

# PSNH's ENERGY STAR® Homes Program - Geothermal Option



Dear Homebuilder / Homeowner:

CONGRATULATIONS on building a new home and thank you for your interest in energy efficiency and in building an ENERGY STAR® Qualified home. Homes that earn the ENERGY STAR® label are independently verified to meet the strict guidelines for energy efficiency set by the U.S. Environmental Protection Agency (EPA). Homes earning the ENERGY STAR® Qualified Homes designation through PSNH's Geothermal Option Program are certified to be at least 35% more efficient than homes built to the 2004 International Residential Code (IRC). Your new geothermal home will be substantially more efficient than standard homes built to New Hampshire's Building Code which is currently the IECC 2006 (similar to the 2004 IRC).

Public Service of New Hampshire (PSNH) offers two tracts of the ENERGY STAR® Homes Program. In both cases a Nationally Certified Home Energy Rater (HERS Rater) is used to provide: design assistance, efficiency recommendations, and testing and certification. They act in a consultive manner to help ensure that your new home meets the required Program guidelines. Additionally, PSNH offers financial incentives to help offset the costs of building your new home to higher performance standards. Typically the incentives go to the "decision maker" for the project, the person making the decision to and paying to build to a higher performance standard - in some cases the builder and in others the homeowner. The two tracts are summarized below:

- The traditional ENERGY STAR® Homes Program is available for builders/homeowners opting to condition their home using a conventional fossil-fuel based heating system (usually a hot water boiler or a forced hot-air ducted furnace) employing either oil, liquid propane or natural gas as the heating fuel. In this Program tract PSNH pays for the HERS Rater services (a \$750+ value) and offers incentives up to \$2,500.
- The other tract of the ENERGY STAR® Homes Program utilizes geo-thermal (ground source) heat pump technology to condition the home and in many cases provide hot water as well. Geo-thermal heat pump systems are growing in popularity because they are believed to be one of the most cost and energy efficient – and cleanest space conditioning system available today. Because its benefits are believed to make such an impact, PSNH offers higher incentives for the installation of geothermal heat pumps in new home construction. In this tract the homeowner or builder pays for the HERS Rater services, however, incentives up to \$7,500 are available.

Even if you start a home down the geo-thermal heat pump tract but decide not to pursue it you can "switch" to the traditional program. In either case, you can be reassured that your new home will be more comfortable, healthier and more energy-efficient than the average New Hampshire home.

Congratulations and enjoy your new home!

Bruce Fulmer  
ENERGY STAR Homes Program Administrator  
[fulmebm@psnh.com](mailto:fulmebm@psnh.com)  
(603) 634-2789

# PSNH's ENERGY STAR® Homes Program - Geothermal Option



## Procedures to Follow to Receive Your PSNH Incentive For Building an ENERGY STAR® HOME (Geothermal Heat Pump Option)

### **1. Contract the services of a Program Approved HERS Rater (see Attachment A for a list of raters)**

Your rater will utilize a copy of your house plans and other information that you provide to conduct a preliminary performance modeling of your home. Based on the results, your rater will provide feedback and recommendations that if implemented will likely ensure that your home will meet at least the Program minimum performance guidelines. Following the plans evaluation, two on-site inspections will be conducted: a mid-construction site-visit and then a final inspection and blower door test. The mid-construction site-visit (after insulation but before drywall) helps to ensure that your house is being built according to plan. The final inspection and blower door test is conducted to determine the air leakage of the home and to determine the actual HERS score (Home Energy Rating System) of your home. In order to qualify for PSNH's ENERGY STAR Homes Program - Geothermal Track Program rebates, the home must achieve a HERS Index score of 65 or better (lower is better) - see enclosed page entitled "Home Testing and Certification" for info.

### **2. Select a Geothermal Heat Pump Distributor & Installer**

A geothermal heat pump distributor's role is to help you choose and design a geothermal system that is best suited for the size of your new home as well as its heating and cooling requirements. This process of "right-sizing" the geo system to your home's needs is done through a process using a **Manual J Form** (or equivalent). They will also need to provide you with equipment-testing results once installation is complete (**COP or coefficient of performance report**). PSNH requires both of these forms in order to process a rebate. PSNH does not endorse particular vendors, however, your geothermal heat pump should be ENERGY STAR rated. See [www.energystar.gov](http://www.energystar.gov) for more information. You are encouraged to seek out an experienced geothermal designer, distributor and installer. A properly designed and installed system is crucial to maximizing the benefits of the geothermal heat pump.

