ENERGY STAR
Small Network Equipment (SNE)
Version 1.0 Certification Body (CB) Training

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Agenda

1	**ENERGY STAR Overview**
2	**Version 1.0 SNE Specification Overview**
3	**Overview of CB Details**
4	**Open Questions & Comments**

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ENERGY STAR Overview

- Voluntary labeling program managed the U.S. Environmental Protection Agency (EPA)
- Strategic approach to energy management, promoting energy efficient products and practices
- Tools and resources to help save money and protect the environment
- Influential brand recognized by 85 percent of Americans

ENERGY STAR Portfolio

- Define and educate on energy performance through a single designation: ENERGY STAR
  - Product Efficiency
  - New/Existing Home Efficiency
  - Commercial and Industrial Efficiency
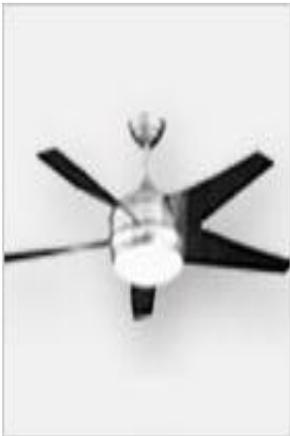
The ENERGY STAR Product Label

- The ENERGY STAR label was established to:
  - Reduce greenhouse gas emissions and other pollutants caused by the inefficient use of energy
    AND
  - Make it easy to identify energy-efficient products that offer savings on energy bills without sacrificing performance, features, and comfort.

Benefits of the ENERGY STAR Label

- Energy efficiency with same or better performance

- Standard test procedures applied to all products
  - Apples to apples comparison

- Detailed, publicly available data
  - Soon to be available in XML, other machine readable formats

- Unbiased, 3rd party source for energy efficiency information.

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Timeline of Version 1.0 SNE Specification Development

- 2009:
  - October - Framework Document
  - December - Draft 1 Test Method
- 2010:
  - March - Draft 2 Test Method
  - November - Draft 3 Test Method
- 2011:
  - February - Draft 4 Test Method + Original Data Assembly
- 2012:
  - February - Draft 1 Specification - February
  - December - Draft 2 Specification and Final Draft Test Method
- 2013:
  - March - Final Data Assembly
  - May - Draft 3 Specification + Final Test Method
  - July - Final Draft Specification
  - August - Final Specification

Definitions

- Types of SNE products:
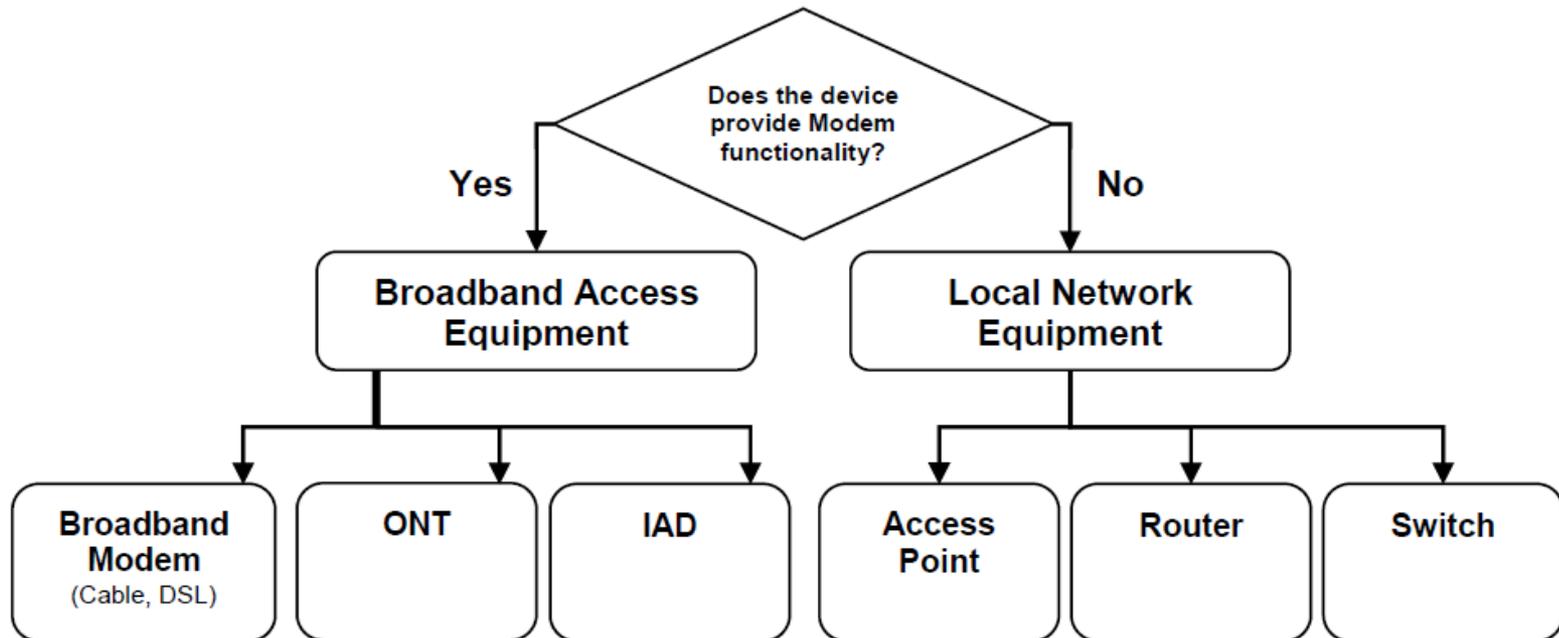
Definitions

- Modes and states

- Additional components

- Energy efficiency features

- Physical port definitions

- Product family

Scope Evaluation

- How to determine if a product is in scope:

