

ARPA-E: Federal Support for Energy Research and Innovation

Department of Energy, Advanced Research Projects Agency – Energy (ARPA-E)

- ARPA-E's mandate to support energy innovation through R&D has impacted more than 660 projects and invested more than \$1.8 billion in early-stage research.
- Early-stage research produces a net benefit to taxpayers as these federally funded projects ultimately leads to greater efficiency in the private sector.
- Absent programs like ARPA-E, many of these projects would go unfunded or be delayed in the private sector due to cost or risk.
- ARPA-E has demonstrated its value as an innovation center and has successfully deployed projects to the private sector without additional government support.



History of ARPA-E Program

The Advanced Research Projects Agency – Energy (ARPA-E) office at the Energy Department is a relatively new program, authorized in 2007 by Congress and signed into law by President George W. Bush. Its framework is based on the Defense Advanced Research Projects Agency (DARPA), a program tied **directly to winning the space race of the 1950s and 1960s**. The office has been instrumental in advancing energy research since 2009 and has received bipartisan Congressional support.

America is a world leader in innovation and the clean energy economy is the next frontier. Early stage research is a critical space where the public sector and the private sector have worked together in partnership to develop next-generation, lower-cost solar panels, achieve efficiency breakthroughs, and pioneer new technologies such as wave energy and battery storage. Investing in the research is a fundamental reason why America has become and remains a global energy leader.

Getting Technologies to Market

ARPA-E HAS A TRACK RECORD OF SUCCESS

According to the most recently available data, ARPA-E projects have **spawned 71 new companies and secured more than \$2.6 billion in subsequent private-sector funding**. The result is highly encouraging for an office that focuses on technologies that are at their earliest stages.

While companies will always have an incentive to innovate, some projects are too risky for companies to take on alone. From a capital budgeting perspective, a company's level of risk tolerance is the determining factor between a major investment and an idea that is discarded. Without picking winners and losers, the government can focus on not just the risk of a particular project, but also assess the overall merit of the market sector the technology could fit into and help grow.

THE ROLE OF THE PRIVATE SECTOR

One of the vital functions of ARPA-E is a commitment to handing off successful projects to a more permanent home in the private sector, the military, or an incubator. Ensuring that these projects do not falter once their grant expires is equally as important as selecting the right projects from the start and is one area where ARPA-E has demonstrated success. Programs like ARPA-E support these technologies that are viable in the private sector once they clear initial funding hurdles.

Staying Internationally Competitive

American energy projects deserve the support that will continue to advance domestic energy innovation to assure that America remains the energy leader that it is today. The U.S. already faces pressure from other nations who are prioritizing new energy investments. If the U.S. cuts funding for new research projects, another country will fill that void. China is poised to continue its vast state support for energy projects. While the U.S. should not seek to adopt a heavily subsidized approach, it is important that the U.S. does not abandon these key investments. Data has shown that these key investments are preparing the U.S. for leadership as new technologies, **such as electric vehicles**, continue to mature.

The U.S. should never shy away from the innovation that made it a global energy leader originally. While the projects may take on a new shape in the 21st century, they remain just as vital.

Why Early-stage Energy Research?

The U.S. government can help ensure that support systems are in place for research and the advancement of high-potential, high-impact energy technologies. The private sector should always develop projects with a focus on going to market and becoming fully viable without government aid. However, strategic investments on early-stage technologies by the federal government can provide a hand-up to technologies that are one step away from being feasible for private-sector investment.

The U.S. government can make certain that small businesses can enter the clean energy space, help our economy grow, and re-position the U.S. as an exporter of clean energy technologies. Enabling new companies to enter the energy market is a win for both consumers and producers and promotes a greater diversity of energy choice. Congress must maintain the market incentives for established companies to continue to innovate and structure competitive grant and loan programs to elevate the next generation of innovation.

Ultimately, the government should not be looked at as the sole source for energy innovation, but a critical partner for the American energy sector as a competitive and dominant force internationally.

View this video on one ARPA-E award recipient's growth from innovation to commercialization.
<https://cresforum.org/2018/05/small-business-spotlight-rita-hansen-ceo-of-onboard-dynamics/>

