-rich areas took greater interest in renewable energy issues

Sources of Information

- PUC
 - Statute—PURA 2005 §39.904
 - www.puc.state.tx.us/rules/statutes/index.cfm
 - Rules—Substantive Rule 25.173, 25.174
 - www.puc.state.tx.us/rules/subrules/electric/index.cfm
- REC administrator—ERCOT
 - Capacity, energy, annual reports
 - www.texasrenewables.com



