



# ENERGY STAR® Products Enhanced Testing and Verification

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# Background and Purpose



- Through over 15 years of shared effort, EPA and partners have built something of real value – the ENERGY STAR brand
- Maintaining the value of this brand requires ensuring products labeled with the ENERGY STAR deliver on their promise to the consumer
- This presentation will focus on enhancements to the ENERGY STAR program through testing and verification efforts

# Historic Approach to ENERGY STAR Qualification and Testing



- EPA enters into Partnership Agreements with product manufacturers and issues program identity guidelines
- Manufacturing partners submit test data to EPA to qualify their products within a designated timeframe; lab accreditations required for certain product categories
- EPA reviews test data and adds products to list of qualified products
- EPA verifies energy performance through its compliance audit program

# Why Enhanced Testing?



- Increased scrutiny of voluntary programs
  - Proliferation of green standards – national, international, media, retail
  - Concern over “greenwashing”
  - OIG Reports at EPA and DOE
  - GAO ENERGY STAR Investigation
- New EPA-DOE Partnership Agreement
  - “Verification of compliance with program requirements will be increased and efforts will be enhanced to identify and address product performance issues.”
  - “Verification of ENERGY STAR Qualifying Products will be enhanced in two ways:
    - All products will be required to be tested in an accredited laboratory and qualifying product information be submitted to the government before the product can be qualified as ENERGY STAR
    - Enhanced ‘off-the-shelf’ product testing will be instituted across the full suite of ENERGY STAR covered product categories through a combination of EPA/DOE testing, manufacturer funded/EPA-DOE administered testing, or other third party testing.”

# Key Elements of Enhanced Testing Requirements



- Testing and reporting prior to qualification
  - Ensure that EPA has testing information on all products prior to labeling
  - Require test data from accredited labs that is representative of the product in the marketplace
- Continued testing after qualification
  - Verify that products continue to meet the ENERGY STAR requirements regardless of changes in the production process
  - Provide consumers with confidence that ENERGY STAR products are delivering the savings they expect

**Comments: General support for qualification testing submitted prior to labeling, but concern about costs and time to market; Overall support for verification testing; Requests for more details**

# ENERGY STAR Enhanced Testing and Verification Overview



## TESTING ENHANCEMENT

### Qualification Testing

### Verification Testing

## PURPOSE

*Ensure each product meets ENERGY STAR specification prior to being labeled with the ENERGY STAR*

*Ensure that products continue to meet ENERGY STAR requirements*

## KEY APPROACHES

- Require test data for each product from approved, accredited lab
- Data may be provided to EPA through approved third-party certification system

- Require ongoing verification testing as a condition of ENERGY STAR logo use
- Verification testing administered through third-party testing program
- *DOE has initiated verification testing through Testing Pilot Program*
- *DOE to provide ongoing quality assurance for verification testing*

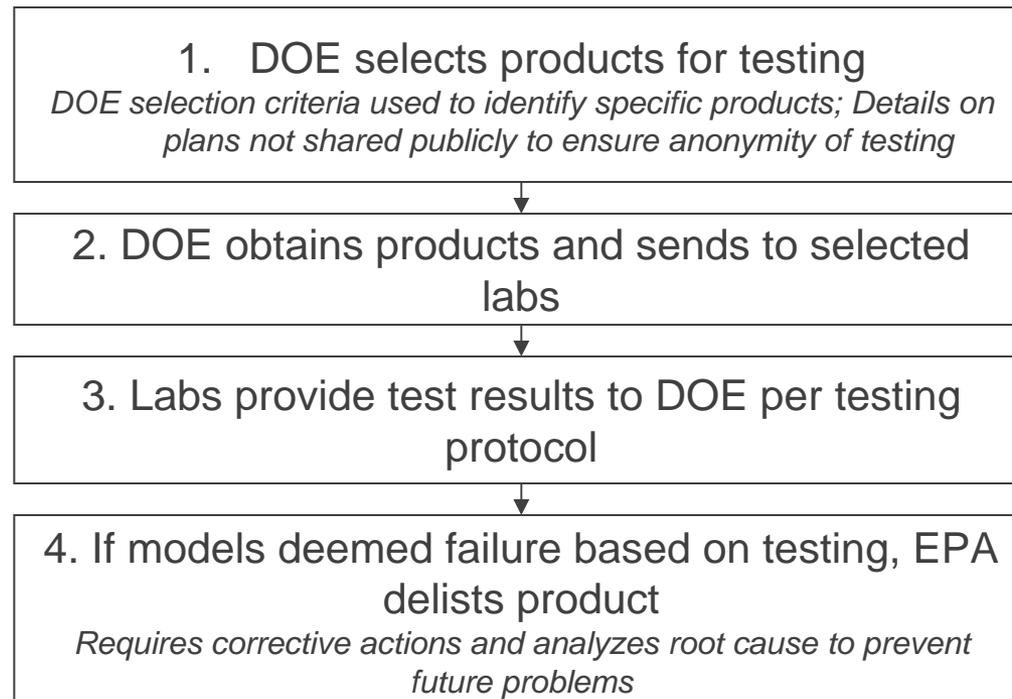
# ENERGY STAR Enhanced Testing and Verification – Government Testing Program



