



**[6450-01-P]**

**DEPARTMENT OF ENERGY**

**10 CFR Part 430**

**[Docket No. EERE–2014–BT–NOA–0012]**

**RIN: 1904-AD21**

**Energy Conservation Standards and Test Procedure for Battery Chargers:**

**Availability of Data**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notice of data availability (NODA).

**SUMMARY:** The U.S. Department of Energy (DOE) has completed testing of new battery chargers to supplement its earlier analysis presented in a notice of proposed rulemaking from March 2012. DOE has compared these test results with data reported in the California Energy Commission’s (CEC) “Appliance Efficiency Database and has found some inconsistencies. To ascertain the reasons for these inconsistencies, DOE is publishing data from its own testing to solicit feedback from manufacturers on whether there are potential ambiguities in the Federal test procedure with respect to how certain battery chargers are tested when determining the energy usage ratings of these products.

**DATES:** DOE will hold a public meeting on June 3, 2014 from 9 a.m. to 12 p.m. in Washington, DC. The meeting will also be broadcast as a webinar. See section V, “Public Participation,” for webinar information, participation instructions, and information about the capabilities available to webinar participants.

DOE will accept comments, data, and information regarding the NODA before and after the public meeting, but no later than **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN FEDERAL REGISTER]**. For details, see section V, “Public Participation,” of this NODA.

**ADDRESSES:** The public meeting will be held at the U.S. Department of Energy Forrestal Building, Room 8E-089, 1000 Independence Avenue, SW., Washington DC 20585. For those planning to attend, see section V, “Public Participation,” of this NODA for additional information.

The docket, EERE-2014-BT-NOA-0012, is available for review at [www.regulations.gov](http://www.regulations.gov), including Federal Register notices, comments, and other supporting documents or materials. All documents in the docket are listed in the [www.regulations.gov](http://www.regulations.gov) index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

A link to the docket web page can be found at:

<http://www.regulations.gov/#!docketDetail;D=EERE-2014-BT-NOA-0012>

The regulations.gov web page contains instructions on how to access all documents in the docket, including public comments. For further information on how to review the docket, contact Ms. Brenda Edwards at (202) 586-2945 or by email:

[Brenda.Edwards@ee.doe.gov](mailto:Brenda.Edwards@ee.doe.gov).

**FOR FURTHER INFORMATION CONTACT:**

Direct requests for additional information may be sent to Mr. Jeremy Dommu, U.S.

Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-5B, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: 202-586-9870. E-mail:

[battery\\_chargers\\_and\\_external\\_power\\_supplies@ee.doe.gov](mailto:battery_chargers_and_external_power_supplies@ee.doe.gov)

In the office of the General Counsel, contact Mr. Michael Kido, Esq., U.S. Department of Energy, Office of General Counsel, GC-71, 1000 Independence Avenue, SW., Washington, DC 20585-0121, (202) 586-8145, [Michael.Kido@hq.doe.gov](mailto:Michael.Kido@hq.doe.gov)

**SUPPLEMENTARY INFORMATION:**

Please note that foreign nationals visiting DOE Headquarters are subject to advance security screening procedures. Any foreign national wishing to participate in the meeting should advise DOE as soon as possible by contacting Ms. Brenda Edwards at (202) 586-2945 to initiate the necessary procedures.

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### **I. History of Test Procedure and Energy Conservation Standards Rulemaking for Battery Chargers**

On December 8, 2006, U.S. Department of Energy (DOE) adopted a test procedure to measure the efficiency of battery chargers. 71 FR 71339. DOE amended the procedure on June 1, 2011 to measure all modes of charging and added provisions for measuring the energy recovered from the battery during discharge. 71 FR 31750. Using this procedure, DOE proposed to establish Federal energy conservation standards for battery chargers and external power supplies (BCEPS). 77 FR 18478 (March 27, 2012). These proposed standards for battery chargers were based on the approach laid out in DOE’s test procedure. The proposal was also issued after the California Energy Commission (CEC) had finalized its own standards for battery charger systems on

January 12, 2012. The CEC standards took effect on February 1, 2013.<sup>1</sup> The standard levels and accompanying battery charger classes contained in DOE's proposal and the CEC standards overlapped in some, but not all, respects. Additionally, DOE's proposed standards differ from those issued by the CEC, with some being more stringent and others being less stringent than the CEC standards. In spite of these differences, both sets of standards (finalized and proposed) rely on the same test procedure. *See* 10 CFR Part 430, Subpart B, Appendix Y.

