Executive Summary

Long Island to Lead on Home Energy Retrofits

Improving home energy efficiency is one of the quickest and most economical means to significantly reduce energy waste, utility bills and carbon dioxide emissions. Major initiatives to promote residential energy retrofits are being launched this year on Long Island. The evaluation of home energy performance and the identification of measures to improve that performance are central to efforts to promote residential energy efficiency retrofits. Federal, state and local governments, as well as utilities, are all currently planning, developing, or implementing residential efficiency retrofit programs. These programs will require evaluation of homes, and confirmation of efficiency gains. The procedure that is often called on for those tasks is a comprehensive Home Energy Audit.

Defining a Home Energy Audit

With this multiplicity of programs, the question arises as to whether there is a commonly accepted definition of a Home Energy Audit and, if not, whether there is a need for one. A survey of laws, industry standards and certification programs indicates that there is a significant agreement on the acceptable authorities for promulgating standards of procedure and certification for Home Energy Audits. However there is not a strong legal definition or standard for use of the term in marketing and other communication with the general public.

The lack of such a clear definition has the potential to create confusion in the marketplace as to the services available to homeowners. It is worthwhile to consider whether this potential confusion could be counterproductive to efforts to encourage home efficiency retrofits. There may be instances when a homeowner would knowingly choose a less comprehensive analysis of a home’s energy performance. However, if a homeowners unknowingly receives an evaluation that does not conform to the definition used by federal, state, local or utility programs, it could hamper his or her ability to take advantage of these programs to receive tax credits, rebates or other incentives, potentially creating bad publicity and decreased participation in these programs.

Protecting Consumers and Elevating the Profession

The creation of a standard could serve to elevate the professionalism of the growing residential energy service industry. It could also enhance consumer protection and help to ensure that consumers can make informed choices when making decisions about improving the efficiency of their homes.

The recommendations of this report are focused on model legislation to provide a definition of Home Energy Audits, and to require disclosure when services that do not meet that definition are marketed.
Defining a Comprehensive Home Energy Audit

The question of what constitutes a Home Energy Audit can be separated into three topics: 1) authority and accreditation; 2) procedures; and 3) verification and quality assurance.

The term Home Energy Audit is not defined for the purposes of marketing services. Since 2009, however, definitions of "energy audit" do exist in New York State law for the purposes of municipal sustainable energy loans (General Municipal Law) and benefit assessments (Town Law). These legal definitions are based on the certification or qualification of contractors, not on required procedures. However, the criteria used for the qualification of contractors can result in particular standards for procedures and quality assurance coming into use, as the leading entities that accredit contractors also promulgate standards to which they hold these contractors.

1. Authority and accreditation

New York State General Municipal Law, Article 5-L Municipal Sustainable Energy Loan Program, section 119-ff 3 defines "energy audit" as:

a formal evaluation of the energy consumption of a permanent building or structural improvement to real property, conducted by a contractor certified by the [New York State Energy Research and Development] authority, or certified by a certifying entity approved by the authority for purposes of this article, for the purpose of identifying appropriate energy efficiency improvements that could be made to the property. A municipal corporation may, by local law, provide for the certification of such contractors based upon criteria at least as stringent as the state-wide criteria for certification adopted by the authority for purposes of this article.

New York State Town Law, Article 12-A Establishment or Extension of Improvement Districts — Alternate Procedure, § 209-i Town. Refuse and garbage improvement districts. Defines "energy audit" as:

a formal evaluation by a qualified contractor, who shall be approved by the town board, of the energy consumption of a residential property for the purpose of identifying methods to improve energy efficiency and reduce energy waste.

Under these sections of the New York State law, the procedures entailed in an energy audit are not delineated, instead the authority to qualify contractors that may perform the service is assigned to the New York State Energy Research and Development Authority (NYSERDA) with the provision that municipalities may adopt more stringent criteria for federally funded sustainable energy loan programs, and to towns for benefit assessments through refuse and garbage districts.

NYSERDA has not yet officially announced a list of certified contractors or approved a certifying entity for sustainable energy loan programs. However, NYSERDA has required Building Performance Institute (BPI) accredited contractors for work performed for the Home Performance with ENERGY STAR program and Residential Energy Services Network (RESNET) accredited raters for the ENERGY STAR Homes program. In meetings NYSERDA staff has indicated that BPI certification will likely be
required for audits performed for sustainable energy loans.

In addition to the Home Performance with ENERGY STAR program, which was developed by the U.S. EPA and Department of Energy and administered by NYSERDA in New York State and LIPA on Long Island, Babylon’s Long Island Green Homes program also requires participating contractors be BPI certified or accredited. New York State Division of Housing and Community Renewal rules require that audits done as part of the federal Weatherization Assistance Program, administered on Long Island by the CDC, be performed by a BPI certified building analyst.

