



August 2, 2013

Mr. Robert Meyers  
ENERGY STAR Product Development  
U.S. Environmental Protection Agency  
Energy Star for Office Equipment  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Re: TIA Supplemental Comments: Energy STAR LNE Specification Framework Document

Dear Mr. Meyers:

The Telecommunications Industry Association (TIA) hereby submits the following supplemental comments on the proposed scope and testing methodology for the draft ENERGY STAR Large Network Equipment (LNE) Specification Version 1.0 Framework Document and Draft 1 Test Method.<sup>1</sup>

**1. TIA recommends that the distinction between LNE and SNE rely on performance characteristics rather than the number of ports.**

TIA remains concerned regarding the proposed scope and definition proposed for the LNE and SNE specifications. The Small Network Equipment Specification Version 1.0 and the Large Network Equipment Framework Document defines Network Equipment as follows:

Network Equipment: A device whose primary function is to pass Internet Protocol traffic among various network interfaces/ports.

- i. Large Network Equipment (LNE): Network Equipment that is rack-mounted, intended for use in standard equipment racks, or contains more than eleven (11) wired Physical Network Ports.
- ii. Small Network Equipment (SNE): Network Equipment that is intended to serve users in either small networks or a subset of a large network. SNE

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<sup>1</sup> See ENERGY STAR Large Network Equipment Specification Version 1.0 Framework Document, available at [www.energystar.gov/products/specs/large\\_network\\_equipment\\_specification\\_version\\_1\\_0\\_pd](http://www.energystar.gov/products/specs/large_network_equipment_specification_version_1_0_pd).

includes a) all Network Equipment with integral wireless capability and b) other Network Equipment meeting all of the following criteria:

1. Designed for stationary operation
2. Contains no more than eleven (11) wired Physical Network Ports;
3. Primary configuration for operation outside of standard equipment racks;<sup>2</sup>

This approach attempts to subdivide the entire network equipment domain into two broad categories: Small Network Equipment and Large Network Equipment based on whether the product has integral wireless capability, is rack mounted and contains more than 11 physical network ports. EPA would then need to provide specific exceptions for products not intended to fall under the comprehensive definition. TIA appreciates the challenge of subdividing a product category as diverse and complex as network equipment into two separate categories, particularly as performance-based product modality, rather than the number of ports, is what separates carrier and high-end enterprise equipment from consumer grade equipment.

TIA believes the goal of the proposed approach is to avoid gaps and eliminate confusion as to which products fall into the SNE and LNE specifications while providing a fair comparison between similar product types. If rigidly applied, however, this definition will result in significant gaps and will ultimately create more confusion for ENERGY STAR stakeholders than it will eliminate, particularly as the specifications move forward. TIA is concerned that the definition as proposed could result in enterprise equipment being compared and rated to consumer equipment, which would have very negative consequences for the rating and government procurement of enterprise equipment. As EPA has recognized through already stating numerous exceptions in both SNE and LNE, for ENERGY STAR purposes, the entire network equipment domain is too diverse and varied to be neatly divided successfully between

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<sup>2</sup> See ENERGY STAR Large Network Equipment Specification Framework Document (June 2013), available at [www.energystar.gov/products/specs/sites/products/files/ENERGY%20STAR%20LNE%20Framework%20Document.pdf](http://www.energystar.gov/products/specs/sites/products/files/ENERGY%20STAR%20LNE%20Framework%20Document.pdf).

two broad categories. As the specifications develop, TIA urges EPA to be flexible in providing exceptions, exclusions and modifications for products that do not fit well into either category and to insure that consumer and enterprise equipment are included in the appropriate category.

**2. TIA recommends that the EPA include enterprise equipment having integral wireless capability in the LNE specification.**

The current proposed definition for SNE and LNE states that “All network equipment with integral wireless capability” should be exclusively included in the SNE specification. This approach could result in enterprise grade wireless equipment being unfairly compared and rated to consumer grade wireless equipment through the ENERGY STAR program. Categorically, enterprise and consumer network equipment have different performance requirements and energy use profiles. TIA recommends that in order to insure fair comparisons of enterprise network equipment energy usage that enterprise wireless equipment be included in the LNE specification.

Specifically, enterprise access points are designed to be deployed in concert with many other access points. To meet enterprise performance requirements, it is crucial that enterprise access points can be managed centrally to allow effective and efficient use of spectrum and that they allow a single virtual access point (Service Set Identifier or SSID) to serve many clients with connections moving seamlessly from one physical access point to another. Enterprise access points are distinguished from consumer access points, as enterprise access points are controlled from an access point controller and are usually powered by PoE. In the Note on page 5 of the final draft of the SNE specification Version 1.0, the document states, “Due to a lack of data on these particular products, EPA has excluded them from Version 1.0 and will look into them in

more detail in Version 2.0 development.”<sup>3</sup> TIA recommends that access points associated with an access point controller should be included in the LNE specification as enterprise equipment rather than the SNE specification. As another example, there is a possibility going forward that there may be integrated access devices (IAD) that have more than 11 ports but also have built-in wireless capability, which under the definition would be excluded from either category. As another example, some enterprise wireless equipment uses modular wired interfaces (SFP or SFP+ modules) or modular wireless interfaces (pluggable radios). Also, some small enterprise switches and routers with less than 11 ports, use modules for uplinks and WAN links, which will also result in a gap in coverage under the current definition.

