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DEPARTMENT OF ENERGY

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[Docket No. EERE–2014–BT–TP–0044]

RIN 1904–AD45

Energy Conservation Program: Test Procedure for Battery Chargers

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

ACTION: Final rule.

SUMMARY: On August 6, 2015, the U.S. Department of Energy (''DOE'') issued a notice of proposed rulemaking (''NOPR'') to amend the test procedure for battery chargers. This final rule is based on that NOPR. The final rule amends the current test procedure, incorporating changes that will take effect 30 days after the final rule publication date. These changes will be mandatory for product testing to demonstrate compliance with any future energy conservation standards that DOE may adopt and for any representations made regarding the energy consumption or energy efficiency of battery chargers starting 180 days after publication of this rule. In summary, these changes update the battery selection criteria for multi-voltage, multi-capacity battery chargers, harmonize the instrumentation resolution and uncertainty requirements with the second edition of the International Electrotechnical Commission (''IEC'') 62301 standard for measuring standby power, define and exclude back-up battery chargers from the testing requirements of this rulemaking, outline provisions for conditioning lead acid batteries, specify sampling and certification requirements for compliance with future energy conservation standards, and correct typographical errors in the current test procedure.

DATES: The effective date of this rule is June 20, 2016. The final rule changes will be mandatory for representations made starting November 16, 2016. The incorporation by reference of certain material listed in this rule is approved by the Director of the Federal Register as of June 20, 2016.

ADDRESSES: The docket, which includes **Federal Register** notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *www.regulations.gov.* All documents in the docket are listed in the *www.regulations.gov* index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

A link to the docket Web page can be found at: *http://www.regulations.gov/#!docketDetail;D=EERE-2014-BT-TP-0044.* The *www.regulations.gov* Web page contains simple instructions on how to access all documents, including public comments, in the docket.

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.*

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SUPPLEMENTARY INFORMATION: This final rule incorporates the resolution parameters for power measurements and uncertainty methodologies found in section 4 of IEC 62301, Edition 2.0, 2011–01, ''Household electrical appliances—Measurement of standby power'', (''IEC 62301'') by reference into part 430.

Copies of the IEC 62301 standard can be obtained from the IEC's webstore at *https://webstore.iec.ch/home.*

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I. Authority and Background

Title III of the Energy Policy and Conservation Act of 1975 (42 U.S.C. 6291, *et seq.;* ''EPCA'' or, ''the Act'') sets forth a variety of provisions designed to improve energy efficiency.[1] Part B of title III, which for editorial reasons was redesignated as Part A upon incorporation into the U.S. Code (42 U.S.C. 6291–6309, as codified), established the ''Energy Conservation Program for Consumer Products Other Than Automobiles.'' Battery chargers are among the consumer products affected by these provisions.

Under EPCA, the energy conservation program consists essentially of four parts: (1) Testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement

[1] All references to EPCA refer to the statute as amended through the Energy Efficiency Improvement Act of 2015, Public Law 114–11 (April 30, 2015).

procedures. The testing requirements consist of test procedures that manufacturers of covered products must use as the basis for (1) ensuring their products comply with the applicable energy conservation standards adopted under EPCA (42 U.S.C. 6295(s)), and (2) making representations about the efficiency of those products (42 U.S.C. 6293(c)). Similarly, DOE must use these test procedures to determine whether the products comply with any relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered products. EPCA provides that any new or amended test procedure must be reasonably designed to produce test results which measure energy efficiency, energy use, or estimated annual operating cost of a covered product during a representative average use cycle or period of use and must not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

In addition, if DOE determines that a test procedure amendment is warranted, it must publish a proposed test procedure and offer the public an opportunity to present oral and written comments. (42 U.S.C. 6293(b)(2)) Finally, in any rulemaking to amend a test procedure, DOE must determine to what extent, if any, the proposed test procedure would alter the measured energy efficiency of the covered product as determined under the existing test procedure. (42 U.S.C. 6293(e)(1))

The Energy Policy Act of 2005 (''EPACT 2005''), Public Law 109–58 (Aug. 8, 2005), amended EPCA by adding provisions related to battery chargers. Among these provisions were definitions outlining what constitutes a battery charger and a requirement that DOE prescribe definitions and test procedures for the power use of battery chargers and external power supplies. (42 U.S.C. 6295(u)(1)(A)) DOE complied with this requirement by publishing a test procedure final rule on December 8, 2006, that established a new Appendix Y to address the testing of battery chargers to measure their energy consumption and adopted several definitions related to the testing of battery chargers. 71 FR 71340 (codified at appendix Y to subpart B of 10 CFR part 430 ''Uniform Test Method for Measuring the Energy Consumption of Battery Chargers''). Lastly, DOE incorporated by reference specific sections of the U.S. Environmental Protection Agency's (''EPA'') ''Test Methodology for Determining the Energy Performance of Battery Charging Systems'' [2] when measuring inactive mode energy consumption.

The Energy Independence and Security Act of 2007 (''EISA 2007''), Public Law 110–140 (Dec. 19, 2007) later amended EPCA by defining active mode, standby mode, and off mode. (42 U.S.C. 6295(gg)(1)(A)) EISA 2007 also directed DOE to amend its existing test procedure by December 31, 2008, to measure the energy consumed in standby mode and off mode for battery chargers. (42 U.S.C. 6295(gg)(2)(B)(i)) Further, it authorized DOE to amend, by rule, any of the definitions for active, standby, and off modes. (42 U.S.C. 6295(gg)(1)(B)) Accordingly, DOE issued a notice of proposed rulemaking (NOPR) on August 15, 2008 (73 FR 48054), and a final rule on March 27, 2009 (74 FR 13318) to establish definitions for these terms.

Subsequently, in response to numerous testing issues raised by commenters in the context of DOE's energy conservation standards rulemaking efforts for battery chargers, DOE issued another NOPR on April 2, 2010. 75 FR 16958. The NOPR proposed adding a new active mode energy consumption test procedure for battery chargers that would assist in developing potential energy conservation standards for these products. DOE also proposed amending portions of its standby and off mode battery charger test procedure to shorten overall measurement time. DOE held a public meeting to discuss its test procedure NOPR on May 7, 2010, where it also received comments on the proposals set forth in the NOPR. After receiving comments at the public meeting, DOE published a final rule that codified a new active mode test procedure and amended the standby and off mode test procedures. 76 FR 31750 (June 1, 2011). As federal standards for battery chargers have yet to be finalized, DOE has not required manufacturers to submit energy efficiency data for their products tested under the battery charger test procedure.

