

RENEWABLE ENERGY WEBCAST SERIES

Legal Considerations of Geothermal Projects

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Legal Considerations of Geothermal Projects

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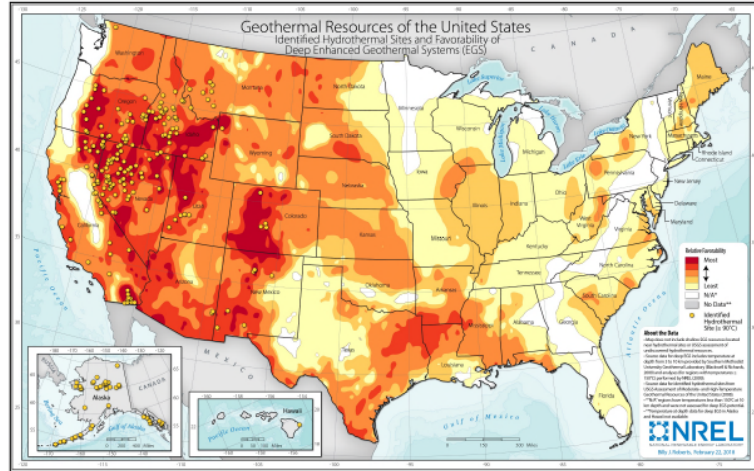
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-  Relationships
-  Communication
-  Budgeting and Staffing
-  Know-How
-  Results

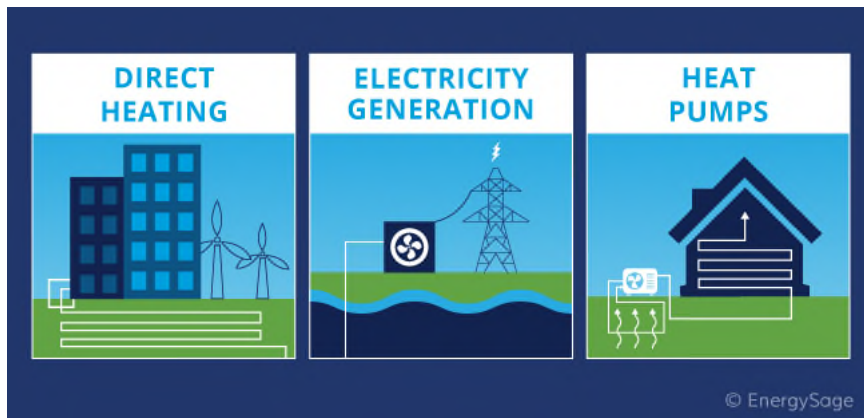
OVERVIEW


- Background
- History
- States
 - California
 - Nevada
 - Utah
 - Colorado
- Federal





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GEOHERMAL ENERGY SYSTEMS




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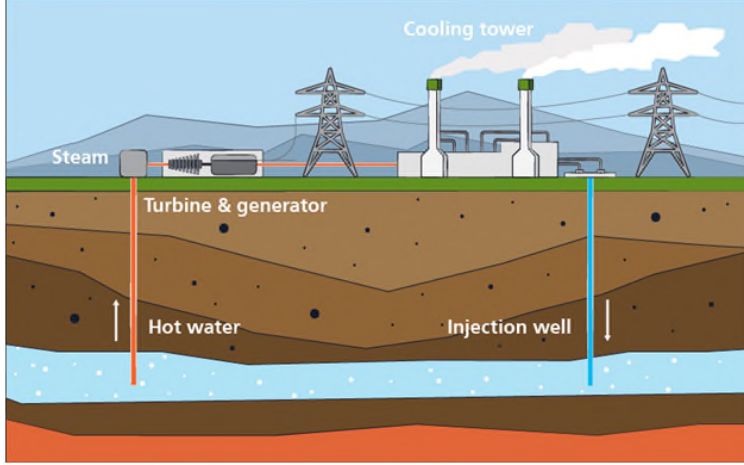
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GEOTHERMAL ELECTRICITY GENERATION





The diagram illustrates the geothermal electricity generation process. It shows a cross-section of the earth with a hot water reservoir at the bottom. An injection well (blue) pumps water down into the reservoir. A turbine & generator (red) is connected to the reservoir, and steam (red) is produced. A cooling tower (grey) is shown on the surface, which releases steam into the atmosphere. The entire process is powered by a geothermal plant with two cooling towers and two power lines.





