

Program Proposal High-Efficiency Residential Central Air Conditioning and Heat Pumps

Submitted By:

Courtney Lane
Citizens for Pennsylvania's Future (PennFuture)
Center for Energy, Enterprise and the Environment
610-696-8051, lane@pennfuture.org

NEED FOR PROGRAM

Throughout the Northeast, utilities are offering programs that target the proper installation of high-efficiency residential air conditioning and air-source heat pumps (Connecticut, Massachusetts, New Jersey, New York, Rhode Island utility incentive programs). This market contains valuable energy savings opportunities. According to the Consortium for Energy Efficiency (CEE), central air conditioners and heat pumps rank third in residential energy use behind space and water heating and Northeast Energy Efficiency Partnerships (NEEP) reported in 2006 that residential heating, ventilation and air conditioning (HVAC) is an important component of the Northeast's energy profile with heating and cooling account for 60 percent of average annual household energy consumption in the region.¹

The Department of Energy's Central Air Conditioner and Heat Pump Rulemaking is helping to improve this market by requiring air conditioners manufactured after January 23, 2006 to achieve a Seasonal Energy Efficiency Ratio (SEER) of at least 13.00. However, more can be done. Relative to this new standard SEER 14.00 and 15.00 rated equipment provides up to seven percent and 13 percent energy savings, respectively. Field studies have shown that proper sizing and installation of this equipment can often affect energy savings more than the equipment upgrade alone. HVAC equipment is often over-sized, has inadequate airflow, and too much or too little refrigerant in the system. Correcting for sizing and installation mistakes can reduce electricity even further by approximately 20 percent.

Most consumers in Pennsylvania are unaware of the benefits of high-efficiency equipment and proper installation, and could greatly benefit from a program that provides them with the financial and technical tools to save money on their energy bills. Contractors in the state would also benefit from such a program as they would receive rebates on training courses, gain a competitive edge in the marketplace, and have greater customer satisfaction.

STATE PROGRAM EXAMPLE

Since 2001, New Jersey has offered two programs that target the above shortfalls in the residential cooling and heating sectors, CoolAdvantage and WarmAdvantage. Where the WarmAdvantage program is a traditional rebate program for high-efficiency gas furnaces and boilers, the CoolAdvantage program works to transform the residential HVAC market by making installations of high-efficiency cooling equipment more commonplace by combining rebates with the promotion of proper sizing and installation by contractors.

The program includes extensive consumer education campaigns where each utility in the state markets the program individually with a state brochure, bill inserts, direct mail, newspaper, radio, yellow pages, and trade shows. In 2006, the program offered rebates of \$400 for high-efficiency (SEER 14.00 or 15.00) central air conditioners and \$550 for high-efficiency heat pumps. The WarmAdvantage program offered rebates ranging from \$300 for to \$400 depending on the efficiency rating of the furnace or boiler. Since most consumers are unaware of the difference between quality installation and good contractors, the CoolAdvantage program provides the customer with contractors who have received training or who are North American Technician Excellence, Inc. (NATE) certified.

The program helps assure that the extra savings from proper sizing and installation are realized by requiring the consumer's installing contractor to submit documentation that the air conditioner or heat pump has been properly sized and installed before they receive the rebate.

Other Program Examples:

National Grid - Rhode Island COOL CHANGE with ENERGY STAR www.ricoolchange.com
 Long Island Power Authority – Cool Homes www.lipower.org/cei
 Connecticut Light & Power - Residential Heating and Cooling Program www.cl-p.com
 United Illuminating Company - Residential Heating and Cooling Program www.uinet.com
 Massachusetts COOL SMART with ENERGY STAR - www.macoolsmart.com
 NYSERDA - New York State Residential ENERGY STAR HVAC Training, Education, Certification, & Awareness (TECA) Program www.GetEnergySmart.org

COSTS AND SAVINGS

The New Jersey program has increased the market share for efficient equipment 20-25% compared to 1-2% nationally for SEER 14 and up. During 2005, 620 HVAC technicians received sales and technical training, and 118 technicians passed the test and were added to the North American Technician Excellence (NATE) certification list. In addition, the New Jersey list of contractors with 75 percent or more of their technicians holding NATE certification has grown to over 200 firms.

New Jersey CoolAdvantage and WarmAdvantage Costs and Savings

	2002	2003	2004	2005
Expenditures	\$18,490,000	\$14,444,000	\$15,564,000	\$13,117,000
# Participants	26,992	24,786	26,345	27,510
MWh Savings	15,703	14,621	15,499	15,021
MW Savings	13,825	12,254	13,065	12.7
Dtherm Savings	428,457	364,391	135,002	138,959

For utilities with programs only targeting residential air conditioning, expenditures range from between \$950,000 and \$3.4 million annually.

DOWNSIDES OR BARRIERS

Barriers to implementing this program include the current lack of funding available in the state for energy efficiency and demand side management and no one to administer the program. In addition, the number and variety of contractors in Pennsylvania makes it difficult to transform the market to ensure all HVAC contractors are using proper installation practices

HOW PROGRAM WOULD BE IMPLEMENTED

In order to implement a program similar to New Jersey's CoolAdvantage and WarmAdvantage, the Pennsylvania Public Utility Commission (PUC) will need to undertake the below steps or contract out the work to a third party.

1. Conduct a market study to document the current share of efficient equipment, typical sizing and installation practices, consumer and contractor awareness and attitudes, manufacturer/distributor perceptions in order to establish a baseline to measure program success.
2. Create budget, goals and cost-effectiveness screening.
3. Create a marketing campaign to all electric and natural gas customers in the state including brochures, bill inserts, direct mail, newspaper, radio, yellow pages, and trade shows.
4. Target HVAC technicians and manufacturers:
 - a. Offer cash incentives to local technicians that completes a NATE certification course through a company like Eastern Heating and Cooling Council (www.ehcc.org) and invite those already NATE certified to be listed as program participants. A list of NATE technicians can be found at: <http://www.natex.org/>.
 - b. Target manufacturers through a request for proposals to provide bids of what kind of markdown on energy efficiency equipment and what kind of data they will provide to the program. Through the RFP the burden would be placed on the manufacturer to provide the quality installation, and verification.
5. Require that rebates are tied to both the purchase of equipment and documentation of sizing and installation.

¹ Titus, E., et al. (May 2006) *Strategies to Increase Residential HVAC Efficiency in the Northeast*. Northeast Energy Efficiency Partnerships. Available at: http://www.neep.org/newsroom/STAC_report.pdf