

NH Home Performance with ENERGY STAR - Program Description

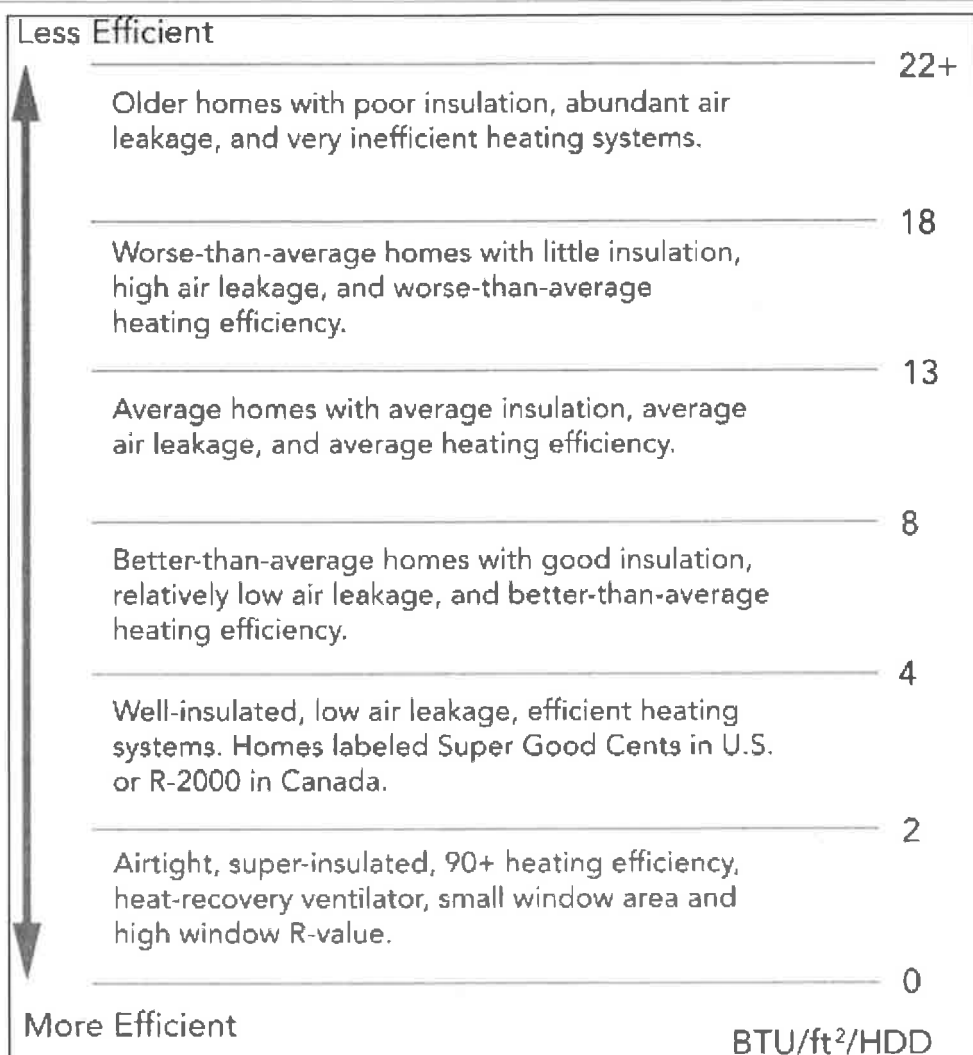
Primary objectives	To weatherize residential homes regardless of heating fuel type, capture cost effective opportunities for energy saving, and collaborate with other programs such as the gas utilities' programs to improve program effectiveness.		
Secondary objectives	To develop a base of weatherization contractors working within the program to assess the industry's ability to serve many applicants. To stimulate customer demand for fuel neutral weatherization services. To demonstrate the cost effectiveness of a fuel neutral energy efficiency program.		
Performance goals (2012)	<u>Goal</u>	<u>PSNH</u>	<u>Unitil</u>
	Electric Savings (Lifetime kWh)	1,482,626	1,205,185
	Energy Savings (Lifetime mmBtu)	265,440	24,273
	Participants	1,036	68
	Benefit to Cost Ratio	2.10	1.55
Budget (2012)	PSNH	\$1,660,101	
	<u>Unitil</u>	<u>\$250,000</u>	
	Total	\$1,910,101	
Program design	<p>Design of the Home Performance with ENERGY STAR Program (HPwES) is based on the standards established for the national Home Performance with Energy Star (HPwES). HPwES is a national effort sponsored jointly by the U.S. EPA and U.S. DOE with the primary mission of improving the energy performance and comfort of existing homes. The program design offers a comprehensive, whole-house approach to improving energy efficiency and comfort at home, while helping to protect the environment. The HPwES format will provide brand recognition to support this fuel neutral weatherization program, to educate customers on the benefits of whole house weatherization and to insure that the program adheres to national best practices in weatherization programming.</p> <p>Program services will be delivered by the NH CORE Utilities including training and recruitment of home improvement contractors and consultants who are qualified to perform comprehensive home energy audits. Qualified contractors must adhere to Building Performance Institute standards when installing approved weatherization measures.</p> <p>A screening process will be used to qualify customers for participation in the program. Qualified participants will receive a whole house audit which will identify energy savings opportunities and educate customers on weatherization needs and benefits. The audit includes an inspection of the heating and cooling systems, windows, insulation, air infiltration via a blower door test, as well as a safety check of combustion appliances. Also included is an inspection to address potential moisture</p>		

