

Getting to the Core Rules and Regulations for Geothermal Development

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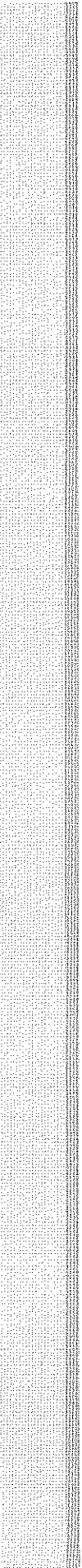
Geothermal Energy Utilization

Oil & Gas Development Conference

Dallas, Texas

17 June 2008

!Disclaimer!



HANDLE WITH EXTREME CARE:

**This Product Contains Minute Electrically Charged
Particles Moving at Velocities in Excess of Five
Hundred Million Miles Per Hour.**

THIS IS A 100% MATTER PRODUCT:

**In the Unlikely Event That This Merchandise Should
Contact Antimatter in Any Form, a Catastrophic
Explosion Will Result.**

Texas Geothermal Policy

- "It is declared to be the policy of the State of Texas that: (1) the rapid and orderly development of geothermal energy and associated resources located within the State of Texas is in the interest of the people of the State of Texas;"
- Geothermal Resources Act of 1975

History of Geothermal Energy Interest

- 1960s/1970s energy crisis
 - Geothermal Steam Act of 1970
 - state laws encouraging geothermal exploitation
- increased environmental interest/Mid East tension
 - Department of Energy initiatives starting in 2000
- increased cost of oil and gas

Geothermal Rights



Geothermal Rights – Federal

- Geothermal Steam Act of 1970
 - Department of the Interior
- Outer Continental Shelf Lands Act
- Department of Defense Lands



Geothermal Rights – State

- State
- Private Land Owners
- Other Lease Holders??



Leasing – The Grant

- oil, gas and other minerals
- exploring, drilling, mining and operating for, producing and owning oil, gas, sulphur and all other minerals
- oil and gas, along with all hydrocarbon and non-hydrocarbon substances



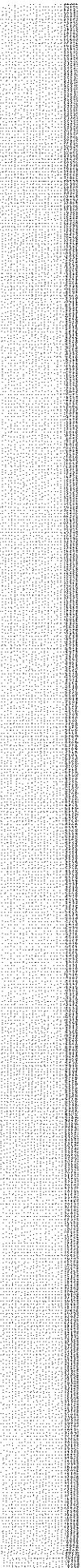
Leasing – Other Issues

- Term
 - Initial
 - production
- Royalty
- Surface use



Leasing – Other Issues

- Migration
- Oil & Gas versus Geothermal Rights
- Environmental Liability



Environmental Laws

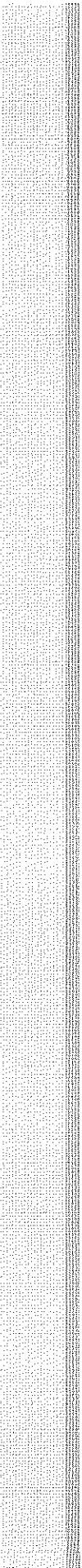
Environmental Laws – Federal

- Coastal Zone Management Act
- Endangered Species Act
- National Environmental Policy Act (NEPA)
 - requires an environmental impact statement



Environmental Laws – State

- State environmental laws



Environmental Laws – Local

- Water conservation districts
- Other county and municipal laws



Environmental Challenges to Renewables

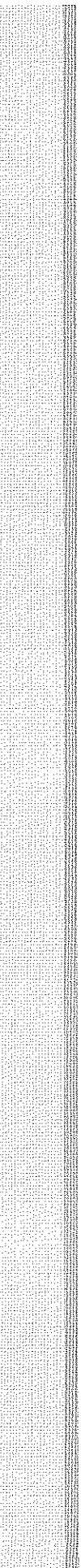
▪ Parties

- American Bird Conservancy
- Armstrong Ranch
- Audubon Outdoor Club of Corpus Christi
- Coastal Bend Audubon Society
- Frontera Audubon Society
- Galveston Bay Conservation and Preservation Association
- Houston Audubon Society
- King Ranch, Inc.
- Lower Laguna Madre Foundation
- Matagorda Bay Foundation
- Travis Audubon Society