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GEOTHERMAL ELECTRICITY GENERATION






States with geothermal power plants in 2020

	State share of total U.S. geothermal electricity generation	Geothermal share of total state electricity generation
California	70.5%	6.1%
Nevada	24.5%	10.2%
Utah	2.1%	1.0%
Hawaii	1.2%	2.2%
Oregon	0.9%	0.2%
Idaho	0.5%	0.5%
New Mexico	0.3%	0.2%




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A SHORT HISTORY OF GEOTHERMAL LEASING

- **1951:** Owners of property convey to Geothermal Kinetics' predecessor in interest a deed for "all minerals in, on or under 408 acres." Ultimately supplies the first plant.
- **1955:** Commercial development in The Geysers commences with Magma Power Company and Thermal Power Company drilling along Big Sulphur Creek.
- **1960:** PG&E opens the first electrical generating plant at The Geysers utilizing geothermal steam piped from well drilled pursuant to 1951 Grant. More plants in 1963 and 1967.
- **1965:** California enacts the first statute regulating geothermal operations (Ch. 1483, 1965 Cal. Stat. 3451, codified as amended, at Cal. Pub. Res. Code §§ 3700-3776).
- **1966:** President Johnson pocket vetoes the Geothermal Steam Act of 1966.
- **1967:** Two states pass statutes authorizing the leasing of geothermal resources.
 - **California:** Geothermal Resources Act of 1967, ch. 1398, 1967 Cal. Stat. 3279 (codified as amended at Cal. Pub. Res. Code §§ 6901-6925.2).
 - **New Mexico:** Geothermal Resources Act, ch. 158, 1967 N.M. Laws §§ 1-29 (codified at N.M. Stat. Ann. 19-13-1 to 19-13-28).




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A SHORT HISTORY OF GEOTHERMAL LEASING


- **1968:** Owen Olpin publishes his paper, *The Law of Geothermal Resources*. It was often cited by courts in decisions regarding the estate and ownership of geothermal resources.
- **1968 and 1969:** Bills addressing geothermal leasing fail in Congress over disagreements regarding conversion rights and due to opposition from the Department of Interior.
- **December 24, 1970:** First Federal law enacted providing for the leasing of Federal lands for geothermal resources (Geothermal Steam Act of 1970, 30 U.S.C. § 1001 et seq.).
- **1972-1974:**
 - Idaho passes its geothermal resources statute (1972, Ch. 182; I.C. 47-1601 to 47-1611)
 - Washington passes Geothermal Resources Act (1974 ex.s. ch. 43; RCW 78.60.010-.900)
- **January 31, 1977:** *United States v. Union Oil Company of California* decides rights of owners occupying the surface of 35 million acres patented under SRHA.
- **July 17, 1980:** *Pariani v. State of California* rules on ownership of geothermal resources on split estate lands patented by California.





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A SHORT HISTORY OF GEOTHERMAL LEASING


- **August 7, 2005:** Energy Policy Act signed by President Bush, which included the John Rishel Geothermal Steam Act Amendments.
- **April 14, 2006:** BLM Director and Chief of the US Forest Service signed MOU, which created administrative procedures for processing lease applications and to reduce the backlog of lease applications.
- **May 2, 2007:** DOI issues current regulations for Federal Geothermal Resource Leasing and Geothermal Resource Unit Agreements.
- **June 20, 2007:** First competitive lease sale under the new regulations. 8 parcels in Utah and Idaho leased with \$9.4million in total revenue.
- **Other Competitive Lease Sales Under Current Regulations:**
 - **August 14, 2007:** 49 parcels leased in California and Nevada (\$19.7 million)
 - **August 6, 2008:** 35 parcels leased in Nevada (\$28.2 million)
 - **December 19, 2008:** 48 parcels leased in Utah (\$5.7 million)
 - **July 14, 2009:** 98 parcels leased, 82 in Nevada, 15 in California, and 1 in Utah (\$9.1 million)





