

# Alaska Department of Natural Resources

## SB161 Geothermal Resources: Part 2

*Senate Resources Committee*

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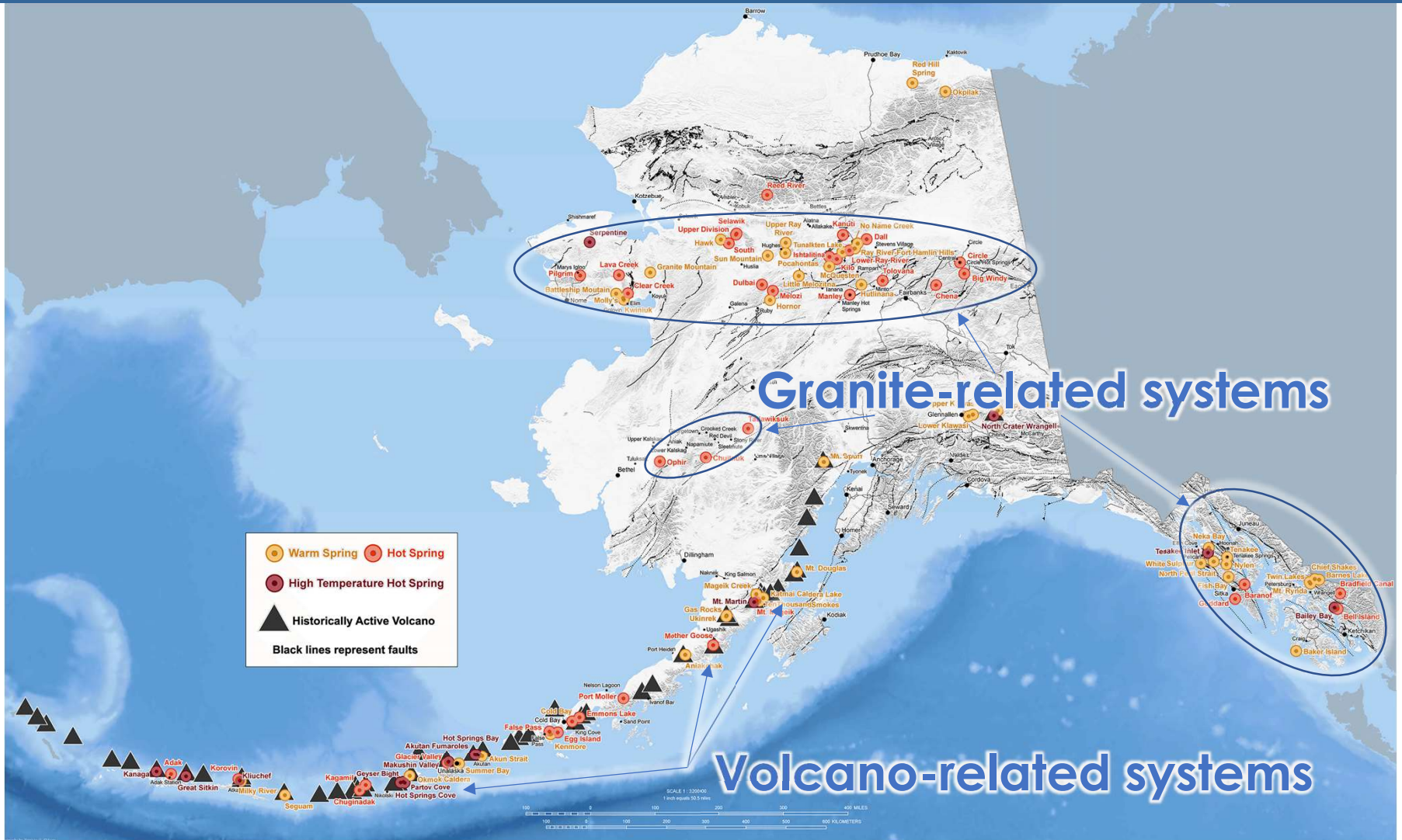
# Overview

- Review of 21 February presentation
- DNR geothermal leasing history
- Purpose of SB161
- Sectional summary
- Analysis of selected sections & responses to questions

# Review of 21 February Presentation

- Geothermal heat, where technically and economically accessible, is an excellent form of sustainable energy
- Hydrothermal systems are the most common form of energy extraction from geothermal heat
- Complex geologic parameters necessary for a viable geothermal resource, all present at one location, is rare
- Alaska contains several potential geothermal resources
- New technologies that will help expand geothermal development into less favorable geology are on the horizon