The RESNET Home Energy Rating System (HERS) is utilized by the ENERGY STAR Homes program developed by the Environmental Protection Agency and administered in New York State by NYSERDA and on Long Island by LIPA.

RESNET National Standard for Home Energy Audits requires the certified auditor be a Home Energy Rater certified by RESNET and a Building Analyst certified by BPI.

On the Federal level, the PACE Policy Framework developed by the White House (released October 13, 2009) refers to “an energy audit, conducted by a qualified auditor or inspector.” It does not provide guidance as to the qualification of auditors. Similarly, the Guidelines for Pilot PACE Financing Programs released by the Department of Energy, May 7, 2010 states that “Only validly licensed auditors and contractors that adhere to PACE program terms and conditions should be permitted to conduct PACE energy audits and retrofits.” The Guidelines do not detail what the conditions for auditor and contractor participation should be.

The proposed Home Star program alluded to by the President in the most recent State of the Union is now the subject of Senate bill S.3177. In regards to qualifications, this legislation would require energy retrofits be done by a contractor accredited by the BPI (or other standards approved by the Secretary of Energy in consultation with the Administrator of the EPA) in order to be eligible for a $3,000 to $8,000 rebate.

In conclusion, authoritative sources regard BPI certification as an established industry standard for an individual to perform home energy audits and retrofits, and a number of government programs require participating contractors to be BPI certified.

2. Procedures

There are well developed industry standards predicated on certifiable diagnostics. The leading national non-governmental organizations that have promulgated standards for home energy auditing are the Building Performance Institute (BPI) and the Residential Energy Services Network (RESNET). Additionally, the Department of Energy (DOE) has provided some guidance on the subject, and legislation currently being considered by Congress provides insight as to potential future requirements.

As noted above, many programs of both federal and state government recognize BPI and RESNET as authorities on home energy analysis, and on the certification of professionals in the field.

Based on the lack of a legal standard for the required procedures of a home energy audit, and the wide acceptance and credibility of the organizations that have promulgated standards (BPI and RESNET), it seems reasonable to accept those standards as a best practices standard for a comprehensive Home Energy Audit.

The BPI Home Energy Auditing (EA-7) Standard and RESNET National Standard for Home Energy Audits are multi-page documents and the subject of significant training courses. It is not our intention to replicate them here, although there are some elements of these standards that are worth pointing out.

Both require that performance testing (including blower door tests), combustion appliance testing (carbon monoxide safety testing) and computer modeling of the home’s energy performance be completed, and a scope of work for the home be prepared. The BPI standards require that if infrared thermogra-
phy is conducted, the auditor follow RESNET standards for the thermal inspection of buildings.

The Department of Energy’s energysavers.gov web site recommends that audits conducted by professionals include at least a blower door test and thermographic imaging:

Before contracting with an energy auditing company, you should take the following steps:

- Get several references, and contact them all. Ask if they were satisfied with the work.
- Call the Better Business Bureau and ask about any complaints against the company.
- Make sure the energy auditor uses a calibrated blower door.
- Make sure they do thermographic inspections or contract another company to conduct one.

(From the energysavers.gov web site http://www.energysavers.gov/your_home/energy_audits/index.cfm/mytopic=11180)

An outline of key procedures for a Home Energy Audit based on these authorities would include (not an exhaustive list):

- An interview with the homeowner/resident to determine existing comfort and energy problems, goals, priorities, etc.
- Use of appropriate protective equipment and attire.
- A thorough walk-through inspection of the home.
- Diagnostics performed:
  - a blower door test;
  - combustion appliance safety testing (including CO tests of units with outdoor combustion air sources, sealed combustion units, and power ventilated equipment to verify that they are properly installed and operating); and
  - duct testing, in homes with heating and/or air conditioning ducts.
  - Thermographic imaging is strongly recommended.
- The report provided to the homeowner as a result of a home energy audit must include a prioritized list of recommended repairs, upgrades and improvements for health, safety and energy conservation. Energy conservation measures should be rated for cost effectiveness in terms of units of energy saved.

**Differing Levels of Home Energy Assessment**

There are circumstances in which a homeowner might choose to have a less comprehensive survey of a home’s energy performance, particularly to avoid the greater expense of a comprehensive Home Energy Audit, if he or she does not have immediate plans to spend a significant amount on improvements. Some authorities recognize less comprehensive levels of home energy assessment. RESNET categorizes and establishes standards for Home Energy Surveys, which can be performed on-line or in-home. The Rapid Deployment Energy Efficiency Toolkit, promulgated by the Leadership Group of the National Action Plan for Energy Efficiency, recognizes a distinction between what they call “Tier I” audits which offer “a basic, visual home energy checkup whereas the HPwES audit [Home Performance with Energy Star] is comprehensive and involves diagnostic tools.” A DOE informational flyer from 1989, in referring to different levels of complexity in a home energy audit, describes a “walk-through” as consisting of a “room-by-room examination of a residence, as well as a thorough examination of past heating and cooling bills.” It notes that more complex audits often use “blower doors, infrared cameras, digital surface thermometers, and smoke pencils to detect leaks in the build-
ing’s envelope.” In that flyer from two decades ago, a clear distinction in terminology is not made between a walk-through and more complex audits. However, the DOE web site currently recommends that consumers hire professionals who use blower doors and thermographic imaging to conduct energy audits.