Following the publication of the most recent battery charger test procedure final rule, DOE continued to receive additional questions and requests for clarification regarding the testing, rating, and classification of battery chargers. As part of the continuing effort to establish federal energy conservation standards for battery chargers and to develop a clear and widely applicable test procedure, DOE published a Notice of Data Availability (NODA) on May 15, 2014. 79 FR 27774. The NODA sought stakeholder comments concerning the repeatability of the test procedure for battery chargers with several consumer configurations, and on anticipated market penetration of new battery charging technologies that may require further revisions to DOE's regulations. DOE also sought stakeholder comments on the reporting methodologies for manufacturers attempting to comply with California's Energy Commission's (CEC's) efficiency standards for battery chargers in order to understand certain data discrepancies in the CEC database. DOE indicated its interest in soliciting feedback to determine whether the current procedure contained any ambiguities requiring clarification. These issues were discussed during DOE's NODA public meeting on June 3, 2014.

To improve the repeatability and reproducibility of the battery charger test procedure, DOE issued a NOPR on August 6, 2015 (''August 2015 NOPR''), which, based on stakeholder comments to the NODA, proposed amendments to appendix Y to subpart B of 10 CFR part 430 and to 10 CFR part 429. 80 FR 46855. DOE then held a public meeting to discuss these proposed amendments on September 15, 2015 and allowed for written comments to be submitted through October 20, 2015. This rule addresses comments that were received on the proposal, and finalizes many of the proposed changes to appendix Y to subpart B of 10 CFR part 430 and to 10 CFR part 429.

II. Summary of the Final Rule

This final rule makes several amendments to the current test procedure for battery chargers. First, the final rule harmonizes the current test procedure for battery chargers with the latest version of the IEC 62301 standard by providing specific resolution and measurement tolerances. This amendment ensures that the measurements resulting from the current test procedure are repeatable and reproducible.

Second, the final rule amends the battery selection criteria for multi-voltage, multi-capacity battery chargers to limit the number of batteries selected for testing to one. For multi-voltage, multi-capacity battery chargers, the battery with the highest rated voltage is to be selected for testing. If at least two batteries meet the criteria of having the highest rated voltage, then the battery with the highest rated charge capacity at that rated voltage is to be selected for testing.

[2] U.S. Environmental Protection Agency. ''Test Methodology for Determining the Energy Performance of Battery Charging Systems.'' December 2005. Available at: *https://www.energystar.gov/ia/partners/prod_development/downloads/Battery_Chargers_Test_Method.pdf.*

Third, the final rule defines and excludes back-up battery chargers embedded in continuous use devices from being required to be tested under the battery charger test procedure.

Fourth, the final rule allows lead acid batteries to be conditioned prior to testing by applying the protocol currently used for other battery chemistries (excluding lithium-ion). DOE is aware that a lead acid battery's condition may vary upon purchase and this variation can impact the performance of lead acid batteries. Conditioning of these batteries prior to testing will help mitigate the extent of this variation and reduce the variability of the test results.

Fifth, the final rule adds product-specific certification reporting requirements to 10 CFR 429.39(b), which had been reserved. The final rule also adds a sampling methodology to be used for determining representations of battery charger energy consumption and also adds provisions for enforcement testing. These amendments specify the required data elements to certify compliance with any energy conservation standards for battery chargers that DOE may adopt, describe how to calculate the representations, and provide a method for DOE to enforce compliance with any energy conservation standards for battery chargers that DOE may promulgate.

Sixth, the final rule corrects an internal cross-reference error in the current version of Table 3.1 contained in appendix Y to subpart B of 10 CFR part 430, adds units of measurement to the measured and calculated values in the table, and removes the empty value column currently contained in that table. Additionally, the final rule corrects a typographical error in section 5.8(c)(2) of appendix Y to subpart B of 10 CFR part 430.

Table II–1 below summarizes the changes and affected sections of 10 CFR parts 429 and 430.

TABLE II–1—SUMMARY OF CHANGES AND AFFECTED SECTIONS OF 10 CFR PARTS 429 AND 430

Modified sections	Summary of modifications
429.39 Battery Chargers	• Revised requirements for determining represented values for battery chargers in 429.39(a). • Created a new paragraph (b), specifying requirements for certifications of compliance with energy conservation standards for battery chargers.
430.2. Definitions	• Added definition of ''back-up battery charger.''
1. Scope	• Inserted exceptions for back-up battery chargers embedded in continuous use devices.
2. Definitions	• Inserted unit in the definition of C-Rate in section 2.10. • Renamed ''rated battery voltages'' as ''Nameplate battery voltages'' in section 2.17. • Renamed ''Rated battery voltage'' as ''Nameplate battery voltage'' in section 2.19. • Renamed ''Rated charge capacity'' as ''Nameplate battery charge capacity'' in section 2.20. • Renamed ''Rated energy capacity'' as ''Nameplate battery energy capacity'' in section 2.21.
3. Standard Test Conditions	• Incorporated by reference the uncertainty requirements of IEC 62301 in 3.2(a). • Corrected the internal cross reference in Table 3.1 for item 4 and modified the table by removing the current ''value'' column and adding units to the table as appropriate.
4. Unit Under Test (UUT) Setup Requirements.	• Revised 4.3(a)(1) to remove the possibility of misinterpretation regarding selection of batteries to use for testing for battery chargers packaged with multiple batteries. • Clarified in section 4.3(b) that a single battery must be selected as a result of applying the battery selection criteria in Table 4.1. Inserted a paragraph in section 4.3(b) to require selecting the single battery resulting in the highest maintenance mode power when following Table 4.1 results in two or more distinct batteries. • Changed ''rated charge capacity'' and ''rated charge capacities'' to ''nameplate battery charge capacity'' and ''nameplate battery charge capacities,'' respectively, in section 4.3(c). • Updated Table 4.1 to remove instances of multiple batteries for test and instructed that, where applicable, the battery with the highest voltage must be selected for testing. If multiple batteries meet the criteria of highest voltage, then the battery with the highest charge capacity at that voltage must be selected for testing. Removed column ''number of tests.''
5. Test Measurements	• Changed ''rated battery voltage'', ''rated charge capacity'' and ''rated charge energy'' to ''nameplate battery voltage'', ''nameplate battery charge capacity'' and ''nameplate battery energy capacity,'' respectively, in section 5.1. • Removed reference to lead acid batteries from section 5.3(a). • Inserted provision for lead acid batteries to be discharged to end-of-discharge voltages specified in Table 5.2. • Removed reference to lead acid from section 5.3(d). • Corrected the unit of discharge current to ''C'' in section 5.8(c)(2). • Added footnote in Table 5.2 regarding situations with protective circuits preventing batteries from reaching the specified discharge voltage.

