

Decision Making for Demonstration Funding RFF Workshop: Metrics

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Linda Cohen

University of California at Irvine

Lrcohen@uci.edu

Metrics for Federal Demonstration Programs

- Purpose of demonstration
- Metrics in the presence of market failures
- Metrics in a networked world
- Metrics and complementary goods
- Metrics for success

Purpose of demonstration

- Economic justifications for subsidized demonstrations: spillover benefits
 - Environmental benefits: broad-based benefits to population at large
 - Demonstrate technical feasibility, costs to potential deployers of technology
 - Marginal, uncertain profitability
 - Benefits to other firms operating in same space
 - Enhance network opportunities
 - Lower coordination costs
 - Demonstrate value to users of technology
 - Lower information costs and risks to small users, e.g., independent truckers
 - Accelerate learning economies
- Additional goals of DOE demonstrations under the IRA and IIJA
 - Distribution of environmental and economic benefits
 - Diversity, equity and inclusion
 - Justice40

Metrics in the presence of market failures

- The presence of environmental externalities depress efficient investments in both innovation and in adoption. Adoption may depend on the presence of complimentary policies such as renewable portfolio standards and tax credits. The magnitude of the problem depends in part on how long-lived the investment, reflecting uncertainty over the stability of relevant policies.
- Metrics need to recognize:
 - Continued subsidies for early adopters of long-lived technologies can determine deployment
 - Related policies will affect the success of the demonstration project.

Metrics in a networked world

- A supplier of a network good can create value to users and other purveyors of the good, in addition to itself, by expanding the size and reach of a market.
- Network externalities raise complex measurement issues. *There is no unambiguous “right” way to measure some network benefits.*
However, it is important to account for contributions of technologies to network goods and vice versa:
 - The spillovers among suppliers from market expansions enabled or accelerated by the demonstration
 - The potential demonstration value for small or independent users allowing for a critical size of the user base.

Metrics and complementary goods

- A demonstration can coordinate the activities of complementary goods and services needed to create value to some or all of the technologies. Successful demonstrations need to account for whether such coordination is important and how it is accomplished.
- Metrics need to account for:
 - The dependence of deployment of the demonstrated technology on the cost and development of complementary goods
 - The increase in the value of complementary technologies

Metrics of success

- External factors can determine economic success of the project: wrong assumptions about input markets may increase cost; development of competitive products may depress demand.
 - Metrics need to include value from contributions that are not dependent on deployment of the technology.
- Network benefits can occur at a remove from initial purchaser.
 - Metrics need to account for spillovers to the broader network
 - Metrics need to account for information dissemination strategies
- Technology deployment can depend on external policies and activities
 - Metrics need to allow for potential deployment, especially for long-lived and network technologies