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# Augustine Island- Delivering Geothermal Power for the Long-Term Energy Security of Alaska

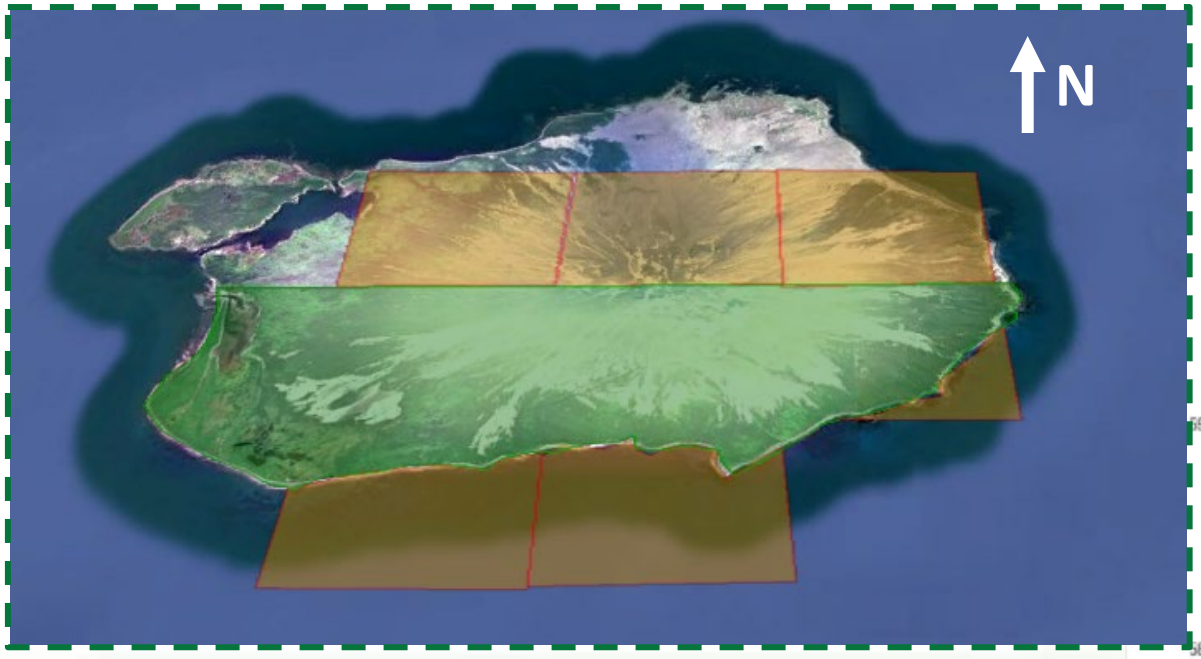
## House Energy Committee

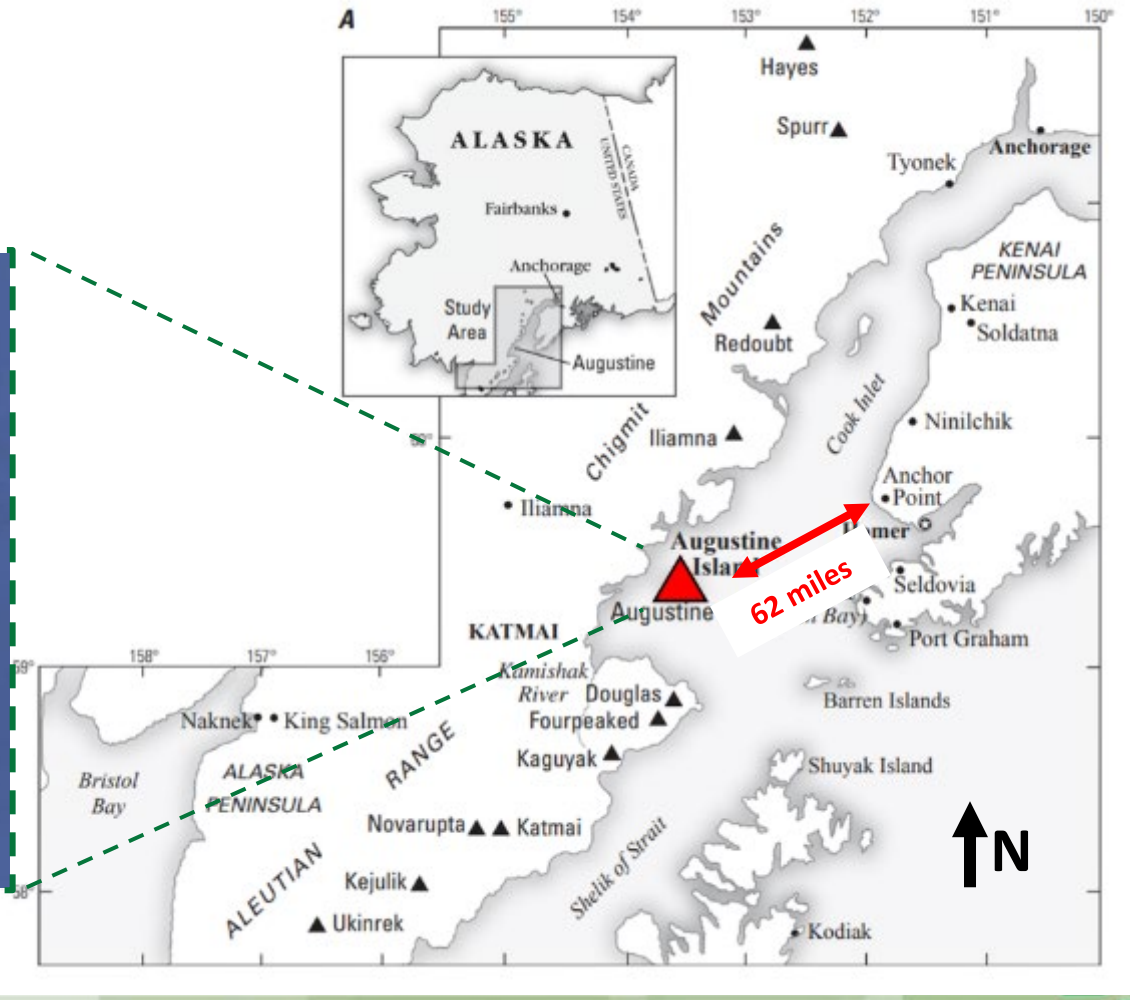
May 6th, 2025