III. Discussion

In response to the August 2015 NOPR, DOE received written comments from 18 interested parties, including manufacturers, trade associations, standards development organizations, energy efficiency advocacy groups, and a foreign government. Table III–1 below lists the entities that commented on that NOPR and their affiliation. These comments are discussed in more detail below, and the full set of comments can be found at: *http://www.regulations.gov/#!docketBrowser;rpp=25;po=0;dct=PS;D=EERE-2014-BT-TP-0044.*

TABLE III–1—INTERESTED PARTIES THAT PROVIDED WRITTEN COMMENTS ON THE AUGUST 2015 NOPR

Commenter	Acronym	Comment No. (docket reference)
Association of Home Appliance Manufacturers, Power Tool Institute and Outdoor Power Equipment Institute.	Joint Commenters	16
ARRIS Group, Inc and Cisco Systems, Inc	ARRIS	19
California Energy Commission	CEC	08
California Investor Owned Utilities	CA IOUs	21
Delta-Q Technologies Corp	Delta-Q	11
Information Technology Industry Council	ITI	17
iRobot Corp	iRobot	07
Japan Four Electric and Electronic Industrial Associations	Japan 4EE	06
Johnson Outdoor Marine Electronics, Inc	JOME	02
National Electrical Manufacturers Association	NEMA	13
National Marine Manufacturers Association	NMMA	09
Natural Resources Defense Council, Appliance Standards Awareness Project, and Northwest Energy Efficiency Alliance.	NRDC, et al	20
NOPR Public Meeting Transcript, various parties	Pub. Mtg. Tr	04
People's Republic of China	P. R. China	05
Power MergerCo, Inc	Power MergerCo	15
Power Tools Institute and Outdoor Power Equipment Institute	PTI/OPEI	14
Schneider Electric	Schneider Electric	12
Telecommunications Industry Association	TIA	10
WAHL Clipper Corp	WAHL Clipper	18

A. Measurement Accuracy and Precision

To continue to ensure that DOE's test procedure for battery chargers is harmonized with the default guidelines for power and energy measurements generally recognized by many regulatory bodies, DOE proposed in the August 2015 NOPR to incorporate by reference the resolution parameters and uncertainty methodologies found in section 4 of the second edition of the IEC 62301 standard. 80 FR 46855, 46861.

DOE received comments from the CA IOUs, ITI, NEMA, NMMA, Schneider Electric, and WAHL Clipper supporting the proposal. (CA IOUs, No. 21, p. 3, ITI, No. 17, p. 4, NEMA, No. 13, p. 3, NMMA, No. 9, p. 3, Schneider Electric, No. 12, p. 4, WAHL Clipper, No. 18, p. 1). DOE also received comments from JOME and Delta-Q opposing the proposal. JOME expressed concern that the sampling rate of at least one sample per second prescribed in the second edition of the IEC 62301 standard will produce large amounts of data during the 24-hour energy consumption test and the management of these data can be cumbersome for manufacturers. (JOME, No. 2, p. 2) JOME and Delta-Q both recommended a sampling rate of at least one sample per minute. (JOME, No. 2, p. 2, Delta-Q, No. 11, p. 1) Additionally, JOME opposed the mandated calculation of uncertainty of measurement in annex D of the second edition of the IEC 62301 standard. (JOME, No. 2, p. 3)

DOE believes that harmonization with the second edition of the IEC 62301 standard is necessary for ensuring accuracy and repeatability of test results for battery chargers. DOE does not believe that the increase in data resulting from the higher sampling rate is cumbersome or unduly burdensome on manufacturers since test data acquisition and storage is performed automatically using electronic test equipment. Furthermore, DOE believes that the mandated calculation of uncertainty of measurement, as prescribed in annex D of the second edition of the IEC 62301 standard, is necessary for appropriately quantifying the accuracy of measured values. Thus, DOE is incorporating by reference the resolution parameters and uncertainty methodologies found in section 4 of the second edition of the IEC 62301 standard in this final rule.

B. Battery Selection and Testing of Multi-Voltage, Multi-Capacity Battery Chargers

In order to eliminate ambiguity in the battery selection criteria and reduce testing burden on manufacturers, DOE proposed in the August 2015 NOPR to reduce the number of batteries selected for testing certain multi-voltage, multi-capacity battery chargers to one. 80 FR at 46860. These criteria are applicable to multi-voltage, multi-capacity battery chargers packaged or sold without a battery or packaged and sold with more than one battery. Specifically, DOE proposed to modify Table 4.1 to eliminate the multiple tests currently required for multi-voltage and multi-capacity battery chargers and instead require that only one battery with the highest voltage and/or highest capacity be selected. DOE's proposal would result in only one set of test results, and after application of the sampling plan, a single represented value for each basic model of battery charger. Any potential energy conservation standard would only apply to the specific combination that is required to be tested and represented as part of the test procedure.

DOE received numerous comments from a variety of stakeholders regarding the proposed change in the battery selection criteria for multi-voltage, multi-capacity battery chargers. First, DOE received comments from NEMA, NRDC, et al., and Schneider Electric opposing the proposal to limit the number of batteries selected for testing multi-voltage, multi-capacity battery chargers to one. NEMA argued that limiting the number of batteries selected for testing to a single battery prescribes an unnecessary restriction on manufacturers of battery chargers. NEMA further argued that multiple chemistries and capacity values make battery chargers a very diverse category, whose test results cannot be duplicated under too-specific test procedures. (NEMA, No. 13, p. 2) Schneider Electric also argued that limiting the number of batteries selected for testing to a single battery is an unnecessary and burdensome restriction on battery charger manufacturers. Schneider Electric stated that testing a battery charger with the highest voltage or highest capacity battery does not

capture the worst-case energy consumption of the battery charger. Schneider Electric recommended an approach requiring manufacturers to select, identify, and declare which battery was used for testing (typically, the worst-case battery subsystem in terms of energy consumption). These testing specifics would be reported and available to DOE and third-party test facilities, to enable them to reproduce the test results. (Schneider Electric, No. 12, p. 2)

DOE believes that the proposed battery selection criteria for testing multi-voltage, multi-capacity battery chargers, packaged or sold without a battery or packaged and sold with more than one battery, is most representative of the overall energy use of the battery charger while reducing testing burden on manufacturers of battery chargers. Due to the increased costs and complexity for a battery charger to support higher voltages, it is unlikely that a manufacturer would add support for higher voltages unless there was a strong demand to charge such batteries. Adding support for lower voltage batteries, however, incurs little to no additional cost or design complexity. Thus, the highest voltage and/or highest capacity battery is likely the most representative combination for a battery charger. As Schneider Electric notes, the highest voltage or capacity may not necessarily be the highest energy use. However, the highest voltage or capacity would be the most common use of such a battery charger. Additionally, it would be burdensome to determine which battery did result in the highest energy use as that would require testing all the combinations of batteries the battery charger supported and, at this point in time, DOE does not have a reason to believe this is necessary. Allowing manufacturers to declare and select the battery used would reduce the testing burden; however, that approach could be inconsistently applied amongst different manufacturers based on how such batteries were selected and may result in battery selections that are not commonly used by consumers. DOE also notes that restricting test results to a single battery instead of multiple batteries would reduce burden on a manufacturer if the potential energy conservation standards only require compliance at the tested battery configuration. Finally, contrary to the assertion of NEMA and Schneider Electric, manufacturers would still be able to distribute the basic model of battery charger with other batteries; DOE is only limiting the battery with which the manufacturer is required to test the battery charger.

