Introduction

Prior to the 1973 oil embargo, energy conservation figured neither in American policy nor in American consciousness. As a result of the crisis atmosphere engendered by the embargo, every industrialized nation in the world has emphasized improvements in energy efficiency. In the United States this effort has been led by the Department of Energy's (DOE) Office of Conservation. Since 1978, DOE's conservation R&D program has committed almost $2 billion to hundreds of projects aimed at improving energy efficiency throughout the U.S. economy. This national effort has paid huge dividends. Despite the fact that the U.S. economy has grown by over 35 percent since 1973, fuel consumption has not increased. This represents a cumulative saving of over 150 quads of energy, worth approximately $840 billion at current energy prices.

Three-quarters of DOE's Conservation R&D funds have been devoted to technology research and development: basic and applied research, exploratory R&D, engineering feasibility studies, pilot-scale prototype R&D, and technology demonstration. Non-R&D projects have involved technology assessment, program planning and analysis, model development, technology transfer and consumer information, health effects and safety research, and technical support for rule making.

The success stories summarized in this compendium fall into three general categories:

- *Completed Technology Success Stories*: projects that have resulted in new energy-saving technologies that are presently being used in the private sector.
- *Technical Success Stories*: projects that have produced or disseminated important scientific/technical information likely to result in future energy savings.
- *Program Success Stories*: non-R&D activities that have resulted in nationally significant energy benefits.

The Energy Conservation research and development program at DOE is managed by the Office of Conservation under the direction of the Deputy Assistant Secretary for Conservation. Three subordinate Program Offices correspond to the buildings, transportation, and industrial end-use sectors. A fourth subordinate Program Office -- Energy Utilization Research -- sponsors research and technical inventions for all end-use sectors.

Buildings and Community Systems (BCS)

The buildings sector consumes more than 35 percent of the primary energy in the United States, approximately 27 quads. A major national effort to conserve energy in the buildings sector could save 20-30 percent of this total over the next 20 years. The conservation research efforts of the Office of Buildings and Community Systems are focused on five key building systems: building envelope, building equipment, indoor air quality, lighting, and design and construction systems.

In addition, BCS encourages community energy management by localities throughout the United States, conducts R&D on the centralized production and distribution of heating and cooling, and, through its recently initiated Least-Cost Utility Planning Program, conducts research on the integration of energy conservation and energy supply options in planning by electric utilities.