### **3. Project Enrollment Form (see enclosed form)**

PSNH requires that ALL projects be enrolled in the Program by completing and submitting a **Project Enrollment Form**. By signing this agreement, the builder and/or homeowner acknowledge acceptance of Program requirements; primarily the responsibility of ensuring that the home will be built according to approved specifications (both building AND equipment). Essentially, the Project Enrollment Form acts as an incentive offer and "earmarks" the estimated rebate for your project.

### **4. Incentive Payment Processing**

Processing of payment will not begin until your home's construction is complete; this includes the installation and testing of geothermal heat pump equipment. Once your installer has authenticated test results and submitted these to both you and PSNH, notify your home energy rater that your home is now ready for final inspection (reference step one above). Your incentive payment will be generated upon receipt of the final HERS report documenting a HERS score of 65 or better and with receipt of documentation noted in the steps listed above (Project Enrollment Form, Manual J Form, & COP report). Receipt of your incentive check can take up to 4-6 weeks after all documents are received.

## **ENERGY STAR Homes Program - Geothermal Option Incentive Calculation**

**For projects that complete in 2008, incentives are based on conditioned square footage of living space as documented in the FINAL Home Energy Rating Report submitted by the Home Energy Rater.**

**For projects that complete after 12/31/08 the incentive calculation method is due to change.**

### **2008 Geothermal Projects Incentive Calculation**

**Less than or equal to 2,400 square feet of conditioned area = \$2.25/square foot**

**Greater than 2,400 square feet of conditioned area = \$2.00/square foot**

**The incentive is capped at \$7,500 per home**



## Features of an ENERGY STAR Qualified New Home

ENERGY STAR® qualified homes can include a variety of energy efficient features such as effective insulation, high performance windows, tight construction and ducts, efficient heating and cooling equipment and ENERGY STAR® qualified lighting and appliances. These features contribute to improved home quality and homeowner comfort, and to lower energy demand and reduced air pollution. ENERGY STAR® also encourages the use of features designed to improve indoor air quality.

**1. Effective Insulation** - *Without proper levels of insulation that is installed right, it's like wearing a jacket open and loose on a cold winter day.* Properly installed, climate-appropriate insulation in floors, walls, and attics ensures even temperatures throughout the house, less energy consumption, and increased comfort. Insulation is installed without any gaps, compressions, and misalignments. This continuous boundary of insulation between the inside and outside helps maintain temperature efficiently.

**2. High-Performance Windows** - Energy-efficient windows employ advanced technologies, such as protective coatings and improved frame assemblies, to help keep heat in during winter and out during summer. These windows also block damaging ultraviolet sunlight that can discolor carpets and furnishings.

**3. Tight Construction** - *Hundreds of holes and cracks in a typical home can quickly add up to the equivalent of an open window in the house 365 days a year.* Sealing, caulking, foaming, and gasketing holes and cracks in the home's "envelope" help reduce energy loss, drafts, moisture, dust, pollen, and noise. A tightly sealed home improves comfort and indoor air quality while reducing utility bills. Properly air sealing the building is one of the most critical features of an ENERGY STAR® home.

**4. Duct Sealing and Insulation** - *Sealing ducts allow more conditioned air to reach the home's living spaces; providing greater comfort.* Ducts carry air from a home's central heater or air conditioner to each part of the home, but can waste a significant amount of energy due to improper installation and poor materials. The ducts in an ENERGY STAR® qualified home use an advanced sealant and are insulated to significantly reduce leakage in the duct system, improving the comfort and air quality of the home, while reducing utility bills.

**5. Efficient Heating and Cooling Equipment (including geo-thermal heat pumps)** - In addition to using less energy to operate, energy-efficient heating and cooling systems can be quieter, reduce indoor humidity, and improve the overall comfort of the home. Typically, energy-efficient equipment is also more durable and requires less maintenance than standard models.

**6. Lighting and Appliances** - ENERGY STAR® qualified homes may also be equipped with ENERGY STAR® qualified products - lighting fixtures, compact fluorescent bulbs, ventilation fans, and appliances, such as refrigerators, dish washers, and washing machines. These ENERGY STAR qualified products provide additional energy savings to the owner.

**7. Third-Party Verification**- *any builder can claim they have an energy efficient home – the ENERGY STAR® labeled home proves it!* With the help of independent Certified Home Energy Raters, ENERGY STAR® R builder partners choose the most appropriate energy-saving features for their homes. Additionally, raters conduct onsite testing and inspections to verify that the homes qualify as ENERGY STAR®.