NRDC, et al. also opposed DOE's proposal and recommended that DOE retain the current battery selection criteria for multi-voltage, multi-capacity battery chargers so that these chargers are tested against the entire range of batteries compatible with that basic model of charger. Further, NRDC, et al. recommended that the test procedure should ensure battery chargers are tested with the batteries they are shipped with instead of the highest capacity batteries that the chargers are capable of charging. (NRDC, et al., No. 20, p. 3) While DOE is finalizing its proposal of testing multi-voltage, multi-capacity battery chargers shipped either with multiple batteries or without a battery, with one and only one battery to, in part, remove ambiguity in the battery selection criteria, the primary reason is to balance testing burden on manufacturers against potential losses in energy savings that may arise due to testing in specific configurations or modes. DOE believes that testing at the highest voltage would most likely capture the highest energy use of the battery charger as well as the most common use of the battery charger by consumers. DOE will monitor the market as compliance is required and revisit this approach if DOE believes this approach is resulting in unintended consequences. DOE further emphasizes that the selection criteria provided in Table 4.1 of Appendix Y apply only to battery chargers packaged with multiple batteries, or packaged without a battery. The selection criteria do not apply to battery chargers with integrated batteries or to battery charger basic models that are packaged with only one battery (in each of those cases, the battery packaged with the charger would be used for testing). For a battery charger packaged with a battery, the battery charger basic model includes the entire battery charger system as packaged together and distributed into commerce. Therefore, if a battery charger is packaged and sold with a single battery of a particular voltage and capacity, and that same charger model is packaged and sold with another single battery of different voltage and capacity, then each combination of charger circuitry and battery would be considered its own battery charger basic model. A battery charger basic model is subject to testing, certification, and compliance with an energy conservation standard. The selection criteria are not relevant in these cases because the test procedure would require testing the battery charger circuitry and the (single) battery packaged together as a single battery charger basic model. The battery selection criteria proposed in the August 2015 NOPR are only used when more than one battery is packaged with a battery charger or when no batteries are packaged with the charger. For the reasons stated above, DOE is finalizing its proposal to reduce the number of batteries selected for testing certain multi-voltage, multi-capacity battery chargers packaged with multiple batteries, or packaged without a battery, to one in this final rule.

DOE also received stakeholder comments supporting the proposed battery selection criteria but arguing that the highest voltage and highest capacity might not always be found in the same physical battery. (The Joint Commenters, No. 16, p. 5; DELL Inc., Pub. Mtg. Tr., No. 4, p. 31–33). Under DOE's proposal, a multi-voltage and multi-capacity battery charger would be tested using the battery or configuration of batteries with the highest individual voltage and highest total rated energy capacity. Upon further consideration, DOE acknowledges that this proposal creates ambiguity in cases where a battery with a lower voltage has a higher rated energy capacity than a battery with a higher voltage, and vice-versa. To eliminate this ambiguity in the proposed battery selection criteria, ITI and PTI/OPEI recommended selecting a battery with the highest capacity, and if multiple batteries exist with the same capacity then the battery with the highest voltage would be selected. (ITI, No. 17, p. 2, PTI/OPEI, No 14, p. 4) In contrast, NRDC, et al. recommended selecting a battery with the highest voltage, and if multiple batteries of the same voltage exist then select the battery with the highest capacity. (NRDC, et al., No. 20, p. 2) NRDC, et al. also recommended selecting the battery with the lowest charge capacity, and if multiple batteries meet this criterion, then the compatible battery with the lowest voltage and lowest charge capacity would be selected. (NRDC, et al., No. 20, p. 3) NEMA recommended that manufacturers should be permitted discretion on battery selection based on internal considerations such as the most common type of batteries used in their supply chain, etc. (NEMA, No. 13, p. 2) DOE also received comments that recommended selecting the most common battery for the application (JOME, No. 2, p. 2), the battery mentioned in the user manual (Japan 4EE, No. 6, p. 3), and the readily available batteries specific to lead acid battery chargers (NMMA, No. 9, p. 2).

The proposals from NEMA, Japan 4EE, and NMMA could be

representative of the battery charger energy; however, there is no way to ensure repeatability when selecting the battery since different manufacturers may select recommended batteries for reasons unrelated to representativeness, the most commonly used battery may change over time, and readily available batteries may also change over time resulting in constant retesting and recertifications.

In the August 2015 NOPR, DOE proposed that the highest voltage and/or highest capacity battery be selected for multi-voltage, multi-capacity battery chargers. 80 FR at 46860. DOE intended to prioritize battery voltage over battery capacity. Higher voltages require the most design consideration for battery chargers, and a manufacturer would not design for higher voltages unless it was common and significant to the use of the battery charger. Increased battery capacity generally does not require as significant a redesign of the battery charger. Therefore, in response to stakeholder comments and to clarify its original intention, DOE is modifying the battery selection criteria language for multi-voltage, multi-capacity battery chargers in Table 4.1 to more clearly specify that battery voltage is prioritized over battery capacity. This update eliminates any ambiguity in the battery selection criteria while ensuring that the energy consumption of multi-voltage, multi-capacity battery chargers is tested at the most representative combination as DOE intended.

Further, DOE received comments from NRDC, et al. supporting DOE's additional proposed criterion of testing a multi-voltage, multi-capacity, multi-chemistry battery charger with a battery that results in the highest maintenance mode power if applying the battery selection criteria in Table 4.1 results in more than one battery selected (such that two or more batteries, each with a unique chemistry, meet the selection criteria). (NRDC, et al., No. 20, p. 2) However, NMMA recommended that DOE clarify that the selection criterion of highest maintenance mode power only applies to chargers of distinct chemistries, and does not apply to lead acid battery chargers sold without an accompanying battery. NMMA stated that the maintenance mode power of lead acid batteries depends on a number of factors, not all manufacturers of lead acid batteries publish this information, and, therefore, selection of worst-case lead acid batteries may be difficult to achieve. (NMMA, No. 9, p. 2)

In response to the concern raised by NMMA, DOE clarifies that the additional battery selection criterion of selecting the battery that results in the highest mode maintenance power was intended to only apply when application of the battery selection criteria in Table 4.1 to multi-voltage, multi-capacity, multi-chemistry chargers results in more than one battery (such that two or more batteries, each with a unique chemistry, meet the selection criteria). This criterion was not intended to and will not apply to multi-voltage, multi-capacity battery chargers sold without an accompanied battery that are only capable of charging batteries of a single chemistry such as lead acid. Additionally, since DOE is reducing the testing burden to a single voltage point, testing with the highest maintenance mode power ensures that the energy savings from a potential energy conservation standard is maximized. Therefore, DOE is finalizing the additional battery selection criterion of selecting the battery and battery charger combination resulting in the highest maintenance mode power if applying the battery selection criteria in Table 4.1 results in more than one battery (such that two or more batteries, each with a unique chemistry, meet the selection criteria) for a multi-voltage, multi-capacity, multi-chemistry battery charger.