## DOE Verification Testing Program Scope: All ENERGY STAR Product Categories

### Process

Purpose: Ongoing government testing program to verify energy performance of product in the market against reported energy performance data



# ENERGY STAR Enhanced Testing and Verification – Market-Based Testing Program

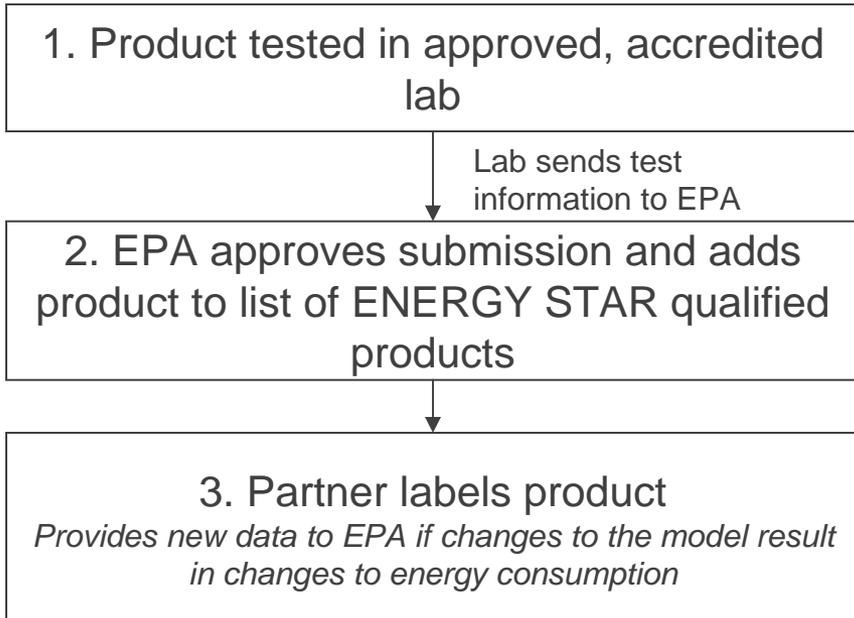


## Market-Based Testing

Scope: All ENERGY STAR Product Categories

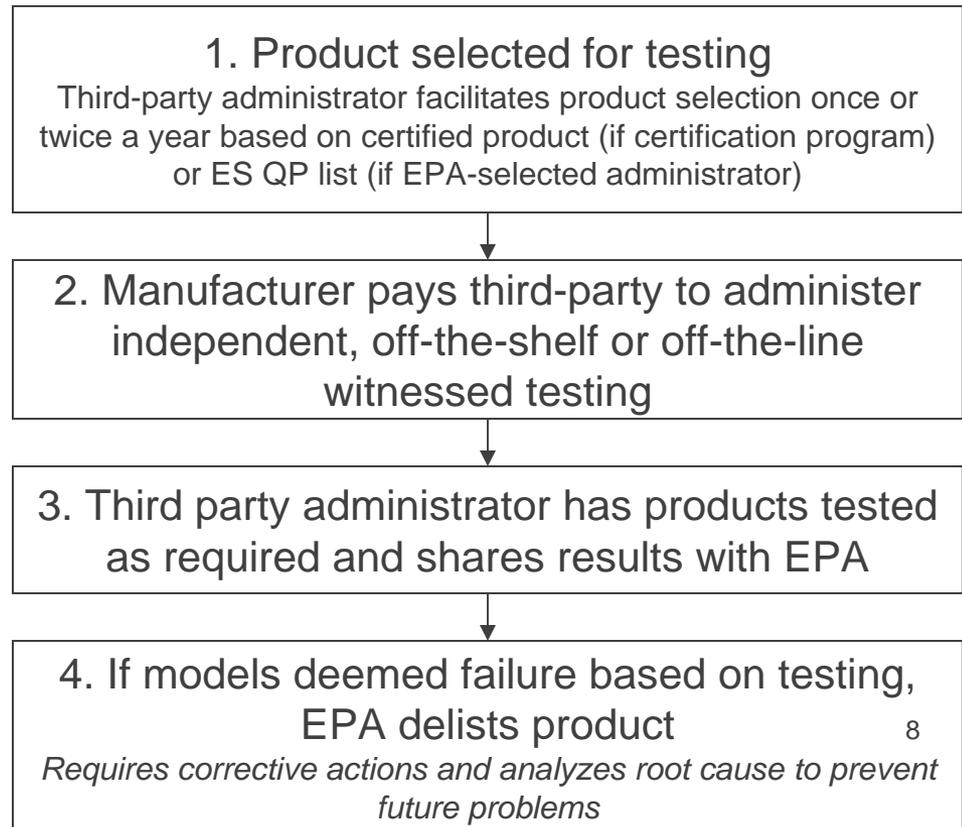
### Qualification Testing

Purpose: Ensure that testing is conducted as required by ENERGY STAR specification and that lab submits test results to EPA that are representative of products sold to customer



### Verification Testing

Purpose: Ensure that products continue to meet ENERGY STAR requirements



# Process for Finalizing Testing and Verification Requirements



- Conference calls with specific product categories to discuss requirements in more detail
- Conference call with accreditation bodies and laboratories
- Requesting comments on both broad requirements and product-specific requirements
- Incorporate comments and distribute guidance documents outlining testing requirements for further review
- Host additional calls as appropriate

# Agenda for Proposed Requirements for all ENERGY STAR Products



- Implementation Issues
  - Process for implementing and reporting on new testing requirements
- Qualification and Quality Assurance Testing
  - Consumer Electronics and IT Equipment
  - Lighting Products
- Third Party Certification and Verification Testing
  - HVAC Products
  - Building Products: Windows, Roofing, Insulation
  - Appliances
  - Commercial Food Service

**Comments: Recommendations to model requirements after existing programs, including current industry third-party verification programs and safety testing programs**

# Implementation Issues – Proposed Approaches

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- New partner commitments
- Lab accreditation
- Verification program administrators
- Submission of test data
- Compliance protocols
- Communication of test results

# New Partner Commitments



- Incorporate requirement for testing in accredited labs prior to qualification for all ENERGY STAR products
  - Products qualified after X date will need to be tested in accredited labs. X date will allow sufficient time for labs to receive accreditation.
  - In the case of no specification change, products qualified before X date will need to be requalified after Y date, allowing a reasonable period for products to be retested.
- Incorporate requirement for qualification prior to labeling
- Explicitly require models to be retested if changes in components are made after qualification that will impact testing results
- Require products to meet ES requirements for conditions in all markets where they are sold
- Require verification testing – verification testing requirements will not be integrated into the specification
- Ensure consistent commitments across products as appropriate

