

In the early and mid 1990s The Results Center produced 126 case studies of the most successful energy efficiency and renewable energy programs in the United States and around the world. With the support of the John D. and Catherine T. MacArthur Foundation, Ted Flanigan directed a research team at Colorado-based IRT Environment to produce and distribute these exceptional examples.

#39 EXECUTIVE SUMMARY

BURLINGTON ELECTRIC DEPARTMENT, HEAT EXCHANGE PROGRAM

Burlington Electric Department (BED) is currently engaged in the pioneering DSM practice of promoting the cost effective substitution of alternate fuels for electricity. Three discrete BED projects are presented in this profile as the Heat Exchange Program. The program includes 1) a DOE pilot fuel switching program that resulted in the conversions of 44 residences to natural gas space heating using direct vent gas-fired space heaters; 2) a fuel switching project at the Northgate Housing complex that resulted in conversions of 336 units ; and 3) the full-scale fuel switching program that is currently active in Burlington.

In March of 1990 Burlington's voters overwhelmingly approved a \$11.3 million bond for conservation and DSM programs knowing it would raise rates by 4% to pay for it. As a result of the publicity surrounding the bond issue, over 1,000 buildings were signed up to participate in the Heat Exchange program even before it had begun!

Heat Exchange begins with a free energy audit conducted by a contractor and a BED energy services specialist. After the audit, a report is sent to the customer outlining cost effective measures to be implemented and their prices and projected annual savings. A summary of weatherization work, if necessary, required to meet BED minimum standards is also provided. There are two forms of financing available: a loan or a cash rebate. If the customer finances the work with a loan from BED, BED oversees the work. If the customer finances the project independently to receive the rebate, the customer is responsible for work arrangements and payment of the contractors.

Space heaters comprise 54% of the heating units installed as a result of the Heat Exchange program, while central heating systems make up the other 46%. A strong majority (66%) of the domestic hot water units installed are integrated systems. Most of the weatherization measures involved as part of Heat Exchange are in the form of air sealing. To date, BED's Heat Exchange program has accounted for total annual energy savings of 7,952 MWh and 1.9 MW.

Out of an eligible population of 2,336 homes with electric space heat, 753 housing units have completed Heat Exchange conversions. Thus the program's participation rate to date has been 32%. BED projects that 61% of customers with primary electric space heat and 50% of customers with electric water heaters will fuel switch over the 5-8 year life of the program.

Since the program's inception BED has spent a total of \$825,799 on the Heat Exchange program, while its customers have spent more than \$2,570,000 on installation costs. Thus BED has paid 24% of the societal cost of the program to date resulting in an admirably low cost of saved energy, calculated at a 5% real discount rate, of 1.24 ¢/kWh.

Download entire 24 page profile:

<https://ecomotion.us/results-center-profiles/39/burlington-electric-department-heat-exchange-program.pdf>

Print this page:

<https://ecomotion.us/results-center-profiles/39/burlington-electric-department-heat-exchange-program-summary.pdf>

All Results Center Profiles:

<https://ecomotion.us/consulting/case-studies/>

BURLINGTON ELECTRIC DEPARTMENT Heat Exchange Program

Sector: Residential

Measures: Fuel conversion of space and water heating systems and weatherization

Mechanism: Free energy audit coupled with rebate or loan for conversions

History: Six month pilot project in 1989. Northgate Housing Project conversion (1989-1990). Full scale program began in 1991 and continues to present.

CUMULATIVE PROGRAM DATA

Energy savings:	8.0 GWh
Lifecycle energy savings:	119 GWh
Capacity savings:	1.9 MW
Utility cost:	\$825,800
Participant cost:	\$2,570,000
Number of Conversions:	753
Participation rate:	32%

CONVENTIONS

For the entire 1992 profile series all dollar values have been adjusted to 1990 U.S. dollar levels unless otherwise specified. Inflation and exchange rates were derived from the U.S. Dept of Labor's Consumer Price Index and the International Monetary Fund's International Financial Statistics Yearbook: 1991.

The Results Center uses three conventions for presenting program savings. Annual savings refer to the annualized value of increments of energy and capacity installed in a given year, or what might be best described as the first full-year effect of the measures installed in a given year. Cumulative savings represent the savings in a given year for all measures installed to date. Lifecycle savings are calculated by multiplying the annual savings by the assumed average measure lifetime. Caution: cumulative and lifecycle savings are theoretical values that usually represent only the technical measure lifetimes and are not adjusted for attrition unless specifically stated.