Lastly, NEMA recommended that DOE require manufacturers of multi-voltage, multi-capacity, multi-chemistry battery chargers to identify and declare testing specifics that would be reported and available to DOE and third-party test facilities, to enable them to reproduce the test results. (NEMA, No. 13, p. 2) NEMA's recommendation was based on its recommendation that DOE relax the requirements of its proposed test procedure to allow options for battery selection under these circumstances. NEMA contended that ''too-specific test procedures challenge successful duplication of test efforts.'' (NEMA, No. 13, p. 2) DOE believes, to the contrary, that deviation from the standard protocols would negatively affect accuracy and repeatability of test results. Therefore, this test procedure final rule for battery chargers details and standardizes all specifics surrounding compliance testing. As such, there will be no need for the requirement recommended by NEMA.

C. Back-Up Battery Chargers

In the August 2015 NOPR, DOE proposed to define back-up battery chargers and exclude them from the scope of the battery chargers test procedure rulemaking. 80 FR at 46860. In that document, DOE explained that because these types of devices are becoming increasingly integrated with a variety of products that do not perform back-up battery charging as a primary function, measuring the energy use associated with the battery charging function of these devices is often extremely difficult—if not impossible—because of the inability to isolate the energy usage from the battery charging function during testing. DOE proposed to define back-up battery chargers in 10 CFR 430.2 as a battery charger that: (1) Is embedded in a separate end-use product that is designed to operate continuously using mains power (AC or DC), and (2) has as its sole purpose to recharge a battery used to maintain continuity of load power in case of input power failure.

DOE received comments from ARRIS and Japan 4EE supporting DOE's decision to define and exclude back-up battery chargers from the scope of the battery chargers test procedure. (ARRIS, No. 19, p. 1, Japan 4EE, No. 6, p. 3) However, DOE also received comments from the CA IOUs, CEC, NRDC, et al. and Schneider Electric opposing this aspect of DOE's proposal. Schneider Electric expressed concern that, in the absence of a Federal test procedure covering back-up battery chargers, manufacturers of back-up battery chargers are faced with the possibility of individual states introducing numerous and potentially inconsistent test procedures and energy conservation standards, which will be unduly burdensome on manufacturers. (Schneider Electric, No. 12, p. 1) The CEC, CA IOUs, and NRDC, et al. contended that excluding back-up battery chargers from the test procedure will preempt the CEC's existing energy efficiency standards for back-up battery chargers, which can potentially lead to backsliding of energy savings from the CEC standards. Furthermore, the CEC, CA IOUs and NRDC, et al. suggested that, if DOE decides to exclude back-up battery chargers from the scope of the battery chargers test procedure, DOE should exclude back-up battery chargers from the definition of battery chargers altogether, which will allow the current CEC standards to remain applicable until DOE decides to introduce a specific test procedure for back-up battery chargers. (CEC, No. 8, p. 3, CA IOUs, No. 21, p. 3, NRDC, et al., No. 20, p. 2)

In response to these concerns, DOE clarifies here that, while the rule adopted here will preempt state test procedures for battery chargers, state energy conservation standards for battery chargers, including back-up battery chargers and UPSs, prescribed or enacted before publication of this final rule, will not be preempted until the compliance date of Federal energy

conservation standards for battery chargers. (42 U.S.C. 6295(ii)(1))

DOE has considered all stakeholder comments related to this topic and is finalizing the exclusion of back-up battery chargers, as defined in 10 CFR 430.2, from the battery charger test procedure. This is not because it is not possible to apply the test procedure to back-up battery chargers, but rather because applying the battery charger test procedure to back-up battery chargers does not result in a representative measure of the energy consumption of these battery chargers. While the battery charger test procedure allows a manufacturer to minimize standby power of additional functionalities or incorporate an on-off switch to disable non-battery charger functions, doing so is impractical for applications that are designed to operate continuously. There would be no practical reason, therefore, for a manufacturer to implement potentially costly technology or switches that limit the non-battery charging functions of a design in which those non-battery charging functions are designed to be operated continuously, and thus, are not representative of typical use.

Similarly, DOE is excluding uninterruptible power supplies (''UPSs'') from this battery charger test procedure. DOE has proposed, as part of a separate rulemaking, a test procedure for UPSs that contain an AC output. See *http://energy.gov/sites/prod/files/2016/04/f31/Uninterruptible%20Power%20Supply%20Test%20Procedure%20NOPR_0.pdf.* That rulemaking, if finalized as proposed, would establish a different battery charger test procedure for UPSs with an AC output, and would ensure that a uniform and consistent test procedure exists for these type of battery chargers that is representative of their energy consumption and energy efficiency.

DOE also received comments from ITI requesting that DOE define and exclude rechargeable battery subsystems from the test procedure for battery chargers. ITI defines rechargeable battery subsystems as ''rechargeable batteries and battery charger systems contained completely within a larger product that are not capable of providing normal operation of the parent product when AC mains power is removed.'' ITI argued these products are functionally different from other battery chargers covered under this regulation. ITI contends that batteries and battery charging subsystems cannot be effectively isolated from the parent device for testing and there is no appropriate test procedure to measure the energy consumption of these subsystems. (ITI, No. 17, pp. 3–4)

After researching applications and architectures of rechargeable battery subsystems, as defined by ITI, DOE believes that rechargeable battery subsystems would already meet the proposed definition of back-up battery chargers. In particular, a battery charger that maintains a battery used to provide partial operation of a parent product in the event of an input power failure would not preclude it from meeting the definition proposed by DOE. Therefore, under DOE's proposal, rechargeable battery subsystems would be excluded from the scope of the battery charger test procedure. Based on the comment from ITI, DOE is finalizing a modified definition of back-up battery chargers in 10 CFR 430.2 to make clear that a battery charger system embedded in a continuous use product does not need to maintain continuity of normal operation in the event of a power loss to qualify as a back-up battery charger. Hence, in this final rule, back-up battery charger means a battery charger (excluding UPSs) that: (1) Is embedded in a separate end-use product that is designed to continuously operate using mains power (including end-use products that use external power supplies), and (2) has as its sole purpose to recharge a battery used to maintain continuity of power in order to provide normal or partial operation of a product in case of loss of input power. This definition of back-up battery chargers clarifies that rechargeable battery subsystems meet the definition of back-up battery chargers.