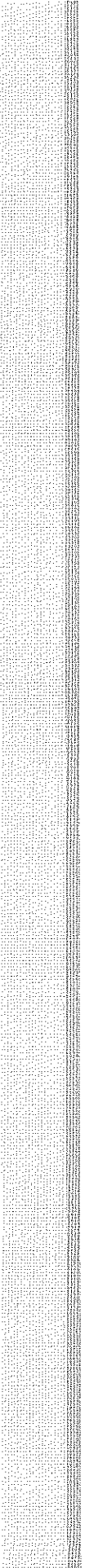
Environmental Challenges to Renewables

- **Agencies**
 - Texas Coastal Coordination Council
 - Public Utility Commission of Texas
 - US Fish & Wildlife

- **Courts**
 - Travis County, Texas state court
 - United States federal court



Development



Development – Federal

- Geothermal Steam Act of 1970
 - “so much of the surface of the land . . . for the production . . . of geothermal resources.”
- Do not need consent of surface owners



Development – State

- Surface owners
- Classification
 - Mineral
 - Texas, California, Alaska, Arizona, Hawaii
 - Water
 - Wyoming, Utah
 - Neither
 - Idaho, Washington, Montana



Development – State

- Drilling permits/regulations
 - On or off school fund land
- Reporting requirements
- Safety requirements
 - Blowout prevention standards



Development – State

- Power line easements
- State (and possibly federal) approvals for transmission lines



Ryan's Ideas



Legislative Initiatives



Things to think about...

- Governor's business initiative
- Legislative session



Wind-Related Initiatives

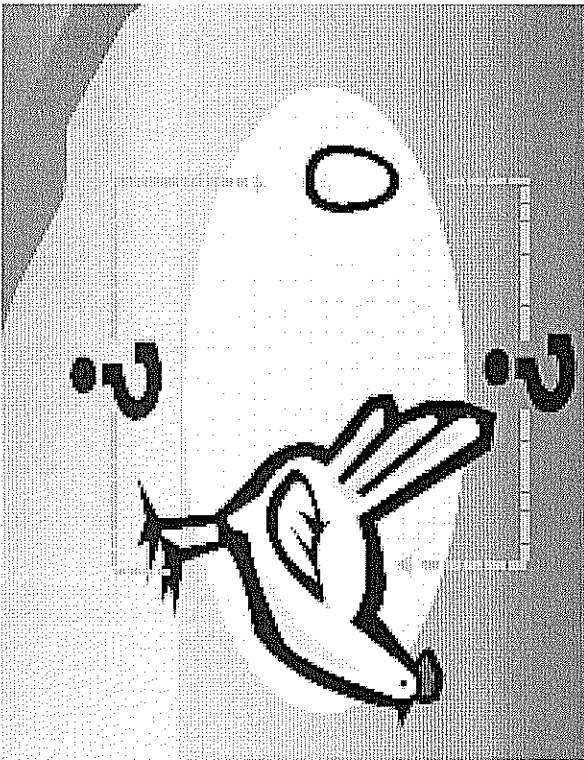
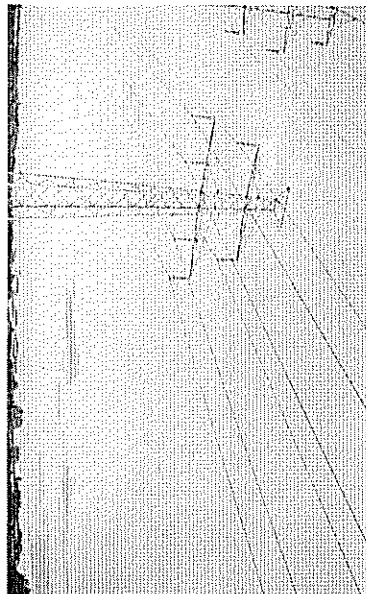
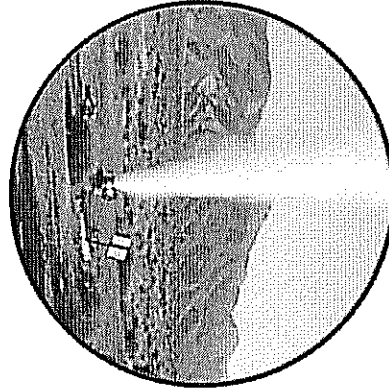


