



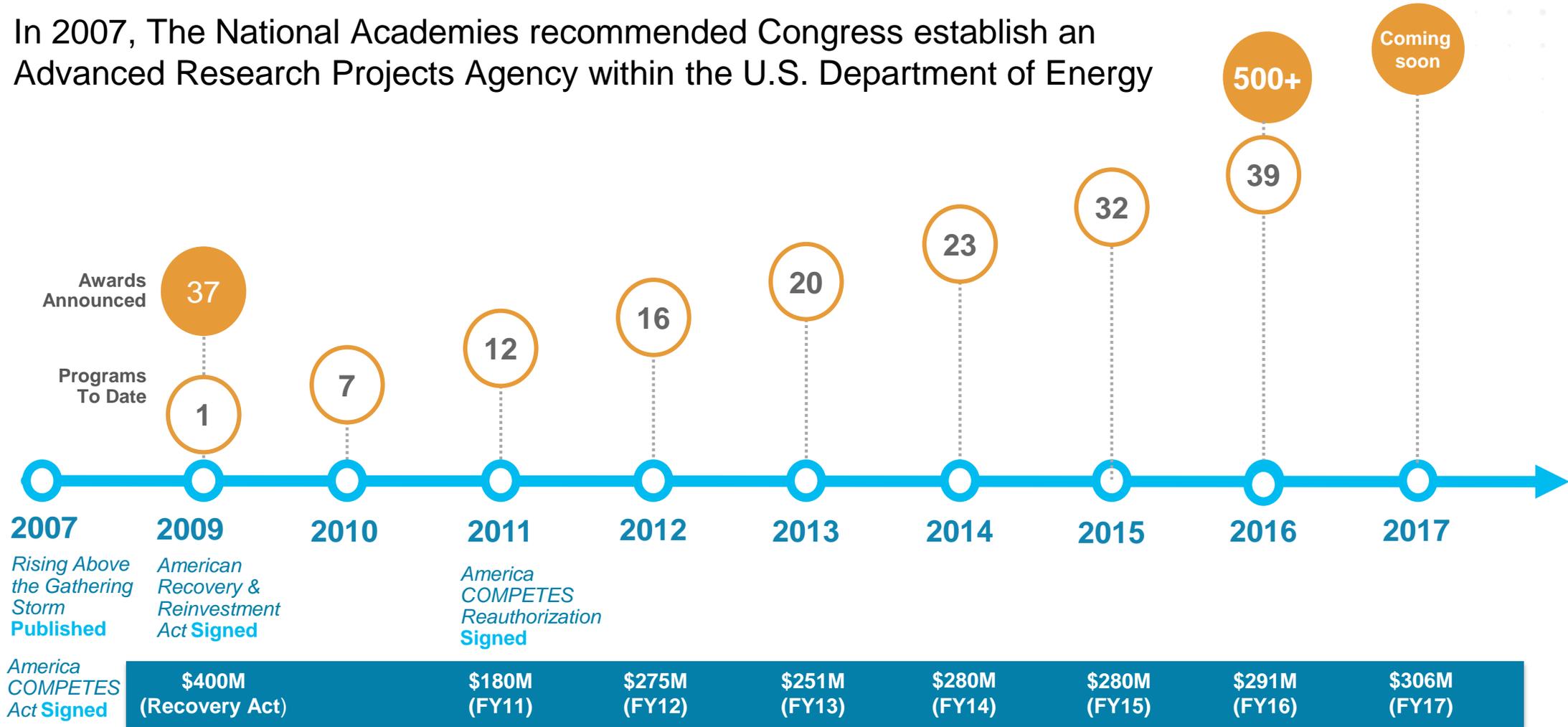
Overview and Update on the Advanced Research Projects Agency-Energy (ARPA-E)

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Deputy Director for Technology

History of ARPA-E

In 2007, The National Academies recommended Congress establish an Advanced Research Projects Agency within the U.S. Department of Energy