# Location & Permit Area

## Permits & Licenses

**Mount Augustine**
ADL: 394080 (green)
ADL: 394174 (green)
Orange area represents add. permits acquired April 22, 2025

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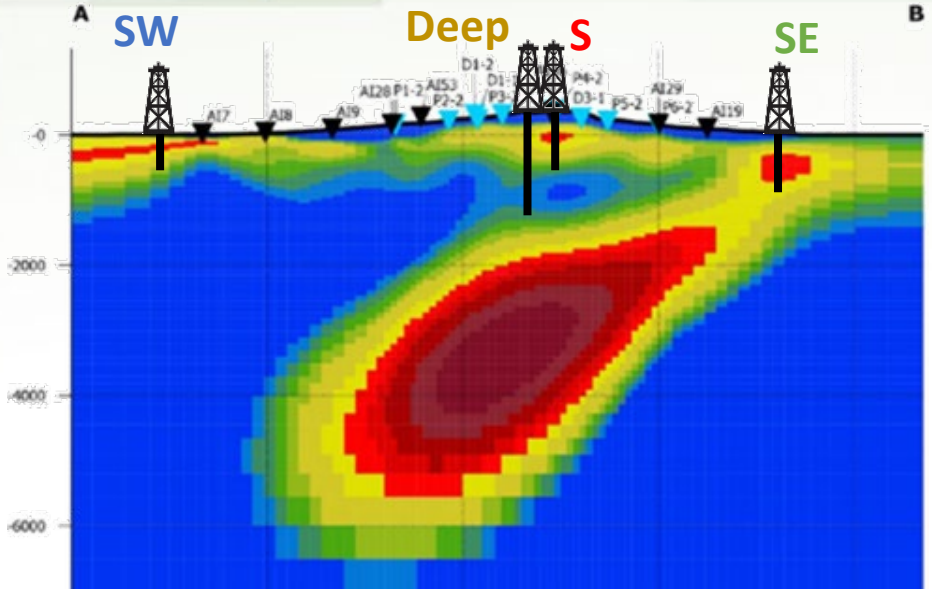
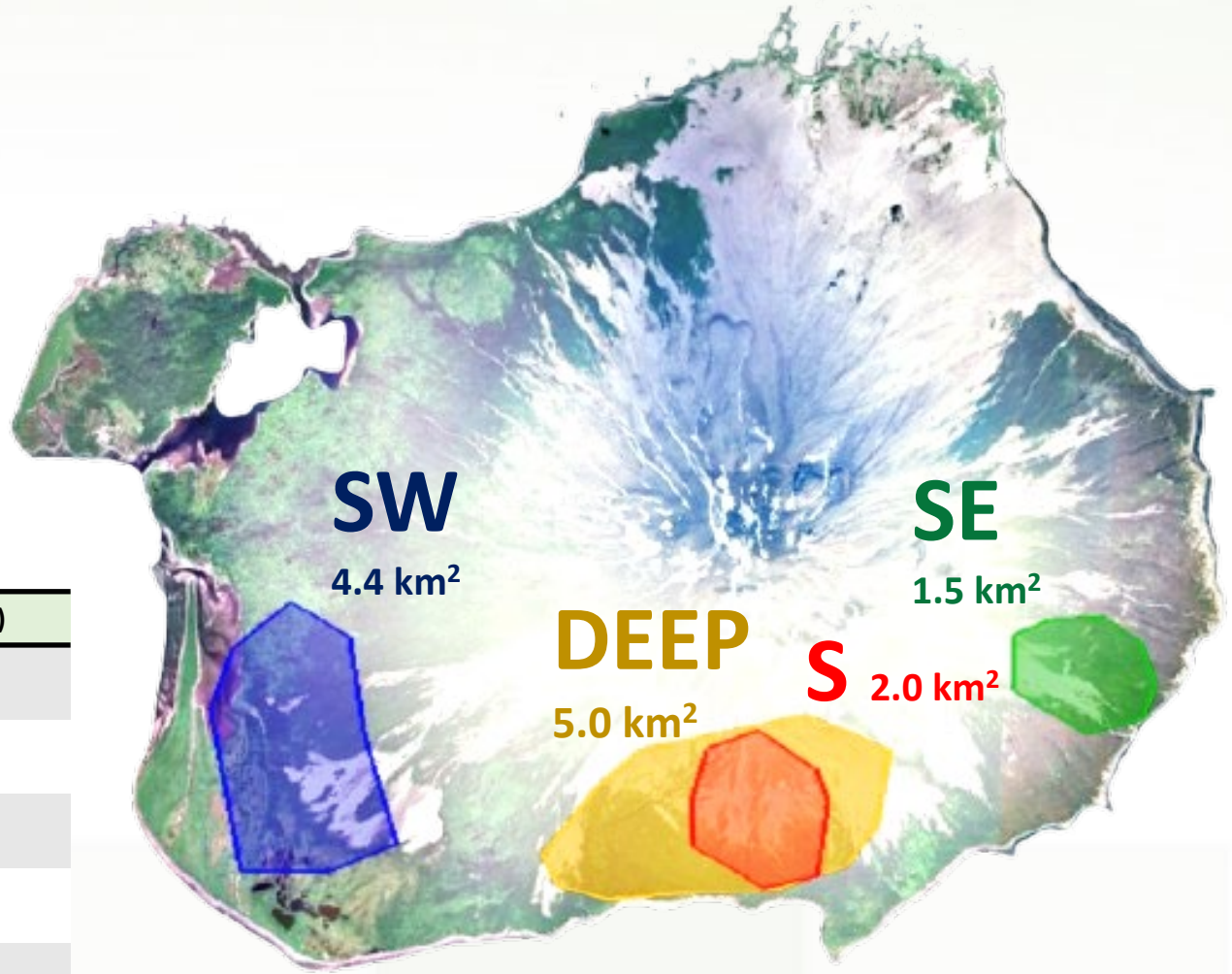
# Reservoir Horizons & Potential




| Prospect | P90-P10 (MWe) | Likely Temp (°C) | Estimated area (km²) |
|---|---|---|---|
| SW | 23-65 | 150 | 4.4 |
| S | 47-83 | 275 | 2.0 |
| SE | 15-26 | 225 | 1.5 |
| DEEP | 47-101 | 450 | 5 |
| **Net Sale** | **167-243** | | |

