



## **Opening Statement of Energy Subcommittee Chairman Brandon Williams**

Energy Subcommittee Hearing

*Bridging the Valley of Death: ARPA-E's Role in Developing Breakthrough Technologies*

March 12, 2024

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Good Morning, today the Energy Subcommittee will be examining the Department of Energy's Advanced Research Projects Agency – Energy, known as ARPA-E. This year marks the 15<sup>th</sup> anniversary of funding its first project. A lot has changed since then, but one thing hasn't, and that's ARPA-E's widely successful approach to innovation and ability to bridge the so called "valley of death".

Created in 2007 by the American Competes Act and reauthorized in the Energy Act of 2020, ARPA-E was developed to advance U.S. leadership in science and technology. Despite the growth of the venture and start up communities in the United States, investors at large have passed on innovative energy projects that don't fall in line with quarterly earnings reports. This is where ARPA-E fills the gap, funding high-risk, high-reward technologies, which may transform our energy future.

Since its conception, ARPA-E has taken a Silicon Valley approach to staffing. Instead of creating an entrenched bureaucracy, DOE recruits individuals from academia, industry, and the National Laboratories to serve 3 to 5 years stints as program directors. This limited time frame fosters an environment of "move fast and break things," which is highly conducive to innovation and economic growth.

In tandem, ARPA-E defies the Department's programmatic approach to innovation. Compared to traditional R&D programs, which last decades, ARPA-E consistently develops new short-term programs, which terminate after a few years. This cyclical feature allows its program managers to be strategic and nimble. By constantly evaluating potential technological gaps, ARPA-E is efficient in discovering transformative technologies and is effective in deploying taxpayer dollars.

Over the last fifteen years, ARPA-E has been instrumental in the development of a wide variety of revolutionary technologies such as fusion energy, advanced nuclear, and energy storage.

Starting with the ALPHA program in 2015 and progressing to the Chadwick program in 2024, ARPA-E has accelerated efforts to deploy the first fusion power plant. Early investments in novel reactor designs and material sciences have been vital to decreasing institutional risk across the industry. And they've helped with the maturation of leading players such as Helion and Commonwealth Fusion Systems who benefited from these early programs.

In the nuclear fission space, ARPA-E has prioritized reducing operation and maintenance costs for advanced reactors through GEMINA and closing the nuclear fuel cycle with CURIE and

ONWARDS. Reducing capital costs across the whole value chain is vital to widespread deployment of next generation nuclear reactors and a reliable supply of fuel. ARPA-E is uniquely situated to make advanced nuclear a reality.

With energy demand perpetually increasing, ARPA-E has concentrated its efforts on energy storage. The Duration Addition to electricity Storage, known as the Days Program, seeks to extend the duration of stored energy to approximately 100 hours. These efforts are important to my constituents in Syracuse, New York who depend on resilient and reliable energy during the winter.

ARPA-E's success in these technological areas among others has benefitted the taxpayer greatly. Since 2009, the program has funded over 1,560 projects with over 3.76 billion dollars; this work has led to over 1120 patents issued by the U.S. Patent and Trademark Office, the formation of 154 companies, \$12.1 billion in additional private sector funding, and 29 exits with market valuations worth more than \$21.9 billion from mergers, acquisitions, and IPOs.

With this success, ARPA-E has established a new technological pipeline, which previously did not exist. Now, companies may start with initial funding from ARPA-E and later receive subsequent investment from DOE's Applied Offices or other programs. For instance, Zap Energy, who is one of our witnesses today, received funding from the BETHE (BETA) program and now is a participant in the Office of Science's new Milestone Based Fusion Development Program. In addition, ARPA-E is a breeding ground to test new programs, which may mature into new programs in other offices within DOE.

It's clear that ARPA-E has been highly successful since its inception. I look forward to seeing its progress over the next 15 years.

I want to thank our witnesses for their testimony, and I look forward to our conversation.