1. EXECUTIVE SUMMARY

This report summarizes state and utility low-income weatherization program activity for households weatherized to completion during calendar year 2002. The report includes state, utility, and agency summaries of calendar year 2002 spending and impacts by measure, end-use, and fuel. The base data consisted of statewide program tracking databases of spending and measure installations for households completed during the calendar year 2002.

We estimated energy and coincident demand impacts for the program participants by adjustment factors to the engineering estimates that were developed for the 1992 program[1]. The adjustment were derived from a series of fuel consumption analyses, including the 1992 and 1994 program participants as well as using data for completions during the period April, 1996 through March, 1997, September, 1998 through August, 1999, January through December, 2000 and 2001, and August 2001 to August 2002.

Utilities began funding incremental benefits for increasing the efficiency water heaters replaced for health and safety reasons. We assessed incremental savings for their expenditures. In addition, we developed estimates of savings that reflect the higher heating efficiency of new units that are free of scale buildup within the tank.

The impacts also reflect a revision of the diversified demand factors for electricity measures. The original factors were developed in 1992. The revised values reflect changes in system load factors due to mergers of utilities over the past decade.

Program Costs and Impacts

The WAP program installed measures in 2,091 households during calendar year 2002: measures with direct energy savings were installed in all but five of these. Program expenditures for labor, materials, and support totaled $10.02 million in calendar year 2002, averaging $4,795 per household. Most measures installed by the program in 2002 are essentially unchanged from the 2001 program. In 2002, clients experienced greater savings from expansion of refrigerator and freezer exchanges or removals.

First-year savings of natural gas totaled 511,218 therms -- a 0.5% increase from 508,643 therms in CY 2001. First-year savings of electricity increased by 84%, to 2,400,162 kWh from the 1,303,387 kWh in the CY 2001 program. This large increase is attributable to increases in the installations of refrigeration appliances: 43% of households received some form of refrigeration measure in 2002 compared to 14% in 2001. Utility-funded measures were responsible for 35% of all energy and demand savings for electricity, and 37% of natural gas savings.

In addition to utility-provided fuels, the CY2002 program saved 43,263 gallons of propane, 3,567 gallons of fuel oil, and 48 Mbtu of wood, coal, and other fuels.

First-year client energy cost savings totaled $516,973, averaging $247 per household.

[1] see the following Wisconsin Energy Conservation Corporation reports for a full description of the estimation routines and derivation of the adjustment factors:

- Estimated Low-Income Program Impacts in Iowa, June 14, 1993;
- An Evaluation of Iowa's Low-Income Weatherization Efforts, August 8, 1994; and
- An Evaluation of the 1995 Iowa Low-Income Collaborative Weatherization Program, November 5, 1996.

On average, the program saved 1,154 kWh of electricity for 2,080 households with electricity impacts – this constitutes a 66% increase in average electricity savings for households with electricity impacts. The program saved an average of 277 therms of natural gas for 1,814 households with gas impacts (a 5% decrease from CY 2001), 176 gallons of propane in 246 households with propane impacts, and 115 gallons of fuel oil in 31 households with fuel oil impacts.

Utilities contributed $2.11 million in expenditures, or 21% percent of the total program expenditures. Utility-funded measures were installed in 1,345 households. Savings from utility-funded measures averaged 648 kWh in 1,321 utility-funded households with electricity impacts, and 172 therms in 1,126 utility-funded households with gas impacts. Utility-funded measures yielded first-year client cost savings or $171,203, averaging $127 per household overall. The average household electricity savings for utility-funded measures was $44, and for gas was $100.

Fuel Consumption Analysis Results

The natural gas savings reported herein have been adjusted at the agency level. The adjustment factors were derived from a fuel consumption analysis of recent program participants. The factors were applied to the estimated natural gas, propane, and fuel oil heating measures, and to natural gas and propane water heater measures. Along with providing better assessments of agency-level impacts, this procedure also provides a check on the accuracy of the algorithms used to estimate savings. The fuel consumption analysis showed 25.1% savings ± 1.1% at 90% confidence for natural gas measures installed in CY 2002.

Changes in Reporting

The content of the report and data sources are similar to previous years, with a few exceptions:

- The electricity measure diversified demand factors were updated
- A billing analysis was completed to develop agency-specific natural gas adjustment factors (this is performed annually).
- We expanded the summary tables of Sections 4-6 to include the following:
  - We developed algorithms for water heater replacements and now report these on separate lines for standard and high-efficiency models
  - Electric space heating replacements are reported on a separate line
  - We expanded the breakout of client and landlord contributions