

Background on ARPA-E

In August of 2007, the President signed into law the America COMPETES Act (PL 110-69). COMPETES codified many of the recommendations of the 2005 National Academies report, *Rising Above the Gathering Storm*, including to establish an Advanced Research Projects Agency for Energy (ARPA-E) to sponsor “creative, out-of-the-box, transformational” energy research.

ARPA-E is charged with developing technologies that:

- Reduce dependency on foreign oil;
- Improve the energy efficiency of all economic sectors;
- Reduce greenhouse gas emissions; and
- Maintain U.S. leadership in the development and deployment of energy technologies.

ARPA-E utilizes many of the same organizational elements that fostered the successful culture of innovation of DARPA at the Department of Defense. ARPA-E offers a significant shift for the Department of Energy (DOE), both for the research it conducts and how it conducts that research.

- ARPA-E will leverage the intellectual capital of the nation’s universities, commercial, industrial, and investor communities, and the national labs to pursue high-risk, high-reward research that neither these entities nor DOE would pursue on their own.
- ARPA-E will have the flexibility to sponsor R&D that spans multiple stages, from basic research to commercialization, and in areas that are otherwise too cross-cutting or multi-disciplinary to fit into the current DOE system.
- ARPA-E will be an independent entity within DOE with a flat, non-bureaucratic management structure. The ARPA-E Director will report directly to the Secretary of Energy, and no other program within DOE will report to ARPA-E.
- The ARPA-E Director will have flexible hiring authority to recruit the best and brightest program managers from outside of government at competitive salaries and for limited tenures of 3-5 years to ensure that fresh ideas and talent circulate through the program.
- ARPA-E Program Managers are given extraordinary autonomy and resources to pursue high-risk technological pathways, quickly assemble research teams to “crash” on projects, and start and stop projects based on performance and relevance. ARPA-E projects will not be subject to the traditional peer-review system.

As recommended by the National Academies, ARPA-E funding should be seen in the context of expanding overall energy R&D investment to a level that begins to meet the scale and complexity of the challenge. First year funding should approach \$300 million, and quickly ramp-up to \$1 billion in subsequent years.

If ARPA-E has substantial and consistent funding, and it is implemented as envisioned in COMPETES, the long-term results for the U.S. will be:

- Advanced technologies that transform how we harness, use, and conserve energy.
- A much larger and more diverse community of energy researchers and technology developers, providing the foundation of a vibrant new sector of the U.S. economy.