ARPA-E Mission

Mission: To overcome long-term and high-risk technological barriers in the development of energy technologies



Means:

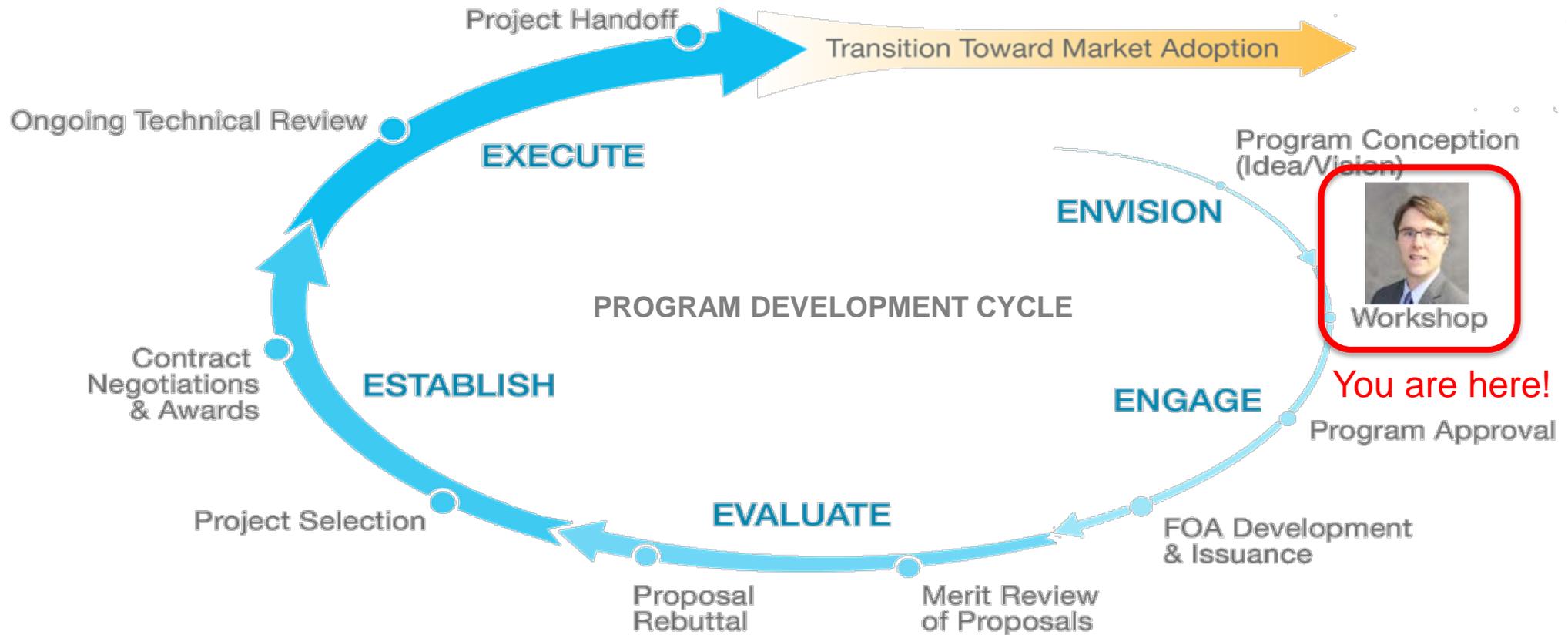
- ▶ Identify and promote revolutionary advances in fundamental and applied sciences
- ▶ Translate scientific discoveries and cutting-edge inventions into technological innovations
- ▶ Accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty

Built on DARPA foundation, but with key differences...



Developing ARPA-E Focused Programs

ARPA-E Program Directors



ARPA-E Program Framing Questions



ARPA-E Program Types

Focused programs prioritize R&D topics by their potential to make a significant difference in ARPA-E's mission space.