	<p>issues and to identify potential health and safety problems within the home.</p> <p>The outcome of a whole house audit is a recommendation report that identifies energy saving opportunities, prioritizes improvements based on a payback analysis, identifies carbon reduction effects and informs customers of health and safety needs. Customers will also be given information regarding additional steps they may take to save energy cost-effectively should energy prices increase.</p> <p>During the audit, each customer may receive at no additional charge energy efficient compact fluorescent lights (CFLs) for high use fixtures, low flow faucet aerators and showerheads, as well as educational materials. Customers identified as needing comprehensive improvements such as air sealing, insulation, and weather stripping will be offered a 50% incentive, up to \$4,000, for cost effective measures that are identified by the auditor.</p> <p>In addition, the HPwES program will offer incentives to encourage the installation of high-efficiency heating systems. Other measures will be evaluated for cost-effectiveness on an on-going basis and will be added to the program as appropriate. The HVAC incentives are described below, and as a minimum, equipment will be ENERGY STAR® qualified with consideration given to the adoption of higher regional efficiency standards when available. Customers will also be made aware of federal tax credits and state incentives.</p> <p>Customers who do not qualify for a whole house audit may receive educational materials and/or be directed to other utility incentive programs offering to upgrade their lighting or appliances.</p>
Target market	<p>This program is open to all single and multi-family homes (income eligible customers will be referred to the Home Energy Assistance Program). Multi-family dwellings with greater than four units may not be eligible for full weatherization services but may receive baseload electric savings measures (e.g. CFLs, high efficiency lighting fixtures, aerators, etc.). To be eligible the residence must receive delivery service from one of the participating Utilities. Renters in 1-4 unit homes may participate with permission from the owner/landlord.</p>
Marketing approach	<ul style="list-style-type: none"> • Leverage national HPwES marketing materials • Utility bill inserts, newsletters, the Internet, trade shows and outreach to affinity and community groups. • Develop trade allies to recruit participants through contractor marketing efforts. • Collaboration with gas utilities and other strategic groups

