Geothermal Program Update

House Energy Committee

Presented by:
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April 14, 2026



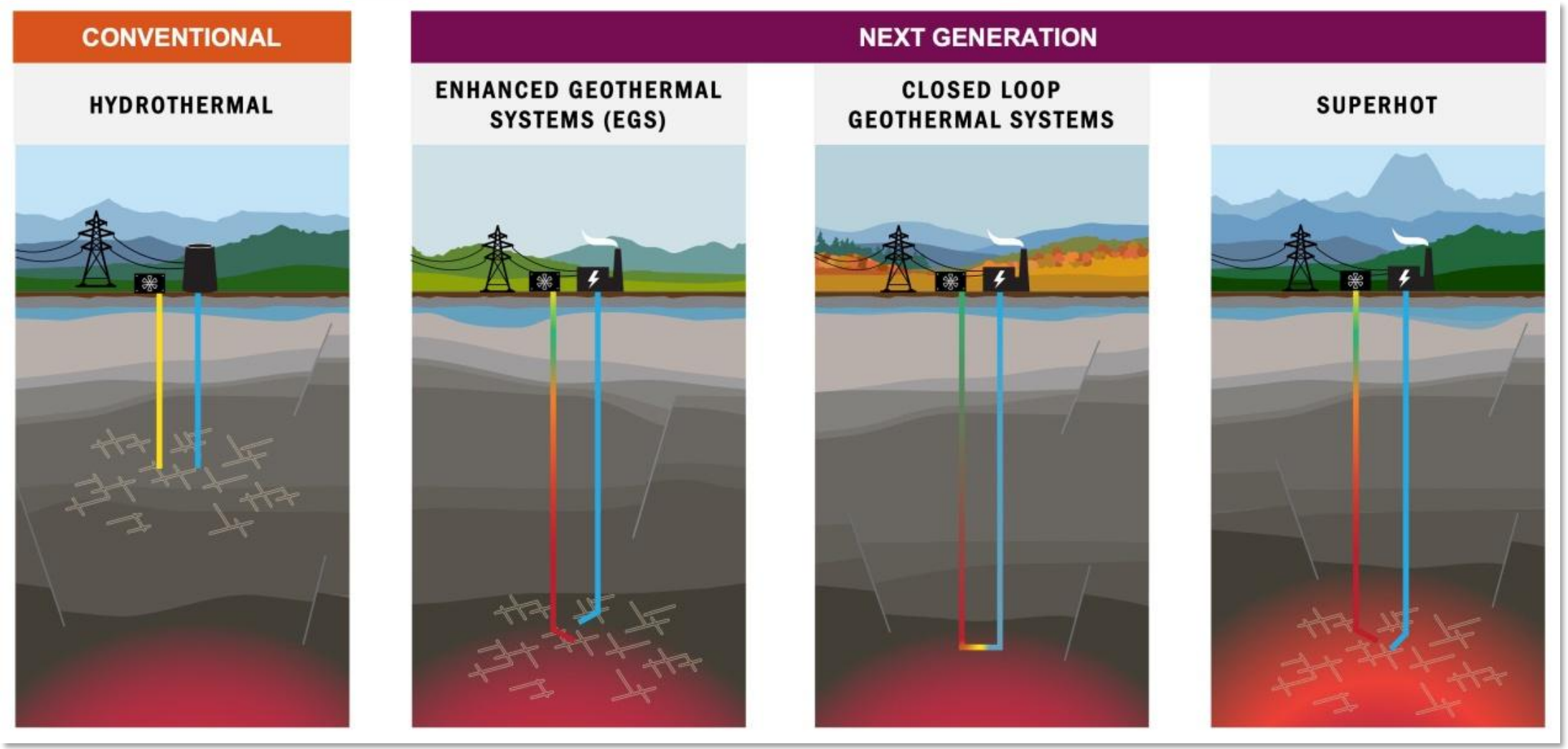

Introduction – DGGS Geothermal Program

- **Restarted through "*Powering Alaska's Future with Geothermal Energy*"**
  - $3M UGF, FY2025-FY2027
  - Three full-time staff (one reassigned and two in recruitment)
- **Purpose: Diversify and reduce the high cost of energy in Alaska**
  - Advance understanding of Alaska's geothermal energy potential by collecting and publishing baseline geological and geophysical data
  - Reduce risk and attract exploration and development investment
- **Early success and return on investment**
  - Developed technical partnerships (public & private)
  - In pre-award phase on two major federal grants
  - Early outreach and strong stakeholder interest
  - Strategic plan for new geoscience data acquisition


