

ABSTRACT

This report provides information on the economic, energy, and environmental impacts of inventions supported by the Energy-Related Inventions Program (ERIP)—a program jointly operated by the U.S. Department of Energy and the National Institute of Standards and Technology (NIST). It describes the results of the latest in a series of ERIP evaluation projects that have been completed since 1980. The period of interest is 1980 through 1992. The evaluation is based on data collected in 1993 through mail and telephone surveys of 253 program participants, and historical data collected during previous evaluations for an additional 189 participants.

As of October 1991, a total of 557 inventions were recommended to DOE by the National Institute for Standards and Technology, which screens all submitted inventions for technical merit, potential for commercial success, and potential energy impact. By the end of 1992, at least 129 of these inventions had entered the market, generating total cumulative sales of \$763 million (in 1992 dollars). The success of ERIP inventors is also shown in their licensing revenues. It is estimated that in 1992 ERIP inventors earned royalties of \$1.0 million, and over the lifetime of the program, royalties total \$18.6 million. With \$41 million in grants awarded from 1975 through 1992, and \$106 million in program appropriations over the same period, ERIP has generated a 19:1 return in terms of sales values to grants, and a 7:1 return in sales versus program appropriations. At least 23% of the 557 ERIP inventions had achieved sales by the end of 1992. Comparisons between these performance indicators and measures of the success of other technological innovations suggests that the ERIP figures are impressive.

The commercial progress of spinoff technologies is also documented. Altogether, 36 spinoff technologies have generated sales of \$63 million (in 1992 dollars). Further, it is estimated that at least 668 full-time equivalent employees were working on ERIP technologies in 1992, and that this resulted in a return of approximately \$2.7 million in individual income taxes to the U.S. Treasury. Finally, more than \$531 million of energy expenditures has been saved over the past decade as a result of the commercial success of three ERIP projects. These energy savings have resulted in reduced emissions of nearly one million metric tons of carbon. An analysis of sources of funding provides additional evidence of positive program impacts.