

GUIRR Webinar: The NASEM Assessment of ARPA-E

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Webinar Agenda

- Why NASEM conducted the assessment
- What the committee did
- What the committee found
- What the committee recommended
- Questions from listeners

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But first, the punch line:

- Finding 4-3: While 6 years is not long enough to produce observable evidence of widespread deployment of funded technologies, **there are clear indications that ARPA-E is making progress toward its statutory mission and goals.**

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The Punch Line:

- “Importantly, especially at this early stage, the committee found no signs that ARPA-E is failing, or on a path to failing, to deliver on its mission and goals.”

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Briefings to Date

- Briefing for ARPA-E
- Briefings for Members of Congress and staff
- Public Launch of Report
- Briefings for other groups and institutions

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Why Assess ARPA-E?

- Congressional request
 - Mandated in ARPA-E's authorizing statute
- Provide guidance to the agency
- Provide guidance to other organizations seeking to support or undertake innovative R&D

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What was done?

- Review of literature
- Analyze administrative records
- Bibliometric Analysis
- Analysis of Patenting Activity
- Attempt to analyze private follow-on funding

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What was done?

- Attempt to analyze formation of new firms and spinoffs
- Consultations with individuals
- Review of selected programs & projects
 - All concluded energy storage programs
- Case studies

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Findings & Recommendations

- Big Picture (Paul)
- Operations (Paul)
- Technical (John)
- Technical (Lou)

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Big Picture Findings

- Finding 3-2: Program director discretion enables ARPA-E to fund relatively risky projects, with no indication that average project performance in the short term is reduced.

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Big Picture Findings

- **Finding 4-2:** The projects ARPA-E has funded support its statutory mission and goals.

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Big Picture Recommendations

- Recommendation 3-1: ARPA-E should preserve its distinctive and flexible management approach that empowers program directors and stresses active project management.

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Big Picture Recommendations

- Recommendation 4-2: The director of ARPA-E should continue to promote and maintain a high-risk culture within the agency...

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Findings & Recommendations

Operational Assessment Paul Beaton

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Operations Findings

- **Finding 3-1:** ARPA-E program directors have been empowered to take risks in project selection in line with the agency's mission.

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Operations Findings

- Finding 3-3: Program directors are continuously engaged in ongoing projects...

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Operations Findings

- **Finding 3-8:** ARPA-E program directors have wide authority to develop new focused technology programs that are potentially transformative.

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Operations Recommendations

- Recommendation 3-5: The secretary of energy should ensure that other offices and programs within DOE continue to explore and adopt elements of ARPA-E's practices that can improve the department's operations.

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Operations Recommendations

- Recommendation 4-3: ARPA-E should continue to use processes designed to identify and support unexplored opportunities that hold promise for resulting in transformational technological advances.

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Findings & Recommendations

Technical Assessment John C. Wall (NAE)

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Technical Findings

- Finding 4-4: One of ARPA-E’s strengths is its focus on funding high-risk, potentially transformative technologies and overlooked, “off-roadmap” opportunities pursued by neither private firms nor other funding agencies, including other programs and offices within DOE.

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Technical Findings

- Finding 3-4: ARPA-E considers its “technology-to-market” (T2M) activities to be an ongoing experiment, and the challenge of developing such a program may be greater than originally thought.

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Technical Recommendations

- Recommendation 3-3: ARPA-E should reconceptualize its “technology-to-market” program to account for the wide variation in support needed across programs and performers ...

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Technical Findings

- Finding 4-7: Through its projects and programs, ARPA-E is accumulating not only technical knowledge of what is working and has promise, but also potentially very useful information on what does not work that can be an important addition to ARPA-E documentation.

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Technical Recommendations

- Recommendation 4-6: ARPA-E program directors should compile a document or other repository of lessons learned on all projects, including both positive and negative outcomes.

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Technical Findings

- **Finding 4-9: ARPA-E is not yet able to assess the full extent to which it has achieved its statutory mission and goals. However, it is in a good position to develop a framework for prospectively mapping data on project selection and management to mission success and goal achievement.**

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Technical Recommendations

- Recommendation 4-8: The ARPA-E director and program directors should develop and implement a framework for measuring and assessing the agency's impact in achieving its mission and goals.

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Findings & Recommendations

Technical Assessment Lou Schick

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Technical Findings

- Finding 4-5: Some of the language used by ARPA-E creates an impractical expectation and mission that are not necessarily in the agency's original authorizing statute.

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Technical Findings

- Finding 4-8: ARPA-E is in many cases successfully enhancing the economic and energy security of the United States by funding transformational activities... However, ARPA-E is doing a poor job of creating awareness of these very real successes...