Augustine Island

Fundamentals of Geothermal Energy

- **Ingredients**: Heat -- Fluid -- Permeability



U.S. DEPARTMENT of ENERGY

Temperature, Uses, and Applications

>150°C / >300°F

Augustine, Mt. Spurr, Makushin, Akutan

Electricity Generation

- Flash & Dry Steam Plants
- Binary Power Plants

Often associated with volcanoes (shallow magma)

Makushin

~70-150°C / ~160-300°F

Chena Hot Springs
Pilgrim Hot Springs

Direct Use and Combined Heat & Power

- District Heating
- Industrial Processes

Can operate small binary power plants as low as 70°C

Chena Hot Springs

~20-90°C / ~70-200°F

Manley Hot Springs
Goddard Hot Springs

Low-Temperature Applications

- Greenhouses and Agriculture
- Spa and Recreation

Manley Hot Springs

~5-25°C / ~40-80°F

Alaska SeaLife Center

Geothermal Heat Pumps (GHPs)

- Heating (and Cooling) via Heat Exchange Cycles
- Extract and Concentrate Heat (Ground/Air/Water)

Can operate across much of Alaska

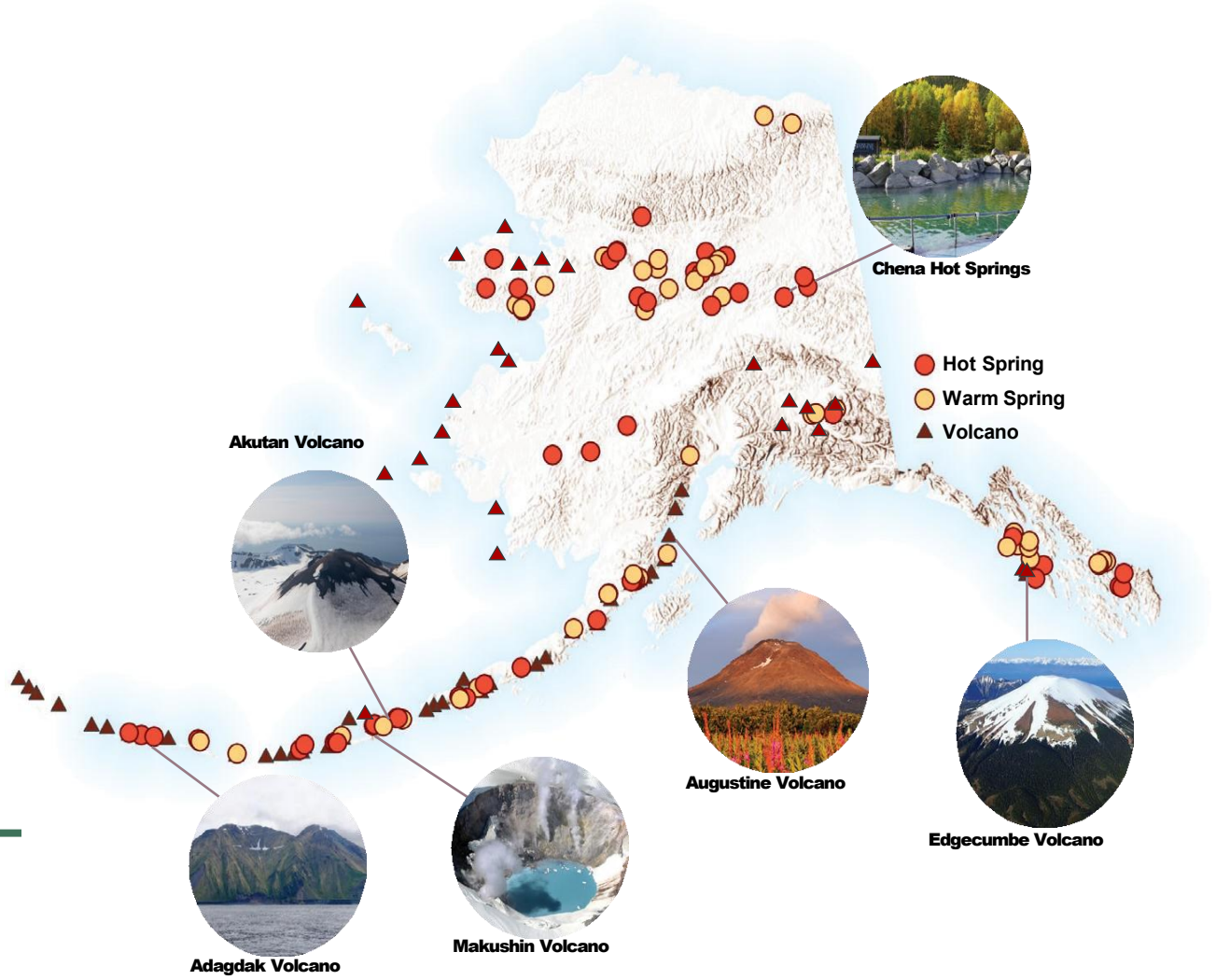
Seward

Alaska's Geothermal Potential

- High geothermal energy potential
  - 97 known thermal springs
  - 48 springs hotter than 50°C
- Underexplored, limited modern data
- HB 50 modernized leasing and resource management framework
- Diverse, complex geology
  - Different than lower 48
  - More analogous to circum-Pacific

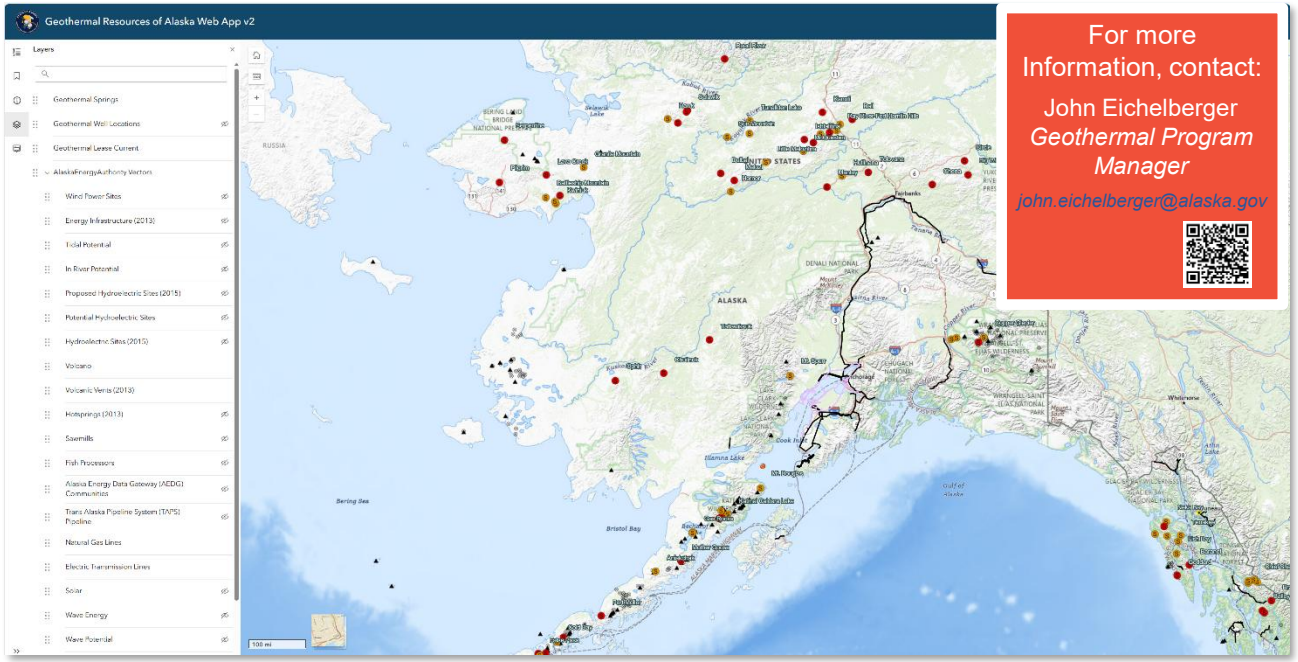
Aleutian / Wrangell
Seward Peninsula

Interior
Southeast



DGGS Geothermal Database and Web App

- Makes statewide geothermal information accessible for rapid screening
- Built on legacy data
  - Spring locations and temperature
  - Volcanic vents
- Includes *Alaska Energy Authority* layers to overlay key infrastructure
- Platform is scalable to include other data types, such as subsurface well temperatures, aqueous geochemistry, etc.



