



ENERGY STAR®

Electronics Product Update

2010 ENERGY STAR Products Partner Meeting
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Historical Perspective



1992: Computers V1.0

Sleep Mode = 30W for Desktops, 60W for Integrated computers

Program Savings ~12 million kWh



2007: Computers V4.0

Sleep Mode = 4W for Desktops and Integrated computers

PLUS:

- Requirements for Off Mode & Idle
- Requirements for PSU efficiency
- Advanced power management

Program Savings ~2.8 billion kWh

2010: Computers V5.0

Program Savings: 3.05 Billion kWh



Historical Perspective



- Major Efficiency Drivers
 - Market-driven technological innovation
 - ENERGY STAR
- 14 unique electronics & IT product specifications have been developed since the inception of ENERGY STAR,
- 51 specification revisions have been completed to keep pace with efficiency gains and product innovations.
- The pace of revisions is increasing. 2011: 9 revisions, 3 new products, 5 scoping electronics efforts underway.



ENERGY STAR Televisions
Specification Revisions by Year

Tracking Technology Development



- Depth and savings potential of ENERGY STAR specifications are increasing over time.
- CE/IT now accounts for over 30% of the total energy savings from the ENERGY STAR program.
- Specs address several unique **power modes**, or a weighted average of modes expressed in terms of **Typical Energy Consumption (TEC)** as well as **power management**, **power supply efficiency**, and **user education and information**.

Televisions	Audio Video	Computers
On Mode	Active Mode	Idle Mode
Sleep Mode	Idle Mode	Sleep Mode
Download Acquisition Mode	Sleep State	Off Mode

Power Management Opportunity



- Advanced power management features in ENERGY STAR computers save consumers up to \$50 annually.
- A similar approach has been applied to other ENERGY STAR programs, via incentives or mandatory requirements.
 - Audio/Video V2.0, Displays (mandatory Auto Power Down)
 - Set-top Box V3.0 (voluntary APD plus Deep Sleep incentive)
 - Televisions and Imaging Equipment (voluntary APD)

System-level Opportunities



- **Proxying & Energy Efficient Ethernet:** Ecma-393 standard allows electronic devices to sleep without compromising network availability. Products that implement are rewarded by the ENERGY STAR computer specification.
- **Multi-room Set-top Boxes:** The ENERGY STAR STB service provider agreement encourages deployment of thin-client devices without DVRs for whole-home energy savings.
- **System Sleep:** The ENERGY STAR Audio/Video specification requires a low power sleep state—can support the ability to wake from sleep without direct user input. Once audio hits the input, the system resumes automatically.

Other Environmental Benefits



- Working with industry & academia to assess lifecycle carbon impact of ENERGY STAR products.
- Developing strategy for ensuring that ENERGY STAR use-phase efficiency considerations do not favor technologies with substantial manufacturing-phase or end-of-life carbon emissions.
- Evaluating other vehicles for delivering on consumer demands for their electronics.