- Size of the potential impact
- Technical opportunities for transformation
- Portfolio of projects with different approaches



OPEN programs support the development of potentially disruptive new technologies across the full spectrum of energy applications.

- Complement focused programs
- Support innovative “one off” projects
- Provide a “snapshot” of energy R&D



ARPA-E Program Portfolio



ARPA-E Current & Planned FOAs

- ▶ **Innovative Natural-gas Technologies for Efficiency Gain in Reliable and Affordable Thermochemical Electricity-Generation (INTEGRATE)**
 - Develop natural gas-fueled distributed electric generation systems that offer fuel to electric power conversion efficiencies in excess of 70%.
- ▶ **Modeling Enhanced Innovations Trailblazing Nuclear Energy Reinvigoration (MEITNER)**
 - Advance innovative concepts for advanced (non-LWR) nuclear power plants that can achieve commercial viability by taking an integrated, system-level, safety-through-design approach.
- ▶ **OPEN 2018**
 - Coming soon.....teaming partner list currently posted on ARPA-E funding portal (<https://arpa-e-foa.energy.gov/>)

Tech to Market: Preparing Teams for Success



Scope

Support creation of highly innovative, commercially-relevant programs



Manage

Manage project teams' T2M efforts through T2M plans and jointly developed milestones



Advise

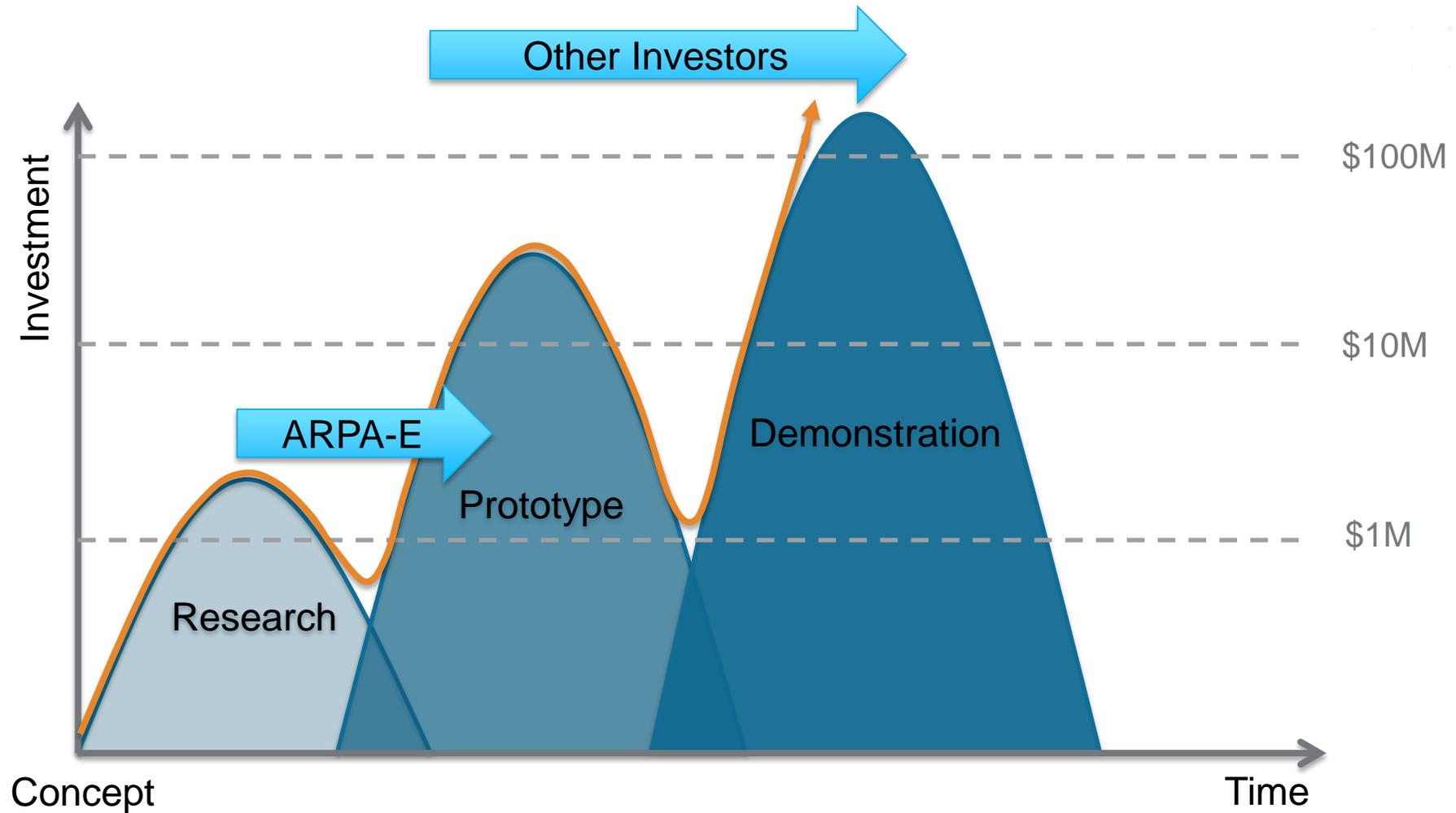
Support project teams with skills & knowledge to align technology with market needs