D. Conditioning and Discharge Rate for Lead Acid Battery Chargers

In the August 2015 NOPR, DOE proposed to apply the same battery conditioning provisions found in section 5.3(c) of appendix Y to subpart B of 10 CFR part 430, to lead acid batteries and use a 50% depth of discharge during conditioning cycles. 80 FR at 46861. Since the publication of the NOPR, DOE received comments from JOME, Delta-Q, NEMA, Schneider Electric and ITI supporting the proposal of allowing conditioning for lead acid batteries prior to testing. (JOME, No. 2, p. 3, Delta-Q, No. 11, p. 2, NEMA, No. 13, p. 3, Schneider Electric, No. 12, p. 4, ITI, No. 17, pp. 4–5) However, some of these commenters also recommended alternative methods for conditioning lead acid batteries. JOME requested that DOE should refrain from mandating two conditioning cycles for large lead acid batteries because of time considerations. (JOME, No. 2, p. 3) Similarly, Delta-Q recommended that DOE should not mandate two conditioning cycles for lead acid batteries. (Delta-Q, No. 11, p. 1) Schneider Electric and ITI suggested conditioning lead acid batteries by means of a float charger for a duration of at least 72 hours for batteries that have been in storage for 3 months or longer. (Schneider Electric, No. 12, p. 4, ITI, No. 17, p. 5) NEMA recommended that DOE provide flexibility in the process of conditioning batteries for certification testing. NEMA highlighted that it is not unusual for lead acid batteries to be in storage for some time and that two discharge cycles may not be enough to fully recover their capacity. Further, NEMA mentioned that a float charge of 72 hours duration is also sometimes used following 100% discharge cycles depending on battery condition, age or other needs. (NEMA, No. 13, p. 3)

NRDC, et al. opposed the proposal to allow lead acid batteries to be conditioned prior to testing. In its view, unlike the current test procedure, permitting the conditioning of lead acid batteries would allow lower efficiency battery chargers to comply with the proposed energy efficiency standards. (NRDC, et al., No. 20, p. 5) The CEC also recommended that if DOE decides to allow conditioning of lead acid batteries prior to testing, DOE must also factor the impact of this conditioning into its proposed energy conservation standards for lead acid battery chargers. (CEC, No. 8, p. 7)

DOE has become aware that the condition of lead acid batteries may vary upon purchase and this variation can impact the repeatability of test results of lead acid battery chargers. Given this fact, conditioning lead acid batteries prior to testing will produce more accurate and repeatable representations of battery discharge energy, which will result in more accurate and repeatable representations of energy consumption for lead acid battery chargers. Additionally, standardizing the battery conditioning protocol will help to ensure repeatability of all test results. DOE has not collected or received any data to suggest that cycling a lead acid battery twice—as is being adopted in this rule—would significantly increase that battery's energy capacity. Therefore, in the absence of such data, DOE also does not believe that allowing conditioning of lead acid batteries needs to be factored into potential energy conservation standards (as commented by CEC) because its impact on the measured energy consumption is minimal. With regards to the use of float chargers for batteries stored for at least 3 months, DOE notes that section 5.3(d)

of appendix Y to subpart B of 10 CFR part 430 already contains provisions to fully charge the battery if it has already been conditioned through at least two cycles, which could include a float charger to charge the battery. DOE does not believe it is necessary to specify in detail the type of charging used. After careful consideration of comments from all interested stakeholders, DOE is finalizing its proposal to condition lead acid batteries prior to testing by applying the provisions for conditioning found in section 5.3(c) of appendix Y to subpart B of 10 CFR part 430.

DOE also proposed to amend its test procedure by providing manufacturers with the option of choosing from a 5-hour (''C/5'' or ''0.2C''), 10-hour (''C/10'' or ''0.1C''), or 20-hour (''C/20'' or ''.05C'') discharge rate when testing lead acid batteries. DOE's proposal limited this option to lead acid batteries with an energy capacity above 1,000 watt-hours (Wh) because a longer discharge cycle would do little to maximize discharge energy for batteries under 1,000 Wh, but would have a more significant impact on maximizing discharge energy for batteries greater than 1,000 Wh. 80 FR at 46861.

JOME, NMMA and Delta-Q provided comments supporting the allowance of slower discharge rates for large lead acid batteries. (JOME, No. 2, p. 3, NMMA, No. 9, p. 3, Delta-Q, No. 11, p. 3) However, NRDC, et al., CEC and the CA IOUs strongly opposed allowing slower discharge rates for large lead acid batteries. (NRDC, et al., No. 20, p. 4, CEC, No. 8, pp. 4–5, CA IOUs, No. 21, p. 4) NRDC, et al. stated that slower discharge rates are not representative of applications with fast discharge rates, such as golf carts. (NRDC, et al., No. 20, p. 4) Similarly, P. R. China claimed that certain practical applications of large lead acid batteries require higher discharge currents and 1-hour, 2-hour and 3-hour discharge rates are more representative of these applications. Instead, it recommended using discharge rates that are representative of their practical application. (P. R. China, No. 5, p. 3) Lastly, NRDC, et al., the CEC and the CA IOUs requested that DOE reassess its proposed energy conservation standards for battery chargers if DOE decides to allow slower discharge rates for large lead acid batteries. (NRDC, et al., No. 20. p. 5, CEC, No. 8, p. 7, CA IOUs, Pub. Mtg. Tr., No. 4, p. 64)

After careful consideration of comments submitted by all interested stakeholders on this issue, DOE is electing not to finalize its proposal of allowing multiple discharge rates for large lead acid batteries. Therefore, all batteries will continue to be discharged at the 5-hour (*i.e.,* C/5 or 0.2C) discharge rate as prescribed in the current test procedure for battery chargers. While a single discharge rate is not representative of all applications of batteries, the 5-hour discharge rate is currently used by all manufacturers of battery chargers as part of the Appliance Efficiency Regulations for Battery Charger Systems by the CEC. See Table D in section III.F of Energy Efficiency Battery Charger System Test Procedure Version 2.2.[3] Moreover, usage of a 5-hour discharge rate for all batteries effectively avoids any variability that would be introduced by allowing manufacturers of certain battery chargers to use one of three specified discharge rates.

Finally, a number of stakeholders highlighted a typographical error in the proposed requirements for conditioning lead acid batteries found in section 5.3(c) of appendix Y to subpart B to 10 CFR part 430 where it is stated that lead acid batteries should be discharged to 50% of the rated voltage instead of to 50% depth of discharge. 80 FR at 46869. Delta-Q requested DOE fix this error by stating that lead acid batteries should be discharged to 50% of rated capacity. (Delta-Q, No. 11, p. 2) Schneider Electric, NEMA, and PTI/OPEI requested DOE fix this error by stating that lead acid batteries should be discharged to voltage levels provided in Table 5.2 of the existing battery charger test procedure. (Schneider Electric, No. 12, p. 4, NEMA, No. 13, p. 3, PTI/OPEI, No. 14, p. 4)

DOE is resolving this clerical error in the final rule by stating that all lead acid batteries be conditioned by discharging to the voltage levels already stated in Table 5.2 of the current test procedure for battery chargers, which is consistent with DOE's original intention of discharging lead acid batteries to 50% depth of discharge during conditioning.

