

Evaluating ENERGY STAR Initiatives: Issues for Data Sharing and Coordination

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Summary

The United States Environmental Protection Agency (EPA), Climate Protection Division is currently evaluating the market effects, energy savings, and related emissions (carbon) reductions associated with its market transformation programs:

- **The ENERGY STAR Labeling Program.** Three components of the ENERGY STAR Labeling Program are being assessed: the general communication and awareness campaign, labeling of residential heating and cooling products, and labeling of office equipment.
- **The ENERGY STAR Buildings/Green Lights Program.** The division is conducting a retrospective evaluation of the energy savings attributable to its Green Lights Program and establishing a baseline for future assessment of its ENERGY STAR Buildings Program. One unique aspect of the Green Lights Program evaluation (in what is assumed to be a largely transformed market) is an examination of free drivers in addition to an assessment of free riders.
- **The ENERGY STAR Homes Program.** The ENERGY STAR Homes Program is currently developing its evaluation strategy.

These evaluation initiatives provide a unique opportunity to contrast evaluation methodologies for market transformation programs in new, transitioning, and transformed markets. However, program or even product-specific evaluation methodologies may vary based on differences in market structure and program interventions.

In designing and implementing the ENERGY STAR programs, EPA developed baseline estimates of program impacts (energy and carbon savings) for each product/program category. The assumptions used to create these forecasts help identify critical issues and data collection needs during the evaluation. Baseline estimates will be verified or challenged through the evaluation, providing insights for improving program strategies and forecasts.

In addition, the ENERGY STAR label is being used by many energy efficiency program operators at the regional and state levels. The use of the ENERGY STAR label in national and regional programs presents unique opportunities and challenges in the field of program evaluation. Specifically, coordination of evaluation efforts among the federal government and regional program sponsors can greatly enhance

the value of the information they produce and the depth of understanding they provide in regard to market characterization and program efficacy. Achieving these benefits will require a clear understanding among the parties of their evaluation objectives, identification of critical procedures needed to integrate data and results from each other's efforts, and logistical coordination.

The greatest potential benefit from coordination will be the availability of data and analysis from multiple studies to address common research questions. These questions will include:

- To what extent do end-users, retailers, contractors, and manufacturers recognize the ENERGY STAR label?
- What meaning or significance do they attribute to the label?
- Have customers used the ENERGY STAR label to guide purchasing decisions?
- How and to what extent have retailers, contractors, and manufacturers used the ENERGY STAR label as a marketing vehicle? To what extent do they use promotional methods developed or supported by the ENERGY STAR program, such as financial analysis software and project financing facilities?
- What is the market penetration of ENERGY STAR products?
- Generally, how are the markets for ENERGY STAR-labeled products and services changing? What is the role of ENERGY STAR in that process?

Techniques to analyze the market effects of energy efficiency programs rely heavily on analysis of changes in market conditions over time, or differences in market conditions between regions which have different exposure to program and communications efforts. Use of these comparative methods requires, at a minimum, that the sources of information, sampling techniques, survey modes, and analytical approaches be thoroughly documented. Only with such documentation can analysts judge the appropriateness of comparing the results of studies conducted at different times or in different regions. Obtaining the maximum value from multiple evaluations will require coordination of efforts and application of more rigorous methods. Among these are the following:

- **Use of common survey modes and methods.** Experience shows that various survey methods result in widely varied levels of response and apparent results, especially in regard to questions of market penetration. For example, nationwide telephone surveys of residential customers in 1994 found that 20 percent of households had at least one compact fluorescent lamp installed. The 1993 Residential Energy Consumption Survey (RECS), which included on-site verification, found that the saturation level was around 11 percent. The differential reflects both accuracy of observed versus self-reported data and the high level of response to RECS versus typical market research-type surveys. Similarly, telephone and mail approaches tend to achieve different levels of response and results.
- **Use of common sampling approaches.** Sampling approaches have a profound influence on the likely results of customer and vendor surveys. The use of random selection methods is a basic minimum. Beyond that, research sponsors who plan to share and compare results will need to coordinate the selection of sample frames and stratification methods.
- **Use of common questions.** As with sampling, the wording and structure of questions can have a key impact on response, and therefore, comparability. The wording of questions having to do

with recognition of the ENERGY STAR label, the purchase of specific kinds of products, and the adoption of specific practices should be uniform in order to ensure comparability.

- **Estimation of energy impacts.** Due to regional differences in climate, building stock, saturation of efficient measures, and distribution channels, there are bound to be differences between national and regional studies in methods used to estimate gross and net energy impacts from various programs. At a minimum, the methods used must be sufficiently well-documented to support their use in a qualitative narrative of program effects.

Panelists will discuss the practical methods by which EPA has addressed the topics above, share preliminary results to the extent they are available, and discuss underlying evaluation assumptions driving program evaluation and design.