



*Rochester Committee  
for Scientific Information*

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## **It's Not Your Father's Energy Audit, Anymore!**

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### **Background**

You don't have to think back very far to recall the days when your local utility would send a person, maybe even an actual engineer, to your home to perform an energy study of your house. This study was intended to reveal possible deficiencies of your home's attic, walls, windows and doors that might be the cause of your "higher-than-anyone-else's" heating bills.

Called "Energy Auditors", these intrepid folks would spend an hour or so, searching through your attic, checking the depth and type of your insulation, asking what you might know about the type of insulation in your walls (if any), measuring your windows, checking to see if you have single or double-pane and storm windows, computing an actual design heat loss of your home (a number representing the amount of heat your home loses, per hour, during the coldest night of a typical year). The auditor would then go down into your basement, look at the band-joint, the space above your basement wall, below the underside of the first floor, to see if there were spaces through which air, and moisture might be passing freely, from inside to outside. They'd also check the furnace or boiler, its input/output rating, the condition of the flue and its connection to the chimney. They'd inspect the water heater, its condition and flue connection, as well as the condition of the piping to/from the house plumbing system.

Following all of this, they'd sit down with you and review their findings, make recommendations for improving the comfort and energy efficiency of your home, provide you with a list of local contractors and, if appropriate, describe a program of no/low-interest loans, through local lending institutions, where you could borrow up to \$1,500, interest-free, to implement their recommendations. The cost to you for all of this, the visit, the audit and the meeting, was never more than \$10.

While, at the time, it was a cutting-edge program, it had certain shortcomings. This system of "free energy audits" was under-subscribed and recommendations from the audits were only occasionally followed. The primary focus was on lowering energy bills; there was no means of imposing quality control on any of the contractors' workmanship and the customer default rate on the utility-guaranteed loans was exceptionally high. Because the utilities had been ordered to develop and implement the program, without commensurate authority to control any of its elements, it was not long before abuses of the program became common. Homeowners paid

only cursory attention to the “free” advice offered. Sometimes, unscrupulous contractors took advantage of the “easy money” and promoted themselves as insulation experts, whether or not they’d had any experience, sometimes not even performing the specified work. Also, there was no easy in-the-field means of measuring the overall quality of the work that had been performed. With no follow-up on the projects, workmanship was sometimes poor and insulation improperly applied. Homeowners would find it easily justifiable to default on loans, especially when the work had been done poorly, or not at all. Banks were not motivated to take action on delinquent loans when the utility had been required to guarantee the loan, and would pay on defaults. The utility was not permitted to tie continuation of energy delivery service, in any way, to a home with a defaulted loan. So, the program faltered, with limited promotion, poor subscription and only limited positive results.

## **Transition**

With the advent of utility de-regulation, in the late 1990’s, a “new life” was in store for the old energy audit programs. The utilities were relieved of this responsibility, and it was turned over to the New York State Energy Research & Development Authority (NYSERDA). NYSERDA was encouraged to broaden the scope of the energy audits and introduce the principles of a new approach to residential energy efficiency. Called “Building Science”, it offers a more comprehensive approach to building design and construction giving occupant comfort, energy efficiency and homeowner safety the highest priorities. Having a government agency in charge of the program, instead of private enterprise, also allowed enforceable guidelines to be set for program operation, including specific training requirements for contractors, a contractor certification process, criteria for project conduct and follow-up inspection of the contractors’ work. A funding stream for underwriting the cost of the program was established, through a monthly charge on utility bills, one which would be unaffected by the State’s budget or financial issues. With this funding, the program could hire “experts” to develop, market, implement, verify and support the program.

## **Marketing**

To represent this new program, NYSERDA established a network across the State called **New York Energy \$mart Communities**. Geographic regions were identified and contracts were let to local agencies (Regional Contractors) with specific demonstrated skills in marketing, trade affiliations and community interaction. Each Region has a pair of assigned Coordinators whose job it is to represent all of the NYSERDA programs, especially the residential program. Their responsibilities include marketing and promotion of the program and recruiting home performance contractors into the program.

## **Home Performance with ENERGY STAR**

The result of this transition from limited scope, utility-based program to a comprehensive government-sponsored program is called “**Home Performance with ENERGY STAR**” (**HPw/ES**). HPw/ES represents the melding of a group of time-tested principles, together with the newest proven technologies for sealing and insulating buildings. The Program has created a network of independent home performance contractors that are accredited by the Building Performance Institute (BPI). This is an established national resource for assessing the health and safety of homes. Contractors are trained and tested, according to specific principles of building science, taking a “whole house” approach to testing homes and identifying energy efficiency

improvements. As the name implies, this NYS program is combined with the established testing procedures of the Federal ENERGY STAR appliance and equipment certification program. This will ensure that the energy efficiency measures included in the projects are accompanied by recommendations for upgrading the home appliances and lighting with the higher-efficiency ENERGY STAR rated appliances and equipment currently available in the market.

