

Navigating the New World of

ENERGY STAR[®]

by John Sabelli, Technical Lead, Energy Efficiency Global Network: Intertek Group

ENERGY STAR has created a completely new system of requirements and procedures for qualifying energy-efficient products. Navigating the new routes to qualification can be a challenge, given the multiplicity of newly defined requirements for testing, certification and verification. What are Recognized Laboratories, Certification Bodies and Accreditation Bodies? What roles do they play in the process? Can manufacturers still perform their own product testing for qualification? This article will chart the landscape and describe how to choose the fastest and most economical route through EPA's Enhanced Testing and Verification Program.



ENERGY STAR has just gone through the biggest transformation in its 30-plus year history. It has changed from a program based on manufacturer self declaration to a program based on 3rd Party Testing and Certification – very similar to the process for electrical safety listing in North America.

Although ENERGY STAR is a voluntary program, it now has all of the characteristics of the world's most demanding regulatory compliance systems. Yet for some manufacturers and large retailers ENERGY STAR qualification *is* a must, from a marketing standpoint, for at least some of the products they make or sell. You might as well use the word “compliance” for ENERGY STAR.

Recently, the US Environmental Protection Agency (EPA) and the Department of Energy (DOE) signed a Memorandum of Understanding (MOU) regarding operation of the ENERGY STAR program. Responsibilities for various aspects of the program were reassigned among the EPA and the DOE. According to the MOU, EPA will manage the ENERGY STAR program, including executing Partner Agreements, setting policy on use of the ENERGY STAR logo and posting web listings. The DOE will provide technical support in assessing the impact of new technologies on test procedures and qualification criteria. These roles will help in addressing issues on test procedures and issuing interpretations.

As part of this MOU, EPA took on the massive job of creating the new Enhanced Testing and Verification system. For manufacturers, or *Manufacturing Partners*, this means up-front work well before a product is tested for ENERGY STAR compliance.

PARTNER COMMITMENTS

A manufacturer (or U.S. distributor) who wishes to use the ENERGY STAR logo on or in connection with its products must first become an ENERGY STAR Partner, that is, sign a Partnership Agreement with ENERGY STAR. This is a licensing agreement for the use of the ENERGY STAR logo. The right to use the logo is granted in exchange for the Partner's “Commitment” that their use of the ENERGY STAR logo will be in accordance with ENERGY STAR rules.

While this part of the Partnership Agreement has always existed in the ENERGY STAR program, new elements have been added. From this point onward, products will be tested in EPA Recognized Laboratories and certified by an EPA Recognized Certification Body before using the ENERGY STAR logo. Additionally, a sampling of each company's ENERGY STAR certified products will be re-tested each year as part of the new Annual Verification Testing requirements.

CHANGE FROM SELF-DECLARATION TO CERTIFICATION-AND-VERIFICATION

Manufacturer self-declaration is history. All ENERGY STAR products must go through some form of 3rd Party, independently-supervised laboratory testing and certification. In turn, laboratories must be EPA recognized, either by accreditation to ISO 17025 or by participating in a 3rd Party Certification Body's Data Acceptance Program. Also, selected products must be periodically re-tested by EPA-recognized laboratories and certification bodies.

To make this shift to independent third party testing, certification and verification, EPA had to define what it meant by *certification* and *verification*. Similarly, it had to set requirements for qualifying organizations to perform these functions. By doing so, EPA in effect created several new entities which exist to run the new Enhanced Testing and Verification System.

In summary of the new EPA requirements, each product is to be independently tested and certified to confirm meeting ENERGY STAR requirements. EPA now requires annual verification testing of certain products to verify that products continue to meet ENERGY STAR requirements. Furthermore, Laboratory Accreditors and 3rd Party Certification Bodies themselves must also go through an application and approval process to become EPA Recognized.

ROLES OF EPA RECOGNIZED LABS AND CERTIFICATION BODIES

EPA Recognized Testing Laboratories

EPA Recognized Testing Laboratories are able to test products to ENERGY STAR criteria and provide test reports to an EPA Recognized Certification Body (CB). Testing Laboratories must be either ISO 17025 accredited for the appropriate tests and recognized by EPA, or qualified by an EPA Recognized CB as meeting the applicable requirements of ISO 17025 and having demonstrated competency in the appropriate tests.