# Lab Accreditation



- Requirements for accreditation bodies
  - Need to register with ENERGY STAR and provide information about lab accreditations, including applications in process and list of accredited labs
  - Conduct round robin testing of accredited laboratories if appropriate
  - Signatory, in good standing, to the International Laboratory Accreditation Cooperation ILAC, APLAC, or NACLA Mutual Recognition Arrangement (MRA)
    - Verifies, by evaluation and peer assessment, that its signatory members are in full compliance with ISO/IEC 17011
    - Verifies that accredited laboratories comply with ISO/IEC 17025.
- Labs will need to be accredited by an approved accreditation body
  - ISO/IEC 17025 or equivalent, including appropriate and current ENERGY STAR test procedures within the scope of accreditation
  - Accreditation shall not be set to expire within the time necessary to complete verification testing and follow-up. Or, if set to expire within that period, confirmation of pending renewal of accreditation will be required.
- Use of in-house labs will be considered on a product-level basis
- Interim approval of labs will be considered on a short-term basis for new specifications that are effective immediately to allow time for labs to secure appropriate accreditation

**Comments: Requests to use the ILAC and IAF infrastructure for accreditation bodies; Requests for more details to define accreditation; Concern about costs and need for accreditation**

# Verification Program Administration



- Manufacturing partners will work with verification program administrators to have products tested in accredited labs. Administrators will share test data with EPA/DOE
- Third parties providing certification and verification testing for ENERGY STAR must meet certain requirements to be approved and listed by ENERGY STAR
- Third parties will be selected by EPA/DOE to administer verification testing for products not covered by certification programs

# Submission of Test Data



- Goal is for ENERGY STAR to have access to test reports for qualification and auditing purposes for all ENERGY STAR qualified products
- Submission of test report or certified test results by accredited and approved laboratory will be required to qualify ENERGY STAR products
- If test results are not certified, ENERGY STAR will audit test reports to ensure accurate representation of testing to qualify products

# Enforcement Protocol



- EPA will publish a standard protocol for responding to product testing failures
  - Process for disputing test results
  - Typical corrective actions

***Failing testing, refusing to participate in testing and/or using the ENERGY STAR label on non-qualified products will be a violation of the partnership agreement and may result in termination of the ENERGY STAR partnership***

# Communication of Verification Test Results to Specific Audiences



- US government and partner countries
  - A list of products tested each year with a summary of test results
  - Detailed test reports for products that fail testing
- Retailers and energy efficiency program sponsors
  - The total number of models tested
  - Delisted models
  - Models that failed, but not delisted, including reason for not delisting
- General public
  - Annual summary of testing, including the total number of products tested and the number of models delisted.
  - Post failed and delisted products

***Verification testing should be conducted in a transparent manner, plans and results should be shared in various forms to meet needs of specific product categories.***

# Applicability of Testing Approaches



- Qualification and Quality Assurance Testing
  - Consumer Electronics
  - IT and Office Equipment
  - Lighting Products
- Third-Party Certification and Verification
  - HVAC
  - Appliances
  - Commercial Food Service
  - Home Envelope
    - **Windows – Different approach that focuses on upfront certification and quality of manufacturing facilities – covered in separate document**
    - Roofing
    - Insulation
  - Water Heaters
  - Other: Vending Machines, Water Coolers
  - Component Products: EPS, BCS

***Products covered by quality assurance testing may also be covered by third-party certification and verification programs as an option***

# Qualification and Quality Assurance Testing

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- Product categories covered
  - Consumer Electronics
  - IT and Office Equipment
  - Lighting Products

# Qualification and Quality Assurance Testing (*cont.*)



- Qualification testing
  - Laboratory requirements
- Verification testing program administration
- Verification testing
  - Laboratory requirements
  - Process for identifying and selecting products
  - Process for obtaining products
  - Number of units to be tested
- Partner responsibilities

# Qualification Testing



- Third-party independent lab will be required by default; in-house labs may be allowed on a product-specific basis

**Comments: Concern about costs, capacity, and time-to-market associated with third-party labs; Recommendation to consider testing programs that allow for testing at manufacturers labs with oversight.**