Product Attribute	✔ In Scope	🚫 Out of Scope
Power Input Type	AC single phase	DC / Power over Ethernet
Product Type	• Broadband Modems • ONTs • IADs • Routers • Switches • Access Points	• Large Network Equipment • Security Appliances • Enterprise Access Points • Cellular/3G/4G Wireless Products
Physical Network Port Count	Less than or equal to eleven	Twelve or greater
Physical Network Port Types	• Twisted Pair Copper • Coaxial Cable • Fiber Optic	Pluggable or modular media adapters (e.g. GBIC and SFP modules)

Additional Scope Exclusions

- Network equipment capable of accepting interchangeable modules (e.g. line cards and additional power supplies)

- Products that can provide power through Power over Ethernet functionality

Power Supply Requirements

- External power supplies must meet level V performance requirements under the International Efficiency Marking Protocol

Efficiency Criteria

- The average power of a SNE product is calculated using the equation below:

$$P_{AVG} = Average\left[P_{WAN\_TEST}, P_{LAN\_TEST}, P_{WIRELESS\_TEST}\right]$$

Where:

- $Average[x_i]$ = Average of terms (x_i) applicable to the UUT;
- P_{WAN_TEST} = Measured power in Wired Network – WAN test, at 1.0 kb/s (W);
- P_{LAN_TEST} = Measured power in Wired Network – LAN test, half of available wired LAN ports populated, at 1.0 kb/s (W);
- $P_{WIRELESS\_TEST}$ = Measured power in Wireless Network – LAN test, at 1.0 kb/s (W).

Efficiency Criteria

- The maximum average power of a product cannot exceed the value generated by the following equation:

$$P_{AVG\_MAX} = P_{BASE} + \sum_{i=1}^{n} P_{ADD_i}$$

Where:

- P_{BASE} = *Base power allowance (W) from Table 1;*
- P_{ADDi} = *The power allowance as specified in Table 2 for each feature present in the device, for a total of n such allowances.*

Efficiency Criteria Tables

Table 1: Base Power Allowances

Product Type	P_{BASE} (watts) Version 1.0
Broadband Modem – Cable	5.7
Broadband Modem – DSL	4.0
ONT	4.4
IAD - Cable	6.1
IAD - ADSL	5.5
IAD - VDSL	7.5
Router	3.1
Switch	0.6
Access Point	2.0

Efficiency Criteria Tables

Table 2: Additional Functional Adders

Feature	Power Allowance (P_{ADD}) in watts	Notes
Fast Ethernet (100Base-T)	0.1	Allowance applied once per port present in the UUT.
Gigabit Ethernet (1000Base-T)	0.3	Allowance applied once per port present in the UUT.
Wi-Fi (802.11a/b/g/n)	0.7	Allowance applied once for the UUT for availability of Wi-Fi connectivity.
802.11n per Receive Spatial Stream	0.2	Allowance applied to total number of 2.4 GHz and 5.0 GHz 802.11n receive spatial streams. Only applicable for products that ship with simultaneous dual band Wi-Fi enabled.
802.11ac per Receive Spatial Stream	1.3	Allowance applied to 5.0 GHz 802.11ac receive spatial streams only. Only applicable for products that ship with simultaneous dual band Wi-Fi enabled.
Plain Old Telephone Service (RJ11/RJ14)	0.5	Allowance applied once per port, up to a maximum of two ports.

Version 1.0 Incentives

- Energy Efficiency Ethernet (EEE) Incentive
  - 0.2 watts per Gigabit port when calculating P_{ADD}
- External Proxy Incentive
  - Value applied when calculating P_{ADD}

Table 3: External Proxy Incentives

Capability	Incentive Value in watts
Base Capability	0.2
Remote Wake	0.5
Service Discovery/ Name Services	0.8
Full Capability	1.0

Testing Considerations

- Products that have both ADSL and VDSL functionality shall be testing using their VDSL functionality

- Products that have DOCSIS 3.0 energy management 1x1 capability shall be testing in an environment that allows this feature to operate at low traffic rates during testing

Optional Performance Reporting

- This data is may be optionally reported by the manufacturer and submitting as part of the qualification process
  - Ethernet throughput
  - Maximum number of wireless clients
  - Maximum number of NAT clients
  - Maximum number of EEE Gigabit Ethernet ports
  - Maximum external proxy capability
- All other fields not listed above that appear in the data reporting template (QPX) must be submitted for qualification

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Certification Timeline

Today:
Training Webinar

Mid September 2013:
EPA announces recognized CBs

CBs submit applications to EPA

CBs certify products and submit data via QPX

Late August, 2013:
Specification and test method published

October 2013
EPA posts QPL for all products in Version 1.0 scope

Application Process

- At the completion of this meeting, EPA will begin accepting applications for recognition
- Please send a signed application and evidence that you have contacted your accreditation body requesting a scope expansion for the Small Network Equipment program to certification@energystar.gov
- Submission deadline for those CBs that want to be among the first batch recognized will be September 3. EPA will continue to accept applications at any time, but cannot guarantee prompt recognition for those that apply after September 3.

