Panel: Evaluating the Impacts of Energy Innovation Policies

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ARPA-E Mission – high risk, high reward energy R&D

Goal 1: Enhance the economic and energy security of the United States through the development of energy technologies that—

- REDUCE IMPORTS
- IMPROVE EFFICIENCY
- REDUCE EMISSIONS
- IMPROVE THE MANAGEMENT, CLEAN-UP, AND DISPOSAL OF RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL
- IMPROVE THE RESILIENCE, RELIABILITY, AND SECURITY OF ENERGY INFRASTRUCTURE

Goal 2: Ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies.
We are high-risk, high reward

What problem should be solved... And why?

What should the solution look like to make an impact?

Metrics -> Funding Op. -> Merit Review -> Close Involvement

Tech + Market = Impact
Characteristics of a risk tolerant agency

- Bottom-up decision making
- No Roadmaps
- Term limits + Freedom
- World class talent
- Lean and Flat Organization – Trust and Empowerment
- Market integrated with Tech
- Peer Pressure Testing
- Extensive Outreach
- Close Involvement + Milestones

Willingness to fail the RIGHT WAY

Portfolios of multiple technical approaches

Disruptive Technology

Market included in metrics and milestones
ARPA-E Impact Indicators 2021

Since 2009 ARPA-E has provided $2.93 billion in R&D funding to more than 1,270 projects.

183 projects have attracted more than $7.6 billion in private-sector follow-on funding.

109 companies formed by ARPA-E projects.

17 exits market valuations worth $19.4 billion from mergers, acquisitions, and IPOs.

266 projects have partnered with other government agencies for further development.

4,871 peer-reviewed journal articles from ARPA-E projects.

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

253 licenses reported from ARPA-E projects.

As of September 2021.
**ARPA-E Outcome Data Overview**

**Reporting Required**

- **Publications Data**
  - Average time to publication

- **Follow on Funding Amounts**
  - Average time to share with Agency

- **Patent Data Collected**
  - Average time to report

- **License**
  - Average time to report

- **Products**
  - Technology reaches production

- **Subject Inventions**
  - Often disclosed in final reports

**Project Start**

Low Uncertainty

~3 Years

**Project End**

5 - 10 Years

**Reporting Period Ends**

High Uncertainty
Unparalleled Networking
Highly Selective Technology Showcase
Inspiring Keynotes
Fast-Paced Technology Pitches

arpa-e-summit.com
March 14-16, 2022 | Denver, Colorado
Life of an ARPA-E Program

External Stakeholders
New Communities
Extensive internal pitch

Internal Stakeholders
Usually both Concept Paper and Full App phases. Both are externally reviewed.

Portfolio Creation:
'Shots on goal'

Project Handoff
Transition Toward Market Adoption

Technical Review
Substantial Involvement

Portfolio Rebalancing

EXECUTE

ESTABLISH

Contract Negotiations & Awards
Project Selection

Program Conception (Idea/Vision)
Internal pre-pitching Internal Stakeholders
Workshop
External Stakeholders New Communities
Program Approval
Extensive internal pitch

ENVISION

ENGAGE

EVALUATE

Proposal Rebuttal
Merit Review of Proposals

FOA Development & Issuance

Portfolio Creation: 'shots on goal'

Usually both Concept Paper and Full App phases. Both are externally reviewed.