Manufacturer laboratories may be qualified by a CB in the Supervised Manufacturer Testing Laboratory (SMTL) program and/or the Witnessed Manufacturer Testing Laboratory (WMTL) program. SMTL is a program in which the CB assesses the manufacturer laboratory and assembles evidence to establish confidence that the laboratory will produce accurate results without the presence of a CB representative. Once qualified, the manufacturer laboratory performs testing and submits data to the CB for review and acceptance for program certification purposes. Through the WMTL program, the CB assesses the manufacturer laboratory and assembles evidence to establish confidence

that the laboratory will produce accurate results while a CB representative is present. Once qualified, the manufacturer laboratory performs testing in the presence of a CB representative, and submits data to the CB for review and acceptance for program certification purposes.

EPA Recognized Certification Bodies

As dictated by the new EPA Enhanced Testing and Verification procedures, EPA Recognized Certification Bodies must maintain ISO Guide 65 accreditation for conducting conformity assessment certification programs in the required testing disciplines. A CB’s responsibilities include communicating with EPA on listing qualified products, maintaining auditable records of each product’s qualification and verification history, as well as issuing each Notice of ENERGY STAR Certification. Essentially, this certification notice is a green light for manufacturers to use the ENERGY STAR logo with each certified product.

EPA Recognized Accreditation Bodies

The role of EPA Recognized Accreditation Bodies is to provide loose oversight of both EPA Recognized Testing Laboratories and Certification Bodies. These accreditation organizations are recognized by the EPA as qualified to assess the competency and adherence to best practices of testing laboratories and Certification Bodies. In turn, the

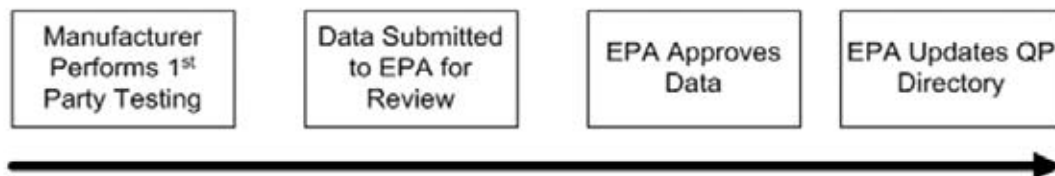
accreditations issued by these bodies are recognized as valid by EPA.