**3. TIA recommends that the definition and scope of modular equipment in the SNE and LNE specifications be clarified.**

Currently, the SNE specification seems to exclude all types of modular network equipment.<sup>4</sup> The LNE specification is unclear whether it defines modular in the broadest or narrowest sense of the term. For testing purposes, TIA recommends that EPA consider dividing modular network equipment into three types of modularity:

- Systems with module sockets for interfaces that are fixed in number and speed (e.g. media adapters, SFP modules, etc.)
- Systems with modules that change the number and/or speed of interfaces but do not change the functionality (e.g. adapter modules that support 8 x 1Gbps or 1 x 10 Gbps, chassis systems with interface blades sharing a fixed forwarding fabric, etc.)
- Systems supporting modules that can change the functionality of the combined unit (e.g. complex chassis with packet processing blades, etc.)

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<sup>3</sup> ENERGY STAR Program Requirements for Small Network Equipment Final Draft, 5, available at: [www.energystar.gov/products/specs/sites/products/files/Final%20Draft%20Version%201%200%20SNE%20Specification.pdf](http://www.energystar.gov/products/specs/sites/products/files/Final%20Draft%20Version%201%200%20SNE%20Specification.pdf).

<sup>4</sup> ENERGY STAR Program Requirements for Small Network Equipment Final Draft, 4-5, available at: [www.energystar.gov/products/specs/sites/products/files/Final%20Draft%20Version%201%200%20SNE%20Specification.pdf](http://www.energystar.gov/products/specs/sites/products/files/Final%20Draft%20Version%201%200%20SNE%20Specification.pdf).

**4. TIA recommends that PoE products should be included in LNE rather than SNE regardless of port count.**

PoE products are currently excluded from the SNE specification. This results in a significant number of products, specifically PoE wireless products with 11 or less ports, being excluded from both the SNE and LNE specifications. Most wireless networking products used in enterprise environments rely on PoE. For example, within the education networking market, a very high proportion of network equipment would fall into this category. TIA recommends that PoE products be included in the LNE specification rather than the SNE specification regardless of the number of ports.

**5. TIA recommends that fixed and modular network equipment under the LNE specification be subject to a test and report requirement and that ENERGY STAR levels should not be set for either fixed or modular network equipment under the LNE specification.**

The current proposal in the Framework Document is to set ENERGY STAR levels for fixed network equipment and to require testing and reporting only for modular network equipment.

The Framework Document draft states the following with regard to modular network equipment:

EPA is proposing to include modular products in the Version 1.0 LNE specification, but recognizes that these products are typically more complex and that the testing method and eligibility requirements for them may be different from that used for fixed products. EPA is proposing to collect and display efficiency measurements of modular equipment, but not set levels for these products in the Version 1.0 LNE specification. This approach would mirror the ENERGY STAR Version 2.0 Computer Servers specification for three and four socket servers, blade systems, and multi-node systems.<sup>5</sup>

If fixed and modular equipment are to be included in the specification, TIA recommends that the test and report requirement apply to both categories, fixed and modular, rather than attempting to

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<sup>5</sup> See ENERGY STAR LNE Framework Document, p. 4 (June 2013), available at [www.energystar.gov/products/specs/sites/products/files/ENERGY%20STAR%20LNE%20Framework%20Document.pdf](http://www.energystar.gov/products/specs/sites/products/files/ENERGY%20STAR%20LNE%20Framework%20Document.pdf).

split the two categories with one setting a level and the other relying on test and report. A test and report requirement for both fixed and modular equipment will provide buyers with adequate information to identify the most energy efficient products while maintaining the intelligence of the person procuring the equipment to fit network equipment to the specific needs of the system.

For modular equipment, TIA agrees that the more complex and configured nature of modular network equipment makes the development of an ENERGY STAR qualification level extremely difficult and in many cases impossible for this product category. For fixed equipment as well, setting an ENERGY STAR level is extremely problematic and in many cases would actually result in increased power consumption by requiring an agency to procure individual network equipment that meets the minimum ENERGY STAR threshold but when used in the system results in greater energy consumption. For example, systems with the same edge port configuration but different uplink options will score differently on an efficiency test. It is inevitable that fixed levels applied across the various configurations will either result in systems with high speed uplinks being passed while those with low speed uplinks fail, or else vice-versa. In the first case, a network deployment that uses ENERGY STAR certified equipment that meets a minimum set level will use more energy for unnecessarily high speed uplinks. In the second case, a network deployment that uses ENERGY STAR certified equipment will have to reduce the number of edge ports per uplink to achieve the necessary performance, thus using more energy per connection.

As another example, systems using the same family of devices to provide functionality are generally available with varying number of edge ports per unit. It is inevitable that fixed levels applied across these configurations will result in systems with more edge ports per unit being passed while those with less ports per unit fail, or else vice-versa. In the first case, a

network deployment that uses ENERGY STAR certified equipment will use high-port count systems where the required number of connections is low, thus wasting energy. In the other case the network deployment will use multiple low-port-count units to connect devices that would be better served by a single high-port-count unit.

Finally, if explicit testing is conducted for PoE source efficiency and fixed efficiency levels are defined, then it is inevitable that the efficiency measure will favor either high-power PoE sources over low power systems or vice-versa. In the first case, PoE power sources will be used in scenarios where the load is insufficient to operate in the efficient range for the power supplies. In the second case, more PoE power sources will be needed for heavy loads, wasting energy on duplication of system overheads and switching resources.

## CONCLUSION

TIA appreciates the opportunity to provide additional input to the EPA regarding and SNE and LNE specifications and looks forward to continuing to work with the EPA and other stakeholders moving forward.

Respectfully submitted,

TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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