It is the stated goal of NYSERDA to use HPw/ES to “transform” the market for residential energy efficiency. Previously, contractors marketed only their own specialized product/service of furnace/boiler replacement, wall and attic insulation or window replacement as “the remedy” for home discomfort and high utility bills. NYSERDA’s goal is for a new market environment in which contractors increase their expertise and expand the scope of their business to provide, or subcontract, all of the services necessary to achieve maximum comfort, energy efficiency and safety for their customers.

To accomplish this “market transformation”, NYSERDA has adopted a bi-directional approach in which competent building performance contractors are recruited into a comprehensive training program that instills in them certain principles of energy efficiency and service delivery. This contractor training, taught from the new “building science” curriculum, approaches the home as a system of interdependent energy interactions that impact the comfort, energy efficiency and integrity of the structure. To maximize access to these training courses, NYSERDA has, through its training contractor, Hudson Valley Community College (HVCC), established Training Centers at local community colleges and other training venues across New York State, where the requisite 30 – 36 hour training courses are taught, and the Certification tests are given. The Regional Coordinators of the NYSERDA Energy Smart Communities Program regularly invite local contractor prospects to formal presentations on the HPw/ES Program. At these Recruiting Seminars, they learn about the HPw/ES Program and hear first-hand, from other Accredited and Certified contractors working in the Program, about the advantages it offers to them for differentiating themselves from their competition and for improving their market share.

At the same time, these Regional Coordinators regularly seek opportunities to make presentations to home owners. Here these prospective HPw/ES customers are taught about the greater value of a more comprehensive approach to residential energy efficiency and to expect more than just a piece-meal approach to solving the comfort and energy efficiency deficiencies of their home. Through these professional NYSERDA presentations, the home owners are encouraged to recognize that persistent discomfort and high utility bills are the result of several factors that cannot be remedied by simply replacing a furnace/boiler, adding some more attic insulation and/or replacing a few windows. Instead, the customer’s expectations are raised to the point where they begin to understand that their discomfort and expense are the result of several interacting factors in their home, and a comprehensive, engineered approach to identifying these and a combination of actions, specific to their home, necessary to reduce/eliminate these problems. They are also shown, step by step, what to expect from the Home Performance w/ ENERGY STAR Program, and that there are specific steps the contractor must follow to ensure that all issues of comfort, energy and safety in their home are addressed by the Program.

### **Program Steps...**

- 1. Finding a BPI Accredited Contractor** – The NYSERDA HPw/ES Program requires that a homeowner use only a BPI accredited contractor. These can be found on NYSERDA’s [www.getenergysmart.org](http://www.getenergysmart.org) website by clicking (in the left-hand column)...

**Resources/Find a Partner/Home Performance Contractors**, then selecting your County on the NYS map. You will be presented with a listing of contractors, all of whom who have been trained, tested and accredited to work in the Program. These are the only contractors who can bring you into the NYSERDA Program.

- 2. The Comprehensive Home Assessment (CHA)** – This is the new name for the old “energy audit”. The contractor selected by a homeowner will come to the home and spend up to three hours inspecting the living space, attic and crawl spaces, examining and testing appliances and flues, taking measurements and collecting other important data. This will include a non-invasive examination of thermal boundaries (walls, windows, doors & ceilings) as well as the attic, roof and venting. From this data, and a proprietary NYSERDA software package, the contractor then develops a ten-page report on the home and its use of energy. The report includes a set of recommendations for improving the comfort, energy efficiency and safety of a home. This Comprehensive Home Assessment (CHA) is a valuable document, specific to the home. It represents a set of careful measurements applied to the principles of building science, resulting in a diagnosis of the home and its comfort, energy efficiency and safety needs. There is a customer charge for the CHA, somewhere between \$300 and \$600.

The results of the CHA, and its recommendations, are presented in order of their economic feasibility; lowest cost/most effective first. From this project list, some or all of the proposed measures for implementation may be selected. By using a participating BPI-Accredited Contractor, a homeowner has access to a number of financing options to help pay for energy efficiency upgrades.