The Next Texas Tea Is Clear

- **1999**
 - Installed Wind Generation Capacity: 880 MW
 - Texas Legislature Mandate: +2,000 MW by 2009
- **2005**
 - Installed Wind Generation Capacity: ~2,000 MW
 - Texas Legislature: +3,000 MW by 2015 / 10,000 MW by 2025
 - ****with 500 MW carve out for non-wind renewables****
- **2007**
 - Installed Wind Generation Capacity: ~3,000 MW

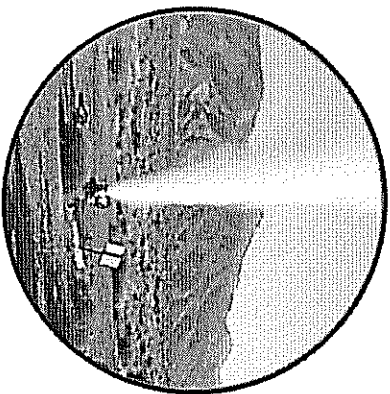


How Do We Get There?



Competitive Renewable Energy Zones

CREZ: Zone in which renewable energy resources and suitable land areas are sufficient to develop generating capacity from renewable energy technologies.



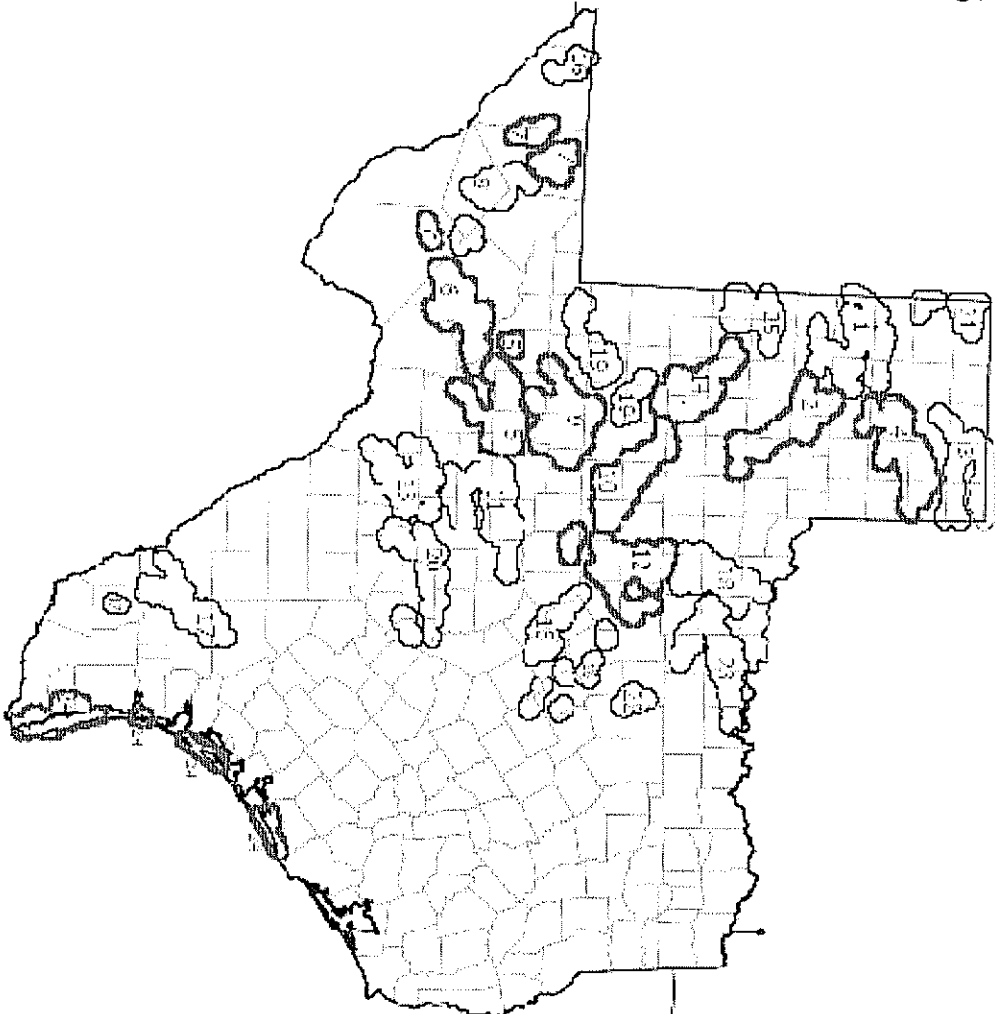
Financial Commitment

PUCT considers developers' financial commitment in deciding whether to designate an area a CREZ and whether to issue a certificate of convenience and necessity.