Pursuant to the Energy Policy and Conservation Act of 1975, as amended (EPCA), DOE performs a robust analysis to determine whether potential new or amended energy conservation standards that DOE proposes to adopt for certain products, such as battery chargers, are designed to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)). While the analysis performed in support of DOE's March 2012 Notice of Proposed Rulemaking (NOPR) tentatively determined that the proposed standards would achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified, DOE is interested in determining if revisions to its analysis are necessary now that more stringent standards than DOE proposed have been in effect in California for over one year. As part of its examination of this situation, DOE is particularly interested in whether certain aspects of its test procedure require

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<sup>1</sup> [http://www.energy.ca.gov/appliances/battery\\_chargers/](http://www.energy.ca.gov/appliances/battery_chargers/)

clarifications or revisions to ensure that the measurement of energy usage under the procedure is both accurate and repeatable.

Additionally, DOE is interested in whether its tentative decision to defer the regulation of certain types of battery chargers, including those that are designed to charge consumer products wirelessly (e.g. inductive battery chargers designed to operate in dry environments) remains a viable approach. To this end, today's notice solicits comments from the public regarding how DOE's current test procedure impacts (if at all) the testing and potential future regulation of these types of products.

## **II. Results and Analyses Summary**

As of February 2013, compliance with the California standards for battery chargers was required when distributing those products in California. To better understand the impact of these standards on the battery charger industry, DOE has been obtaining products from retail merchants and testing them in accordance with the DOE test procedure. This process has enabled DOE to examine the types of technologies manufacturers are employing to meet the California standards.

While investigating these issues, DOE compared the results from its own testing activities to the publicly available energy efficiency ratings for the same units reported in the CEC database and found inconsistencies between these two separate sets of data.

(The CEC database is available online at: <http://www.appliances.energy.ca.gov/>).

Because the values obtained through DOE testing and the values reported to CEC should

have been obtained through use of the same test procedure (found in Appendix Y to subpart B of 10 CFR Part 430), these inconsistencies have raised a question as to whether these differences have arisen from an ambiguity in the DOE test procedure.

DOE is publishing its test results to solicit feedback from interested parties, especially manufacturers, on any potential ambiguities in the DOE test procedure with respect to how certain battery chargers are tested in order to determine their energy efficiency ratings. Specifically, DOE has been unable to obtain ratings consistent with those found in the CEC database for multi-voltage, multi-capacity battery chargers and multi-voltage, multi-capacity, multi-chemistry battery chargers. DOE would like to ensure that the test procedure is clear and being administered as intended, and may use the responses to this notice to support potential revisions or updates to the test procedure for battery chargers. DOE's test results are available online at <http://www.regulations.gov/#!docketDetail;D=EERE-2014-BT-NOA-0012>.

Additionally, DOE is seeking comments and requesting information from interested parties on how to test (1) battery charging units that are equipped with a battery that is used exclusively for back-up power, (2) wireless battery chargers, and (3) battery chargers capable of performing adaptive charging. DOE is also interested in how the rated charge capacity of a given unit, versus the measured battery energy, is being interpreted in terms of test procedure requirements.

## Overview of the Test Data – Multi-Voltage, Multi-Capacity Battery Chargers and Multi-Voltage, Multi-Capacity, Multi-Chemistry Battery Chargers and Battery Energy

DOE tested several battery charger models capable of charging either multiple batteries at different voltages and capacities or charging batteries of different chemistries as well as different voltages and capacities. According to Table 4.1, “Battery Selection for Testing” found in section 4.3 of DOE’s test procedure, at 10 CFR 430, Subpart B, Appendix Y, a battery charger that is capable of performing multi-voltage and multi-capacity charging must undergo 3 tests. Those tests include the following:

1. Of the batteries with the lowest voltage, use the one with the lowest charge capacity. Use only one port. [BATTERY 1]
2. Of the batteries with the highest voltage, use the one with the lowest charge capacity. Use only one port. [BATTERY 2]
3. Use all ports and use the battery or the configuration of batteries with the highest total rated energy capacity. [BATTERY 3]

DOE applied the battery selection method as outlined above, and the battery discharge test per Section 5.8 codified 10 CFR 430, Subpart B, Appendix Y of the DOE test procedure, to several units and used several battery configurations, but could not obtain the results listed in the CEC database for those same models. The results from

DOE testing of these models are detailed in the test report, Section 3. DOE has docketed this report, which is available at [www.regulations.gov](http://www.regulations.gov).

