



Arctic Energy Office Introduction

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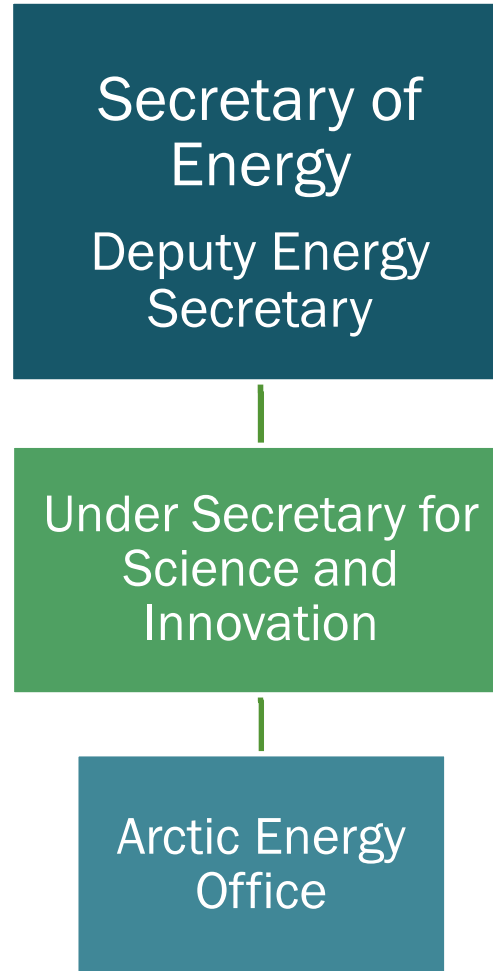
Arctic Energy Office: A Critical Part of the DOE Mission

Department of Energy Mission:

Ensure America's security and prosperity by addressing energy, environmental and nuclear challenges through transformative science and technology solutions.

Department of Energy Goals:

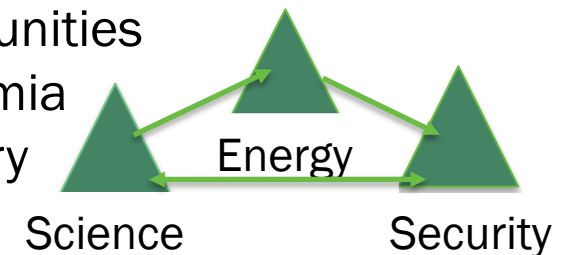
- Combat the climate crisis
- Promote energy justice
- Facilitate energy transition
- Create Clean Energy union jobs



AEO Vision:

*To bring the Arctic to the Department of Energy (DOE), and DOE to the Arctic. We collaborate in innovative ways to meet the **energy**, **science** and **security** needs of the US and its Arctic allies.*

- Headquarters offices
- National laboratories
- Interagency
- Communities
- Academia
- Industry



The Arctic Context for DOE (& the Nation/World)

Needs

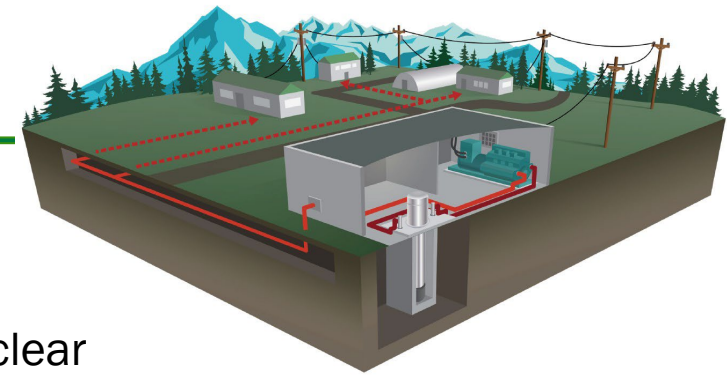
- Rapidly evolving natural, economic, and political environments
- Multiple stakeholders – indigenous, national, commercial
- Compelling technology maturation / transition opportunities
- Significant potential for circumpolar & trans-latitude collaboration



AEO's Focus on Energy

AEO advances existing DOE research and programs:

- **Electricity:** Microgrids in rural Alaska
- **Efficiency:** capacity building, technical assistance to villages; partner with NREL's Alaska Campus (CCHRC)
- **Fossil:** carbon capture & transport, use & storage on North Slope
- **Geothermal:** Pilgrim Hot Springs, Makushin
- **Hydrokinetics:** research on tidal and marine energy at Tanana River, Igiugig, Cook Inlet
- **Nuclear:** Nuclear Energy Working Group discussions on small nuclear reactors at Eielson AFB
- **Solar:** installations at Shungnak, Kotzebue, Deering, Noatak (upcoming), & agrivoltaics research
- **Transportation:** EPIC funding award to Launch Alaska advancing electric vehicle transportation in Alaska.
- **Wind, batteries:** ETIPP awards to Alaskan villages to explore energy solutions
- **Hydrogen:** Hydrogen Energy Working Group, Alaska roadmap



Small nuclear reactor, above; Solar panels at the Village of Deering, AK, middle; and hydrokinetic testing in Tanana River, below.



AEO's Focus on Security

- AEO helps ensure national energy security by:
 - Promoting STEM initiatives in the Pan Arctic
 - Participating in the Arctic Council / Arctic Circle Assembly
- Collaborated with U.S. State Department's Arctic Coordinator
- AEO provided input to the Interagency Arctic Research Policy Committee's 2022-2026 Arctic Research Plan and the National Climate Strategy from the National Security Council.
- AEO represents DOE at the White House Arctic Executive Steering Committee.
- Mission Innovation proposal for AK-WA zero-emission shipping corridor
- Legacy nuclear site monitoring at Amchitka, Chariot and STEM program



Senior Advisors Mike McEleney and Matt Heavner at Arctic Circle Assembly in Iceland in 2021

AEO's Focus on Science

AEO supports DOE projects at national labs:

- **Atmospheric Radiation Measurement (ARM)** at Utqiagvik with instruments, uncrewed aircraft; AEO is working with Sandia National Lab to maintain DOE airspace at Oliktok Point
- **Energy Exascale Earth System Modeling (E3SM)** experiments on Arctic tundra, mid-latitude, tropical forests, oceans
- **Next-Generation Ecosystem Experiments (NGEE Arctic)** to improve predictions of carbon Arctic-rich processes and feedbacks to climate
- **Arctic Innovators Program** at the University of Alaska Fairbanks, multiple National Labs



Atmospheric modeling at Utqiagvik, above; NGEE Arctic research, left and Arctic Innovators, right.



Thank You!

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