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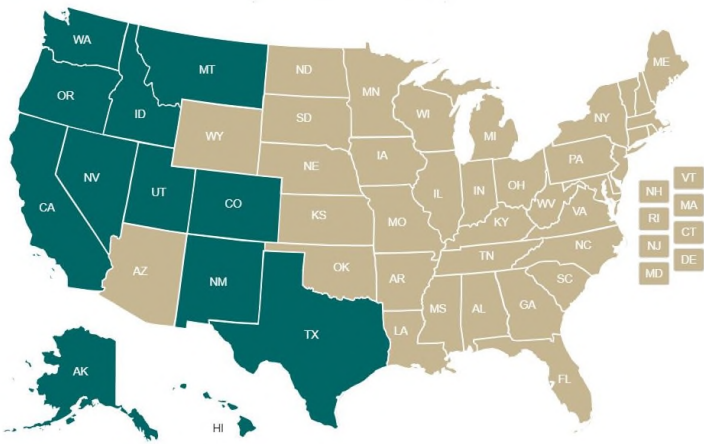

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GEOTHERMAL REGULATIONS BY STATE





Only Federal Regulations Available
 Federal & State Regulations Available




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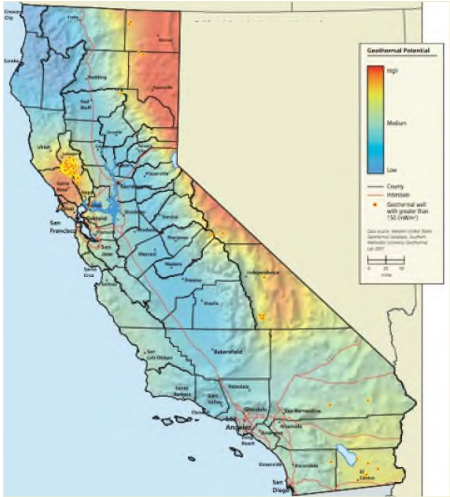

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CALIFORNIA





- California Classification of Geothermal Resources
- Acquisition of Ownership Rights Required to Develop Geothermal Resources
- Typical Geothermal Leasing/Licensing Terms
- Relevant State Regulatory Agencies
- Potential Conflicts





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GEOTHERMAL CLASSIFICATION / OWNERSHIP

- Cal. Pub. Res. Code Sec. 6903
 - Defined as “the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from, such natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brines, associated gases, and steam, in whatever form, found below the surface of the earth, but excluding oil, hydrocarbon gas or other hydrocarbon substances.”
 - Geothermal resources belong to the owner of the mineral estate
- *Geothermal Kinetics, Inc. v. Union Oil Company*, 75 Cal.App.3d 56 (1977)
 - Holding: Absent any expressed specific intent to the contrary, the general grant of minerals includes a grant of geothermal resources.



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ACQUISITION OF RIGHTS

- State land or geothermal resources reserved to the state require a geothermal lease from the California State Lands Commission (CSLC) Mineral Resources Management Division
- Privately owned geothermal rights are negotiated and leased from the owner of the mineral estate
- Geothermal rights may also be purchased, although the nature of the project/duration would govern




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GEOHERMAL LEASING

- Generally similar in nature to leasing of oil and gas, i.e. lease of lands for a specified term
- Leasing of state lands begins when the developer submits an application form
 - CSLC determines in writing if the application is complete, after thirty calendar days, the application is deemed complete CGC § 65943
- CSLC – are the lands suited for competitive leasing or negotiated leasing?
- Competitive Leasing process
 - Surface owner has the right to match the highest bid
- Lease Negotiated process
 - Conducted between the developer and CSLC