The RESNET standards require professionals conducting Home Energy Surveys to affirmatively “advise the homeowner on where to locate qualified individuals to conduct… a Comprehensive Home Energy Audit,” “explain the limitations of the In-Home Energy Survey and provide an overview of the Comprehensive Home Energy Audit,” and to present any energy savings estimates as “generalized… with the qualification that a Comprehensive Home Energy Audit must be obtained to calculate energy savings estimates.” This requirement ensures that the homeowner is aware of the difference between the service being offered and a comprehensive Home Energy Audit and the relative benefits of each, thereby allowing him or her to make an informed decision between the two.

3. Verification and Quality Control

The Department of Energy’s Funding Opportunity Announcement (FOA) for the Retrofit Ramp-Up competitive grant lists as one of its goals to “stimulate activities and investments which can: • Deliver verified energy savings…” [emphasis added] The most obvious means of verification of energy savings would be to require modeling of home performance prior to and after the retrofit. The FOA did not specify this method, however, and was open to innovative approaches —actively seeking “game changers.”

The Department of Energy’s Guidelines for Pilot PACE Financing Programs recommends that: “Inspections should be completed on at least a portion of participating properties upon project completion to ensure that contractors participating in the PACE program are adequately performing work.”

The U.S. Senate Home Star legislation (S.3177) would require prior to the grant of a rebate that energy savings be documented through “comparison of the simulated energy consumption of the home before and after the retrofit” [emphasis added] through whole home simulation software approved under the Weatherization Assistance Program or equivalent, under RESNET Publication No. 06–001 or equivalent, or a HERS rating system required by state law. The legislation states that random third party field verification of work performed is not necessary if “a post-retrofit home energy rating is conducted by an eligible certifier in accordance with— (i) RESNET Publication No. 06-001 (or a successor publication approved by the Secretary); (ii) a State-certified equivalent rating network, as specified in IRS Notice 2008-35; or (iii) a HERS rating system required by State law;”

The draft joint RESNET/BPI Comprehensive Home Energy Audit standard states of the scope of work provided to the homeowner as a result of a Home Energy Audit: “The scope of work shall specify verification of installed work, including all required performance testing and combustion appliance testing.” The importance of a test-out audit in verifying the efficacy and the safety of the measures implemented should be stressed to the homeowner.

Structuring fees or charges so the cost of the “test-out” audit is substantially incorporated in the charge for the initial audit, or the scope of retrofit work performed should be encouraged.

Both RESNET and BPI have internal quality assurance procedures, as do efficiency programs sponsored by LIPA. For example, at least 10% of a HERS rater’s files are reviewed by a third-party Quality Assurance Designee. The Long Island Green Homes program in the Town of Babylon also provides quality assurance through spot-checking and homeowner complaint resolution processes.
Recommendation: Establish legal definition of “Home Energy Audit” and requirements of home energy efficiency service providers.

Justification for establishing legal definition and requirements: The average homeowner does not have sophisticated knowledge of building performance testing and the range of potential diagnostic tools available to assess the energy efficiency of a home. While it is true that in most homes a number of potential energy savings measures can readily be identified and prioritized without the use of a comprehensive assessment that utilizes these diagnostic tools, homeowners who are interested in improving the energy performance of their homes should be made aware that more comprehensive assessments are available and have benefits in terms of identifying and quantifying potential energy savings and protecting health and safety.

As an example, the RESNET National Standard for Home Energy Audits recognizes two levels of home energy assessment — a Home Energy Survey and a Comprehensive Home Energy Audit. When a Home Energy Survey is conducted, the RESNET Standard requires that “The Home Energy Survey Professional shall explain the limitations of the In-Home Energy Survey and provide an overview of the Comprehensive Home Energy Audit,” (RESNET National Standard for Home Energy Audits 704.1.2.1) and “The Home Energy Survey Professional shall advise the homeowner on where to locate qualified individuals to conduct a Diagnostic Home Energy Survey or a Comprehensive Home Energy Audit.” (RESNET National Standard for Home Energy Audits 704.1.2.4)

Proposed model legislation

Definitions. As used in this law, the following terms shall have the meanings indicated:

A. “Home Energy Audit” shall mean a comprehensive, diagnostic analysis of homes energy performance, performed by an individual accredited to perform home energy audits by the Building Performance Institute (BPI) or RESNET, in accordance with the provisions of either the BPI EA-7 Standards or the National Energy Audit Standard promulgated by RESNET.