THE ENERGY STAR PROCESS

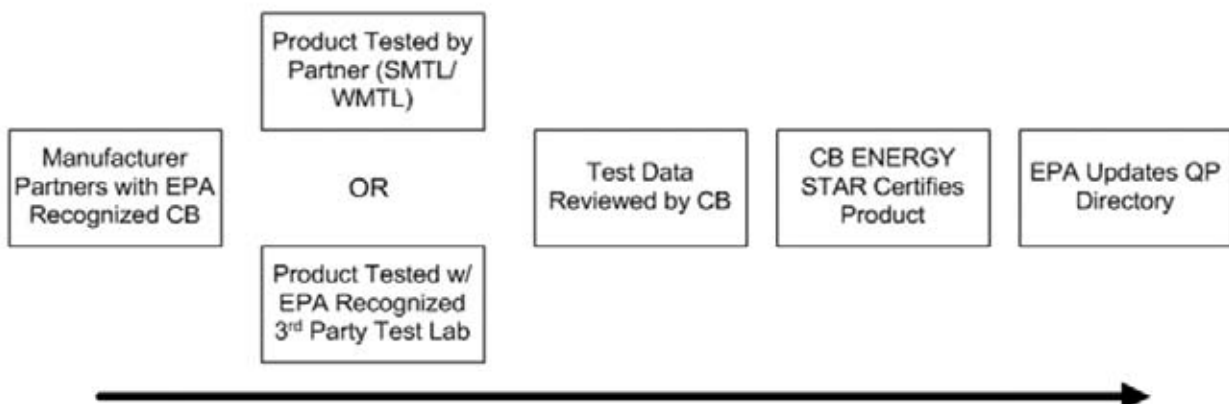
Initial ENERGY STAR Qualification

In the past, manufacturers reported their products’ energy efficiency ratings directly to the ENERGY STAR program. Now, EPA will only accept certified energy efficiency ratings straight from an EPA Recognized Certification Body. Essentially, EPA has re-assigned the responsibility for certifying and verifying ENERGY STAR products. Manufacturers are to partner with an EPA-Recognized CB and have products tested at EPA-Recognized laboratories (as designated by the CB) that have reciprocal agreements with that CB. As a next step, recognized laboratories must conduct an engineering review of test results and reports. Once reviewed and approved, test reports are sent by the laboratory to the Certification Body. After conducting a certification review of the test reports, product characteristics, and ratings, the CB certifies the product for ENERGY STAR. Having issued the Notice of ENERGY STAR Certification to the manufacturer in its certification program, the CB transmits listings of ENERGY STAR certified products to EPA for posting on ENERGY STAR web site. Keep in mind that manufacturers need not wait for their products to appear on EPA’s Qualified Products list – once the Notice of ENERGY

Current EPA Process; to 31 December 2010



New EPA Process; from 1 January 2011



Currently Qualified Products (as of 11/10/10)

Appliances

- Clothes Washers
- Dishwashers
- Refrigerators
- Freezers
- Water Coolers
- Commercial Ovens
- Commercial Refrigerators & Freezers
- Commercial Steam Cookers

Lighting

- Decorative Light Strings
- Luminaires (including sub-components)
- Lamps

Home Electronics

- Audio/Video Equipment
- Set-top Boxes & Cable Boxes
- Telephony
- Televisions
- Battery Charging Systems

Information Technology

- Computers
- Displays
- Imaging Equipment
- Computer Servers
- Enterprise Storage
- Uninterruptible Power Supplies
- Small network Equipment

Commercial Food Service

- Commercial Dishwashers
- Commercial Fryers
- Commercial Griddles
- Commercial Hot Food Holding Cabinets
- Commercial Ice Machines

Home & Building Envelope

- Roof Products
- Water Heater, Gas Condensing
- Water Heater, Heat Pump
- Water Heater, High Efficiency Gas Storage
- Water Heater, Solar
- Water Heater, Whole Home Gas Tankless

Other

- New Refrigerated Vending Machines
- Rebuilt Refrigerated Beverage Vending Machines
- Lab-grade Refrigerators/Freezers

Heating & Cooling Products (HVAC)

- Boilers, Furnaces
- Central Air Conditioning
- Dehumidifiers
- Heat Pumps (Air-Source, Geothermal)
- Light Commercial HVAC
- Res. Fans, Ceiling and Ventilating
- Res. Water Heaters
- Room Air Cleaners/Purifiers
- Room Air Conditioners
- Climate Controls

STAR Certification has been issued, manufacturers may proceed to use the ENERGY STAR logo to market their products.

Annual Verification Testing

Another significant new element of the ENERGY STAR program is Annual Verification testing. EPA's objective is to ensure that a product continues to comply with ENERGY STAR requirements in production after initial certification. Here again, the CB is given the task of managing the annual verification testing. For these purposes, each CB must maintain listings of all products certified as ENERGY STAR in its program. Every year, the CB will select at least 10% of the products in its certification program, procure appropriate test samples, and direct the testing of those samples for continued compliance to ENERGY STAR criteria.

Using each manufacturer's listings of certified ENERGY STAR models, the CB designates models for annual retests. The minimum number of models that are selected and retested must be at least 10% of the total number of models that the manufacturer has in certification. It is at the discretion of EPA to direct the CB to select specific models for annual retests. These special models may represent up to half of the total models selected for the year.

The CB arranges procurement of samples of each of the selected models from one of several sources. Of these, the CB may obtain samples via open-market purchase (retail outlets for household products or contractor supply channels for commercial products) in which case the purchase cost is charged back to the manufacturer. This is EPA's preferable procurement method when dealing with high volume consumer products seeing as open market purchase is most representative of products going into consumers' homes.