Partnerships

Engage third-party investors and partners to support technology development towards the market

Energy Technology “Mountains of Opportunity”



ARPA-E Impact Indicators

Since 2009 ARPA-E has provided \$1.5 billion in R&D funding to more than 580 projects.



74 projects have attracted more than \$1.8 billion in private-sector follow-on funding



208 patents issued by U.S. Patent and Trademark Office



56 projects have formed new companies



1,328 peer-reviewed journal articles from ARPA-E projects



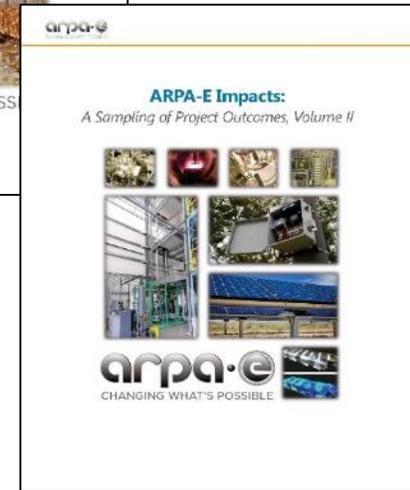
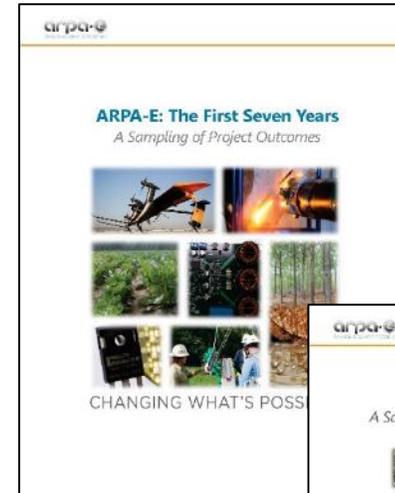
68 projects have partnered with other government agencies to further development



1,493 reported subject invention disclosures

Assessing ARPA-E's Impact

ARPA-E's Impact Assessments evaluate the technical and commercial advancements of a sampling of projects.