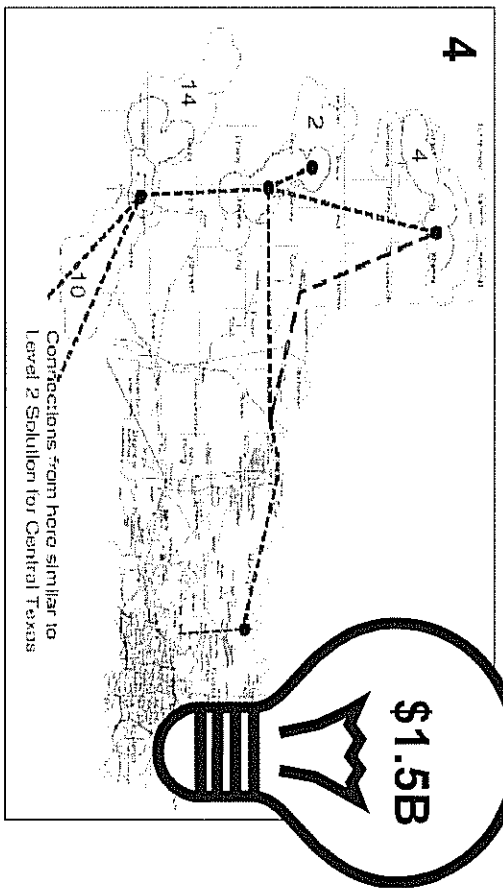
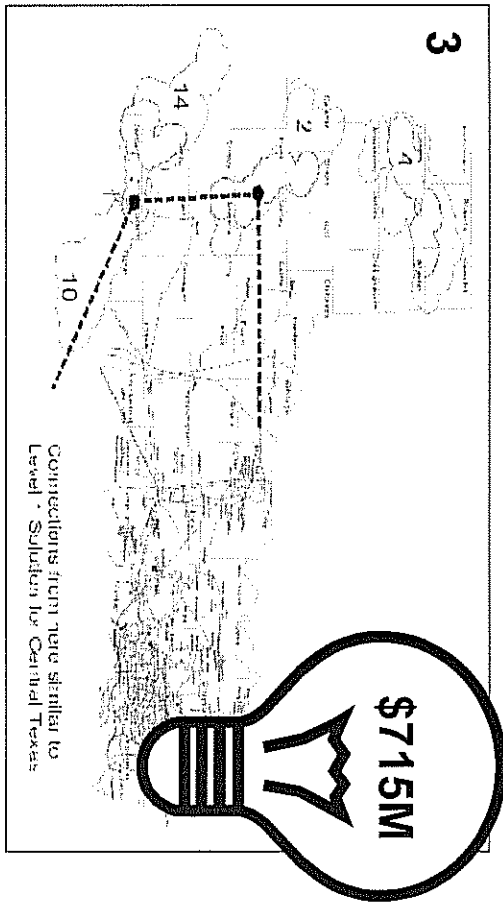
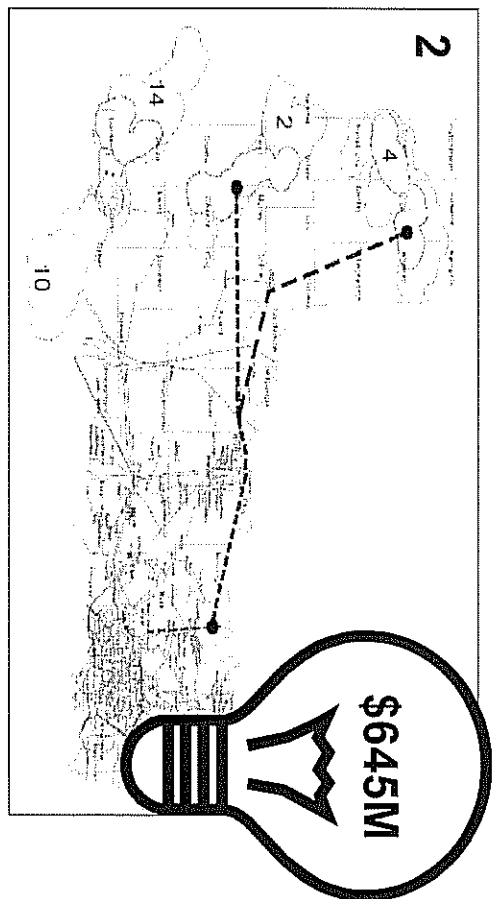
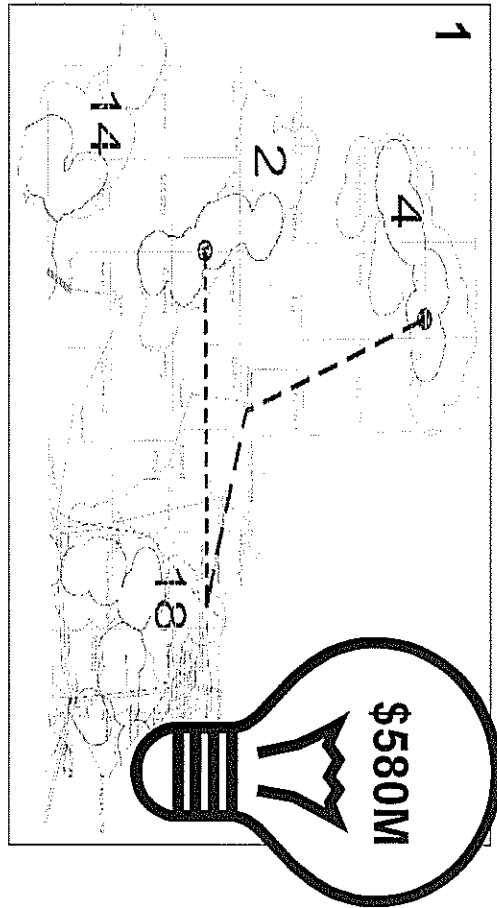


