ARPA-E Subsurface/Geothermal Topics

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ARPA-E Mission

Goal 1: To enhance the economic and energy security of the United States through the development of energy technologies that—

REDUCE IMPORTS

IMPROVE EFFICIENCY

REDUCE EMISSIONS

IMPROVE THE MANAGEMENT, CLEAN-UP, AND DISPOSAL OF RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL

IMPROVE THE RESILIENCE, RELIABILITY, AND SECURITY OF ENERGY INFRASTRUCTURE

Goal 2: To ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies.

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CHANGING WHAT'S POSSIBLE

Funding Opportunities

‣ SPARKS https://arpa-e.energy.gov/technologies/programs/sparks

 – $10MM "Rolling FOA" for early-stage, exploratory topics, proof-of-concept tests

 – Recommend contacting a Program Director for input on concept(s)

‣ OPEN 2024 (tentative)

 – Historically ARPA-E has run an OPEN FOA every 3 years

 • Any energy-related topic

 – 2021 was 5th Open

 • $175MM awarded to 68 projects

‣ Dedicated geothermal program – Need a Program Director!

 – Join us!

SCALEUP

Seeding Critical Advances for Leading Energy technologies with Untapped Potential
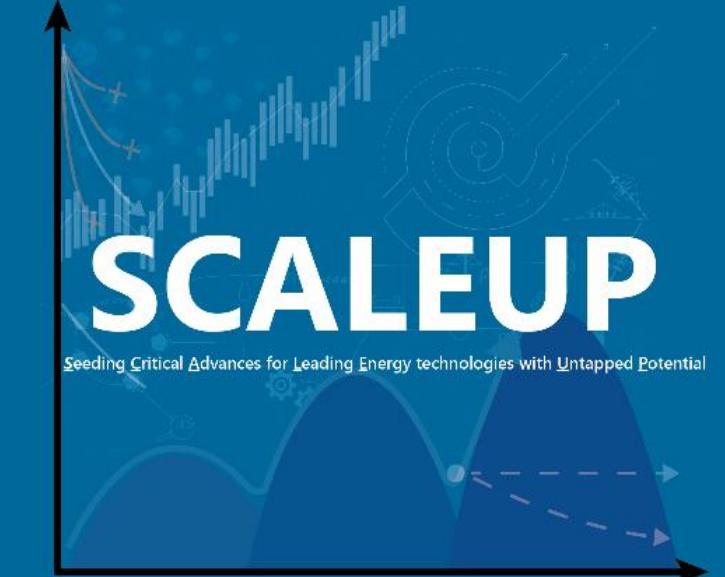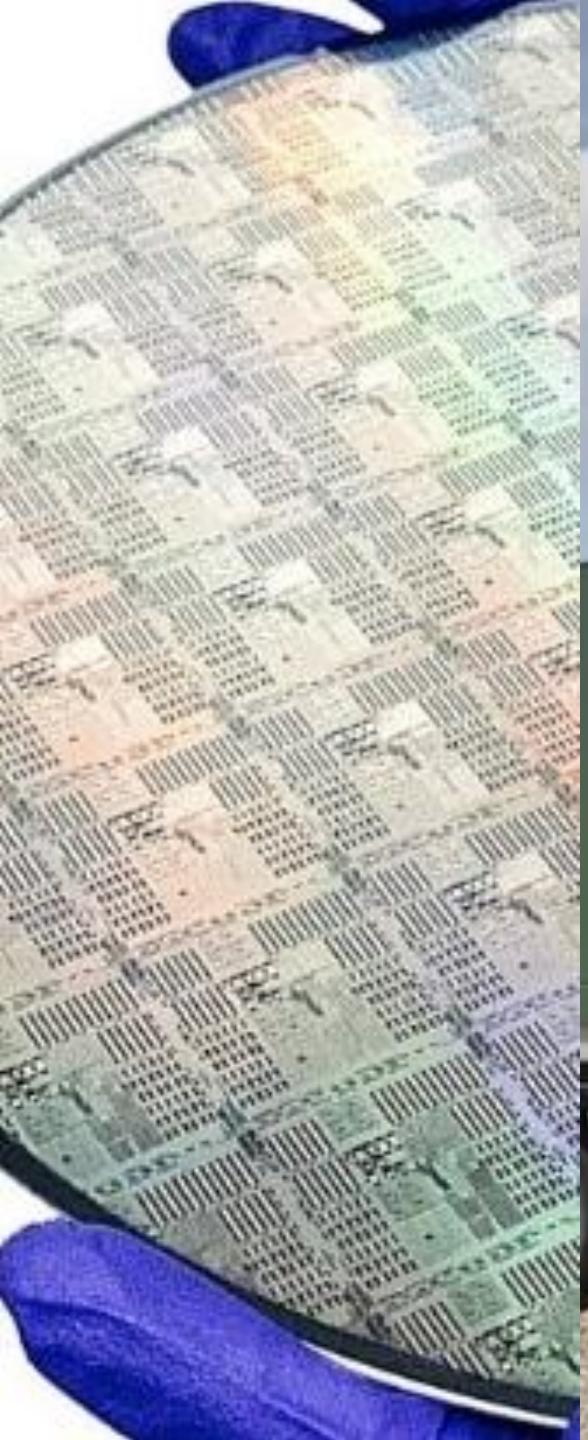
Supports previously funded ARPA-E technologies to commercial viability
*
Enables further technology de-risking of pre-production prototypes
*
Encourages small business, company, and industry participation
*
SCALEUP 2019
10 Awardees - $70+ million
*
SCALEUP 2021
Up to $100M available