Target end uses	The program targets any cost-effective energy-saving improvements in the house shell, domestic hot water and heating systems, cooling systems, lighting improvements and refrigeration.																							
Recommended technologies	Recommended technologies include air sealing, duct sealing, insulation, thermostats, heating system controls, high efficiency domestic hot water and heating system replacements, lighting and refrigerator upgrades, and other cost effective improvements																							
Financial incentives	<p>The incentive for recommended cost effective measures is approximately 50% of the cost of installing those measures up to a maximum of \$4,000.</p> <p>High Efficiency HVAC</p> <p>In addition to the incentives noted above, the following rebates will be made to program participants to encourage high efficiency HVAC equipment. HVAC incentives are not counted towards the \$4,000 incentive cap specified above.</p> <table><tr><th>Equipment Type</th><th>Minimum Efficiency Requirement ¹</th><th>Rebate</th></tr><tr><td>Oil Furnaces</td><td>AFUE >= 85% ENERGY STAR Qualified AFUE >= 85% w/ECM¹ ENERGY STAR Qualified</td><td>\$300 \$400</td></tr><tr><td>Natural Gas / Liquid Propane Furnaces ²</td><td>AFUE >=90% ENERGY STAR Qualified AFUE >= 90% w/ECM¹ ENERGY STAR Qualified</td><td>\$300 \$400</td></tr><tr><td>Oil Boilers ³</td><td>AFUE >=85% ENERGY STAR Qualified AFUE >=90% ENERGY STAR Qualified</td><td>\$500 \$1,000</td></tr><tr><td>Natural Gas / Liquid Propane Boilers ^{2,3}</td><td>AFUE >= 85% ENERGY STAR Qualified AFUE >= 90% ENERGY STAR Qualified</td><td>\$500 \$1,000</td></tr><tr><td>Hot Water Heater – Gas Storage</td><td>Energy Factor >= 0.62 ENERGY STAR Qualified</td><td>\$100</td></tr><tr><td>Hot Water Heater – Gas Tankless</td><td>Energy Factor >= 0.82 ENERGY STAR Qualified</td><td>\$300</td></tr></table> <p>1. AFUE=Annual Fuel Utilization Efficiency ECM = Electronically Commutated Motor</p> <p>2. Gas equipment rebates are available first via the local gas utility energy efficiency program.</p> <p>3. An additional \$100 incentive is available if the replacement system is installed with a boiler reset control. Manufacturers include: Beckett, Honeywell, Taco and Tekmar (although this is not an exhaustive list)</p> <p>Equipment type, efficiency levels and rebates are subject to change with market changes.</p>			Equipment Type	Minimum Efficiency Requirement ¹	Rebate	Oil Furnaces	AFUE >= 85% ENERGY STAR Qualified AFUE >= 85% w/ECM ¹ ENERGY STAR Qualified	\$300 \$400	Natural Gas / Liquid Propane Furnaces ²	AFUE >=90% ENERGY STAR Qualified AFUE >= 90% w/ECM ¹ ENERGY STAR Qualified	\$300 \$400	Oil Boilers ³	AFUE >=85% ENERGY STAR Qualified AFUE >=90% ENERGY STAR Qualified	\$500 \$1,000	Natural Gas / Liquid Propane Boilers ^{2,3}	AFUE >= 85% ENERGY STAR Qualified AFUE >= 90% ENERGY STAR Qualified	\$500 \$1,000	Hot Water Heater – Gas Storage	Energy Factor >= 0.62 ENERGY STAR Qualified	\$100	Hot Water Heater – Gas Tankless	Energy Factor >= 0.82 ENERGY STAR Qualified	\$300
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Delivery mechanism	<p>The program is administered by the Utilities offering fuel neutral weatherization services to their customers. The program sponsors will meet regularly to develop program best practices, to plan jointly sponsored training opportunities, to leverage other regional programs and to insure the success of this program. The sponsoring Utilities will recruit contractors to provide weatherization services to program participants in a competitive market environment. All participating contractors will comply with Building Performance Institute (BPI) standards and local codes as appropriate to insure that all materials and services provided through this program meet BPI technical standards. All participating contractors will be subject to quality assurance inspections from the program sponsor and from the BPI organization to insure that customers receive high quality products and services.</p>
Program Collaborative Goals	<ul style="list-style-type: none"> • Seek support for additional funding sources in order to leverage SBC funds (eg. RGGI, ARRA, etc.) • Inform customers about renewable technology incentives available via RPS initiatives (eg. Solar Thermal or Whole House Wood Pellet Heating Systems). • Leverage National Grid and Unitil gas programs to coordinate services for gas heated homes. Gas companies pay for weatherization improvements on gas heated homes and claim related gas energy savings. Continue fossil fuel HVAC rebates which align with gas HVAC rebates. • Collaborate with regional Utilities to leverage program marketing materials, training opportunities and best practices.
Measurement & Verification	<p>Working with the Commission Staff, the Utilities developed and implemented an evaluation plan for this fuel neutral pilot program.</p> <ol style="list-style-type: none"> 1. The first step included hiring KEMA in 2010 to provide an early assessment of the New Hampshire Home Performance with Energy Star Program (HPwES) as operated by PSNH and Unitil. KEMA was asked to perform a general review of the program for purposes of providing recommendations for program improvement and to assess the ability of the tracked program data to support a downstream impact evaluation effort. 2. Cadmus was selected to perform a Process and Impact Evaluation of the 2009-2010 Home Performance with ENERGY STAR Program. Recommendations from this evaluation were incorporated into the 2012 program. 3. Measurement & Verification efforts will be ongoing as deemed appropriate by Commission staff.