CREZ Designations

ZONE	DEVELOPERS
1	1
2	6
4	5
5	5
6	5
7	1
9	5
10	5
11	1
12	2
14	2
18	1
19	1
20	1
25	1



Source: PUCT Docket No. 33672



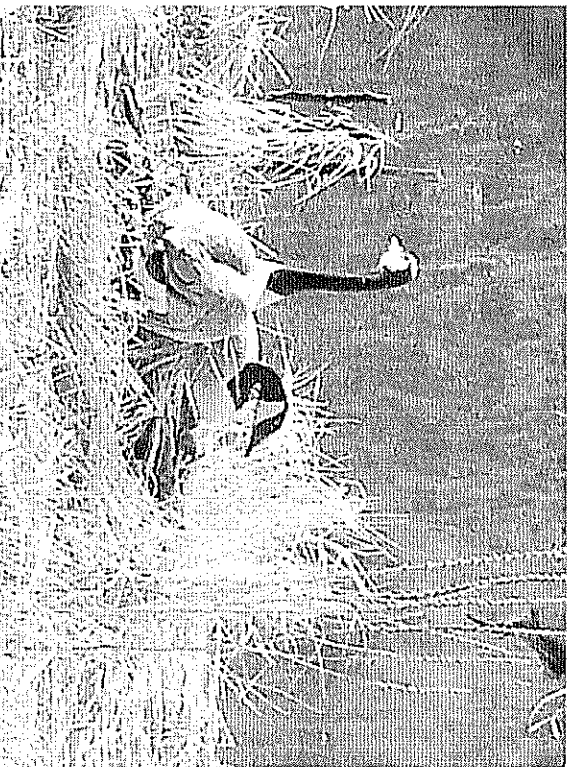
Source: ERCOT's 1 Dec 06 Report

Next Steps

- **Determine Transmission Scenario**
 - Hearings last week
 - July 17, 2008
- **Determine Transmission Provider**
 - Hearings by year-end?
- **Separate Line-Approval Cases**
 - 2009
- **Return to Dispatch Priority Discussion**
 - ?
 - **We must do more than stand still**

So What?

- Dispatch priority proceeding
- Nesting??



Questions

