

Research and Energy Efficiency: Selected Success Stories

Patricia Welesko Garland
Technical Staff Member
Oak Ridge National Laboratory
600 Maryland Ave. SW, Suite 306W
Washington, DC 20024
phone: 202-479-0292

Robert W. Garland
Senior Policy Specialist
United States Department of Energy
1000 Independence Ave.
Washington, DC 20585
phone: 202-586-7547

ABSTRACT

Energy use and energy technology play critical roles in the U. S. economy and modern society. The Department of Energy (DOE) conducts civilian energy research and development (R&D) programs for the purpose of identifying promising technologies that promote energy security, energy efficiency, and renewable energy use. DOE-sponsored research ranges from basic investigation of phenomena all the way through development of applied technology in partnership with industry. DOE's research programs are conducted in support of national strategic energy objectives, however austere financial times have dictated that R&D programs be measured in terms of cost vs. benefit. In some cases it is difficult to measure the return on investment for the basic "curiosity-driven" research, however many applied technology development programs have resulted in measurable commercial successes. The DOE has published summaries of their most successful applied technology energy R&D programs. In this paper, we will discuss five examples from the Building Technologies area of the DOE Energy Efficiency program. Each story will describe the technology, discuss the level of federal funding, and discuss the returns in terms of energy savings, cost savings, or national economic impacts.

Energy Efficiency

In an effort to reduce the nation's vulnerability to disruptions in our energy supply, the DOE sponsors research in energy efficiency and the development of alternative energy sources. Although energy efficiency may not appear as glamorous as renewable energy sources, such as solar or wind power, it does follow the old adage of "a penny saved is a penny earned." The installation of energy efficiency technology reduces the country's energy usage, and thereby mitigates our susceptibility to potential energy supply disruptions.

There are numerous examples of energy efficiency technologies, where initial development was sponsored by DOE, and now

private-sector implementation has resulted in measurable energy savings. In the lighting area, electronic ballasts for fluorescent lamps are saving 15-30% over magnetic ballast technology. Low emissivity windows are achieving 35% savings over double pane windows in both residential and commercial applications. Savings like these have been documented in an attempt to raise the awareness of the value of energy efficiency measures, while also supporting the efficacy of the nation's energy R&D investments.

Fluorescent Lamp Electronic Ballasts

Fluorescent lighting using the electronic ballast consumes 15-30 percent less electricity per unit of light output than the magnetic alternative