## Home Testing and Certification

All ENERGY STAR qualified homes are certified to meet the U.S. Environmental Protection Agency's strict guidelines for energy efficiency. An accredited independent Home Energy Ratings System (HERS) Rating Provider is required to verify this certification. All ENERGY STAR qualified new homes receive the ENERGY STAR label and ENERGY STAR certificate. Below is a summary of the basic steps involved to certify homes meet the ENERGY STAR guidelines.

### 1. Evaluate the Home's Predicted Energy Performance

The first step in the certification process is the review of a home's construction plans to calculate the home's energy performance as compared to the local residential code. During this step, an accredited HERS Rater analyzes the planned home's energy performance by using energy modeling software and taking into account information such as orientation, shading area, proposed HVAC efficiency ratings, insulation levels, and water heating equipment efficiencies. This analysis yields a projected, pre-construction HERS Index score, and indicates how much better the home will perform than a simulated reference home. The HERS Rater uses the results from the analysis to identify the most-cost effective energy efficiency upgrades that will achieve an Index of 80 or lower (for PSNH's Traditional - Non Geothermal Program Track) or an Index of 65 or lower (for PSNH's Geothermal Program Track) for the homebuilder's consideration.

### 2. Complete On-Site Mid Construction Home Inspection and Testing

On-site home inspections and testing is conducted by an accredited HERS Rater to verify that the home is built to the agreed specifications and will earn the ENERGY STAR label. You will be responsible for contacting your assigned rater to schedule testing for your home.

An optional inspection is highly recommended, but not required, for homebuilders new to ENERGY STAR. This optional inspection takes place before insulation is installed to identify and address potential problem areas such duct sealing of the HVAC system and air sealing of the building shell. The home may not meet ENERGY STAR standards if these items are not identified and addressed early during the construction process.

The first mandatory inspection is conducted after the insulation is installed before drywall to verify the completion of the Thermal Bypass Inspection Checklist. The Thermal Bypass Inspection Checklist is a visual inspection of framing areas and inspection of insulation so that the air and thermal barriers are continuous and complete. Each home must pass the Thermal Bypass Checklist, however precedence must be given to state, local and regional codes as well as product manufacturers' warranty.

### 3. Conduct Final On-site Home Inspections and Complete Home Energy Rating

Once a home achieves a qualifying HERS Index of 80 or lower, it then becomes an ENERGY STAR Qualified home. At this time, the HERS Rating Provider is responsible for providing you with an ENERGY STAR certificate and label. The final mandatory inspection consists of a blower door test (to test the leakiness of the house) and a duct blaster test (to test the leakiness of the ducts if present). Using data from these tests, your HERS Rater will determine the final HERS Index score for the home.



The ENERGY STAR Label



## ATTACHMENT A

### PSNH ENERGY STAR HOMES PROGRAM APPROVED

### CERTIFIED HOME ENERGY RATERS (New Hampshire)

#### **Conservation Services Group**

40 Washington Street  
Westborough, MA 01581

**Contact:** Tim McNamara

**Phone:** 508-836-9500

**Cell:** 508-326-3827

**Fax:** 508-836-3138

**Email:** [Tim.McNamara@csggrp.com](mailto:Tim.McNamara@csggrp.com)

**Web:** [www.csggrp.com](http://www.csggrp.com)

**Area Served:**

Southern NH (Keene to Concord to Rochester/Seacoast and south)

#### **GDS Associates, Inc.**

1181 Elm Street, Suite 205  
Manchester, NH 03101

**Contact:** Bruce Bennett

**Phone:** 603-656-0336

**Cell:** 603-860-0968

**Fax:** 603-656-0301

**Email:** [bruce.bennett@gdsassociates.com](mailto:bruce.bennett@gdsassociates.com)

**Web:** [www.gdsassociates.com](http://www.gdsassociates.com)

**Area Served:**

ALL of NH

#### **Horizon – Residential Energy Services - NH, LLC**

26 South Main Street  
Concord, NH 03301

**Contact:** Kevin Hanlon

**Phone:** 603-415-3990

**Fax:** 603-415-3991

**Email:** [kevin@horizon-res.com](mailto:kevin@horizon-res.com)

**Web:** [www.horizon-res.com](http://www.horizon-res.com)

**Area Served:**

ALL of NH