ARPA-E: Enabling Disruptive Energy Technologies

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October 2023
REDUCE
imports

IMPROVE
efficiency

IMPROVE
radioactive waste management

IMPROVE
energy infrastructure resilience

ARPA-E Mission

REDUCE
emissions
Disrupt the Learning Curve

Transformative Research

Existing Technology

Disruptive Technology

COST/PFERFORMANCE vs. TIME or SCALE
Mountains of Opportunity

Investment

$100M

$10M

$1M

Concept
Research
Prototype
Demonstration
Time

ARPA-E SCALEUP
ARPA-E
OTHER INVESTORS
DAYS
Duration Addition to electricity Storage

- Created to develop energy storage systems that provide power to the electric grid
- Capable of providing power for durations of 10 to approximately 100 hours
- Lifetime of 20 years
Quidnet Energy

- Houston, Texas
- Geomechanical Pumped Storage (GPS) technology using 1-10 MW, 10+ hour modules for flexible and precise deployment

Antora Energy

- Sunnyvale, California
- Heated carbon block (up to 2,400°C) and high efficiency TPV cells
- 12 MWh energy storage for 25 hours
MONITOR
Methane Observation Networks with Innovative Technology to Obtain Reductions

• Detect and measure methane leaks as small as 1 ton per year from a site 10 m x 10 m in area

• Certainty that would allow 90% reduction in methane loss for an annual site cost of $3,000
LongPath Technologies

- Boulder, Colorado
- Dual-frequency comb spectrometer
- Quantifies > 90% of leaks down to 0.2 kg/hr from distance of nearly 1 mile

Bridger Photonics

- Bozeman, Montana
- Gas Mapping LiDAR sensor attached to an aircraft
- Laser beam transmitted to target 1-300 m (1000 feet) from the sensor
Areas of Interest

Improving Battery Energy Density
Using Renewables to Create Liquid Fuels
Supporting Battery Circularity
Making Fusion a Reality