



ENERGY STAR®

Large Network Equipment Certification Body Training

U.S. Environmental Protection Agency

January 7, 2016





Agenda

- Version 1.0 Specification Overview
- CB Application and Next Steps
- Open Questions & Comments



Timeline of Version 1.0 LNE Specification

- 2012:
 - Specification Development Launch / Framework Document
- 2013:
 - Draft 1 Test Method
 - Data Assembly Effort
- 2014:
 - Draft 1 Specification
 - Draft 2 Test Method
- 2015:
 - Series of working sessions on specification / test method hurdles
 - Draft 2 Specification
 - Final Draft Test Method
 - Final Draft Specification
 - Final Specification and Test Method (December 2, 2015)



Definitions

Large Network Equipment: Network Equipment that is mountable in a Standard Equipment Rack, supports network management protocols (e.g. SNMP) and contains at least one of the following features:

- a) Contains more than eleven (11) Physical Network Ports.
- b) Total aggregate port throughput of the product is greater than 12 Gb/s

Note: The following definitions are harmonized with definitions from existing ENERGY STAR IT specifications whenever possible



Definitions

- Product Classifications
 - Modular vs. Fixed Products
- Primary LNE Product Types
 - Routers, Switches, Security Appliances, Access Point Controllers
- Product Types (Other Related IT Equipment)
 - SNE, Computer Server, Storage Product, Storage Networking Product, UPS, DSLAMs, CMTS, Network Caching Device, Load Balancing Device



Definitions

- Product Characteristics
 - Processor vs. network managed, stackable products
- LNE Components
 - PSU and associated PSU definitions, standard equipment rack, modular chassis, backplane, module, processor
- Operational Power States
 - Active and idle



Definitions

- Additional Terms
 - Physical Network Ports (including uplink and downlink), Energy Efficient Ethernet, Power over Ethernet



Product Family

- Common Product Family Attributes (Modular)
 - Be from same model line or machine type
 - Share same mechanical and electrical design in chassis
- Product Family Tested Product Configurations
 - Minimum Power Configuration
 - Maximum Power Configuration
 - Typical Configuration
- Note: Product family only applies to modular LNE products in Version 1.0



Scope

- Included:
 - Routers and Switches that meet the definition of LNE and contain **four or fewer** Physical Network Ports that have 40Gb/s or higher link rate capability
- Excluded:
 - SNE, Computer Servers, Storage Products, Security Appliances, Access Point Controllers, DSLAM/CMTS Equipment, Network Caching Devices, and Load Balancing Devices
 - Routers and Switches that meet the definition of LNE but contain **greater than four** Physical Network Ports that have 40Gb/s or higher link rate capability



Power Supply Requirements

- PSU Efficiency Requirements

Table 2: Efficiency Requirements for PSUs

Power Supply Type	Rated Output Power	10% Load	20% Load	50% Load	100% Load
Multi-output	All Output Levels	N/A	85%	88%	85%
Single-output	All Output Levels	80%	88%	92%	88%



Power Supply Requirements

- PSU Power Factor Requirements (for Ac-Dc PSUs only)

Table 3: Power Factor Requirements for Ac-Dc PSUs

Power Supply Type	Rated Output Power	10% Load	20% Load	50% Load	100% Load
Multi-output	All Output Ratings	N/A	0.80	0.90	0.95
Single-output	Output Rating \leq 500 W	N/A	0.80	0.90	0.95
	Output Rating $>$ 500 W and Output Rating \leq 1,000 W	0.65	0.80	0.90	0.95
	Output Rating $>$ 1,000 watts	0.80	0.90	0.90	0.95



Energy Efficiency Feature Requirements

- LNE products must have the following features enabled as-shipped to certify for ENERGY STAR:
 - Remote Port Administration
 - Adaptive Active Cooling
 - Energy Efficient Ethernet (IEEE 802.3 Clause 78 compliant)
 - Required for all copper-based physical network ports



Active State Efficiency Criteria

- Active State Data Reporting:
 - Products or product families submitted must have full power and performance data measured using the ENERGY STAR LNE Test Method and reported through the QPX system
 - The following additional considerations apply for modular products only
 - Power and performance values shall be measured and reported using fully-populated chassis
 - Heterogeneous module configurations are permitted



Data Reporting Requirements

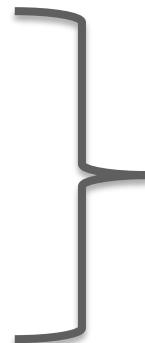
- All required data fields in the ENERGY STAR Version 1.0 LNE Qualified Product Exchange (QPX) form shall be submitted to EPA for each ENERGY STAR certified LNE product or product family