# Geothermal Systems



# DNR Geothermal Leasing History

<b>Present</b>	Currently there is one company, <a href="#">CYRO Energy</a> , with a pending application for geothermal exploration prospecting permit. A Best Interest Finding should be issued in Spring 2020.
<b>2013</b>	<b>Augustine Island</b> 26 tracts were offered. Only one tract was leased to a private individual and no exploration work was conducted as a result of that lease sale.
<b>2008</b>	<b>Mount Spurr</b> 16 tracts leased to Ormat and one private individual. Ormat purchased 15 leases in the 2008 sale and drilled on southern flank of volcano. They didn't find adequate temperatures in wells to pursue the project. The state has the data available.
<b>1986</b>	<b>Mount Spurr</b> On June 24, 1986, DNR offered 2,640 acres in two tracts. Both tracts received bids. The lease for Tract 1 expired in 1996, and the lease for Tract 2 was terminated in 1990.
<b>1983</b>	<b>Mount Spurr</b> DNR held its first geothermal lease sale in the Mount Spurr area on May 17, 1983. 10,240 acres in 16 tracts were offered in Competitive Geothermal Lease Sale 1. One tract received a bid. The lease for that tract was terminated in 1992.

# Purpose of SB161

- Diversify Alaska's energy portfolio
  - More potential for providing affordable, renewable energy to villages
  - More potential for providing power to remote natural resource extraction projects
  - Promote clean energy industry job creation
  - Increase attention to Alaska's geothermal exploration program
- Streamline geothermal licensing by aligning with the oil and gas exploration license program, increasing feasibility for companies to develop resources
  - More time for a company to identify and prove resource to convert to leases
  - Conversion to leases based on completion of work commitment and submission of exploration plan instead of proving discovery of commercial resource
  - Doubles maximum acreage allowed for exploration license
- Reforms definitions for geothermal resources to focus on *Commercial Use*

# Sectional Summary

## REFLECTS PROPOSED AMENDMENTS

Section (Affected Org)	Summary
1 (AOGCC)	Removes unnecessary reference to AS 41.06 from AS 31.05. (Related to Section 9)
2 (DNR)	Changes “permits” to “licenses” Explicit exemption for geothermal resources intended for domestic, noncommercial, or small-scale industrial use (See also Section 10) <i>Amendment deletes “drawn from a depth with a ground temperature of not more than 30 degrees Celsius”</i> Removes preferential rights clause. This is an old water rights provision, not appropriate for commercial geothermal systems.
3 (DNR)	Changes “permits” to “licenses” Replaces lease conversion requirement of commercial discovery with work commitment.
4 (DNR)	Changes “permits” to “licenses”
5 (DNR)	Changes “permits” to “licenses” Increases maximum acreage from 51,200 to 100,000. Adds provision for rental fees to be defined in regulation, rather than statute (easier to update).
6 (DNR)	Changes “permits” to “licenses” Reduces primary term of license to 5 years with reference to lease conversion provision.
7 (DNR)	Adds new subsections providing for unitization of geothermal leases. Uses same or similar language as oil and gas statutes in AS 38.05.180.
8 (DNR)	Replaces definition of geothermal resources. (Same as Section 11)
9 (AOGCC)	Amends AS 41.06.020(e), clarifies that AS 41.06 does not limit DNR’s authority over geothermal resource management on state land.
10 (AOGCC)	Explicit exemption for geothermal resources intended for domestic, noncommercial, or small-scale industrial use (See also Section 2) <i>Amendment deletes “drawn from a depth with a ground temperature of not more than 30 degrees Celsius”</i>
11 (AOGCC)	Amends definition of “geothermal fluid” to remove temperature references and better conform with other changes in this bill.
12 (AOGCC)	Replaces definition of geothermal resources. (Same as Section 8)
13 (AOGCC)	Repeals AS 41.06.005(b) and AS 41.06.030, since geothermal units are managed by DNR.
14–17	General provisions for applicability and effective dates.

# Section 2: Private Use Exemption

- New language (includes requested amendment ~~change~~):  
A prospecting license or lease is not required under this section to explore for, develop, or use geothermal resources ~~drawn from a depth with a ground temperature of not more than 30 degrees Celsius~~ if the geothermal resource is intended for domestic, noncommercial, or small-scale industrial use.
- This explicitly excludes private geothermal users from a requirement to apply for a license or lease.
- The old definition of *geothermal resources* technically provided this exclusion.
- The updated definition made this exclusion necessary.