- 3. The Customer Contract** – When a homeowner has decided on the improvements, a written contract is prepared. It should detail all of the work, the price for this work (not just an estimate), payment terms and any additional contractors who are called in to complete part of the comprehensive job scope. It is imperative that any additional contractors brought in are also BPI-Accredited.
- 4. Signing the Contract** – When the homeowner has reviewed the contract documents and is satisfied, copies of the documents will be provided to the homeowner and also submitted to the Program Implementation Contractor for approval. There may be a need for change orders should the scope of the project have to change during the course of the job. The contractor should spell out the process for presenting and authorizing such change orders.
- 5. Installation of Your Energy Efficiency Improvements** – At the time the contract is signed, the homeowner and the contractor should agree upon a date/time for work to begin, as well as an estimated completion date. Many homeowners also request a daily meeting with the contractor to discuss progress of the work.
- 6. Final Testing** – The energy efficiency work performed on the home will often result in the home becoming more air-tight. To ensure that this increased “tightness” does not

cause air-quality, combustion, health and safety problems, the contractor will repeat the tests performed at the time of the CHA, including the use of the blower door. The process is referred to as Pre- and Post Testing, or “Test-In/Test-Out”. It is a requirement of the NYSERDA HPw/ES Program that these two tests be completed, in order to determine if there are additional modifications necessary to ensure health and safety. It is suggested that the homeowner be present when each of these tests is performed.

**7. The Certificate of Completion – Accepting the Job as Completed** – When all of the work in the original work scope (and any change orders) and the final testing is completed, the contractor will prepare a Certificate of Completion for review and signature. The homeowner should be satisfied that the work on the project has been completed, before signing the Certificate of Completion. Otherwise, the homeowner should note, in the “punch list” section of the Certificate, any remaining items that still need to be addressed. No financing incentives can be processed until the signed Certificate on Completion has been submitted.

**8. Follow-Up Work and Return Business** – Remember, in the long run, a comprehensive plan for energy efficiency improvements, including air-sealing, insulation and an efficient heating/cooling system, is usually the best approach to making a home energy more efficient, comfortable, safe and durable.

## **Funding Incentives**

The basic incentive NYSERDA offers to homeowners for participating in the HPw/ES Program is a 10% cash refund of the cost of the elements recommended and purchased in the CHA for any project that is self-financed by the homeowner.

As an alternative to this 10% refund, the homeowner may elect to receive financial assistance through NYSERDA in the form of a subsidized low-interest loan. This is a loan in which NYSERDA “buys down” the cost of a customer home improvement loan by up to 4% (to a minimum of a 3% interest rate loan).

If a homeowner cannot afford any of the elements of the proposal without additional assistance, the homeowner may also qualify for the Assisted-Home Performance w/ENERGY STAR Program. For families whose household income is below 80% of their County’s Median Income, there can be a grant available from NYSERDA for up to 50% of the cost of a HPw/ES project, to a maximum of \$5,000 (50% of a \$10,000 home performance project) with the balance to be covered by a combination of customer cash (\$500 max.) and a low-interest, NYSERDA-subsidized loan.

It is NYSERDA’s intent to bring affordable comfort, energy efficiency and safety to the homes of New Yorkers. Eligibility for participation in the NYSERDA incentive programs is assured for all customers who acquire their electricity from an investor-owned utility, and are paying the System Benefits Charge (SBC) on their utility bill. Consequently, customers of municipal electric utilities, such as those which exist in Bergen, Churchville, Fairport and Spencerport, are not eligible in the NYSERDA Program. Instead, these customers are urged to contact their municipal electric utility, or the New York Power Authority (NYPA).

## **There's No Better Time Than the Present**

In the face of persistently rising energy prices, it's no longer enough to just replace an older, over-sized, inefficient heating system with a new one. It is imperative that the homeowner also address the many issues that contribute to the persistent discomfort in the home. It's no longer just an "energy audit". With the many new technologies and materials available and the complexities of home construction, it's also no longer a simple "do it yourself" project. It takes a professional approach to address all of the important energy efficiency steps that need to be taken to improve the comfort and energy efficiency of your home.

This comprehensive NYSERDA program is readily available to homeowners, through local, trained and certified, reputable contractors. Financial incentives are attractive enough to get most homeowners to take action now. Low-interest loans and even greater assistance are available for families who can income-qualify. By seeking a comprehensive assessment of a home's energy use characteristics, a homeowner will be able to determine which of the many advertised steps in the market today will be best for improving the comfort, energy efficiency, safety and long-term value of the home.

The time is right; energy costs are continuing to rise. A better program is here; the building science-based approach, offered by NYSERDA's Home Performance w/ENERGY STAR Program, provides a comprehensive method of meeting your home's comfort, cost and safety challenges. Homeowners should take the initiative now, so they can begin to enjoy greater comfort and economy, as the 2010/2011 heating season begins.