# Existing Lab Accreditation Requirements



- Residential Light Fixtures
  - Lab accredited by a signatory to one of the ILAC, APLAC, or NACLA MRAs required for qualification
  - Third-party, NVLAP accredited lab required for verification testing
- CFLs
  - Third-party accredited lab required for qualification testing
  - Independent, Third-party, NVLAP accredited lab required for verification testing

# Quality Assurance Testing: Program Administration



- One third-party entity will be selected to administer testing program for a product category (the same third party may be selected to administer testing for more than one product category)
  - Selection criteria will include cost of testing as well as ability to satisfy qualification criteria
- Qualifications
  - Proficiency in measurement testing or statistics
  - Demonstrated impartiality regarding the outcome of testing
- Responsibilities
  - Identify and select qualified laboratories for testing
  - Work with manufacturers to obtain funds and information for required testing
  - Ensure testing remains on schedule
  - Provide detailed test reports and summaries of results to DOE/EPA

# Quality Assurance Verification Testing: Laboratory Requirements



- Third-party independent accredited lab will be required by default
- Witness testing may be allowed on a product-specific basis

**Comments: Requests to use in-house labs with appropriate accreditation; Support for independent testing in third-party labs**

# Quality Assurance Verification

## Testing: Selecting Products



- Selected by panel with final approval by EPA/DOE
  - Panel should be comprised of members from industry, EEPS, and DOE/EPA
- For 50% of models selected, basic models will be randomly selected from the list of ENERGY STAR products
- For 50% of models selected, additional basic models will be selected using the following factors:
  - Basic models and product classes from manufacturers for which previous basic models were not compliant
  - Third party referrals regarding the accuracy of ratings from third parties such as competitors, consumers, consumer groups or regulatory agencies will be considered
  - Models new to the market, particularly from brands or manufacturers which are new market entrants
  - Models with high sales volumes

# Quality Assurance Verification

## Testing: Selecting Products

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- Need to ensure that products available on market and determine applicability of current requirement based on date of manufacturer.
- Confirm product selection with manufacturer and request list of at least three places to obtain the product.
- Limitations for how many products selected per manufacturer allowing flexibility to test more products if necessary (e.g., manufacturer product failures).

# Quality Assurance Verification

## Testing: Obtaining Products



- Preferred option is to obtain products from the marketplace
  - If more than one sample is required for testing, must obtain products from different locations and at least two of the samples may not be from the same geographic area
- Other option for prohibitively expensive items or for items not available “off-the-shelf”
  - Random selection of product off production line
  - Testing at manufacturer laboratory under supervision

**Comments: General support for off-the-shelf testing**

# Quality Assurance Verification Testing: Sample Size



- The number of units to be tested should be the same as required for qualification – dependent on individual product specification
- Additional testing triggers will also be applicable per product specification requirements
  - e.g., imaging equipment
    - if tested unit is within 10% of the TEC criteria one additional unit should be tested
    - if tested unit is within 15% of the OM criteria two additional units should be tested

# Quality Assurance Verification Testing: Partner Responsibilities

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- Partner is required to pay the third-party administrator for testing of selected products
  - Testing will occur once or twice a year depending on the product

# Third Party Certification and Verification Testing



- HVAC
- Appliances
- Commercial Food Service
- Building Products
  - Windows – Different approach that focuses on upfront certification and quality of manufacturing facilities – to be addressed on window conference call
  - Roofing
- Water Heaters
- Other: Vending Machines, Water Coolers
- Component Products: EPS, BCS

**Comments: Broad support for NFRC certification program despite the costs associated with the program.**

# Third Party Certification and Verification Testing



- Certification and verification testing program administration
- Qualification testing
  - Laboratory Requirements
- Verification testing
  - Laboratory Requirements
  - Process for identifying and selecting products
  - Process for obtaining products
  - Number of units to be tested
- Challenge testing
- Partner responsibilities

