

Making Sense of Definitions and Ownership of Geothermal Resources & Recent Developments in Washington State

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Background

- Research on other state's laws indicates that inconsistent regulations are a barrier to development
- Difficult for developers to work from one state to another/Difficult for regulators to understand their roles
- Proposed framework: Look at the definition and context as to determine “bundle of sticks”
- 2013 Washington has taken steps to make the state more “user friendly”

Proposed Analytical Framework: Interests in geothermal resources as a “bundle of sticks”

- Real property concept
- Fee simple absolute means unimpinged real property ownership
- In reality, real property ownership is limited by reserved rights such as mineral rights; regulations
- Personal property interest is even more limited
- Borrowing an analytical framework

Start with the federal definition: 30 USC, Chap. 23, Sec. 1001

- Geothermal resources: “(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.”

Looking at your site: Is there a federal reserved right?

- Reserved federal rights will trump state definitions and ownership. Article 6, U.S. Constitution.
- Geothermal resources are included in reserved federal mineral rights. *U.S. v. Union Oil*, 549 F.2d 1271 (9th Cir. Cal. 1977).
- Did Congress intend to convey that interest? Look at the intent of specific statutes granting interests in land. *Rosette, Inc. v. U.S.* 277 F.3d, 1222 (10th Cir. N.M. 2002); *Watt v. Western Nuclear, Inc.*, 462 U.S. 36 (1983).

Due diligence analysis of federal interest

- Was the property where the resource is located conveyed to an Indian tribe, state, or patentee by the federal government with reservation of mineral interests?
- State law does not control where reserved federal rights are involved. Rosette.
- Looking at state definition, designation (sui generis, mineral, water), ownership (e.g., surface landowner)
 - Potential questions about federal reserved rights.

State Laws: Definitions – What defines the interest?

- Most common – includes heat, water, steam, minerals except hydrocarbons and helium
- Energy, heat – Note different thresholds (e.g., low temperature resources defined as resources below 212 or 250 degrees F.)
- Water explicitly excluded in a minority of cases; if included, may be treated specially (exempt or special consultation required)

The state definitions: Arizona ARS 27.651

Recognition of “artificial stimulation”, including “gas artificially introduced ... “

- Geothermal resources: (a) All products of geothermal processes embracing indigenous steam, hot water and hot brines; (b) Steam and other gases, hot water and hot brines resulting from water, other fluids or gas artificially introduced into geothermal formations; (c) Heat or other associated energy found in geothermal formations, including any artificial stimulation or induction thereof; (d) Any mineral or minerals, exclusive of fossil fuels and helium gas, which may be present in solution or in association with geothermal steam, water or brines.

California: Public Resources Code Section 6903

“Natural heat” and “energy” + which may be “extracted” (not “found”)

- Geothermal resources: “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.”

California:

Low temperature geothermal resources,
Public Resources Code Section 3703.1
Temperature less than boiling point + Recognition of altitude

- Low-temperature geothermal resources: “fluids that have value by virtue of the heat contained therein and have a temperature that is not more than the boiling point of water at the altitude of occurrence.”
- Reference to water code: Sec. 3716, “Work shall be done ... to [advise] the operators as to the best means of protecting the ... water-bearing strata [suitable for irrigation or domestic purposes] and surface water.”
- Nothing in the geothermal code supersedes Div. 7 of Water Code or Div. 6 of Fish and Game code.

Colorado: CRS 37-90.5 Clarifying limits of water laws + hot dry rock defined

- Geothermal resource means the natural heat of the earth, and includes “(a) the energy that may be extracted from that natural heat; (b) the material medium used to extract energy from a geothermal source; and (c) geothermal by-products.”
- Geothermal fluid means “naturally occurring ground water, brines, vapor and steam associated with a geothermal resource.”
- Hot dry rock means “a geothermal resource which lacks sufficient geothermal fluid to transport commercial amounts of energy to the surface and which is not in association with an economically useful ground water resource.”

Idaho: 42-4002 Idaho Statutes (Irrigation and Drainage Statute)

Energy “at any depth” + ground water >212 degrees F.

- Geothermal resource: “the natural heat energy of the earth, the energy, in whatever form, which may be found in any position or at any depth 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 the material medium of any geothermal resource. Ground water having a temperature of two hundred and twelve (212) degrees Fahrenheit or more in the bottom of a well shall be classified as a geothermal resource.”

Montana: 77-4-102 MCA, State lands code.

- Geothermal Resources: “the natural heat energy of the earth, including the energy, in whatever form, which may be found in any position and at any depth below the surface of the earth, either present in, resulting from, created by, or which may be extracted from such natural heat and all minerals in solution or other products obtained from the materials medium of any geothermal resource. “

Nevada: NRS 534A.010

Includes “pressure”

- Geothermal resource: “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.”
- Coordination with State Engineer on water issues

New Mexico: NMS 71-5 Like California

- Geothermal resources: “the natural heat of the earth or the energy, in whatever form, below the surface of the earth present in, resulting from, created by or which may be extracted from this 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 and other hydrocarbon substances.”

New Mexico (cont.)

Like CA, separate definition of low temp resource + “reservoir”, “not fluids”+ “value” of “heat”

- Low temperature geothermal resource: “a geothermal reservoir containing low-temperature thermal water, which is defined as naturally heated water, the temperature of which is less than boiling at the altitude of occurrence, which has additional value by virtue of the heat contained therein and is found below the surface of the earth or in warm springs at the surface.”

North Dakota: Chap. 38-19-02 NDCC

Little detail in statute – Reference to regulations

- Geothermal resource: “The recoverable stored heat of the earth.”
- Geothermal energy: “the internal energy of the earth, available to man as heat from rocks or liquids.”
- Goals: Protect correlative rights of all owners; prevent contamination and pollution of surface and ground water sources; avoid creation of “secondary hazards of a geologic nature.”