In general, DOE's results from these tests differ from the publicly available data submitted to the CEC for these models. Collectively, these differences lead DOE to question whether there are ambiguities in the test procedure surrounding how multi-voltage, multi-capacity and multi-voltage, multi-capacity, multi-chemistry battery chargers are tested. Specifically, DOE seeks feedback on how the test procedure is being applied to multi-voltage, multi-capacity and multi-voltage, multi-capacity, multi-chemistry battery chargers. To the extent that there are differences in how these different categories of battery chargers are being tested in the field, DOE is also interested in whether the current test procedure needs to be modified to ensure that testing is performed in a consistent manner that obtains the most accurate measurement of a given unit's energy consumption.

### **III. Request for Information**

In addition to feedback on how to test multi-voltage, multi-capacity battery chargers and multi-voltage, multi-capacity, multi-chemistry battery chargers, DOE is soliciting feedback on several products that have become more prevalent in the market since the test procedure was published in 2011. Those products include: (1) battery chargers equipped with a battery used solely for back-up power, (2) wireless chargers for dry environments, and (3) adaptive chargers. Additionally, DOE seeks comment on the

definitions of “Battery Energy” (found in Section 2.7 of 10 CFR 430, Subpart B, Appendix Y) and “Rated Energy Capacity” (found in Section 2.21 of 10 CFR 430, Subpart B, Appendix Y) as they relate to multi-voltage, multi-capacity battery chargers and multi-voltage, multi-capacity, multi-chemistry battery chargers.

#### A. Testing of a Unit with a Battery Used Exclusively for Back-up Power

DOE tested a unit with an integral battery charger and battery that is used solely for back-up power during loss of main power. In this case, the battery charger operates in active mode to recharge the battery only when back-up power has been used; otherwise, the battery charger operates only in maintenance mode. The model that DOE selected for testing lacks a power switch, which meant that the additional functions not related to battery charging could not be turned off during the test. Based on the specifications of the battery, the energy consumption measured was much higher than that measured in comparable battery chargers that exclusively charge batteries of the same voltage, chemistry, and capacity. These results suggest that the current test procedure, which is intended to measure battery charging energy consumption, may be unable to isolate and measure that energy usage of these particular products. DOE seeks input on whether the test procedure can be applied or modified in a manner that would ensure that the final results more accurately reflect the true energy use of this type of battery charger and that those results are repeatable whether measured directly by a manufacturer or in a third-party laboratory without the use of proprietary test fixtures or discharge software that are available only to the manufacturer. DOE seeks feedback on whether the current

procedure is sufficiently detailed in enabling a manufacturer or testing laboratory to measure the energy usage of these products in a consistent and accurate manner or whether specific changes are needed in order to accommodate their unique characteristics while testing.

### B. Testing of Wireless Battery Chargers for Dry Environments

DOE also seeks input on wireless charging stations (i.e. inductive battery chargers) that are specifically designed to operate in dry environments. The wide range of devices (including battery charging pads or charging mats), technologies, charging configurations (such as placement on a charging mat or a magnetic charging dock), number of batteries a device is capable of charging, and the type of batteries that can be charged by these systems, create some ambiguity regarding the ability of the current battery charger test procedure to produce accurate, meaningful and repeatable results for these products. DOE is interested in receiving information on the type of wireless battery charger technologies that are currently available or may become available in the future, and comments on how manufacturers are applying (or would apply) the test procedure to these products. DOE is also interested in the applicability of the outputs that are currently measured or calculated in the battery charger test procedure to wireless battery chargers, and whether additional measurements should be conducted. Finally, DOE is interested in how the current procedure could be used to generate different measurement results for these types of products and whether modifications are needed to help ensure that the test procedure produces accurate and repeatable results.

### C. Adaptive Charging

DOE has become aware of charging systems that communicate with power supplies. These types of charging systems create an adaptive charging environment where the power output varies based on the particular conditions encountered by the charger. DOE is interested in those systems that vary charging rates based on which power supply is connected during charging. DOE is particularly interested in how these products deliver varying outputs and how they are currently rated (and advertised) according to the applicable standards for voltage and current reporting. Additionally, DOE seeks input on how manufacturers are applying the test procedure when measuring the energy usage of these products.