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Technical Recommendations

- Recommendation 3-4: ARPA-E should continue its practice of hiring program directors for 3-year terms, allowing for one, term-limited extension when necessary ...

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Technical Recommendations

- Recommendation 4-4: ARPA-E should be careful not to misinterpret or extend its interpretation of its original authorizing statute...

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Technical Recommendations

- Recommendation 4-7: ARPA-E should increase and improve its communication for non-technical audiences...

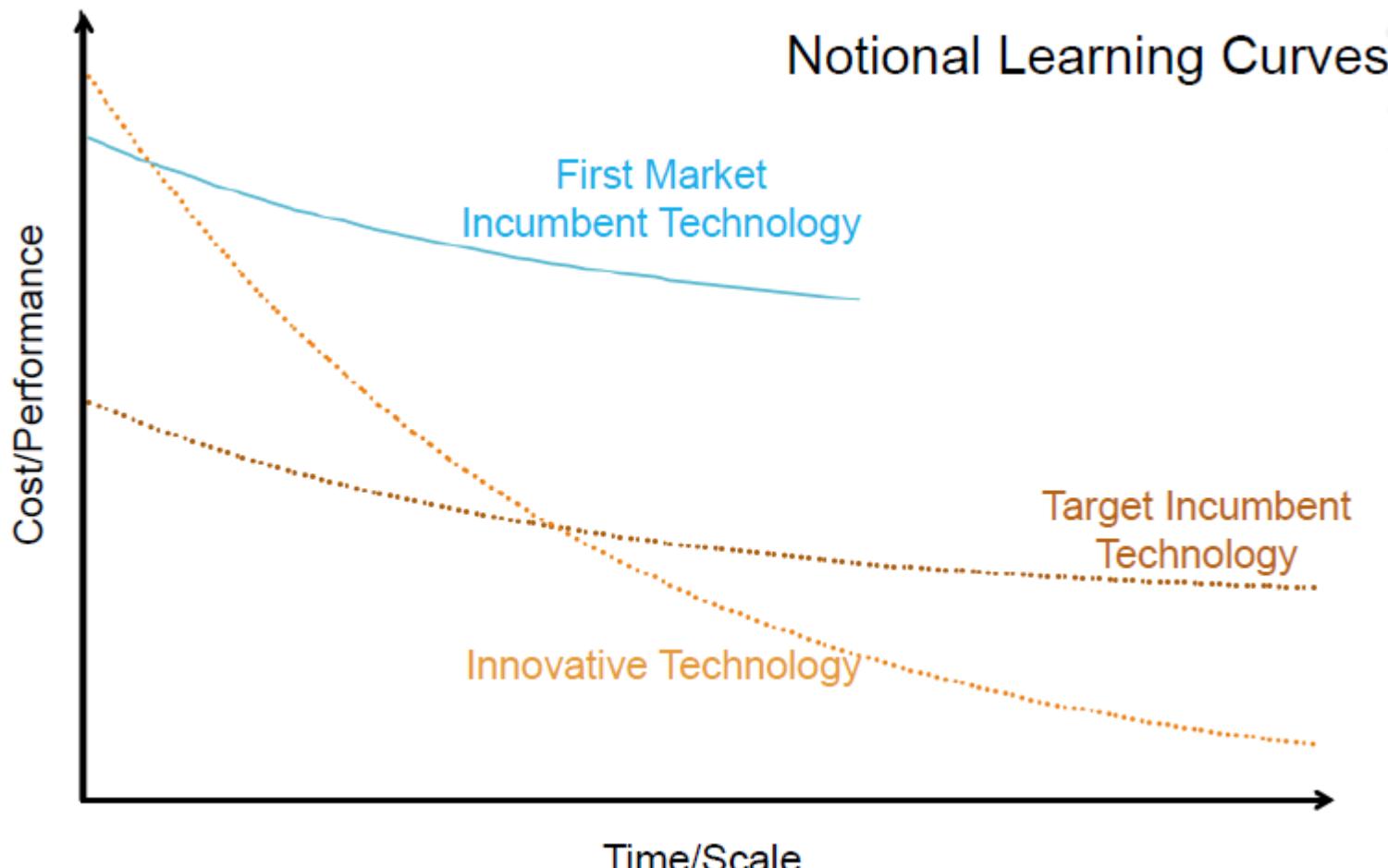
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Quick “Wins” & Big Shifts

- Quick Wins
 - Technology quickly to market
 - Easy to see how technology can make a difference
- Big Shift
 - Change what is possible
 - Potentially large payoff, but not visible for many years
 - Change direction of R&D for entire industry

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Quick “Wins” & Big Shifts



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Thank You

- Questions
- Committee & staff available for follow on discussions after the webinar

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