

2. EVALUATION DESIGN

2.1 SAMPLING STRATEGY

The sampling strategy for the 1993 evaluation of economic impacts is by far the most extensive in the history of the ORNL evaluation effort. In particular, it represents the first attempt since 1985 to collect information on the entire population of ERIP inventions, and it involves an analysis of nonrespondents to the data collection survey.

Between October 1, 1976, and September 30, 1991, a total of 557 inventions were recommended to DOE's Energy-Related Inventions Program by the National Institute of Standards and Technology. These inventions are described in the most recent ERIP annual status report (U.S. Department of Commerce, 1993), and they are the technologies of interest to this evaluation.

Previous ERIP evaluations reduced survey costs by drawing samples of ERIP technologies for surveying. This was necessitated by the heavy reliance on costly telephone interviewing. The most recent evaluation (Brown, Wilson, and Franchuk, 1991) represented the first attempt to rely primarily on mail surveying, supplemented by telephone interviewing. Because of the success with that experience, the evaluators decided to mail a questionnaire to the entire population of ERIP inventors as the primary means of collecting data for the current evaluation.

Two samples of inventions were used to conduct targeted telephone surveying of nonrespondents to the mail survey. The goals of this universal mailing combined with a targeted followup of nonrespondents were (1) to survey enough of the inventions so that the entire population of 557 technologies could be characterized, (2) to collect information on as many as possible of the most successful inventions, and (3) to collect information on a sample of nonrespondents so that nonresponse bias could be assessed.

The first sample contained 133 inventions that were judged to be especially "promising" in terms of the likelihood of market entry and commercial success. This sample of "promising" inventions was identified from the results of past ORNL evaluations and by the Program's invention coordinators. A targeted effort to contact this sample maximized the inclusion of the most successful inventions in the impact evaluation.

The second sample was randomly drawn from the set of 424 inventions that were not earmarked as promising (i.e., the population of 557 inventions minus the sample of 133 promising inventions). At the time the sample was drawn, there were approximately 320 nonrespondents among these "other" inventions. The 10% random sample of other inventions therefore contains 32 inventions. A targeted effort to contact this sample allows us to test for nonresponse bias (see Section 2.3).