E. Sampling and Certification Requirements

DOE proposed to update 10 CFR 429.39, section (a), ''Determination of represented value'', and reserved section (b), ''Certification Reports,'' to detail how to apply the sampling plan to calculate represented values for each measure of energy consumption, time, and power recorded as part of the battery charger test procedure, and subsequently report those ratings during certification. 80 FR at 46862. Specifically, DOE proposed that certification reports for battery chargers include represented values for the measured maintenance mode power (''P_m''), the measured standby power (''P_{sb}''), the measured off mode power (''P_{off}''), the measured battery discharge energy (''E_{Batt}''), and the measured 24-hour energy consumption (''E_{24}''). These represented values would then be used, in conjunction with the proposed equations set forth in the battery chargers energy conservation standards NOPR,[4] to calculate the unit energy consumption (''UEC'') for that battery charger basic model. UEC is designed to represent an annualized amount of non-useful energy consumed by a battery charger in all modes of operation over the course of a year.

DOE received comments from the Joint Commenters, WAHL Clipper, and PTI/OPEI arguing that individual representations of five measures of energy and power (E_{24}, E_{batt}, P_m, P_{sb} and P_{off}) are unduly burdensome on battery charger manufacturers and recommended that DOE require only a single representation of the UEC metric in the certification report. (Joint Commenters, No. 16, p. 4, WAHL Clipper, No. 18, p. 1, PTI/OPEI, No. 5, p. 3) Furthermore, the Joint Commenters argued that it is easier for manufacturers to make conservative representations in the context of a single energy consumption metric, as opposed to conservatively rating five measures of energy and power. (Joint Commenters, No. 16, p. 3)

After considering the comments submitted by the Joint Commenters, WAHL Clipper, and PTI, DOE agrees that it is easier for manufacturers to make conservative representations in the context of an energy consumption metric, the UEC. Therefore, DOE is adopting only the requirement that manufacturers develop a UEC rating for that battery charger basic model according to the statistical requirements in 10 CFR 429.39(a), which allows for conservative ratings of UEC (in kWh/year) that are greater than the higher of the mean or the upper confidence limit divided by 1.05 for the UECs calculated for each unit in the compliance certification sample.

In addition, in order to calculate the UEC for a battery charger basic model during compliance testing, DOE is adding the UEC equations and the associated battery charger usage profiles

[3] California Energy Commission. *Energy Efficiency Battery Charger System Test Procedure,* (November 2008). Available at: *http://www.energy.ca.gov/appliances/2008rulemaking/2008-AAER-1B/2008-11-19_BATTERY_CHARGER_SYSTEM_TEST_PROCEDURE.PDF.*

[4] Energy Conservation Standards for Battery Chargers and External Power Supplies; Proposed Rule, 77 FR 18478, 18522–24 (Mar. 27, 2012) (March 2012 NOPR).

proposed in the September 1, 2015 battery charger energy conservation standards Supplemental Notice of Proposed Rulemaking (SNOPR) [5] to section 5.13 of the battery charger test procedure codified at appendix Y to subpart B of 10 CFR part 430. In order to develop a UEC rating, a manufacturer will first need to calculate the UEC for each unit in the compliance certification sample of a battery charger basic model. For example, if a manufacturer sampled four units of a battery charger basic model, it would be required to calculate the UEC for each of those four units in the sample using the UEC equations in section 5.13 of appendix Y to subpart B of 10 CFR part 430, and then apply the statistical requirements in 10 CFR 429.39(a) in order to develop a rating of UEC for that battery charger basic model.

Manufacturers will still be required to submit represented values of E_{24}, E_{batt}, P_m, $P_{sb,}$ P_{off}, and the duration of the charge and maintenance mode test (t_{cd}) of a battery charger basic model as part of the compliance certification report; however, these represented values will now simply be the arithmetic mean of the measured values for each of these metrics from the units tested in the compliance certification sample. Reporting mean values of E_{24}, E_{batt}, P_m, $P_{sb,}$ P_{off}, and t_{cd} on the certification report will not increase testing burden on manufacturers, as manufacturers will already be using these values to calculate each unit-specific UEC in order to develop UEC ratings. In addition to there being no additional testing burden, the reporting burden itself is limited to simply calculating averages for the six metrics already measured. Reporting represented values of E_{24}, E_{batt}, P_m, P_{sb}, P_{off} and t_{cd} in certification reports for battery chargers provides DOE with more accurate data on the six measured values of power, energy and time for basic models of battery chargers. Accordingly, DOE is revising 10 CFR 429.39(a) to reflect these statistical requirements for representing UEC, E_{24}, E_{batt}, P_m, $P_{sb,}$ P_{off}, and t_{cd} for battery charger basic models.

Second, DOE has received stakeholder comments on the sampling requirements that are already part of the current test procedure for battery chargers. JOME provided comments opposing the sampling requirements on the basis that these requirements increase the number of test units and, consequently, increase the time and costs associated with testing. (JOME, No. 2, p. 4) Schneider Electric also provided comments opposing the sampling requirements. Schneider Electric argued that because there is no documented case of market surveillance failure under the CEC efficiency standards for battery chargers and that manufacturers are ultimately responsible for compliance, DOE should allow manufacturers to define their own sampling plans. (Schneider Electric, No. 12, p. 5) Similarly, Delta-Q expressed concern that although the sampling plan sets the minimum number of samples to be tested per basic model to two units, the statistical approach of upper and lower confidence limits would require more than two units to be tested to account for variability, which imposes a cost and time burden on manufacturers. Delta-Q also expressed concern that if the same flooded lead acid battery is used to test all samples of a basic model of a lead acid battery charger, the high cycle-to-cycle variation of the flooded lead acid battery can have a negative impact on test results. Delta-Q sought clarification on whether the same battery would be used to test all samples of a basic model of a battery charger. (Delta-Q, No. 11, p. 3)

DOE currently mandates sampling requirements to improve the statistical validity of representations made by manufacturers and to ensure products being distributed in commerce actually meet the applicable standard. Under DOE's sampling methodology, manufacturers may determine the number of samples tested as long as the sampling requirements adopted in this final rule are satisfied. To the extent that manufacturers commented that the sample size is required to be greater than two units, DOE believes it is appropriate for a manufacturer to test a sample of sufficient size to make a statistically valid assessment of the compliance of the basic model. Therefore, DOE believes that the sampling requirements for certification of battery chargers stated in 10 CFR 429.39 are appropriate and are not unduly burdensome. Regarding Delta-Q's question (*i.e.,* whether the same battery is used for testing all samples of a basic model), DOE notes that each manufacturer must determine whether to test all samples of the same battery charger basic model with a single battery or with a new battery each time.