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AGENCIES

- **Local jurisdictions** - any Geothermal development must first be in accordance with land use restrictions as defined by the local jurisdiction.
- **California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)**
 - Geothermal Resources Prospecting Permit – allows for the drilling of exploration wells
 - Geothermal Drilling Permit – allows for the drilling of geothermal production wells
 - Underground Injection Control Permit – allows for the drilling of geothermal injection wells
 - Well plugging and abandonment procedures
- **California Energy Commission (CEC)** – must approve construction of geothermal power plants (and all related facilities) with a net generating capacity of 50 MW or more
- **California Public Utilities Commission (CPUC)** – “public utilities” must also obtain a Certificate of Public Convenience and Necessity from the CPUC (50 MW or more)
- **California State Water Resources Control Board (SWRCB)** – administers the rules and regulations pertaining to water rights for surface waters and subterranean streams
- **California State Lands Commission (CSLC) Mineral Resources Management Division** – responsible for the management and administration of geothermal resources contained in state lands.




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MULTIPLE USE & OTHER ISSUES


- Operators should carefully evaluate any existing or proposed joint uses of the subject lands
- Operators should consider how the project might impact coastal areas, conservation districts, and dune protection
- The California Environmental Quality Act (CEQA) – California may halt a project that is not advantageous for the environment and human health





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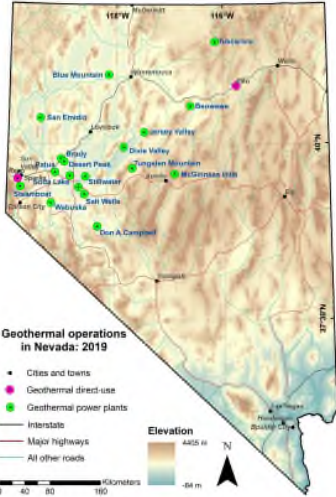

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NEVADA


- Nevada Classification of Geothermal Resources
- Acquisition of Ownership Rights Required to Develop Geothermal Resources
- Typical Geothermal Leasing/Licensing Terms
- Relevant State Regulatory Agencies
- Potential Conflicts



Geothermal operations in Nevada: 2019


- Cities and towns
- Geothermal direct-use
- Geothermal power plants
- Interstate
- Major highways
- All other roads


Elevation: 4825 ft, -54 m





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GEOTHERMAL CLASSIFICATION / OWNERSHIP

- NRS 534A.010
 - Defined as “the natural heat of the earth and the energy associated with that natural heat, pressure and all dissolved or entrained minerals that may be obtained from the medium used to transfer that heat, but excluding hydrocarbons and helium
- Geothermal resources belong to the owner of the surface estate, unless they have been specifically reserved by or conveyed to another person NRS 534A.050




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GEOTHERMAL ACQUISITION

- Over 80% of the land in Nevada is managed by the federal government
- State land or geothermal resources reserved to the state require a geothermal lease from the Nevada Division of State Lands
- Privately owned geothermal rights are negotiated and leased from the owner of the surface estate, or the interest owner if expressly reserved
- Geothermal rights may also be purchased, although the nature of the project/duration would govern




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GEOTHERMAL LEASING

- Generally similar in nature to leasing of oil and gas, i.e. lease of lands for a specified term
- State land leases are acquired through an Application to Use State Lands submitted to the Nevada Division of State Lands
 - Triggers a competitive bid process NRS 322.010 to NRS 322.040 and public auction NRS 321.335(4) and 321.335(5)
 - Leases are required to be on blocks of at least 40 acres of land and cannot exceed 1,280 acres. NRS 322.020



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AGENCIES






- **Nevada Division of Minerals**
 - Permit to Drill – required for drilling or operation of a geothermal well or exploratory well.
 - Geothermal Project Area Permit - required for projects multiple geothermal wells.
 - Sundry Notice – authorizes minor changes to an existing well
- **Nevada Division of Water Resources (NDWR)** – temporary ground use permit or a temporary use of groundwater for Geothermal Exploration
- **Public Utilities Commission of Nevada (PUC)** – all “public utilities” must obtain a Certificate of Public Convenience and Necessity from the PUC
- **Nevada Division of State Lands** – responsible for the management and administration of geothermal resources contained in state lands.