Download Volume I & II on ARPA-E's Website

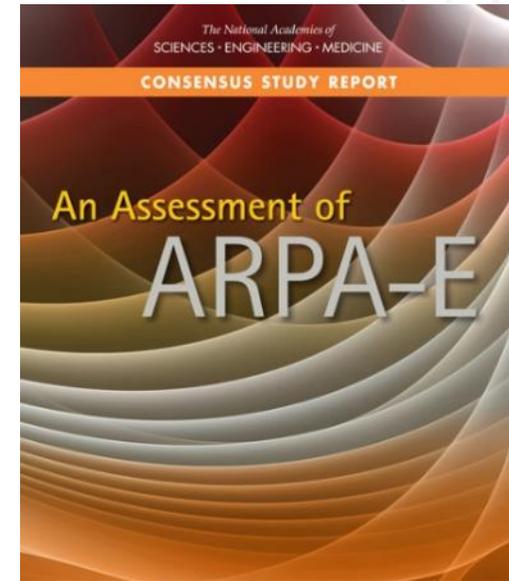
National Academies of Science Assessment

Overview:

- ▶ NAS launched in 2015 a congressionally mandated study of ARPA-E and its progress in achieving its statutory mission and goals
- ▶ The final report issued in June 2017 included 18 findings and 14 recommendations

Key Conclusions:

- ▶ Active project management organizational model is effective
- ▶ ARPA-E has funded research that no other funder was supporting at the time
- ▶ Agency has successfully focused on high risk, potentially transformational technologies and overlooked “off-roadmap” opportunities



“There are clear indicators that ARPA-E is making progress toward achieving its statutory mission and goals...ARPA-E has the ability to make significant contributions to energy R&D that likely would not take place absent the agency’s activities.” - NAS Assessment

Why Work at ARPA-E?



CONTRIBUTE TO A BETTER ENERGY FUTURE

Work towards creating a more efficient, more secure energy future



WORK IN DIVERSE TECH AREAS

Work with a diversity of energy issues and explore new fields



JOIN OUR INNOVATIVE STARTUP-LIKE CULTURE

ARPA-E is a fast-paced, action-oriented Agency



COLLABORATE WITH OTHER EXPERTS

Work with experts from different disciplines who are devoted to creating a better energy future

If you are interested in applying or learning more, please email arpa-e-jobs@hq.doe.gov.