### D. Rated Energy Capacity Versus Measured Battery Energy

During its testing, DOE encountered several instances where it could not replicate the manufacturer-reported test procedure outputs of certain battery chargers. The nature of some of these reported ratings leads DOE to suspect that at least some manufacturers may be reporting the rated energy capacity (as defined in section 2.21 of the test procedure) values instead of the measurements required by the DOE test procedure when reporting battery energy. Specifically, there are cases where the reported battery energy is greater than the 24-hour energy consumption, a result that is not possible when following the test procedure since the maximum measured energy use is based on a 24-hour period. Under the prescribed procedure that manufacturers must follow, section 2.7 of the battery

charger test procedure, codified in 10 CFR 430 Subpart B, Appendix Y, defines battery energy as “the energy, in watt-hours, delivered by the battery under the specified discharge conditions in the test procedure . . . .” The output of the battery discharge test would then be used to calculate the battery charger Unit Energy Consumption (UEC) of both the unit under test and the proposed conservation standard level that the specific battery charger would be required to meet under the NOPR. DOE seeks feedback on whether clarifications to the existing test procedure are needed in order to eliminate any ambiguities associated with how the battery energy is derived.

#### **IV. Issues on Which DOE is Seeking Comment**

DOE welcomes comments on all aspects of this notice of data availability and request for information. DOE is particularly interested in receiving comments from interested parties on the following questions related to the test procedure for battery chargers:

1. How is the test procedure being applied to multi-voltage, multi-capacity and multi-voltage, multi-capacity, multi-chemistry battery chargers battery chargers that are capable of being tested with multiple battery configurations?
2. How are the results of the battery discharge test being reported when multiple battery energy values are obtained by testing with multiple battery configurations?
3. Is the test procedure sufficiently detailed to to ensure accurate and consistent results are obtained when testing multi-voltage, multi-capacity and multi-voltage,

- multi-capacity, multi-chemistry battery chargers or are specific modifications necessary in order to accommodate testing of these type of battery chargers?
4. How is the test procedure being applied to those applications that are equipped with both an integral battery charger and batteries that are solely used when main power is lost (i.e. back-up batteries)?
  5. Is the test procedure sufficiently detailed to to ensure accurate and consistent results are obtained when testing applications that are equipped with both annitergral battery charger and batteries that rae soly used when main power is lost or are specific modifications necessary in order to accommodate testing of these type of battery chargers?
  6. Can the current test procedure be applied to wireless battery chargers (i.e. inductive chargers) that are designed for dry environments to ensure accurate and repeatable results? If not, what changes to the test procedure, if any, are required to ensure that these types of battery chargers can be tested in a repeatable manner that produces accurate results?
  7. DOE seeks information regarding what types of wireless battery charger technologies are currently available or may become available in the future, and how manufacturers are applying (or would apply) the test procedure to these products. (In this context, DOE is referring to inductive chargers designed to operate in dry environments.)
  8. DOE is also interested in how the outputs that are currently measured or calculated in the current battery charger test procedure apply (or would apply) to

- wireless battery chargers, and whether additional measurements should be conducted as part of the test in order to ensure that the measured results are accurate and repeatable. (In this context, DOE is referring to inductive chargers designed to operate in dry environments.)
9. DOE is interested in both whether and how the current test procedure could be used to generate different measurements for wireless battery chargers and whether modifications are needed to help ensure that the test procedure produces accurate and repeatable results. (In this context, DOE is referring to inductive chargers designed to operate in dry environments.)
  10. How are adaptive (or smart) external power supplies being rated (and advertised) according to the applicable standards for voltage and current reporting?
  11. How should the test procedure be applied to battery charging systems with adaptive external power supplies? What changes to the test procedure, if any, would be needed to ensure the repeatability and accuracy of test results.
  12. Are the current definitions of “battery energy” and “rated charge capacity” in the test procedure sufficiently clear to enable manufacturers and testing labs to consistently produce repeatable, certifiable results as was intended by the DOE test procedure? If not, what changes to these definitions, if any, would be needed to ensure the repeatability and accuracy of test results?

## **V. Public Participation**

### A. Attendance at Public Meeting

The time, date, and location of the public meeting are listed in the **DATES** and **ADDRESSES** sections at the beginning of this NODA. To attend the public meeting, please notify Ms. Brenda Edwards at (202) 586–2945. Please note that foreign nationals visiting DOE Headquarters are subject to advance security screening procedures. Any foreign national wishing to participate in the meeting should advise DOE as soon as possible by contacting Ms. Brenda Edwards at (202) 586–2945 to initiate the necessary procedures.