Performance Data Measurement and Output Requirements

- Data Elements: LNE products with nameplate power rating > 250W shall be capable of measuring and reporting:
 - Input Power in watts with an accuracy of $\pm 5\%$ for measurements greater than 200W
 - Inlet Air Temperature with an accuracy of $\pm 2^{\circ}\text{C}$

- Reporting Implementation Requirements
- Sampling Requirements
- Documentation Requirements
- Optional use of iPDUs



Consistent with approach in other ENERGY STAR IT product categories (e.g. servers, storage)



Testing Considerations

- Manufacturers select the testing configuration to use from the ENERGY STAR LNE Test Method (half-port vs. full-port).
 - The test configuration used will be reported in the QPX
 - Manufacturer should select only one testing configuration for a product or product family
- Number of Units Required for Testing
- International Market Certification

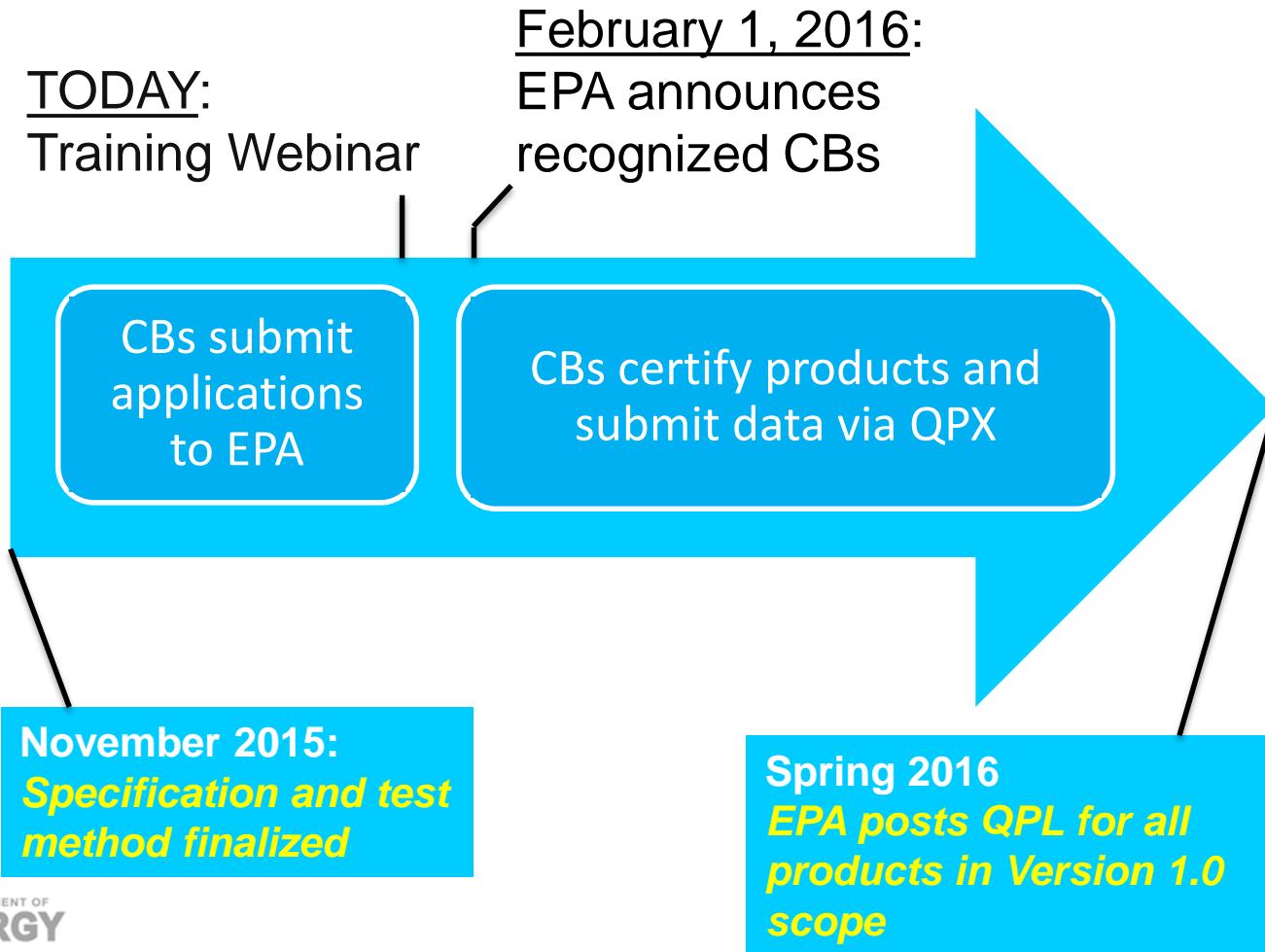


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Certification Timeline





Application Process

- If you have not already, please send a signed application and evidence that you have contacted your accreditation body requesting a scope expansion for the Large Network Equipment program to certification@energystar.gov
- EPA will recognize CBs for this new category pending a formal scope expansion from an accreditation body.
- Submission deadline for those CBs that want to be among the first batch recognized will be **January 22**.
- EPA will continue to accept applications at any time, but cannot guarantee prompt recognition for those that apply after **January 22**.

