

# THE ADVANCED RESEARCH PROJECTS AGENCY-ENERGY

## OVERVIEW

### ABOUT ARPA-E

The Advanced Research Projects Agency-Energy (ARPA-E) catalyzes transformational energy technologies that could create a more secure and affordable American future. We advance high-potential, high-impact energy technologies that are too early for private-sector investment. ARPA-E awardees are unique because they are developing entirely new ways to generate, store, and use energy.

ARPA-E projects have the potential to radically improve U.S. economic prosperity, national security, and environmental well-being. We focus on transformational energy technology projects that can be meaningfully advanced with a small investment over a defined period of time. Our streamlined awards process enables us to act quickly and advance cutting-edge areas of energy research.

ARPA-E empowers America's energy researchers with funding, technical assistance, and market readiness. Our rigorous program design, competitive project selection process, and active program management ensure thoughtful expenditures. ARPA-E Program Directors serve for limited terms to ensure a constant infusion of fresh thinking and new perspectives.

### ARPA-E HISTORY

In 2005, leaders from both parties in Congress asked the National Academies to identify concrete steps that federal policymakers could take to bolster U.S. competitiveness in science and technology to help the U.S. prosper and stay secure in the 21st century. The National Academies recommended that Congress establish an Advanced Research Projects Agency within the U.S. Department of Energy (DOE). In 2007, Congress passed, and President Bush signed into law, the America COMPETES Act, establishing ARPA-E. In 2009, Congress appropriated and President Obama allocated the new agency's first \$400 million in funding.

ARPA-E is modeled after the successful Defense Advanced Research Projects Agency (DARPA) in the Department of Defense (DoD), the agency credited with such innovations as GPS, the stealth fighter, and computer networking.

“Pound for pound, dollar for dollar, it's hard to find a more effective thing government has done than ARPA-E.”

—FedEx founder, chairman, president, and CEO Fred Smith

### ARPA-E PROJECTS

To date, ARPA-E is investing in over 275 high-potential energy technology projects across 14 distinct program areas. The Agency also issues periodic open funding solicitations to address the full range of energy-related technologies, as well as funding solicitations aimed at supporting America's small business innovators.

Many ARPA-E projects have already demonstrated early indicators of technical success. For example, ARPA-E awardees have doubled the world-record energy density for a rechargeable lithium-ion battery, developed a 1 megawatt silicon carbide transistor the size of a fingernail, engineered microbes that use hydrogen and carbon dioxide to make liquid transportation fuel, and pioneered a near-isothermal compressed-air energy storage system.

Technical achievements like these have spurred millions of dollars in follow-on private-sector funding to a number of ARPA-E awardees. In addition, several ARPA-E awardees have formed start-up and spin-off companies.

#### MEASURING SUCCESS

ARPA-E measures its success in a variety of ways, including:

- Breakthrough achievements
  - Patents
  - Publications
- Moving technology to market
  - Partnerships with other government agencies
  - Licensing/acquisition by an established firm
  - Licensing/acquisition resulting in a spinoff
  - Private-sector funding
  - Growth of existing company (e.g. organic growth)
- Operational milestones
  - Award and contracting benchmarks

## ARPA-E LEADERSHIP



**Dr. Cheryl Martin** is the Deputy Director of ARPA-E, responsible for oversight of the Agency. Additionally, Dr. Martin leads ARPA-E's Technology-to-Market program, which helps breakthrough energy technologies

succeed in the marketplace. Prior to joining ARPA-E, Dr. Martin was an Executive in Residence with Kleiner Perkins Caufield and Byers, a venture capital firm based in Menlo Park, California. She also spent 20 years with Rohm and Haas Company where she held various research, marketing, and leadership roles. Dr. Martin is active in the American Chemical Society (ACS) at both the local and national levels. She earned a B.A. degree in chemistry from the College of the Holy Cross and a Ph.D. in organic chemistry from the Massachusetts Institute of Technology (MIT).



**Dr. Pramod P. Khargonekar** is ARPAE's Deputy Director for Technology, responsible for oversight of all technology issues relating to ARPA-E's Programs. Dr. Khargonekar is the Eckis Professor of Electrical and

Computer Engineering at the University of Florida, a member of the Advisory Committee for the Engineering Directorate of the National Science Foundation, and the recipient of many awards, including: the National Science Foundation Presidential Young Investigator Award, the American Automatic Control Council's Eckman Award, the IEEE Baker Prize Award, the IEEE George Axelby Award, and the Distinguished Alumnus Award from the Indian Institute of Technology, Bombay. Dr. Khargonekar serves as a member of the Advisory Committee for the Engineering Directorate of the National Science Foundation. He received a B. Tech. Degree in electrical engineering from the Indian Institute of Technology, Bombay and a M.S. degree in mathematics and Ph.D. degree in electrical engineering from the University of Florida.



**Shane Kosinski** is ARPA-E's Deputy Director for Operations, responsible for oversight and operations of all ARPA-E programs. Kosinski served as the Acting Deputy Director for ARPA-E and led the effort to stand up the

ARPA-E Program Office and develop the means to efficiently and effectively obligate ARPA-E's Recovery Act funding. Kosinski previously worked in the Department of Energy's Office of the Chief Financial Officer where he led several agency-wide efforts for the 2009 Presidential Transition and the American Recovery and Reinvestment Act. Kosinski entered the federal government through the competitive Presidential Management Fellows Program and began his federal career at the Treasury Department. He has a B.S. in Economics and B.A. in Biological Science from Binghamton University, and he earned a M.A. in Economics from the University at Albany.

## THE ARPA-E ENERGY INNOVATION SUMMIT

ARPA-E hosts the premiere U.S. energy technology event: the annual ARPA-E Energy Innovation Summit. The Summit brings together thought leaders from academia, business, and government to discuss cutting-edge energy issues and facilitate relationships to help move technologies into the marketplace. In 2012, the Summit had over 2,500 attendees from 49 states and 26 countries. Attendees represented a mix of research institutions and universities, small businesses, investment firms, and large businesses. Keynote speakers included former President Bill Clinton, Secretary of Energy Stephen Chu, and Microsoft Chairman Bill Gates.

The 2013 Summit will be held February 25-27 at the Gaylord Convention Center in National Harbor, Maryland. Additional information and registration details can be found at [www.arpae-summit.com/](http://www.arpae-summit.com/).

“After 25 years of my career with a defense contractor and having seen every conference and every exhibit known to man, I truly believe that this was the best conference I have ever attended. It was well organized, informative and most importantly inspirational and moving. Listening to Secretary Chu, Bill Gates and President Clinton were the highlights of my career.”

—2012 Summit attendee

### CONTACT US

For additional information on ARPA-E, please visit our website, [arpa-e.energy.gov](http://arpa-e.energy.gov).

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