As a secondary alternative, a CB representative may obtain warehouse stock for use as samples. These are collected from a designated distribution point at which the product is available in quantity and packaged for shipment to its point of sale.

Samples may also be collected straight off the production line, though this method is least preferred by EPA because of the associated risk that test specimens may have been specially prepared. In this case, a sample of the product is taken directly from the end of the production line, which does offer an advantage for collecting low-volume commercial products, especially those that are custom made or built to order. It is especially beneficial for manufacturers of these products to participate in a

CB's Supervised Manufacturer Testing Laboratory (SMTL) program. For custom product orders, a sample can be tested on completion of assembly and then prepared for shipment. This eliminates the added cost and burden of building extra samples just for testing purposes.

If samples are to be tested at another laboratory, the CB representative designates the destination laboratory and seals the sample for shipment. For annual verification testing, testing must either be done at an accredited, independent EPA Recognized Testing Laboratory or it must be witnessed by a CB Representative at a CB-qualified manufacturer laboratory. The latter option requires the use of a Witnessed Manufacturer Testing Laboratory (WMTL) system. Be advised that for annual verification testing, a CB representative must be present to witness a test in a manufacturer's laboratory. Submission of data from tests performed in the absence of a CB representative will not be accepted.

Products whose energy efficiency criteria remain unchanged from 2010 are subject to annual verification testing starting this year. By March 31, 2011, manufacturers must submit a list of currently qualified products to be kept in the ENERGY STAR program to a CB of its choosing. This list of qualified products will be used to conduct annual verification testing. Note that products undergoing specification changes in 2011 – 2012, will NOT be subject to this process because "re-qualification" testing will be required as part of individual products' revised eligibility specifications.

Future revisions to ENERGY STAR Eligibility Criteria will require currently qualified products to undergo re-qualification testing at an EPA Recognized Laboratory and certification by an EPA Recognized Certification Body.

What To Do Next

Given the multitude of newly enhanced requirements and eligibility factors, the logical order for going forward starts with selecting a Certification Body and signing up through its Energy Efficiency Certification Program. When choosing an ENERGY STAR Certification Partner, consider an organization that can offer you the following:

Global Scope to cover ALL your product types. Look for a CB with recognition or accreditations in global markets as this will provide access to worldwide Energy Efficiency compliance organizations such as DOE, Natural Resources Canada (NRCan), Europe's Energy related Products (ErP) Directive, EcoLabel, and the Saudi Arabian Standards

Organization. There is enormous potential for reducing the duplication of testing, inspection and certification in markets with similar (yet diversely created) energy efficiency requirements.

Global Testing Network with plenty of capacity to meet your needs and perform program services at a variety of locations near manufacturing and distribution centers and points of sale.

Expertise: Partner with a team of experts that understand your products inside and out.

Excellent Working Relationships with EPA, DOE and the worldwide organizations noted above. Consider a CB that is actively involved with regulatory and standard development processes. Your CB should be able to serve as a direct link with EPA to help you provide feedback to the ENERGY STAR process.

Guidance Throughout the Process: Look for an organization with personnel who are in tune with the latest ENERGY STAR developments and can explain practical details of the process that are not apparent from just reading EPA documents.

Speed and Capacity for the fastest turnarounds. Meet all ENERGY STAR and product testing needs quickly and efficiently before the competition with 24-hour certification turnaround.

After partnering, the manufacturer and CB work together to determine a testing and certification plan for products to be qualified or to maintain qualification. When determining what products need to be ENERGY STAR qualified, consult the product-specific Partner Commitments and Product Criteria documents published by EPA. ■

ABOUT THE AUTHOR

John Sabelli is the Technical Lead for Intertek's Energy Efficiency Global Network, and is responsible for the continuing development of Intertek's Energy Efficiency Certification Program, to meet constantly changing demands of regulators and premium level energy efficiency programs like ENERGY STAR. John has been involved in various aspects of product energy efficiency testing and regulatory compliance for 24 years at Intertek. He has participated on standards committees of ASHRAE, ASTM, ANSI, ISO and IEC throughout this time.

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