In addition, you can attend the public meeting via webinar. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published on DOE's Web site at: [http://www1.eere.energy.gov/buildings/appliance\\_standards/product.aspx?productid=84](http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx?productid=84). Participants are responsible for ensuring their systems are compatible with the webinar software.

### B. Procedure for Submitting Requests to Speak

Any person who has an interest in the topics addressed in this NODA, or who is a representative of a group or class of persons that has an interest in these issues, may request an opportunity to make an oral presentation at the public meeting. Requests should be emailed to Ms. Brenda Edwards at [Brenda.Edwards@ee.doe.gov](mailto:Brenda.Edwards@ee.doe.gov). Persons who wish to speak should include their contact information and an attached file that describes

the nature of their interest in this NODA and the topics they wish to discuss. DOE requests persons selected to make an oral presentation to submit an advance copy of their statements by May 30, 2014. DOE may permit persons who cannot supply an advance copy of their statement to participate, if those persons have made advance alternative arrangements with the Building Technologies Office. As necessary, requests to give an oral presentation should ask for such alternative arrangements.

### C. Conduct of the Public Meeting

DOE will designate a DOE official to preside at the public meeting and may also use a professional facilitator to aid discussion. The meeting will not be a judicial or evidentiary-type public hearing, but DOE will conduct it in accordance with section 336 of EPCA (42 U.S.C. 6306). There shall not be discussion of proprietary information, costs or prices, market share, or other commercial matters regulated by U.S. anti-trust laws. A court reporter will be present to record the proceedings and prepare a transcript. The public meeting will be conducted in an informal, conference style. DOE reserves the right to schedule the order of presentations and to establish the procedures governing the conduct of the public meeting. DOE will present summaries of comments received before the public meeting, allow time for presentations by participants, and encourage all interested parties to share their views on issues affecting this NODA. Each participant will be allowed to make a prepared general statement (within time limits determined by DOE), before the discussion of specific topics. DOE will permit other participants to comment briefly on any general statements.

At the end of all prepared statements on each specific topic, DOE will permit participants to clarify their statements briefly and comment on statements made by others. Participants should be prepared to answer DOE's and other participants' questions. DOE representatives may also ask participants about other matters relevant to this NODA. The official conducting the public meeting will accept additional comments or questions from those attending as time permits. The presiding official will announce any further procedural rules or modification of these procedures that may be needed for the proper conduct of the public meeting. After the public meeting, interested parties may submit further comments on the proceedings as well as on any aspect of the NODA until the end of the comment period. DOE will make the entire record of this proceeding, including the transcript from the public meeting, available on the DOE Web site.

#### D. Submission of Comments

DOE welcomes comments on all aspects of this NODA and on other relevant issues that participants believe would affect test procedures and energy conservation standards applicable to Battery Chargers. Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at <http://www.regulations.gov>. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2014-BT-NOA-0012, by any of the following methods:

- E-mail: to [BatteryChargers2014NOA0012@ee.doe.gov](mailto:BatteryChargers2014NOA0012@ee.doe.gov). Include EERE-2014-BT-NOA-0012 in the subject line of the message.

- Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, Revisions to Energy Efficiency Enforcement Regulations, EERE-2011-BT-STD-0005, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Phone: (202) 586-2945. Please submit one signed paper original.
- Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza, SW., Washington, DC 20024. Phone: (202) 586-2945. Please submit one signed paper original.

All submissions received must include the agency name and docket number or RIN for this rulemaking.

After the close of the comment period, DOE will begin collecting data, conducting the analyses, and reviewing the public comments. These actions will be taken to aid in the development of a test procedure and energy conservation standards Final Rule for Battery Chargers.

DOE considers public participation to be a very important part of the process for developing test procedures and energy conservation standards. DOE actively encourages the participation and interaction of the public during the comment period in each stage of the rulemaking process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE in the rulemaking process. Anyone who wishes to be added to the DOE mailing list to receive future notices and information about this rulemaking should contact Mr. Jeremy Domm at (202) 586-9870, or via e-mail at [battery\\_chargers\\_and\\_external\\_power\\_supplies@ee.doe.gov](mailto:battery_chargers_and_external_power_supplies@ee.doe.gov).

Issued in Washington, DC, on May 8, 2014.

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Kathleen B. Hogan  
Deputy Assistant Secretary for Energy Efficiency  
Energy Efficiency and Renewable Energy

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