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MULTIPLE USE & OTHER ISSUES


- Operators should carefully evaluate any existing or proposed joint uses of the subject lands
- A state may require a permit if a project affects line of sight, creates excess noise, affects a protected aesthetic resource, etc.


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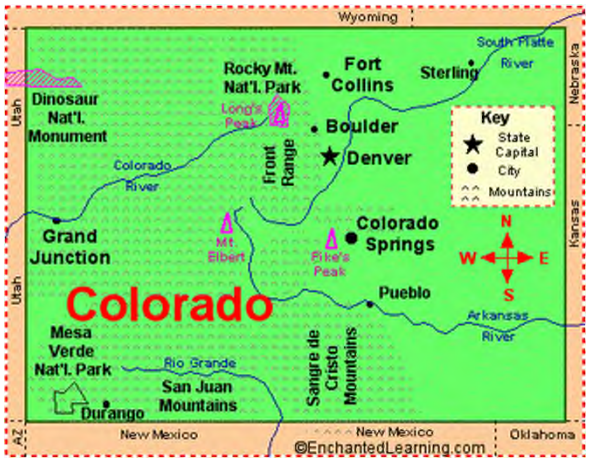
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COLORADO








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GEOTHERMAL CLASSIFICATION / OWNERSHIP

- C.R.S. §§ 37-90.5-101, *et seq.*
- Defined as the “natural heat of the earth, including the energy that might be extracted from the natural heat, the material medium used to extract the energy from a geothermal resource, and geothermal byproducts.”
- Geothermal energy is generally considered a part of, and is conveyed with, surface estate ownership
- This can change if geothermal rights: (i) were previously severed and/or conveyed separately OR (ii) are associated with a decreed, tributary water right




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ACQUISITION OF RIGHTS

- Geothermal rights are typically leased from the surface estate owner, severed geothermal rights owner, and/or decreed tributary water rights owner
- State-owned geothermal resources are leased through a state agency process
- Geothermal rights may also be purchased, although the nature of the project/duration would govern




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TYPICAL GEOTHERMAL LEASING TERMS

- Generally similar in nature to leasing of oil and gas, *i.e.* lease of lands for a specified term
- Granting clause should include all necessary geothermal resources, water and surface use rights
- A 10-year primary term is common, along with the payment of a signing bonus
- Royalty is payable on the proceeds from the sale of generated electricity and/or steam
- The lease should also address taxes, the lessee's right to surrender, multiple land uses (if applicable), notice, standard of care, lessee quiet enjoyment/exclusivity, and the use of covenants where needed/applicable




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STATE GEOTHERMAL LEASING & REGULATION

- Geothermal resources owned by the State of Colorado are under the jurisdiction of the Colorado State Board of Land Commissioners (CSLB), and all geothermal projects are under the jurisdiction of the Colorado Division of Water Resources (CDWR)
- The CSLB offers exploration permits and geothermal leases issued pursuant to C.R.S. §§ 37-90.5-101
- The CDWR regulates geothermal development under C.R.S. §§ 37-90.5-101, *et seq.*, 2 C.C.R. 402-10, and 2 C.C.R. 402-17
- All Colorado geothermal projects on state or private land require CDWR permits to appropriate groundwater and to drill/operate a geothermal well




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MULTIPLE USE & OTHER ISSUES


- Geothermal operators should carefully evaluate any existing or proposed joint uses of the subject lands
- Commercial-level geothermal electricity generation operations may require a Colorado Public Utilities Commission Certificate of Public Convenience and Necessity
- Most true commercial level geothermal projects will involve CPUC oversight/regulation
- Colorado has little, if any, commercial-level geothermal electricity generation projects at present – most are direct-application





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GEOHERMAL CLASSIFICATION / OWNERSHIP

- U.C.A. § 73-22-1, *et seq.*
- Utah defines geothermal fluids as “any water and steam at temperatures greater than [248°F/120°C] naturally present in a geothermal system. . . . Geothermal fluids are deemed to be a special kind of underground water resource, related to and potentially affecting other water resources of the state”
- Utah treats geothermal resources/fluids as water, but ownership derives from an interest in the subject lands, not from an appropriative water right
- All geothermal resources below 248°F/120°C is therefore classified simply as water subject to appropriation.