Submission Deadline
September 3, 2013

Reporting Requirements

CBs shall report the following data to EPA which includes both tested and verified data and manufacturer provided information:

- General characteristics
- Electrical characteristics
- Idle, low traffic rate, and high traffic rate power consumption values for all tested configurations
- Available and enabled power savings features

Fields are specified in the data reporting template (QPX). This template was released for CB and stakeholder review in July and is currently being finalized.

ENERGY STAR Data Submission

- Qualified Product Exchange (QPX) EPA-recognized certification bodies submit data

- System characteristics and power data information displayed on ENERGY STAR website

CB 1

CB 2

CB 3 …

QPX
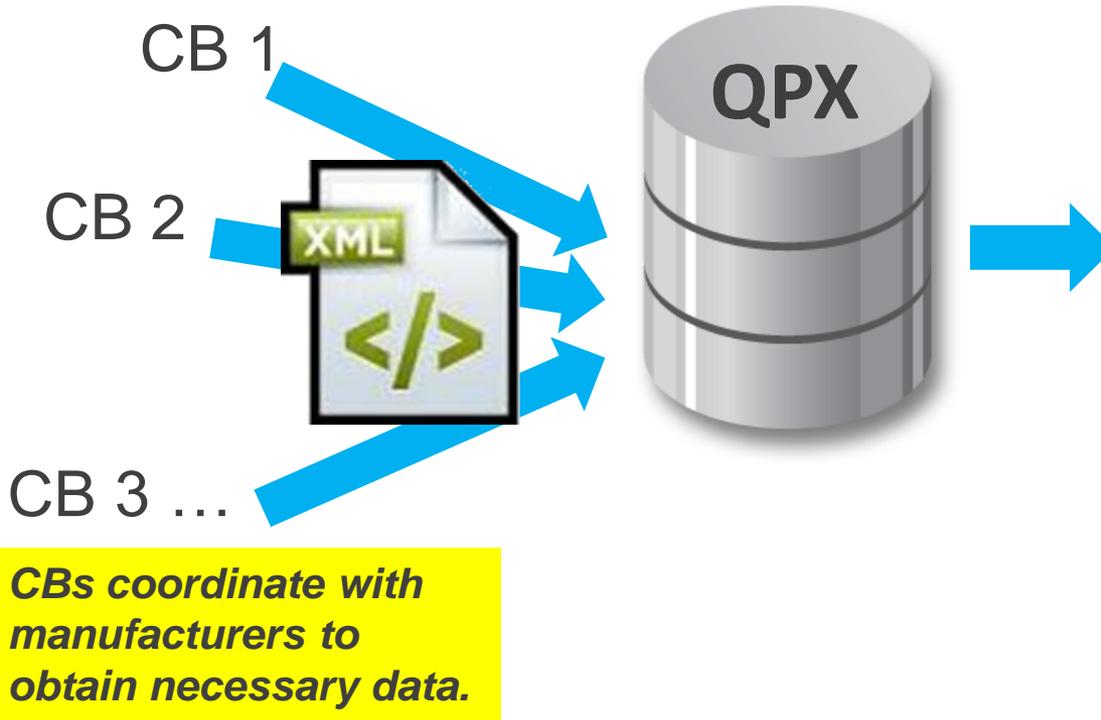
CBs coordinate with manufacturers to obtain necessary data.

New Qualified Product Lists

- Enormous data set
  - One of the largest in the world
  - Lists all ENERGY STAR qualified products for the US market
  - All 65+ products types
- Transition in process to new system
  - Target completion date late-2013
- "ENERGY STAR Product Finder"
  - Basic View
    - Compare Feature
    - Product Details
  - Advanced View
    - Export Options
    - Filter Options
  - Direct access to all datasets
  - Machine readable data export formats (XML, etc.)
- Automated updates Monday, Wednesday and Friday of each week

Remaining Version 1.0 Timeline

- August 21: SNE CB Training Webinar, CBs may start applying for EPA recognition upon the completion of this meeting
- Late August:
  - QPX XML finalized
  - Final SNE Program Requirements Released
- September 3: Final SNE Program Requirements effective, deadline for first batch of CB applications
- September 10: EPA announces recognized CBs
- Late September: QPX system goes live
- October TBD: First QPL is posted

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References and Resources

Questions?
Please send any technical questions to: networking@energystar.gov
Please send any certification questions to: certification@energystar.gov
Please find CB Resources at: www.energystar.gov/CBresources

Thank You!

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