# Third Party Testing – Program Administration



- Third-party entity will administer certification and verification testing program (more than one third-party may offer such programs as long as they meet the qualification criteria)
- Qualifications
  - Proficiency in measurement testing or statistics
  - Demonstrated impartiality regarding the outcome of testing
  - Quality control measures (e.g., ISO/IEC Guide 65:1996)
  - May not require membership for product to be certified
  - Need to be approved by EPA
- Responsibilities
  - Identify and select qualified laboratories for testing
  - Work with manufacturers to test ENERGY STAR products for both initial qualification and verification purposes
  - Ensure testing remains on schedule
  - Provide detailed test reports and summaries of results to EPA/DOE

# Third Party Qualification Testing



- Third-party independent lab will be required by default; in-house labs may be allowed on a product-specific basis
- Products may not be certified based on the rating of another product unless differences do not impact the energy performance of the product
- To certify product, manufacturer must provide information on the distribution of product (for purposes of conducting verification testing)

**Comments: Requests to use in-house labs with appropriate accreditation; Support for independent testing in third-party labs**

# Existing Lab Accreditation Requirements



- Ventilating Fans
  - Independent, Third-party lab by a signatory to one of the ILAC, APLAC, or NACLA MRAs required for both qualification and verification testing
- Commercial Refrigeration
  - CEC approved lab or data verified by a certification body accredited to Standards Council of Canada required for qualification

**Comments: Request to make use of existing mechanisms such as the accreditations under the Standards Council of Canada**

# Third-Party Verification Testing: Laboratory Requirements



- Third-party independent accredited Lab will be required by default
- Witness testing may be allowed on a product-specific basis

**Comments: Requests to use in-house labs with appropriate accreditation; Support for independent testing in third-party labs**

# Third-Party Verification Testing: Selecting Products

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- Selected by third-party program, allowing for input from EPA/DOE and other stakeholders
- Must test all certified products at least every three years
- Need to ensure that products still available on market and that the current specification applies

# Third-Party Verification Testing: Obtaining Products

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- Preferred option is to obtain products from the marketplace
- Other option for prohibitively expensive items or for items not available “off-the-shelf”
  - Random selection of product off production line
  - Testing at manufacturer laboratory under supervision

# Third-Party Verification Testing: Sample Size

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- The number of units to be tested should be at least the same as required for qualification

# Third-Party Verification Testing: Challenge Testing



- Challenge should be conducted in a manner similar to other verification testing
- Challenge provisions may be structured in a way that puts the financial burden on the two companies involved
- Test results for confirmed failures should be shared with EPA immediately

**Comments: General support for challenge testing programs in addition to or in lieu of other testing.**

# Third Party Testing: Partner Responsibilities

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- Partner is required to pay for third-party certification of product
  - Verification testing will be included in the fee
  - Testing will occur at least annually

# Next Steps



- Product Specific Discussions – March/April 2010 – See [www.energystar.gov/mou](http://www.energystar.gov/mou) for schedule of calls
  - Third party certification
    - HVAC: ASHP, GSHP, CAC, Boilers, Furnaces, LCHVAC, Ceiling Fans, Room Air Conditioners, Ventilating Fans
    - Windows
    - Roofing
    - Insulation (to be scheduled)
    - Appliances: Clothes Washers, Dishwashers, Refrigerators/Freezers, Dehumidifiers, Room Air Cleaners
    - Commercial Food Service: Dishwashers, Fryers, Griddles, HFHC, Ice Machines, Ovens Refrigerators/Freezers, Steam Cookers
    - Water Heaters
    - Other: Vending Machines, Water Coolers
    - Component Products: EPS, BCS
  - Quality Assurance Programs
    - Consumer Electronics: AV products, DTA, STB, TV, Telephony, Decorative Light Strings
    - IT and Office Equipment: Enterprise servers, Enterprise storage, Computers, Imaging Equipment, Displays, Small Network Equipment, UPS
    - Lighting Products: CFL bulbs, Integral LED lamps, SSL, Residential Light Fixtures
  - General call for accreditation bodies, laboratories and certification programs

## Next Steps (*cont.*)

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- Comments on general approach (this slide deck) due April 30, 2010
- Complete draft including product-specific requirements – May 2010
- Finalize Requirements – July/August 2010
- Phase-in verification testing requirements allowing adequate time for certification programs to be developed and lab accreditation to occur

# Contact Information

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