Home Heating Index



The Home Heating Index, measured in BTUs per square foot per heating degree, is a common way of comparing homes heated by fossil fuel. Electrically heated homes and multifamily buildings have a different scale 1/3 to 2/3 smaller than the one shown.

Residential Energy - Krigger J. & Darsi C. p25 - Saturn Resource Mgmt Inc.

QUESTIONS MERITING FURTHER CONSIDERATION

It is clear from the comments made at 2009 CORE Programs Merits Hearing, and the additional written comments, that the proposed fuel-neutral HES Pilot Program needed further development. In its Order the Commission posited 12 questions for further consideration. Reproduced here are the Commission's questions presented in italics followed by the Utilities' response in normal type.

1. *Whether PSNH or UES might first modify their existing Home Energy Program requirement, which limits participation to customers who use electricity for more than 65% of their heating needs, to target customers who still use electricity for a large or even majority portion of their heating needs, but less than 65%, or who otherwise have significantly higher than average electric usage, such as might be due to high air conditioning loads.*

Customers using non-electric fuels for more than half of their heating needs are currently participating in the Home Energy Solutions Program. The requirement for participation in the current HES program is that a customer's home has 30% or more of the heat coming from electric heat, demonstrated in their monthly bill. The utilities have been working their way down the list of customers who appear to heat 30% or more through electric heat. The Utilities believe there are fewer and fewer opportunities to serve homes which use electricity to supply a significant portion of their heating needs.

2. *Whether the funds in the Home Energy Solutions program that PSNH and UES do not expect to be utilized in 2009 with their present criteria might be better directed into the Home Energy Assistance program with a somewhat higher income eligibility cap such as has been put into place for this year's Fuel Assistance Program.*

Allocation of the System Benefits Charge funds has been guided by two principles both of which originated with electric industry restructuring. The first of these principles was established by the legislature in RSA 374-F:3.VI which required that restructuring be "...implemented in a manner that benefits all consumers equitably and does not benefit one customer class to the detriment of another." The second principle comes from the Commission's order on restructuring¹ which requires that all customers contribute equally to programs for low income customers.

These principles are fundamental to the preparation of program budgets. For example, in preparing the 2009 CORE Programs Filing, the utilities worked with the Parties and Staff and reached an agreement to fund the low income energy efficiency programs at 13.5%. The remaining Systems Benefits Charge funds were then allocated to residential and business programs in proportion

¹ Statewide Utility Restructuring Plan 82 NH PUC Rep.122, 183 (February 28, 1997)

to SBC contributions from residential and business customers. The Utilities believe that this approach to program funding adheres to the principles established by the legislature and the Commission. Furthermore, redirecting HES funds to HEA may overstep both the principle to have all customers contribute equally to low income programs and the requirement not to benefit one customer class to the detriment of another.

3. *Whether PSNH's use of its waiting list is the most appropriate method to select program participants.*

PSNH plans to open the program to all residential customers not eligible for the Home Energy Assistance Program. Program eligibility will be determined using the applicant screening tool described above in Section III of this filing. Customers who do not qualify for weatherization services will be directed to educational materials that will help them lower their energy use. PSNH will attempt to notify wait listed customers of the new program, but participation will be on a first come, first served basis.

4. *The discrepancy between PSNH and UES on the projected benefit to cost ratio for the existing and proposed fuel neutral Home Energy Solutions program; where PSNH's ratio is 0.90, below the cost-effectiveness threshold of 1.0, while UES's ratio is 1.9, well above the cost-effectiveness threshold.³ Ex 1, Attachment A, at 71 and 75, respectively.*

The projected benefit to cost ratio for PSNH and UES in this proposal is 1.09 and 1.2 respectively. In developing this proposal the companies reviewed their assumptions used to calculate the benefit to cost ratio. Significantly impacting the final result were the assumptions related to energy savings and measure life. Both companies have assumed average heating fuel weatherization savings of 17 MMBtus (approximately 15%) and have modeled the savings based on individual measure lives. (A "blended" measure life had been used in the original filing).

5. *Whether, in light of a benefit to cost ratio of less than 1.0, the PSNH expanded fuel-neutral program merits approval for other reasons, such as the learning value provided by a pilot or the market transformation value that may lead to a cost-effective program.*

As noted above in the Utilities' response to Question #4, PSNH's benefit to cost ratio is 1.09.