Key procedures that must be performed in providing a Home Energy Audit include but are not limited to:

1. An interview with the homeowner/resident to determine existing comfort and energy problems, goals, priorities, etc.
2. Use of appropriate protective equipment and attire.
3. Diagnostics to be performed:
   a. a blower door test;
   b. combustion appliance safety testing (including CO tests of units with outdoor combustion air sources, sealed combustion units, and power ventilated equipment to verify that they are properly installed and operating); and
c. duct testing, in homes with heating and/or air conditioning ducts.

4. Computer modeling of the home’s energy performance, using software accredited or approved for energy audits by BPI or RESNET.

5. The report provided to the homeowner as a result of a home energy audit must include a prioritized list of recommended repairs, upgrades and improvements for health, safety and energy conservation. Energy conservation measures should be rated for cost effectiveness in terms of units of energy saved.

6. The report provided to the homeowner as the result of an initial, or “test-in” audit, performed prior to any upgrades, should inform the homeowner of the importance of a “test-out” audit at the completion of the work, including a combustion safety test, to ensure the efficacy and the safety of the measures implemented. Any scope of work developed as a result of a Home Energy Audit shall include a test-out audit.

B. “Home Energy Efficiency Service Provider” shall mean any individual, partnership, company, association, firm or corporation that advertises to the public goods, services, consultation services or advice intended to improve the energy efficiency of homes.

Requirements

A. No Home Energy Efficiency Service Provider that is not BPI or RESNET accredited to provide Home Energy Audits shall advertise services provided for residential properties as a “home energy audit,” “energy audit,” “energy efficiency audit,” or any other formulation that could reasonably be misconstrued to be a home energy audit.

B. No employee, contractor, representative, volunteer or agent of a Home Energy Efficiency Service Provider who makes a visit to the residential property of a client, customer, or potential client or customer, for the purpose of installation of equipment or material intended to improve the energy efficiency of the home, inspection, assay, assessment of the energy efficiency of the home, or consultation or advice on means of improving the energy efficiency of the home may advertise or refer to services provided as, or imply that services provided are, or include, a “home energy audit,” “energy audit,” “energy efficiency audit,” or any other formulation that could reasonably be misconstrued to be a home energy audit, unless the service to be provided meets the definition of home energy audit set forth in section 1.1 above.

C. When any employee, contractor, representative, volunteer or agent of a Home Energy Efficiency Service Provider enters into a contract or agreement to provide services that include installation of equipment or material intended to improve the energy efficiency of a residential property, inspection, assay, assessment of the energy efficiency of a residential property, or consultation or advice on means of improving the energy efficiency of a residential property that does not meet the definition of home energy audit as set forth in section 1.1, the following disclaimer shall be provided in writing to the other party to the contract or agreement:

The service being provided is not a home energy audit. When significant home improvements or retrofits to improve energy efficiency are made or contemplated, the best practice is to obtain a comprehensive home energy audit before and after work is performed. Home energy audits are performed by accredited professionals, include diagnostic tests that provide data on specific energy performance of the home, and result in prioritized recommendations based on cost effectiveness of energy savings. Home energy audits include air exchange measurements and combustion safety tests to protect the health and safety of occupants from poor air quality and potential carbon monoxide poisonings.

Enforcement.

A. All Home Energy Efficiency Service Providers, as defined in Section 1 above, must be registered with the Commissioner of Consumer Affairs and must provide to the Commissioner current documentation of any certification or accreditations to perform home energy audits.

B. The Commissioner of Consumer Affairs or his or her designated representative shall have the power to impose upon any person who shall violate any of the provisions of this local law and/or any regulations duly promulgated with respect thereto a civil penalty of not less than fifty dollars nor more than five hundred dollars for each such violation.

C. For purposes of this section,

1. each instance of advertising as described in Section 2.1 shall constitute a single violation;
2. each visit to a home where the provisions of Section 2.2 are not complied with shall constitute a single violation;
3. each contract or agreement entered into as described in Section 2.3 without the provision of the required disclaimer shall constitute a single violation.

D. The Commissioner of Consumer Affairs is hereby authorized to promulgate rules, regulations and procedures necessary to administer this local law.
Sustainability Working Group

The Sustainability Institute is committed to an open exchange of ideas and information on issues important to Long Island. We would like to thank the many Long Islanders who are now participating in the Sustainability Working Group, and reviewing our Green Papers. We would especially like to thank those who provided input on the draft and helped to develop and improve this Green Paper. Please join the Sustainability Working Group to assist with future Green Papers.