Program Directors Drive Technical Innovation

PROGRAM DEVELOPMENT



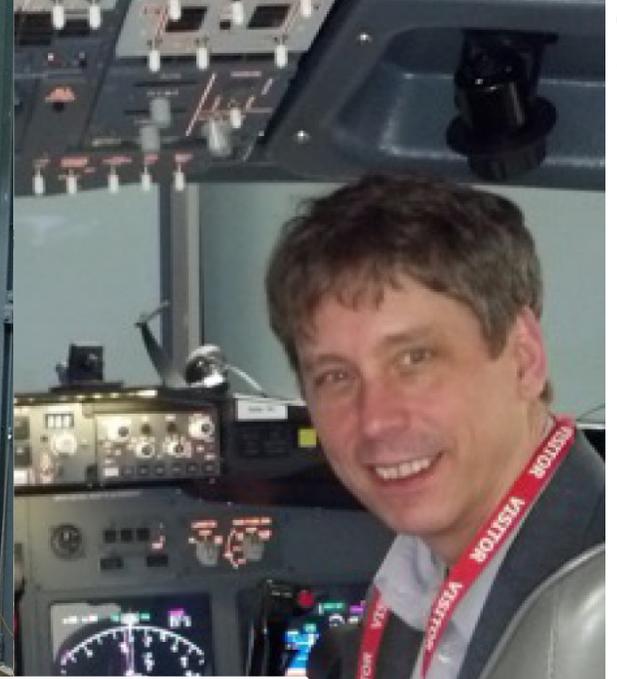
THOUGHT LEADERSHIP



HANDS ON MANAGEMENT

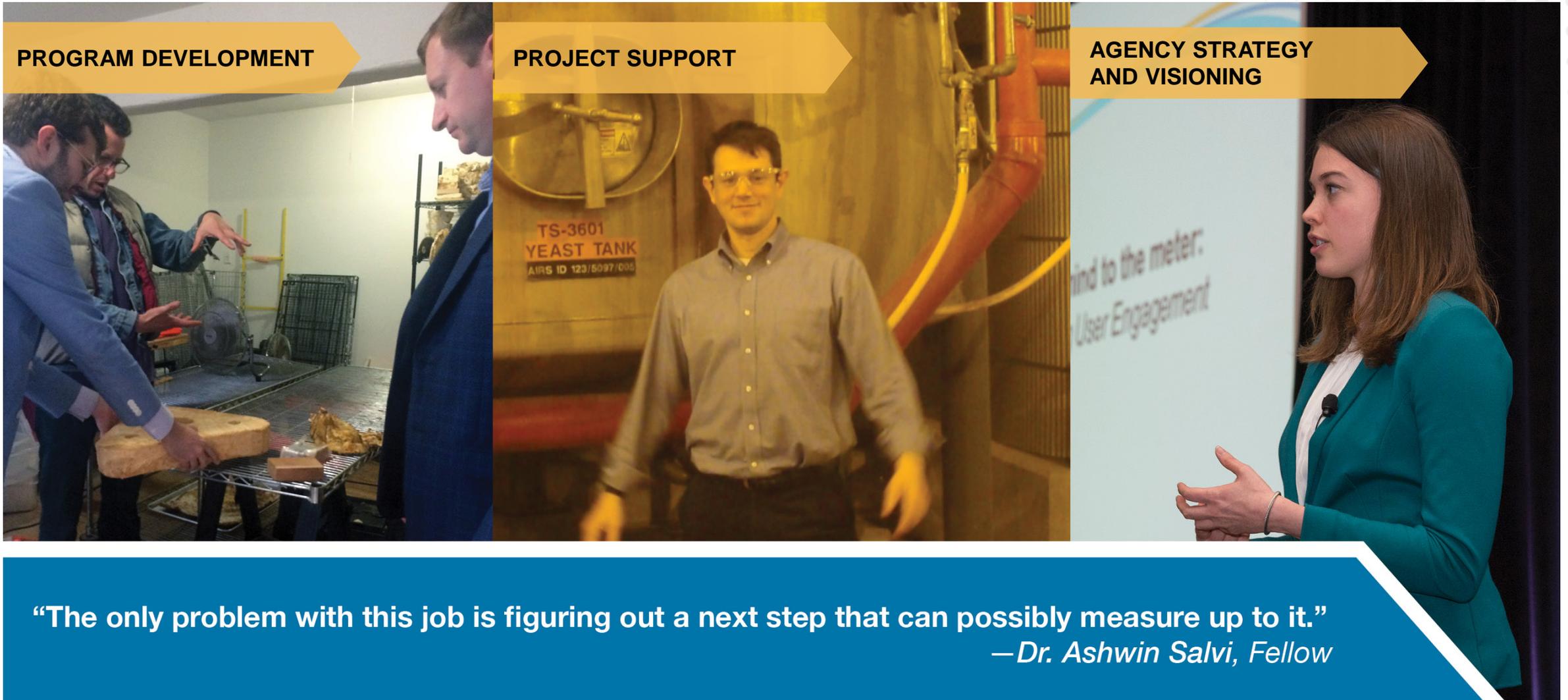


COMMUNITY BUILDING

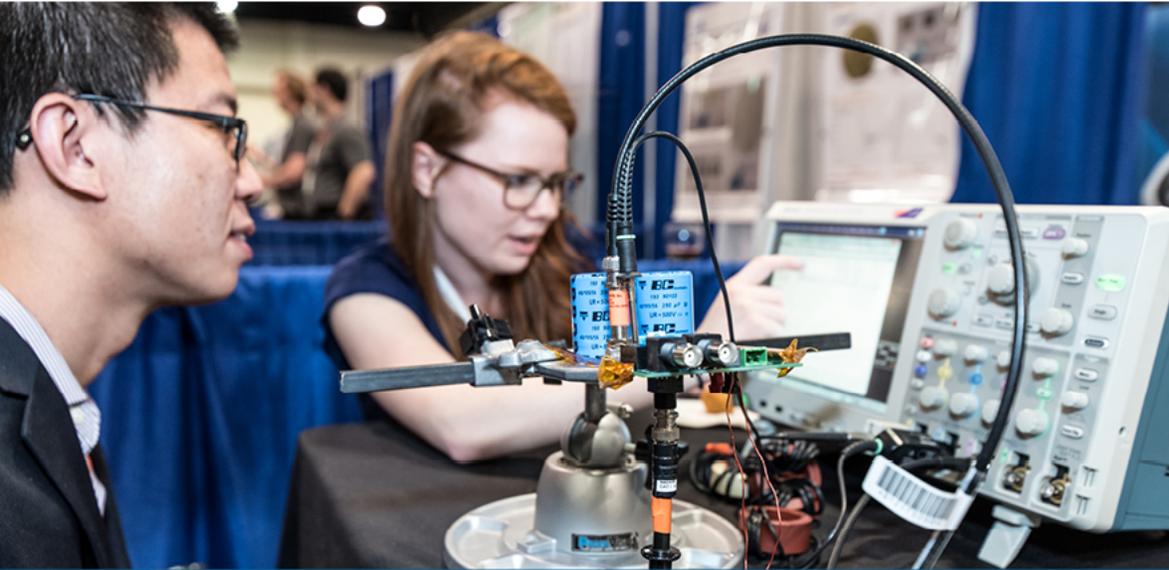


“The CEO of my company asked if he hadn’t given me a big enough sandbox to play in. I told him ARPA-E offered me a beach.” —Joe Cornelius, ARPA-E Program Director

Fellows Are Early-Career Innovators



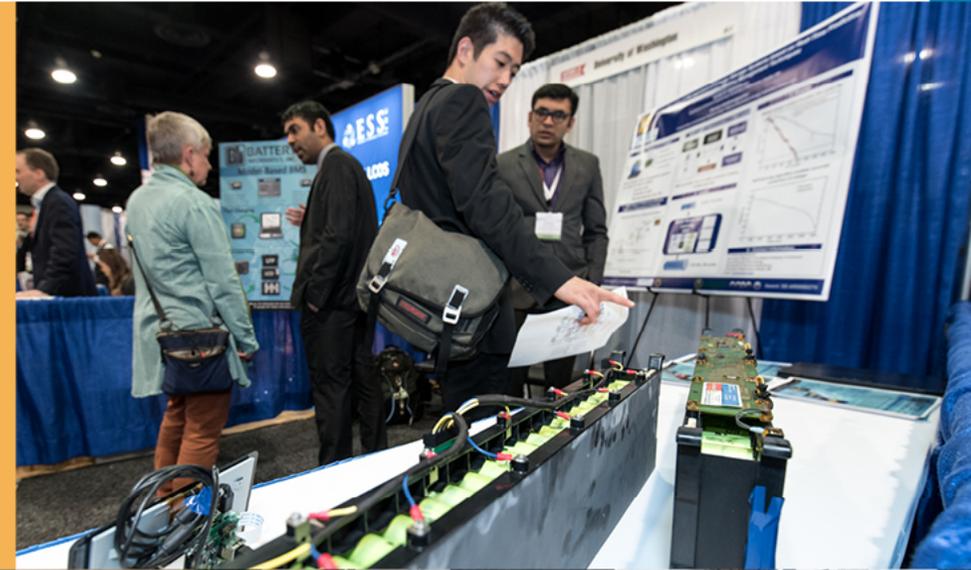
“The only problem with this job is figuring out a next step that can possibly measure up to it.”
—*Dr. Ashwin Salvi, Fellow*



2018 SUMMIT
March 13-15

Technology Showcase:
March 13-15

Gaylord Convention Center,
Washington, D.C.



This is the premier event that showcases
America's future energy technologies.

energy innovation summit



www.ARPAE-Summit.com



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ENERGY

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