6. *Whether a broad fuel neutral home energy efficiency program should be designed consistent with the national "Home Performance with Energy Star" standards promoted by the U.S. Environmental Protection Agency and Department of Energy and used in neighboring states.*

Design of the Home Energy Solutions (HES) Program will be based on the standards established for Home Performance with Energy Star (HPwES). While the NH CORE Utilities are confident that our current program meets

or exceeds these standards, the program is not certified. Attaining certification will be a priority in 2009.

7. *Whether it is appropriate to subsidize 75% of the cost of non-electric weatherization measures for other than low income customers who might otherwise be able to afford the cost of such measures.*

Motivating customers to make energy efficiency improvements has traditionally been a difficult proposition regardless of income. Customers who undertake improvements on their own generally take a piecemeal approach like weather-stripping a door or installing attic insulation. Comprehensive retrofits create the opportunity for larger energy and peak demand savings.

It has been the Utilities' experience that few customers will undertake a comprehensive retrofit even if significant incentives are offered. In 2008 the traditional electric-heat based HES program was marketed to 8,500 PSNH electric space heating customers. While program incentives were approximately 75% of the installed costs, fewer than 4% expressed any interest in the program.

Other considerations that went into the proposed 75% rebate level include maintaining consistency with other regional fuel neutral programs and improving collaboration with similar New Hampshire gas weatherization programs.

8. *Whether the 25% up-front customer co-payment might prove to be a market barrier for moderate income customers in light of current economic conditions.*

The Utilities propose a \$100 up-front payment for customers whose usage qualifies them for a whole house audit. The payment provides some level of assurance that the customer is not only interested, but also has the financial wherewithal to make the investment in identified energy saving measures. The up-front payment will be applied to the 25% co-payment should the customer proceed with comprehensive services.

At a minimum, customers making the \$100 up-front payment will receive a whole house audit, a check-up of their heating and cooling systems including a combustion safety check, and an inspection to address potential moisture issues. In addition, the customer will be given a recommendation report that identifies energy saving opportunities, prioritizes improvements based on a payback analysis, identifies carbon reduction effects and informs the customer of any health and safety needs.

The up-front co-pay is intended to screen out customers who would likely not move forward and install comprehensive weatherization measures. The Utilities will monitor the impact of the co-payment on this objective and make adjustments as appropriate.

9. *Whether the “Smart Start” program might be modified to make it more accessible to customers who might not be able to afford up front co-payments.*

Opening Smart Start to fuel neutral weatherization projects on a statewide basis raises some difficult issues. For example, the majority of the weatherization savings will come from fossil fuel savings and will not appear on customers’ electric bills; however, the Smart Start charge will appear. It will be more difficult for customers – and impossible for the utility – to verify the fundamental tenant of the Smart Start Program – that monthly savings exceed the monthly Smart Start payments.

In the 2009 CORE Programs Settlement Agreement the Utilities agreed to discuss alternative financing agreements including Smart Start and to develop consensus recommendations on expanded financing alternatives. The Utilities believe that consideration of statewide Smart Start financing for a fuel-neutral residential weatherization program should be deferred until the Parties to the Settlement Agreement have had an opportunity to discuss the issues and bring forth their recommendations. Experience with the fuel neutral weatherization program can further aid these discussions on alternative financing.

10. *How “competing” home energy programs might interact in areas where there are both gas and electric utility programs.*

Although the gas programs are currently different from the electric weatherization programs, the utilities will work together to serve all customers the same way. If serving a gas customer, gas saving measures will be paid for by the gas company and electric savings will be funded by the electric System Benefits Charge. If gas funding has been exhausted for a year, and an approved gas home is ready for weatherization, the electric Utility will pay for all cost-effective measures offered under the fuel-neutral HES Program.

11. *What results should utility performance incentives be based on and whether PSNH and UES should have different incentive structures.*

The Utilities believe that the performance incentives should remain as approved by the NHPUC. The kWh savings will be reflected as part of the Lifetime kWh Savings goal, and both the kWh savings and the MBTU savings will be included in the Benefit / Cost ratio calculation.

12. *How the programs will be evaluated, quantitatively and qualitatively.*

The Utilities plan to continue with the current practice of quality assurance, inspecting all weatherization projects of every new contractor, and then a sampling of projects from contractors with a proven track record of quality workmanship. In addition, the Utilities anticipate that the NHPUC will include the fuel-neutral HES Program as part of their M&E responsibilities.