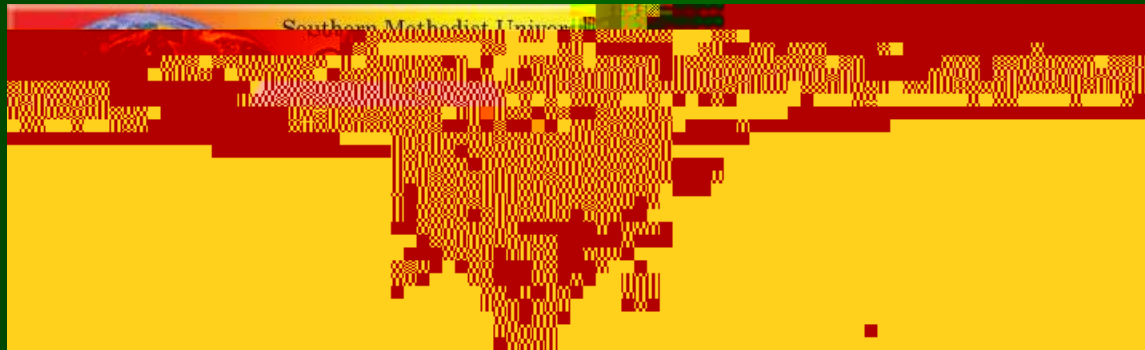


Geothermal Leases and the Regulatory Environment



November 3 - 4, 2009

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Texas Geothermal Policy

- Texas Geothermal Resources Act of 1975
 - RRC has
 - Duty to regulate the exploration, development, and production of geothermal energy and associated resources on both public and private land.
 - Geothermal Energy and Associated Resources Defined
 - all products of geothermal processes, embracing indigenous steam, hot water and hot brines, and geopressured water
 - steam and other gases, hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations
 - heat or other associated energy found in geothermal formations
 - any by-product derived from them.

Texas Geothermal Implementation

- RRC
 - Same rules on development of geothermal resources as imposed on the development of oil and gas
 - Permitting to drill, deepen, plug back or reenter a well
 - Spacing rules, well density rules
 - Limitations on waste disposal and the like.
 - Practical
 - Most proposals for development of geothermal energy contemplate using existing oil and gas wells to reach the geothermal resources.

Texas Geothermal To Do

- General Land Office and School Land Board
 - Power to lease state lands for geothermal energy development.
- Geo-Trio
 - RRC, Texas Natural Resource Conservation Commission and GLO to make rules providing for the *rapid and orderly* exploration, development, and production of geothermal energy and associated
 - Must work together to coordinate the development of the geothermal resources of Texas.

Texas Geothermal More Specific

- Texas Public Utility Commission
 - Targets levels of renewable energy capacity, with a long-term goal of 10,000 MW of installed renewable capacity by January 1, 2025.
- Texas Tax Code
 - Amended September 1, 2009
 - Exempt oil and gas which is incidentally produced in association with the production of geothermal energy from the severance taxes on those substances.
 - What is “incidental production”?

Texas Geothermal Portent

- Anthropogenic Global Warming
 - House of cards will collapse
 - No warming since 1998
 - Cooling for last 3 years
 - Antarctic Ice reached record levels in 2007
 - Arctic Ice rapidly increasing
 - Cool PDO
 - Fading warm AMO
 - Polar Bears NOT at risk
 - Anthropogenic connection obscure, at best
- Lessons
 - Financing, tax and regulatory benefits may be fleeting
 - Projects need to stand on their own economically

Texas Geothermal Legal

- Who owns the right to produce geothermal resources?
 - California
 - Part of the mineral estate
 - Nevada and Oregon, by statute
 - Belongs to surface owner
 - Washington, by statute
 - Surface owner, not a mineral nor a water resource
 - Colorado, by statute
 - Hot water belongs to the state, hot rocks belong to the surface owner.

Texas Geothermal Legal

- Who owns the right to produce geothermal resources?
 - Federal
 -

Texas Geothermal Legal

- Texas
 - We believe geothermal belongs to the surface owner,

Texas Geothermal Legal

- Heat from Produced Water
 - Mineral owner has no right to utilize the heat for sale
 - Might be able to sell as “incidental” to mineral production.
 - But surface owner gets all proceeds
 - May get to deduct costs
 - Mineral owner may be liable for waste for not capturing heat from produced water
 - Solution: implied duty to notify surface owner of availability of heat and make available. Surface owner would take responsibility for installing facilities and disposing of produced water.

Texas Geothermal Legal

- Geothermal drilling operations
 - Risk of geothermal operations
 - Exciting developments
 - 36 inch pipe to 3,000 feet
 - Use as leverage in negotiations
 - What happens if the geothermal operator encounters oil and gas in its drilling?
 - Should be able to produce “incidental” amounts, but no financial benefit without prior agreement with mineral owner.
 - Changes in Texas Tax Code does not grant ownership
 - Some potential liability for damage to oil and gas reservoir.

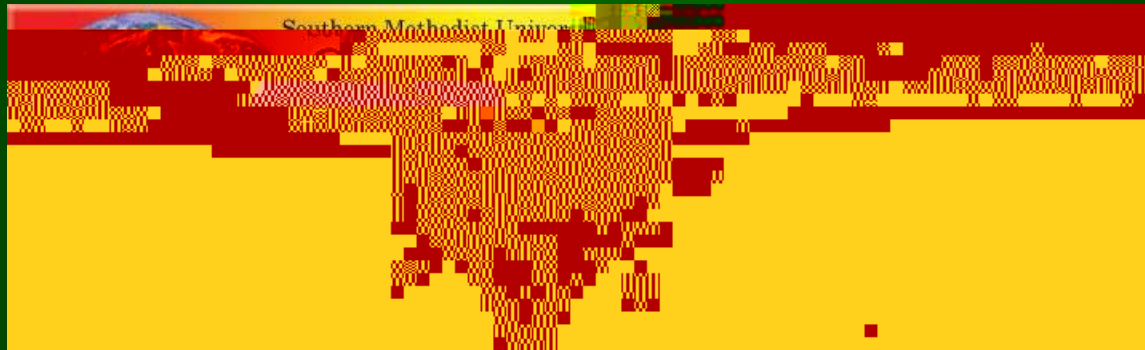
Texas Geothermal Legal

- Suggestions
 - For the geothermal lessee
 - Seek a separate or combined oil and gas lease from unsevered owner
 - Or geothermal lease from surface owner and lease from mineral owner
 - » Option: case the producing zone
 - » Use as leverage in negotiations
 - Do your engineering. How are you going to deal with oil or gas encountered in the geothermal well?

Texas Geothermal Legal

- For the mineral lessee
 - Try to get grant of geothermal rights in your oil and gas lease from unsevered owner.
 - Or geothermal lease from surface owner.

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