

**BEFORE THE UNITED STATES
DEPARTMENT OF ENERGY**

IN THE MATTER OF

REQUEST FOR INFORMATION ON
EVALUATING NEW PRODUCTS FOR
BATTERY CHARGERS AND EXTERNAL
POWER SUPPLY RULEMAKING

Docket No. EERE-2008-BT-STD-0005

RIN No. 1904-AB57

**COMMENTS OF THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION
REGARDING THE REQUEST FOR INFORMATION ON EVALUATING NEW
PRODUCTS FOR BATTERY CHARGERS AND EXTERNAL POWER SUPPLY
RULEMAKING**

I. INTRODUCTION

The Telecommunications Industry Association (TIA) appreciates the opportunity to provide comments in response to the Request for Information on Evaluating New Products for the Battery Chargers and External Power Supply Rulemaking (RFI).¹ TIA represents hundreds of information and communications technology (ICT) manufacturer, vendor, and supplier companies in standards, government affairs and market intelligence. TIA's member companies' products and services empower communications in every industry and market, including healthcare, education, security, public safety, transportation, energy, government, the military, and entertainment. TIA's members produce the equipment and solutions that make up our

¹ See U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Request for Information on Evaluating New Products for the Battery Chargers and External Power Supply Rulemaking (RFI), 78 Fed. Reg. 18253-18255 (Mar. 26, 2013) available at: www.gpo.gov/fdsys/pkg/FR-2013-03-26/html/2013-06745.htm.

Nation's rapidly evolving communications networks and are affected by a number of issues in the battery charger and external power supply rulemaking.

A major function of TIA is the writing and maintenance of voluntary industry standards and specifications, as well as the formulation of technical positions for presentation on behalf of the United States in certain international standards fora. TIA is accredited by the American National Standards Institute (ANSI) to develop voluntary industry standards for a wide variety of telecommunications products and sponsors more than 70 standards formulating committees. These committees are made up of over 1,000 volunteer participants, including representatives from manufacturers of telecommunications equipment, service providers and end-users, including the government. The member companies and other stakeholders participating in the efforts of these committees and sub-groups have produced more than 3,000 standards and technical papers that are used by companies and governments to produce interoperable products around the world.

In the RFI, the DOE requests comments, information, and recommendations regarding issues surrounding compliance with the California Energy Commission (CEC) battery charger standards that went into effect on February 1, 2013 to inform the DOE rulemaking process regarding how the DOE should proceed with the March 27, 2012 Notice of Proposed Rulemaking (NOPR). TIA has numerous concerns with the CEC battery charger standards. In addition to the need for DOE to move forward to avoid patchwork regulation, the CEC standards include technical errors, excessively stringent levels in several product categories, and fail to take into account requirements of the technologies covered by the CEC standards. The CEC standards result in unnecessary and unjustified costs for manufacturers and consumers. In addition to the industry costs mentioned below, TIA also supports the Joint Comments submitted

by AHAM, CEA, CTIA, PTI and TIA outlining product costs incurred by manufacturers to meet the CEC standards. TIA recommends that the DOE move forward with the March 27 NOPR for product classes 2 through 4 at the levels proposed.² TIA offers the following recommendations to the DOE in determining how to proceed with the NOPR.

II. DISCUSSION

1. THE DOE SHOULD PROCEED WITH THE BATTERY CHARGER NOPR TO CORRECT SUBSTANTIVE TECHNICAL ERRORS IN THE CEC BATTERY CHARGER STANDARDS

TIA would like to bring to the attention of the DOE the following technical errors in the CEC BCS standards that will require correction if the DOE moves forward with the March 27 NOPR.

- a) There is a discontinuity in CEC limit curves for the 24-hour charge and maintenance energy (E24) for devices with more than one charging port ($N > 1$). TIA believes this discontinuity is technical error, which results in the E24 limit being more stringent than intended and results in inequitable regulatory treatment of devices with more than one charging port.

For devices with only one charging port, the equation as written has continuity as shown in the following example:

- For $N = 1$

Then for $EB \leq 2.5 \text{ Wh}$, $E24 = 16 \text{ Wh}$

Then for EB slightly greater than 2.5 Wh (ie. $2.5+ \text{ WH}$), $E24 = 12 \times 1 + 1.6 \times (2.5+) = 16 \text{ Wh}$

With $N=1$, there is continuity in the E24 limit, as the equation yields the same E24 limit value of 16 Wh when approaching the E_b from both sides of the 2.5 Wh value.

For devices with more than one charging port, however, the equation as written has discontinuity as shown in the following example:

² See Department Of Energy, Office of Energy Efficiency and Renewable Energy, Docket No. EERE-2008-BT-STD-0005, RIN 1904-AB57, Energy Conservation Program: Energy Conservation Standards for Battery Chargers and External Power Supplies, Notice of Proposed Rulemaking (DOE NOPR), 77 Fed. Reg. 18478, 18504-05 (Mar. 27, 2012) available at www.regulations.gov/#!documentDetail;D=EERE-2008-BT-STD-0005-0070.

