

**U.S. Energy – Efficient Technology  
Procurement Projects:  
Evaluation and Lessons  
Learned**

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February 1999

Prepared for the U.S. Department of Energy  
Under Contract DE-AC-06-76RLO 1830

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## Summary

This report evaluates three U.S. energy-efficient technology procurement projects for the primary purpose of gleaning key learned lessons, so that future practitioners of technology procurement might develop better programs, and avoid costly mistakes. Each of the projects are described in detail, and the results of each project are summarized and discussed.

The three projects evaluated are:

- 1) Super-Efficient Refrigerator Program – a project implemented by a consortium of electric utilities whose primary intent was to induce a refrigerator manufacturer to introduce to the market a new, highly efficient refrigerator that exceeded U.S. government minimum energy efficiency standards by at least 25%, yet cost no more than similar refrigerators with normal energy efficiency
- 2) U.S. Department of Energy's (DOE) High Efficiency Clothes Washer Volume Purchase – a project implemented by DOE and the City of Austin, Texas, whose primary intent was to build early, high volume sales for high-efficiency clothes washers that had just been introduced to the U.S. market
- 3) DOE's Sub-Compact Fluorescent Lamp (CFL) Technology Procurement – a project whose primary intent was to induce lamp manufacturers to introduce to the market new screw-base CFLs that are significantly smaller than the current generation of CFLs, which fail to fit in many common lighting fixtures

### Project Results

The Super-Efficient Refrigerator Program induced a manufacturer, Whirlpool, to manufacture a line of highly efficient refrigerators that exceeded minimum U.S. government energy efficiency standards by 30% to 41%. The new refrigerators helped demonstrate the feasibility of producing refrigerators that greatly exceeded the existing government energy efficiency standards (a key goal of the program), however, the refrigerators were eventually withdrawn from the market due to lower-than-expected sales. The cause for the lower-than-expected sales appears to have been insufficient and problematic marketing.

The High-Efficiency Clothes Washer Volume Purchase succeeded in securing an agreement with a supplier to provide clothes washers to the program at a price almost \$300 less than the prevailing retail price of such clothes washers. Use of the supply agreement was offered to local program partners, such as municipal water utilities, electric utilities, and public housing agencies. The first of such local partners, Austin, achieved strong sales through the project. Due, however, to the unexpectedly large amount of time required to arrange for other local partners, the project succeeded in arranging for only one other local partner, a U.S. Army base. The project was terminated

after one year with total sales well below the 10,000 washer goal, but achieved some mixed success.

The Sub-CFL Technology Procurement, which is still being implemented, succeeded in causing several manufacturers to introduce new, very small products to the market. Prices bid by suppliers in the demonstration phase (Phase I), ranged as low as 5.85 U.S. dollars, well below prevailing market retail prices for CFLs. Approximately 80,000 lamps were sold in Phase I, exceeding the Phase I sales goal of 15,000 lamps by more than a factor of six. Phase II, the full implementation phase, attracted even more aggressive bids than submitted in Phase I. Several of the lamps approved for Phase II are the same as those approved for Phase I, however, one new-to-the-market lamp was added, and evaluation of a new lamp from a new supplier is still underway. The sales goal for Phase II is one million lamps. Sales under Phase II were initiated in November of 1998; initial sales reports are not yet available.

## **Lessons Learned**

Evaluation of all three programs yielded sixteen lessons learned. Among the key lessons are:

- *The program development process should be **buyer** driven. In other words, the interests of buyers, their issues and concerns, market perspectives, and their willingness to buy should have heavy influence on the development and design of a program.*
- *Unless other circumstances strongly indicate otherwise, it is preferable to make more than one award in response to competitive solicitations.*
- *Although technology procurement projects have heavily relied upon guaranteed sales or exclusive access to large financial awards (SERP), DOE's clothes washer and sub-CFL programs have demonstrated that they are not always necessary to attract aggressive bids.*
- *Technology procurement programs that depend on sales to large volume buyers, particularly government agencies, should be designed to allow a long period of time (at least one to two years) for the target buyers to purchase product.*
- *Technology improvement brought forth through competitive procurements is not a one-step function ending with the market introduction of the new technology. Further technology improvements can be made during the implementation of the program, and this consideration should be designed into the program.*
- *Technology procurement programs can be a viable and effective alternative to technology introduction programs that rely on large subsidies.*
- *It is easy to underestimate the size and importance of the promotional/educational part of technology procurement programs.*