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ACQUISITION OF RIGHTS

- Geothermal rights are typically leased from the surface estate owner, notwithstanding the regulation of the same as a water resource
- State-owned geothermal resources are leased through a state agency process
- Geothermal rights may also be purchased, although the nature of the project/duration would govern




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TYPICAL GEOTHERMAL LEASING TERMS

- Generally similar geothermal leasing terms as seen in Colorado as far as lease term, royalty and other material issues
- However, there are no attendant severance, reservation, and/or usufructuary right issues in Utah
- This does not change the need to ensure that the geothermal resources lease acquired captures all necessary access and development rights



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STATE GEOTHERMAL LEASING & REGULATION

- Geothermal resources owned by the State of Utah are under the jurisdiction of: (i) the Utah Division of Forestry, Fire and State Lands (UDFFL) and (ii) the Utah School and Institutional Trust Lands Administration (SITLA)
- All geothermal projects on state or private land are under the jurisdiction of the Utah Division of Water Rights (UDWR)
- Geothermal projects in Utah utilizing injection and/or removal of geothermal fluids also require a state-level permit form the Utah Department of Environmental Quality (UDEQ)




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MULTIPLE USE & OTHER ISSUES


- As in Colorado, geothermal operators should carefully evaluate any existing or proposed joint uses of the subject lands
- Commercial-level geothermal electricity generation operations may require a Utah Public Service Commission Certificate of Public Convenience and Necessity
- Most true commercial level geothermal projects will involve UPSC oversight/regulation





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FEDERAL GEOTHERMAL RESOURCES CLASSIFICATION / OWNERSHIP

- Geothermal Steam Act of 1970, 30 U.S.C. §§ 1001, *et seq.*
- Defines geothermal resources as: “(i) all products of geothermal processes, embracing indigenous steam, hot water and hot brines; (ii) steam and other gases, hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations; (iii) heat or other associated energy found in geothermal formations; and (iv) any byproduct derived from them”
- *United States v. Union Oil Co.*, 549 F.2d 1271 (9th Cir. 1977)



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ACQUISITION OF FEDERAL RIGHTS

- “Subject to the provisions of Section 15 (30 U.S.C. 1014), of this Act, the Secretary of the Interior may issue leases for the development and utilization of geothermal resources: (1) in lands administered by him, including public, withdrawn, and acquired lands, (2) in any national forest or other lands administered by the Department of Agriculture through the Forest Service, including public, withdrawn, and acquired lands, and (3) in lands which have been conveyed by the United States subject to a reservation to the United States of the geothermal resources therein”
- Application for a federal geothermal lease follows a process very similar to that in place for leasing federally-owned oil and gas rights
- 2 types of leases – geothermal and direct use

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FEDERAL GEOTHERMAL LEASE TERMS

- Primary term of 10 years
- Lessee may extend the primary term for an additional 5 years, but before expiration of the primary term, lessee must: (i) satisfy the applicable work requirement; (ii) expend at least \$40/acre per year in development costs or make equivalent payment to BLM; OR (iii) file evidence of production of geothermal resources
- Annual rental payments apply, and unlike federal oil and gas leases, are generally due whether there is geothermal resource production or not
- The primary royalty due is for electricity generation based on gross sale proceeds – 1.75% for the 1st through 10th years of production, and 3.50% for the 11th and all subsequent production years

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FEDERAL GEOTHERMAL LEASES

- The regulation of federal geothermal and direct use leases is via 43 C.F.R. 3200, *et seq.*
- Again, similar concepts/procedures in place to those seen for federal oil and gas leasing – suspension, relinquishment, cancellation, termination, and transfer
- Federal geothermal leases may also be unitized for development



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QUESTIONS?




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Thank You!



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