For more Information, contact:

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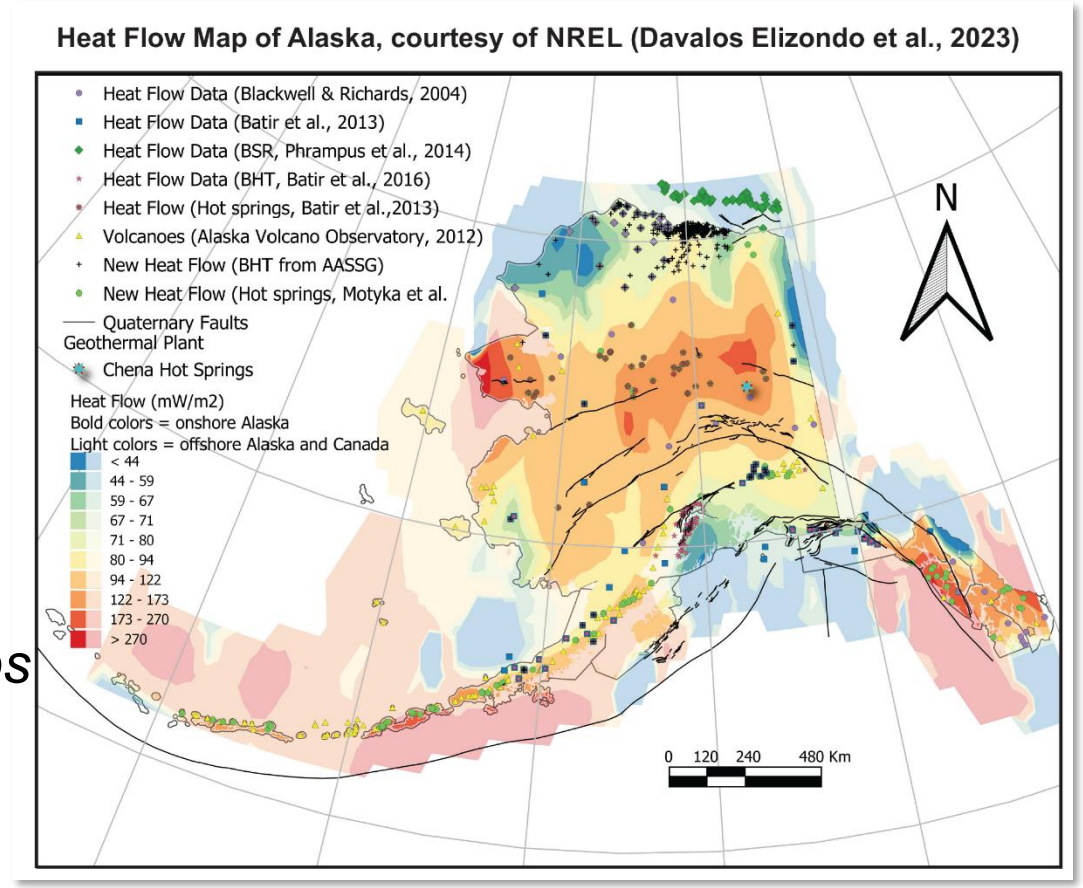
Geothermal Energy Outreach Activities

- Networking and education are vital for overcoming the Alaska *"fear factor"*
- Established Alaska Regional Interest Group
- Held meetings with Native organizations and industry groups
- Presented at 10+ local and national conferences and workshops; served as invited expert panelist at energy meetings
- Responded to numerous media requests