- For $N = 2$
 Then for total Eb ($E_{b1}+E_{b2}$) ≤ 2.5 Wh, $E_{24} = 16 \times 2 = \mathbf{32\ Wh}$
 Then for total Eb slightly greater than 2.5 Wh (ie. $2.5+$ Wh), $E_{24} = 12 \times 2 + 1.6 \times (2.5+) = \mathbf{28\ Wh}$

As demonstrated, for devices with more than one charging port, there is a discontinuity in the E_{24} limit when the total Eb approaches from either side of the 2.5 Wh value (32 Wh and 28 Wh). This discontinuity results in a more stringent E_{24} limit for devices with more than one charging port. For other pertinent total EB values (ie. At 100 Wh and 1000 Wh) there are also discontinuities that result in relaxing the limits. TIA believes the intention of the CEC was to have continuity in the limits and that the discontinuity is the result of technical error.

In moving forward with the DOE NOPR, the DOE should not repeat this error which would result from using the CEC standard as a reference starting point. TIA recommends in their rulemaking that the DOE correct this error by changing pertinent “EB” values to “EB/N” values. The "Standard" column for "Maximum 24 hour charge and maintenance energy (Wh)" would then read:

- For Eb/N of 2.5 Wh or less: $16 \times N$
- For Eb/N greater than 2.5 Wh and less than or equal to 100 Wh: $12 \times N + 1.6 \times Eb$
- For Eb/N greater than 100 Wh and less than or equal to 1000 Wh: $22 \times N + 1.5 \times Eb$
- For Eb/N greater than 1000 Wh: $36.4 \times N + 1.486 \times Eb$

The included Appendix A helps illustrate the issue and depict the limit curves with and without the error.

- b) The CEC BCS Standards fail to adequately take into consideration technical and compatibility requirements of PoE solutions making it difficult for current PoE solutions to comply with CEC BCS Standards.

Current CEC BCS standards include DC powered devices. Products that draw power (PD) as per the IEEE 803.af PoE (or the later IEEE803.af PoE+) standard, which

also charge batteries, would be covered by the CEC standards. However, there is a requirement in the PoE standard that dictates continuous consumption by PD of a minimum 0.5 W power from the Power Sourcing Equipment (PSE), otherwise the PSE will turn off the supply. Note that this continuous consumption is required even during periods when the batteries stop charging after being fully charged.

Because the CEC BCS standards fail to take these continuous charging requirements, as well as current chipset solutions and their associated architectures adequately into consideration, compliance for PoE solutions is extremely difficult. The continuous minimum 0.5 W consumption requirement of the PoE standard makes complying to both the 24-hr energy consumption as well as the $P_m + P_{nb}$ limits extremely difficult without a workaround that may result in compatibility issues with different PSEs in the field. This could eventually affect the ability of vendors to supply some PoE products to California. This is another example of an error with the CEC standard that DOE could fix by proceeding with the NOPR for product classes 2-4.

- c) Both the approach and data used by the CEC relevant to inclusion of cordless phone base units in the scope of the CEC BCS standards is flawed.

For the cordless phone category, the major effort in complying with the new CEC rules is the creation and implementation of a test mode to turn off non-charger base unit functionality and to deregister associated HSs. The CEC approach requires manufacturers to engineer, design and implement a test mode, solely for testing purposes, without taking into account the actual use of the base units as multifunction devices. A

2011 TSD document released by the DOE includes a survey of consumption data of Cordless Phones / Answering Devices, which is captured below:³

Unit ID	Application Type	Observed Battery Characteristics				Test Measurements						Unit Energy Consumption [kWh/yr]
		Battery Chemistry	Rated Battery Voltage [V]	Rated Battery Capacity [Ah]	Rated Battery Energy [Wh]	Measured Battery Energy [Wh]	Charge Test Duration [h]	Maintenance Mode Power [W]	24-Hour Energy [Wh]	No-Battery Test Avg. Power [W]	Off-Mode Test Avg. Power [W]	
662.2.1	Cordless Phones/Answering Devices	Ni-MH	2.4	0.5	12	13	24	15	43.3	1.0	0.0	7.69
662.2.2	Cordless Phones/Answering Devices	Ni-MH	2.4	0.5	12	13	24	19	45.6	1.1	0.0	7.62
664.2.1	Cordless Phones/Answering Devices	Ni-MH	2.4	0.5	12	14	24	0.6	22.2	0.0	0.0	3.14
664.2.2	Cordless Phones/Answering Devices	Ni-MH	2.4	0.5	12	14	24	0.3	6.6	0.3	0.0	1.06

In response to industry concerns regarding the inclusion of telephone base units in the CEC battery charger rulemaking based on the fact that telephone base units are multi-function devices that consume energy for many non-charger functions, the CEC responded in the Summary and Response to Public Comments document that multifunction devices currently meet the standard specifically citing Unit 664.2.2 from the TSD document.⁴