Recent Spec Updates



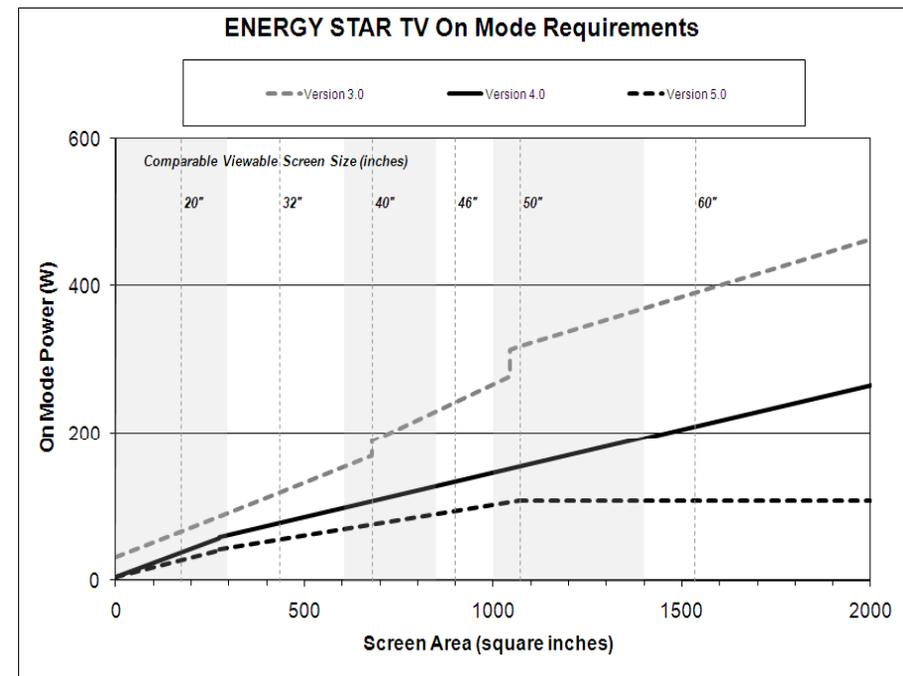
- Audio/Video (Tier 2 v 2.0)
 - Effective July 31, 2010
 - Expanded scope includes commercial audio/video products and new technologies.
 - Requirements include mandatory auto power down, power limits for On and Sleep Mode, and minimum efficiency for audio amplifiers
 - Tier 3 scheduled to take effect in July, 2012



Recent Spec Updates



- Televisions (v 4.1)
 - Effective May 1, 2010
 - Updated On Mode power limits, luminance requirements, and Download Acquisition Mode Limits
 - On Mode limits represent a 40% power reduction from Version 3.0.



2011 Electronics Spec. Development



- **Set Top Boxes (v 3.0)**
 - Draft 2 distributed September 21, 2010.
 - Product spec & service provider agreement are being finalized.
- **Game Consoles (v 1.0)**
 - Development to be restarted October 2010 and will reflect use data.
 - Moved to a separate specification.
- **Televisions (v 5.1)**
 - Check-in on Version 5.1 requirements.
Consider requests for earlier effective date.

2011 Electronics Spec. Development



- **Telephony (v 3.0)**
 - Launch Q1 2011.
 - Will propose adding IP phones.
- **Imaging (v 2.0)**
 - Launch fall 2010
 - Apply TEC to OM products
- **Displays (v 6.0)**
 - Launch October 2010
 - Apply IEC test procedure to all size categories

2011 Electronics Spec. Development



- **Battery Chargers (v 2.0)**
 - Draft 1 planned for November.
 - Will propose adding industrial products.
- **Computer Servers (v 2.0)**
 - Draft 2 development in progress.
 - Working with industry to develop active mode energy performance assessment tools (benchmarks).
- **Computers (v 6.0)**
 - Launch October/November 2011.
 - Add new products, deliver other environmental benefit.

2011 Electronics Spec. Development



- **New!! Data Center Storage (v 1.0)**
 - Draft 2 development in progress.
 - Data collection is ongoing.
- **New!! Uninterruptible Power Supplies (v 1.0)**
 - Draft 1 development in progress.
 - Data collection is pending.
- **New!! Small Network Equipment (v 1.0)**
 - Draft 1 development in progress.
 - Test procedure nearly finalized. Data collection pending.

Scoping Plans



- Projectors
- Home Storage
- Large Network Equipment
- Data Center Cooling
- Home Energy Monitors/Controls

Program Sunsets



- **External Power Supplies & End Use Products**
 - Program sunset announced on July 19th, 2010.
 - New partnerships and product qualifications ceased in July, 2010. Full sunset of the program to occur on December 31st, 2010.
 - Energy use associated with EPSs nationally is estimated to be 12 billion kWh less per year than it would have been had EPS energy performance stayed where it was in 2005. ENERGY STAR has played an important role transforming the EPS market.
- **Digital to Analog Converters (DTAs)**
 - Proposal to sunset distributed for comment on August 27th 2010.
 - Plan to cease new partnerships and product qualifications on October 1st 2010, with full sunset of the program on December 31st 2010.
 - The lifetime of the DTAs program represents over 1 Billion kWh in energy savings.