Oregon: ORS 522.005 Federal and California statutes combined

Geothermal resources: “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 that may be extracted from, the 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, exclusive of helium or of oil, hydrocarbon gas or other hydrocarbon substances, but including, specifically:

- (a) All products of geothermal processes, including indigenous steam, hot water and hot brines;
- (b) Steam and other gases, hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations;
- (c) Heat or other associated energy found in geothermal formations; and
- (d) Any by-product derived from them.

Utah: Utah Code Section 73-22-3

- Geothermal resource: “(a) the natural heat of the earth at temperatures greater than 120 degrees centigrade, and (b) the energy in whatever form, including pressure, present in, resulting from, or created by, or which may be extracted from that natural heat, directly or through a material medium.”
- Geothermal fluid means “water and steam at temperatures greater than 120 degrees centigrade naturally present in a geothermal system.”

Wyoming: 41-3-901 (a) (ii) WS

- Geothermal resources not defined separately from ground water.
- Underground water: “any water, including hot water and geothermal steam, under the surface of the land or the bed of any stream, lake, reservoir, or other body of surface water.”
- State Engineer is lead agency
- “Steam power plants” a preferred beneficial use.

How is the ownership interest defined in state law?

- NV: “The owner of real property owns the rights to the underlying geothermal resources unless they have been reserved by or conveyed to another person.” NRS 534A 050.
- OR: Ownership of the resource “shall be in the owner of the surface property underlain by the geothermal resources unless such rights have been otherwise reserved or conveyed. However, nothing in this section shall divest the people or the state of any rights, title or interest they may have in geothermal resources.” 522.035 ORS.
- UT: “derives from an interest in land and not from an appropriative right to geothermal fluids. 73-22-3 Utah Code.

Colorado: Ownership in the public, like water

- Ownership of geothermal resources is in the public (typical Western water code element)
- Subsurface fluids are considered ground waters of the state
- Subject to appropriation procedure in the water code
- Regulated by Colorado Div. of Water Resources

Utah: Special resource, but use identified as a beneficial use of water

- UT: “geothermal fluids are deemed to be a special kind of underground resource, related to and potentially affecting other water resources of the state. The utilization or distribution for their thermal content and subsurface injection or disposal of same shall constitute a beneficial use of the water resources of the state.” 73-22-8 Utah Code

What is the nature of the resource as defined by the state?

- MT: Sui generis, neither mineral nor water but “closely related to and possibly affecting and affected by water resources in many instances.” 77-4-104 MCA. Also, ID.
- UT: “geothermal fluids are deemed to be a special kind of underground resource, related to and potentially affecting other water resources of the state. The utilization or distribution for their thermal content and subsurface injection or disposal of same shall constitute a beneficial use of the water resources of the state.” 73-22-8 Utah Code.
- CO: Water, with recognition of need for special treatment.

Montana: Sui generis but on state lands, water is reserved,
requiring water right

- “Neither a mineral resource nor a water resource, but closely related to and possibly affecting and affected by water resources in many instances.” 77-4-104 MC
- For leases on state land: Application to state Dept of Natural Resources and Conservation for water right, “filed in the name of the state.”

What does the state water code say?

Oregon: Split regulatory responsibility

- 537.090 Laws applicable to geothermal wells
- (1)The provisions of this chapter relating to appropriation and water rights do not apply to the production of fluid from a well with a bottom hole temperature of at least 250 degrees Fahrenheit.(2)Production of fluids from a well with a bottom hole temperature of at least 250 degrees Fahrenheit shall be regulated as a geothermal resource under the applicable sections of ORS chapter 522.
- (3)If the bottom hole temperature of a well that was initially less than 250 degrees Fahrenheit increases to at least 250 degrees Fahrenheit, the State Geologist and the Water Resources Commission, after consulting with the well owner, shall determine the agency with regulatory responsibility for that specific well. This determination shall be documented in writing and shall supersede a determination made under subsection (2) of this section.

Washington's steps to support geothermal development

- DNR data base updated and accessible; includes favorability maps
- Informal geothermal working group included Senator Adam Kline, Susan Petty of AltaRock, Dave Norman of DNR, representatives from Dept. of Ecology, Weyerhaeuser rep, and Kathleen Callison, Law Office of Kathleen Callison
- Bills submitted over several years; concerns about water held up the bill
- 2013 law included language protecting senior water rights

Washington: 2013 changes to the State's Geothermal Law

- Former definition based on the technological feasibility of producing electricity commercially -> Combined federal and California definition; also distinguished GSHP systems
- Informal coordination regarding water -> Acknowledged in statute; water rights protected
- Ownership remained in surface owner -> And may be conveyed or reserved
- Nonconsumptive water use not subject to the water code; some minimal losses allowed
- Renewed royalty payments to local governments

Washington: New definition RCW 78.60.030

Combines federal and California definitions; excludes GSHP

- (7)(a) "Geothermal resources" includes 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 that may be extracted from, the 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, exclusive of helium or oil, hydrocarbon gas or other hydrocarbon substances, but including, specifically: (i) All products of geothermal processes, including indigenous steam, and hot water and hot brines; (ii) Steam and other bases, 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 by-product derived from them. (b) "Geothermal resources" does not include heat energy used in ground source heat exchange systems for ground source heat pumps.

Proposed analysis of the “bundle of sticks”: Look at the entire context

- Federal reservation? (History of conveyance)
- State definition of resource?
- Nature of the resource in state law (sui generis, mineral, water)?
- Ownership of heat? Water? Well?
- Holder of permit (personal property interest)?
- Lead agency? Regulatory context? Public interest?
- Past history of program administration?

Thank you. I look forward to your thoughts
and questions.

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