32.1	The Commission should consider excluding telephone base units from the proposed regulations, because the function of the base unit is unrelated to the battery charger system for the cordless handset.	Based on the analysis in the Final Staff Report ²³⁷ , the adopted standard for telephone base units is cost effective and feasible. According to Table A-7 on page 39, cordless telephones have a positive net value of \$8.44 under the adopted regulations, indicating the standards are cost effective. There are multifunctional devices that currently meet the standards. For instance, in the Preliminary TSD, cordless phone ID # 664.2.2 complies as well as notebook computer ID # 632.2.1. ²³⁸ These are just two examples. ---
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TIA has concerns with CEC's approach to base units for cordless phones as battery charger systems and the specific data point cited by CEC to justify this approach. Based on its no-battery mode consumption, Unit 664.2.2 is possibly a standalone charger which unlike a base station, does not consume energy for non-charger functions. To our knowledge, there was not a cordless phone base station surveyed during the time of the preparation of the TSD that, with the need for continuing operation of its primary functions, already complied with the limits of the (then) proposed standard. Also, the 6.6

³ Department of Energy, Energy Efficiency and Renewable Energy Office, Appendix 5-B Battery Charger Test Data (July 15, 2011) available at www.regulations.gov/#!documentDetail;D=EERE-2008-BT-STD-0005-0081.

⁴ California Energy Commission, Summary and Response to Public Comments, p. 75, Comment No. 32.1 (September 14, 2012) available at: www.energy.ca.gov/appliances/battery_chargers/documents/2012-09-14_Summary_and_Response_to_Public_Comments.pdf.

Wh quoted for E24h is very likely a typo. From the maintenance and no-battery power of 0.3 W, the E24h should be at least $0.3 \times 24 = 7.2$ Wh. There also appears to be no difference, as far as limited by the precision of data presented, between maintenance and no-battery mode.

By moving forward with the DOE NOPR for product class 2, DOE could significantly improve on the approach followed by the CEC in addressing the efficiency of telephone base units. The CEC approach may require a costly and unnecessary testing process where manufacturers and test labs are required to implement a special test mode to turn off all non-charger functions of the base unit to accurately read the energy consumption of the charger functions. There is no vendor or consumer utility to design the ability to shut off all telephone functions of a cordless base unit as it is intended to be on at all times to provide basic functionality. This test mode would never be used by a consumer in real life situations. Apart from the impact and extra costs involved in engineering, design and testing, this may create unnecessary field impacts requiring manufacturers to document the test mode setup in the user manual, so that any third party lab personnel can follow the procedure to put the device in this test mode.

In examining cordless phone base units in the DOE NOPR, TIA recommends that the DOE take the multifunction nature of telephone base units into account and make allowances or even an exemption in cases where turning off original primary non-charger functions is not easily done.

2. DOE SHOULD PROMULGATE IDENTICAL LABELING REQUIREMENTS TO THE CEC LABELING REQUIREMENTS

Manufacturers have incurred significant costs in complying with the labeling requirement for the CEC BCS standards, which required changes to product and/or packaging. In moving the DOE NOPR forward, TIA recommends that if the DOE requires a label, the labeling requirements be identical to those already promulgated by the CEC to avoid repeating the costs associated with labeling.

3. WIRELESS CHARGING SYSTEMS ARE STILL IN A NASCENT STATE OF DEVELOPMENT AND SHOULD BE EXEMPTED FROM PREMATURE REGULATION

In proceeding with the NOPR, the DOE should not impose any regulations on still nascent wireless charging technology because premature regulation would harm innovation in this evolving space. Wireless charging technology will allow consumers to charge multiple portable electronic devices simply by placing them on a charging pad or properly-equipped table, desktop, or automobile console. In this way, the technology will eliminate consumers' need to connect each portable electronic device to a separate power adapter that plugs into a local ac outlet. Offering consumers more convenient and readily accessible charging options will help to ensure that consumers' smartphones, tablets, hearing aids, and conventional mobile phones are charged when they are needed most, such as during emergency situations.

TIA thus strongly supports the DOE's decision in its 2012 NOPR to defer analysis of wireless charging systems to a later date.⁵ As the DOE found, it would be particularly inappropriate to impose regulations on wireless charging systems (specifically those that operate in a dry environment) given the lack of energy efficiency performance data for these systems, as

⁵ See DOE NOPR. TIA recognizes that the DOE did not in the March 2013 RFI suggest modifying the position on wireless charging as stated in the NOPR, and addresses the issue in this filing to encourage the DOE to follow through on its proposed decision to defer its analysis of wireless charging systems to a later date.

many of these systems are under active development.⁶ Indeed, as noted above, premature regulation would harm the innovation that is currently occurring in this space.

III. CONCLUSION

TIA appreciates the opportunity to provide input and looks forward to working with the Department of Energy and other stakeholders on these issues in the future.

Respectfully signed and submitted on May 28, 2013.

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⁶ See DOE NOPR at 18505.