Enhanced Testing and Verification: Background and Purpose



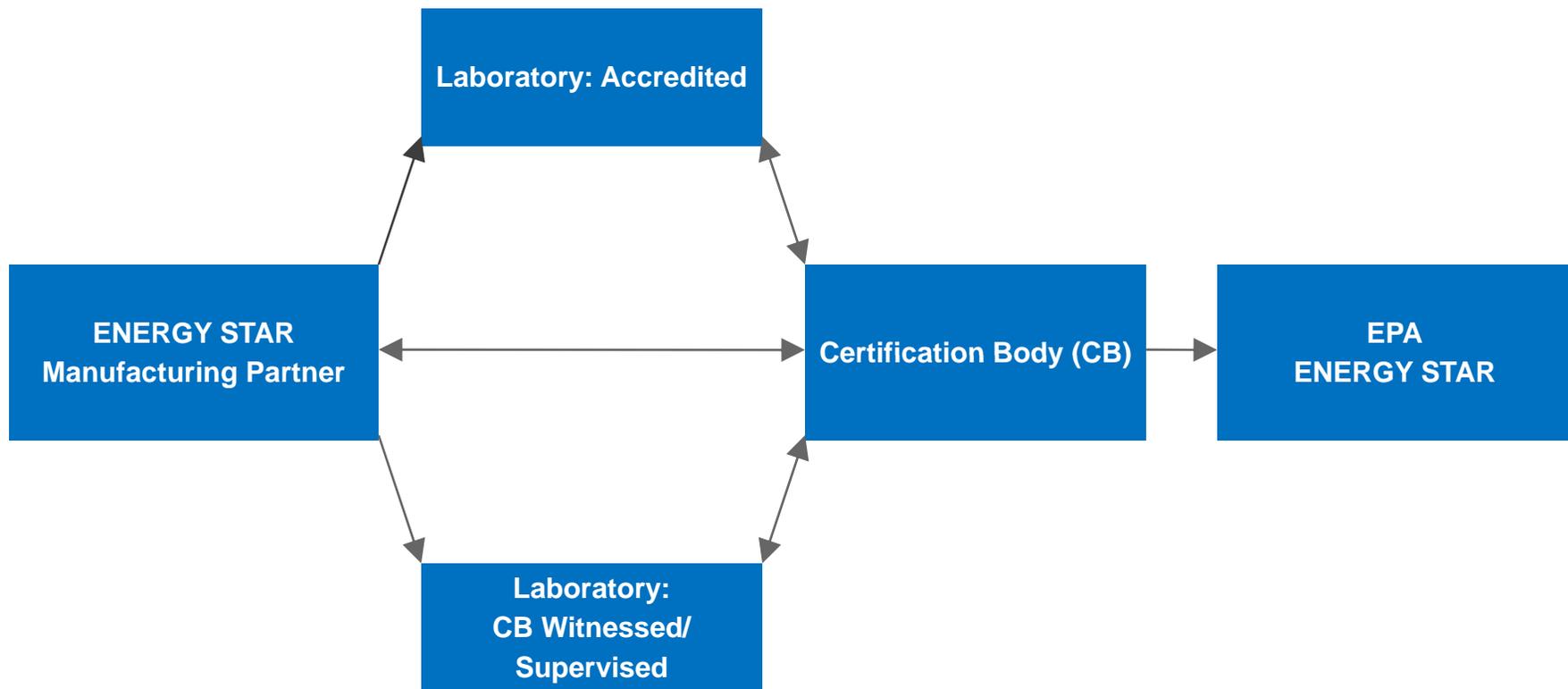
- Through over 15 years of shared effort, EPA and partners have built something of real value – the ENERGY STAR brand
- Maintaining the value of this brand requires ensuring products labeled with the ENERGY STAR deliver on their promise to the consumer
- Recent developments: Increased scrutiny of voluntary programs
 - Inspector General Reports at EPA and DOE
 - Government Accountability Office ENERGY STAR Investigation