Planned 2027 international geothermal meeting in Anchorage

Capacity, Collaborations and Projects

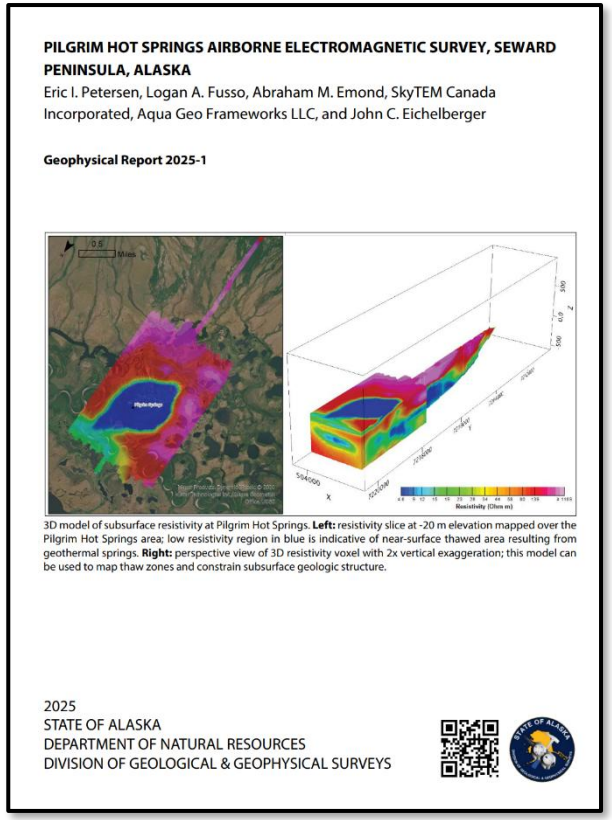
- Complementary—DGGS strengths in applied geoscience: energy, minerals, hazards, geophysics, and geospatial data management
- Building robust collaborations = capacity
  - Multiple National Laboratories
  - Universities (including University of Alaska Anchorage & University of Alaska Fairbanks)
  - U.S. Geological Survey
  - Geothermal Exploration Firms
  - Geothermal Technical Service Companies
- Contributing to "*Alaska Geothermal Resource Data Gaps Analysis"* project
- Two major proposals selected for funding
  - U.S. Department of Energy's "*Regional Partnerships for Geothermal Data*" program
  - 3 years, ~$5,000.0 fed + 20% cost share (pending)



New and Forthcoming Data

- Pilgrim Electromagnetic Survey
- Augustine Lidar Survey
- Augustine Field Geology

- Planned (2026-2027):
  - Airborne Magnetic Surveys
  - Lidar Surveys
  - Magnetotelluric Campaign
  - Airborne Hyperspectral
  - Field Geology



PILGRIM HOT SPRINGS AIRBORNE ELECTROMAGNETIC SURVEY, SEWARD PENINSULA, ALASKA

Eric I. Petersen, Logan A. Fusso, Abraham M. Emond, SkyTEM Canada Incorporated, Aqua Geo Frameworks LLC, and John C. Eichelberger

Geophysical Report 2025-1

3D model of subsurface resistivity at Pilgrim Hot Springs. **Left:** resistivity slice at -20 m elevation mapped over the Pilgrim Hot Springs area; low resistivity region in blue is indicative of near-surface thawed area resulting from geothermal springs. **Right:** perspective view of 3D resistivity voxel with 2x vertical exaggeration; this model can be used to map thaw zones and constrain subsurface geologic structure.

2025
STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

Willow/Houston	Talkeetna Mtns.
Mount Spurr	Mount Drum
Healy	Augustine

Future Projects and Opportunities

- Department of Energy funding opportunities
  - Next-Generation Geothermal Field Tests and Geothermal Resource characterization and Confirmation ($171.5M)
  - Unleashing Tribal Energy Development ($50M)
- Cooperative agreement with U.S. Geological Survey (pending)
- Augustine as an international testbed and research and development laboratory for superhot geothermal energy research
  - State / Federal / Industry partnership
- Monitor other funding opportunities, such as Advanced Research Projects Agency-Energy (ARPA-E), National Science Foundation

Summary and Path Forward

- Geothermal is hot!
  - Alaska is opportunity-rich, but data-poor
  - Strong Alaska stakeholder interest
  - Sustained federal and private sector investment
  - Rapid advances in drilling and geophysics
  - Potential to reduce Railbelt and Rural energy costs
- New data are required to reduce risk and attract competitive exploration dollars
- DGGS has rapidly built technical capacity and has a robust data acquisition plan for FY2026-2027, positioning Alaska to become a leader in geothermal energy


Mt. Spurr


Augustine Island

Thank You

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