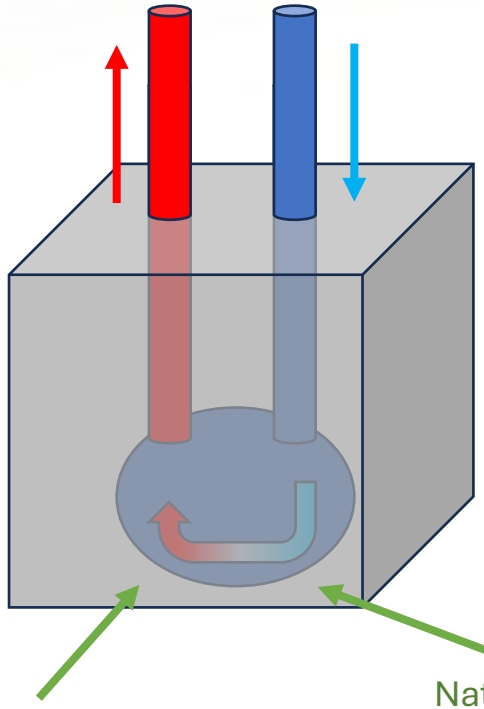



Note: Polygons areas represent a surface projection of subsurface volumes at various depths

# R&D: Shallow Magma

Credit: John Eichelberger, PhD – Founder Krafla Magma Testbed Project (www.kmt.is)

## Conventional rock reservoir

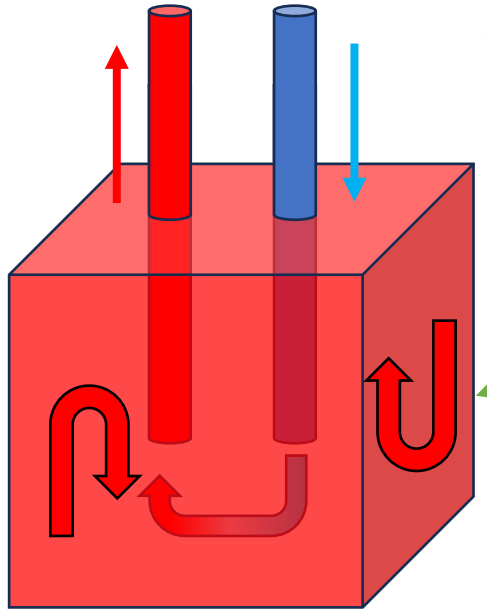


- Low heat capacity (1/5 water)
- Not a good conductor
- Static: heat transported to fluid by conduction (slow)

Cooled volume- need makeup wells

Natural or fracked permeability

## Magma reservoir



- High heat capacity from crystallization and steam release
- Convects, bringing uncooled magma to well.
- Thermally self-fracking, generating new fluid pathways

At least 10X better at maybe 2X cost

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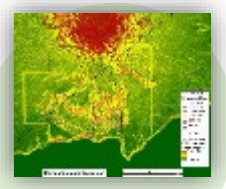
# Potential Uses for Baseload Geothermal Power

- **Baseload Low Carbon Power for the Grid**
  - Helps with looming natural gas shortage
  - Can displace higher carbon sources such as coal and natural gas
  - Meets State of Alaska 80% Renewable Portfolio Standard Goals
- **Potential Uses for Excess Power Production**
  - Data Centers
  - Various Green Fuels (SAF, and other green hydrogen-based products)
  - Direct Support of other high-use power users

# Commercial Attributes for Baseload Geothermal Power

- **Baseload Low Carbon Power for the Grid or Commercial User- PPA**
- **Inflation Reduction Act (IRA) Investment Tax Credit- 30%**
- **Monetization of Environmental Attributes**
  - **Renewable Energy Certificates (REC)**
  - **Carbon offsets in the commercial marketplace**

# Building 24/7 Reliable Energy Supply for Alaska



Commercial Geothermal Exploration Proposal

2023 Data Collection Campaign

2024 Data Collection Campaign

Exploration Well(s)

Development Drilling

Subsea Cabling Starts

2022

2023

2024

today

?

2025

2026

2027

FID

2028

2029

Augustine Permits

Add. Augustine Permits

PPA Agreement

1st Capital Raise

2nd Capital Raise

Power Plant Project Starts

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# Conclusion

- Alaska has some of the highest electrical rates (commercial and residential in the country), and usage is higher in the winter when typical renewables (hydro and solar) have much lower production rates certainty
- Carbon offset production and/or decarbonization of the grid
- State of Alaska's target date for 80% Renewable Portfolio Standard (RPS) is 2040.
- Conventional geothermal resource can produce in the range of greater than 200 MW of electricity
- The world-class shallow magma play can produce 10X of the conventional resource
- Opportunities for on-island usage of baseload green power
- Augustine is 100 km to grid – uninhabited volcanic island with potential for DC cable to grid.