New Approach to ENERGY STAR Qualification and Verification Testing



- Third-party certification of test data prior to qualification and labeling
 - EPA-recognized certification bodies, laboratories, and accreditation bodies
- Verification testing after qualification
 - Verify that products continue to meet the ENERGY STAR requirements regardless of changes in the production process

Qualification Flowchart





Participation

- **ABs**
 - Recognized: **18**
 - **13** different countries including China, Japan, Taiwan, UK
- **Laboratories**
 - Applications under review: **43** accredited labs
- **CBs**
 - Applications under review: **5**

CB Role #1: Product Qualification Through Performance Certification



- CB will be responsible for operating a product certification program compliant with ISO/IEC Guide 65. CB will fulfill this role by:
 - Verifying that the test data originated from an EPA-recognized laboratory
 - Comparing test data to relevant product specifications
- After certification process is completed, CB will notify partners of qualification or rejection, or request additional information
- If CB determines the product is qualified, it will provide EPA with appropriate data so the product may be added to the Qualified Product List

Re-evaluation in the Event of Significant Changes



- CB to re-evaluate product performance in the event of changes that could affect the ENERGY STAR qualification status of a product the CB has certified
 - Partner must inform the CB about any such changes
 - CB evaluates results of retesting



CB Role #2: Verification Testing

- CBs to administer testing
- Approximately 10% of ENERGY STAR qualified models to be tested per year, taking product families into account
- Combination of random and pre-selected models
- Unit procurement: Off-the-shelf where feasible; other channels possible as long as 3rd party personnel select unit(s)
- EPA-recognized 3rd party laboratory must be used. (For product categories where this is not feasible, testing must be witnessed by CB personnel.)
- CB reports results to EPA; failing products disqualified



CB Role #3: Challenge Testing

- CB to have in place a challenge testing procedure
- Conditions of initiation:
 - Challengee has been notified
 - Model number has been clearly identified
 - Sound basis has been established
- CB reports results to EPA; failing products disqualified

Witnessed or Supervised Manufacturers' Test Laboratories



- CB may operate a program to accept test data from a **first-party** lab operating under witness or supervision, i.e., a witnessed or supervised manufacturer's test lab (WMTL/SMTL)
- Lab must still operate in accordance with ISO/IEC 17025, and test products per relevant ENERGY STAR test methods
- CB assesses lab to these requirements
- If lab is recognized by application, CB shall enroll it only as an SMTL, not a WMTL, since EPA recognition removes the need to establish confidence in the laboratory via witnessing every test

Implementation



- EPA proposed edits to Program Requirements to reflect enhanced testing and verification
 - Partner Commitments
 - Eligibility Criteria
 - Test Methods
- Partners will be invited to **recommit to new Partner Commitments via MESA in mid/late October.**
- New Program Requirements **effective December 31, 2010.**
- In discussion with **International Partners** regarding their testing/verification plans



Implementation

Beginning January 1, 2011

- **New Products:** All new products seeking qualification will have to be **tested in an EPA-recognized lab**, and their test reports will have to be reviewed and certified as meeting ENERGY STAR requirements by an EPA-recognized CB.
- **Currently qualified** products:
 - Will **NOT need to be retested**.
 - As specifications are revised, products will need to be tested per the new requirements.

Resources



- www.energystar.gov/productdevelopment
 - Specs at-a-Glance document
 - Product development reports
 - New spec development and spec revision timelines, process guidance, documentation and contacts
- www.energystar.gov/testingandverification
 - Final requirements for accreditation bodies, labs, and certification bodies
 - Updated program requirements for all products (partner commitments, eligibility requirements, and test methods)