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## RESEARCH & APPLICATIONS

# ARPA-E awards \$32 million for fusion energy research

Mon, Apr 20, 2020, 2:50PM | Nuclear News

The winners of \$32 million in funding for 15 projects to develop timely, commercially viable fusion energy were announced by the Department of Energy in April. As part of the DOE Advanced Research Projects Agency–Energy’s (ARPA-E) Breakthroughs Enabling THERmonuclear-fusion Energy (BETHE) program, the projects will work to increase the number and performance levels of lower-cost fusion concepts.

**What they’re saying:** “Fusion energy technology holds great potential to be a safe, clean, reliable energy source, but research and development of fusion technology is often constrained by prohibitive costs,” said Undersecretary of Energy Mark W. Menezes. “BETHE teams will build on recent progress in fusion research and the growing fusion community to lower costs and further foster viable commercial opportunities for the next generation of fusion technology.”

ARPA-E Director Lane Genatowski added, “These BETHE projects further advance ARPA-E’s commitment to the development of fusion energy as a cost-competitive, viable energy generation source. Commercially viable fusion energy can improve our chances of meeting global energy demand and will further establish U.S. technological lead in this crucial area.”

**The projects:** BETHE projects will work to deliver higher-maturity, lower-cost fusion options via three research categories: (1) concept development to advance the performance of inherently lower-cost but less-mature fusion concepts; (2) component technology development that could significantly reduce the capital cost of higher-cost, more-mature fusion

concepts; and (3) capability teams to improve/adapt and apply existing capabilities (including theory/modeling, machine learning, and diagnostics) to accelerate the development of multiple concepts. Each BETHE project will address one of these categories.

According to the DOE, the BETHE projects build on ARPA-E's first focused fusion program, ALPHA, to increase the number of privately funded fusion companies. BETHE teams will pursue additional approaches that reduce cost, unit size, and complexity of fusion systems while also smoothing the path to fusion commercialization to include public, private, and philanthropic partnerships with the BETHE teams.

The winning projects include the following:

University of Wisconsin–Madison—*An HTS Axisymmetric Magnetic Mirror on a Faster Path to Lower Cost Fusion Energy* (\$5 million).

Zap Energy—*Sheared Flow Stabilized Z-Pinch Performance Improvement* (\$1 million).

University of Maryland, Baltimore County—*Centrifugal Mirror Fusion Experiment* (\$4 million).

NK Labs—*Conditions for High-Yield Muon Catalyzed Fusion* (\$830,000).

University of Washington—*Demonstration of Low-Density, High-Performance Operation of Sustained Spheromaks and Favorable Scalability Toward Compact, Low-Cost Fusion Power Plants* (\$1.5 million).

Los Alamos National Laboratory—*Target Formation and Integrated Experiments for Plasma-Jet Driven Magneto-Inertial Fusion* (\$4.62 million); *Electromagnetic and Particle Diagnostics for Transformative Fusion-Energy Concepts* (\$375,000).

Commonwealth Fusion Systems—*Pulsed High Temperature Superconducting Central Solenoid for Revolutionizing Tokamaks* (\$2.39 million).

Princeton Plasma Physics Laboratory—*Stellarator Simplification Using Permanent Magnets* (\$3 million).

University of Rochester—*Advanced Inertial Fusion Energy Target Designs and Driver Development* (\$1.75 million); *A Simulation Resource Team for Innovative Fusion Concepts* (\$2 million).

Virginia Polytechnic Institute and State University—*Capability in Theory, Modeling, and Validation for a Range of Innovative Fusion Concepts Using High-Fidelity Moment-Kinetic Models* (\$2.4 million).

Sapientai—*Data-Enabled Fusion Technology* (\$1.65 million).

Massachusetts Institute of Technology—*Radio Frequency Scenario Modeling for Breakthrough Fusion Concepts* (\$1.25 million).

Oak Ridge National Laboratory—*Magnetic Field Vector Measurements Using Doppler-Free Saturation Spectroscopy* (\$600,000).

Further information on the BETHE projects can be found on the [ARPA-E website](#).

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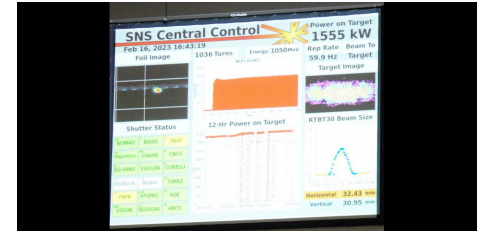
Two Department of Energy sites recently announced training partnerships with local technical and community colleges designed to offer students hands-on work experience while building a...



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Thu, Feb 23, 2023, 10:30AM | Nuclear News

The Department of Energy's Advanced Research Projects Agency–Energy (ARPA-E) announced \$10 million in funding on February 17 for eight projects designed to determine whether low-energy...



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Mon, Feb 27, 2023, 10:30AM | ANS Nuclear Cafe

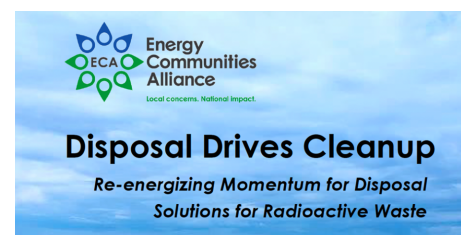
One doesn't typically come across nuclear fusion in a fashion magazine, but a recent issue of Vanity Fair profiled the creative director of a famous luxury fashion house who has made nuclear...



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## SPARC fusion power demo construction is underway outside of Boston

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secretary...

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