

NIST to be technically feasible and commercially competitive, but appear not to offer sufficient energy benefits for program participation. They are labeled "program referrals" because NIST refers them to other programs for support, such as the Small Business Administration's Small Business Development Centers located across the U.S. The advantage of using program referrals as a comparison group is that overall their technologies and inventors appear to be well matched to the population of ERIP participants.

Program referrals and ERIP participants were found to differ significantly in terms of several indicators of commercial success.

- Only four of the 28 program referrals who did not have sales before they applied to the program were able to achieve commercial success afterwards.
- Only one of the four program referrals that did experience initial commercial success after rejection from the program was able to remain viable for more than a few years.
- Average dollar sales by ERIP participants are an order of magnitude greater than the program referral group.
- A higher percentage of ERIP inventions are protected by patents (90%), compared with program referrals (72%).
- Only 6% of the program referrals were associated with employment in recent years, compared with 58% of the ERIP participants.
- ERIP participants raised twice as much funding, per invention, as program referrals.
- Program referrals relied mainly on personal funding to develop their inventions, while ERIP participants received much of their funding from non-personal sources such as corporate profits, banks, stock offerings, and government programs in addition to the ERIP.

These results provide strong evidence that ERIP-supported technologies achieved their considerable commercial success, at least in part because of the support provided by the Energy-Related Inventions Program.

8.2.2 External Validity

The external validity of this evaluation of ERIP is difficult to assess. Our analysis of nonresponse bias indicates that respondents tend to be more actively involved in the development of their ERIP technology than nonrespondents, who tend to have suspended work on their ERIP technologies. But the progress made by respondents is no greater than that of nonrespondents in terms of the advancement of their technologies through the stages of development and into the marketplace.

One indicator of external validity is that all five evaluations of ERIP have produced remarkably similar indicators of commercial progress. For example, consider the various rates of market entry that have been produced by the five evaluations, each based on different samples and an