# Section 2: Preferential Rights

- The preferential rights provision is being deleted because it is inappropriate to the situation (it's more relevant to water rights or other surface use cases not associated with the mineral estate).
- Surface owner rights are protected under AS 38.05.130.
- Rights to access the mineral estate are reserved under AS 38.05.125.
  - Surface owners must provide reasonable access to resource developers.
  - The same condition exists for oil & gas or mining.
- If a surface use agreement can't be reached, resolution process is in 11 AAC 86.145.
  - DNR holds a hearing wherein the developer must prove there is no other alternative location for the well or data acquisition.
  - If the Commissioner concurs, developer posts a bond to compensate landowner for any impacts and work progresses.
- Public notice is a part of the license issuance process, and surface owners would be included.

# Section 2: Preferential Rights

- If a surface owner is already using geothermal resource, DNR protects the surface owner's rights under AS 38.05.130.
- If conflict arises, DNR ensures private landowners would not be left without heat or power, or otherwise damaged by commercial development.
- Scenario is unlikely because private landowners usually don't have financial resources to develop a commercially-viable geothermal resource.

# Section 2: Drilling regulations

## **Division of Oil & Gas (DO&G)**

- Licenses or leases access to the resource (subsurface use).
- Surface permitting (pads, facilities, and infrastructure) in support of exploration and development.

## **Alaska Oil & Gas Conservation Commission (AOGCC)**

- Ensures prevention of waste, protects correlative rights, improves ultimate recovery, and protects underground freshwater.
- Issues of permits to drill wells is AOGCC's jurisdiction.
- Jurisdiction over geothermal triggered by temperature (>120 °C) or commerciality. *New definition ignores temperature.*
- Domestic, noncommercial, or small-scale industrial geothermal well not under AOGCC authority.
- Exception if well *may encounter geothermal resources, fluid, or water of enough heat/pressure to threaten life/health.*

## **Department of Environmental Conservation (DEC)**

- If the incidental discharge enters surface water, need Alaska Pollutant Discharge Elimination System (APDES) permit.
- DEC Division of Water has permitted geothermal discharges using Plan Review in Lieu of Permit.
- Engineering Support and Plan Review (ESPR) conducts plan reviews for smaller systems in municipality (heating or cooling pumps at UAA, U-med district, hatchery, etc.).
- DEC issues permits for *hydrostatic testing, including flushing and aquifer pump testing.*
  - General permit AKG003000 provides for coverage of land disposal or discharge to surface water.
  - One geothermal-related authorization, issued in 2015 for the Akutan Geothermal Project.

# Section 7: Royalty reduction

- Royalty reductions are not permanently established under a unit agreement (AS 38.05.181(i)).
  - They are adjudicated under the authority described in sections AS 38.05.181(f) and (j).
  - Same language used in AS 38.05.180(p) (oil and gas unitization).
  - This aligns geothermal management with existing processes in oil and gas management.
- Royalties have never been paid on geothermal resources, so exact process not yet established.
  - Will be like the system used for oil and gas.
  - Royalties are 1.75% of gross revenue for the first 10 years of commercial operation
  - Royalties are 3.5% after 10 years (See AS 38.05.181(g)).
- This is like oil and gas royalties.
  - Royalties are paid upon removal of the resource from the lease or unit (i.e. sale), regardless of profit.
  - Geothermal energy isn't a measurable volume, so royalties are paid on gross revenues (AS 38.05.181(g)).
  - Royalty reduction provisions exist in statute for oil and gas and are evaluated by application to the Commissioner under specific circumstances provided for in statute (See AS 38.05.180(j), for example).
- If there is no production, there are no royalties.
  - License/lease rental rates are paid per acre.

# Section 11: Geothermal fluids

AS 41.06.060(4) is requested to be amended as:

(4) “geothermal fluid means liquids, **brines, water, gases, or** and steam at temperatures greater than 120 degrees celsius or any commercial use of liquids and steam naturally **or artificially** present in a geothermal system; **“geothermal fluid” does not include oil, hydrocarbon gases, or other hydrocarbon substances** at temperatures less than 120 degrees celsius;”

- Aligns with modernized definition for geothermal resources.
- Not limited by temperature because current technology enables development of cooler geothermal systems.
- Distinguishes geothermal fluids from hydrocarbon resources.

# Sections 8 & 12: New definition

“Geothermal resources” means 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 gases, or other hydrocarbon substances.

- Modern definition for geothermal resources.
- Not limited by temperature because current technology enables development of cooler geothermal systems.
- Ensures all the State’s mineral estate resources are captured in definition.
- Same definition being applied to both DNR & AOGCC statutes.

# Thank you