Current Projects

- FervoFlex: Long duration In-reservoir Energy Storage and Load-Following, Dispatchable Geothermal Generation , Fervo Energy

- Millimeter-Wave Technology Demonstration for Geothermal Directed Energy Drilling, Quaise Energy & AltaRock Energy

- RePED 250: A Revolutionary High-Drilling Rate, High-T Geothermal Drilling System and Companion Power Electronics, National Renewable Energy Lab
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- Electro-Hydraulic Fracturing for Enhanced Geothermal Systems, Eden Geopower

- Integrated Electro-Hydraulic Fracturing and Real-Time Monitoring for Carbon Negative In-Situ Mining, Idaho National Lab

Current Projects, Continued

▸ Next Generation High-temperature Optical Fibers, Lawrence Livermore National Lab

▸ Novel Solid-State Neutron Detectors for Geothermal and Well Logging, Texas Tech University

▸ Subsurface NMR
  – GaN NMR Spectrometer Integrated Circuits Towards Broadly Distributed On-line Monitoring and Management of Subsurface Oil/Gas Reservoirs and Downstream, Harvard University
  – Developing Advanced NMR Techniques to Predict and Monitor CO_2 Storage and Mineralization for Enhanced Mining Exploration and Operation, Harvard University
  – Miniaturized Pulsed Power Systems for Mission Critical Applications (Mini-PulPS), Harvard

▸ Reducing Costs and Mitigating Risk for Geothermal Exploration, Development, Reservoir Management and Monitoring using Permeability Field Imaging, Enegis

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ARPA-E Could be the Hallmark of Your Career

CONTRIBUTE TO A BETTER ENERGY FUTURE

JOIN OUR INNOVATIVE STARTUP CULTURE

COLLABORATE WITH OTHER EXPERTS

WORK IN DIVERSE TECH AREAS

Learn more and apply: **www.arpa-e.energy.gov/jobs** or **arpa-e-jobs@hq.doe.gov**.

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Join the Team that is Transforming the Energy of Tomorrow

PROGRAM DIRECTOR

- Program development
- Active project management
- Thought leadership
- Explore new technical areas

TECHNOLOGY-TO-MARKET ADVISOR

- Business development
- Technical marketing
- Techno-economic analyses
- Stakeholder outreach

FELLOW

- Independent energy technology development
- Program Director support
- Organizational support

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If it works...

will it matter?