Submission Deadline

January 22, 2016



Reporting Requirements

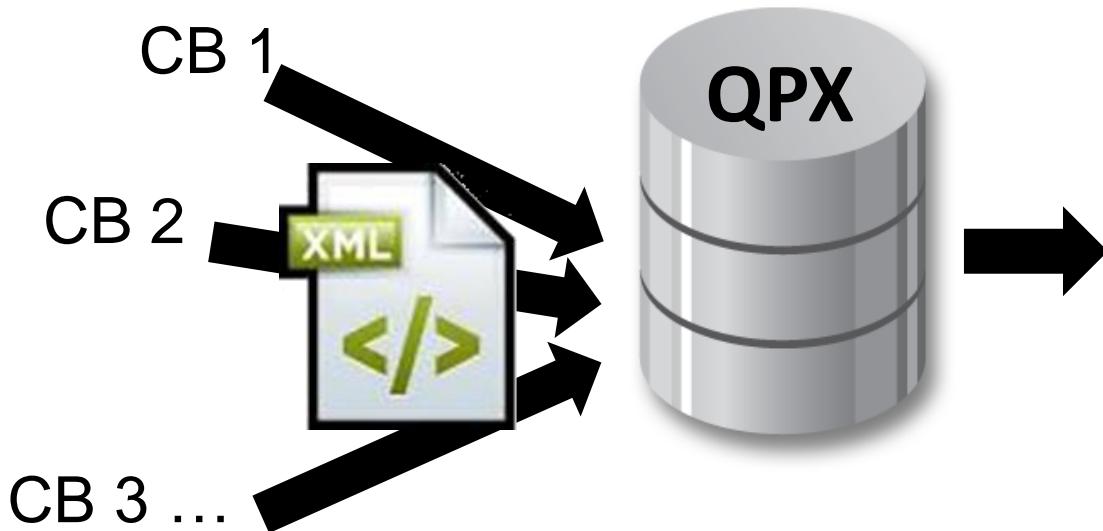
CBs shall report the following data to EPA which includes both tested and verified data and manufacturer provided information:

- General characteristics
- Electrical characteristics
- Active power and performance measurements for all relevant configurations
- Available and enabled power savings features

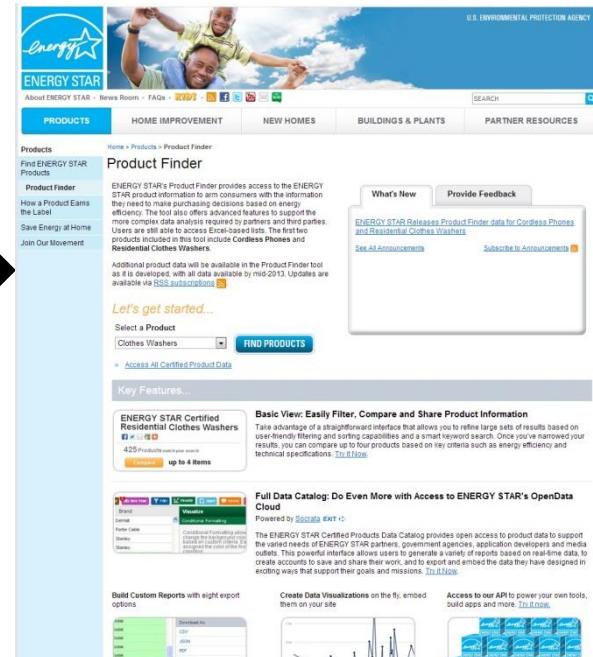
Fields are specified in the data reporting template (QPX). After this webinar EPA will distribute draft QPX requirements for final review. Comments on those draft requirements will be due January 22.

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



CBs coordinate with manufacturers to obtain necessary data.





Remaining Timeline of Version 1.0

- January 7: LNE CB Training Webinar
- January 22: Deadline for first batch of CB applications
- January 22: Deadline for comments on the QPX requirements. EPA will redistribute draft QPX again after this call
- February 1: EPA announces recognized CBs
- Mid-February: QPX will be live
- March 2: Final LNE Program Requirements effective



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References and Resources

Questions?

Please send any technical questions to:

largenetwork@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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