Third, DOE received comments from the Joint Commenters and WAHL Clipper opposing the reporting of contract manufacturer names for their external power supplies (''EPSs'') and test batteries in certification reports. The Joint Commenters and WAHL Clipper recommended that DOE classify and treat manufacturers of EPSs and test batteries as confidential. (Joint Commenters, No. 16, p. 4, WAHL Clipper, No. 18, p. 1) Similarly, ITI argued for the exclusion of the manufacturer and model number of the test battery from certification reports (ITI, No. 17, pp. 5–6), and Schneider Electric inquired as to whether DOE can hold compliance certification reports of upcoming models confidential until the official launch of these models. (Schneider Electric, Pub. Mtg. Tr., No. 4, pp. 93–94).

In response to the comments submitted by the Joint Commenters, WAHL Clipper and ITI, DOE acknowledges that publically disclosing the manufacturers and models of test batteries and external power supplies as part of the battery charger compliance certification reports might have a negative impact on competition. Therefore, DOE is revising the battery charger compliance certification requirements in 10 CFR 429.39(b) so that the manufacturers and models of test batteries and external power supplies are not included in the public disclosures in DOE's compliance certification database. Other than the manufacturer and model of test battery(s) and external power supply, all other product-specific information on a battery charger compliance certification report will be public. Further, in response to the comment submitted by Schneider Electric, DOE clarifies that the confidentiality provisions in 10 CFR 429.7 apply to this rulemaking. Manufacturers who want DOE to hold compliance certification reports of upcoming basic models confidential until the official launch of these basic models should refer to 10 CFR 429.7 for guidance regarding confidentiality. DOE also emphasizes that the manufacturers and models of test batteries and external power supplies will not be provided on the public CCMS database.

Fourth, during the public meeting held to discuss the August 2015 NOPR, DOE received numerous comments inquiring about circumstances that will require manufacturers of battery chargers to recertify their basic models. WAHL Clipper inquired on whether recertification is necessary if a battery manufacturer is changed but battery characteristics remain the same. (WAHL Clipper, Pub. Mtg. Tr., No. 4, p. 83) DELL Inc. asked whether battery charger manufacturers would need to recertify their basic models if there is a change in battery model or part number due to minor improvements made by the battery manufacturer. (DELL Inc., Pub. Mtg. Tr., No. 4, pp. 85–86) STIHL Inc.

[5] Energy Conservation Standards for Battery Chargers; Supplemental Notice of Proposed Rulemaking, 80 FR 52849, 52932–33 (Sept. 1, 2015) (September 2015 SNOPR).

questioned whether basic models of battery chargers require recertification if a higher capacity battery that works with the battery charger is introduced into the market. (STIHL Inc., Pub. Mtg. Tr., No. 4, p. 120) DELL Inc. further inquired whether an entire family of products would need to be recertified if one product in the family uses a new, improved battery. (DELL Inc., Pub. Mtg. Tr., No. 4, p. 120–123)

In response to the comments made by WAHL Clipper, DELL Inc. and STIHL Inc. regarding recertification, DOE notes that its existing regulations address when modifications require recertification. A modification to a model that increases the model's energy or water consumption or decreases its efficiency resulting in re-rating must be certified as a new basic model. 10 CFR 429.12(e)(1). If the design of the battery charger basic model, including the battery, has changed in such a way that the information certified to DOE would no longer be valid, then the manufacturer would be required to test and recertify its battery charger basic model. Recertification would not be necessary if changes to the design of the battery charger result in the UEC remaining below the rated value. Changes resulting in a new individual model in the basic model do not require additional testing but must be reported as part of the next annual certification report. 10 CFR 429.12(d).

Fifth, DOE also received some general comments regarding the proposed sampling and certification requirements for battery chargers. PTI inquired if third-party laboratories are allowed to file for certification on behalf of manufacturers. (PTI, Pub. Mtg. Tr., No. 4, pp. 126–27) Schneider Electric asked for clarification on how to certify in situations where the integrated battery does not have a nameplate. (Schneider Electric, Pub. Mtg. Tr., No. 4, pp. 88–89) NEMA recommended that DOE clearly state whether manufacturers can use an alternate efficiency determination method (''AEDM'') to certify battery chargers. (NEMA, No. 13, p. 4)

DOE regulations require ''manufacturers'' (defined to include importers and U.S. manufacturers) of covered products that are subject to energy conservation standards to submit certification reports to DOE. The regulations also provide, however, that a manufacturer may elect to use a third party to submit the certification report to DOE. Nonetheless, the manufacturer is ultimately responsible for submission of the certification report to DOE. 10 CFR 429.12

In response to Schneider Electric's comment regarding integrated batteries without a nameplate, DOE clarifies that manufacturers would still be required to disclose the battery specifications as part of the certification report even if the battery does not have a nameplate with rated values. It is DOE's understanding that manufacturers of battery chargers with integrated batteries are aware of the exact battery specifications as these specifications are crucial to their product design and intended use. DOE has added language in appendix Y to subpart B of 10 CFR part 430 to clarify that if these rated values are not clearly present on a nameplate or the manufacturer is not aware of the specifications, then the manufacturer must submit measured values. In particular, the manufacturer must measure and report, in place of the rated values, the nominal fully charged battery voltage of the test battery in volts (V), the battery charge capacity of the test battery in ampere-hours (Ah) as measured per this test procedure and the battery energy capacity of the test battery in watt-hours (Wh) as measured per this test procedure.

In response to NEMA's comment regarding AEDMs, DOE authorizes the use of AEDMs for certain covered products that are difficult or expensive to test in an effort to reduce the testing burden faced by manufacturers of expensive or highly customized basic models. DOE's analysis has shown that battery chargers are neither difficult nor expensive to test. Therefore, DOE is not including any provisions allowing manufacturers to use an AEDM for compliance certification in this test procedure final rule.

F. Enforcement Testing Sampling Plan

DOE proposed to add appendix D to subpart C of 10 CFR part 429 to describe the methodology that DOE would use when conducting enforcement testing for battery chargers. 80 FR at 46868. DOE received comments from the Joint Commenters and PTI/OPEI inquiring if DOE had unintentionally left out the standard error of the measured energy performance, as described in appendix A to subpart C of 10 CFR part 429. The Joint Commenters and PTI/OPEI both argued for the inclusion of the standard error of the measured energy performance in the battery charger test procedure final rule. (Joint Commenters, No. 16, pp. 4–5, PTI/OPEI, No. 14, p. 3) iRobot recommended that DOE adopt the proposed enforcement rules and further recommended that DOE only use enforcement data to establish if a basic model meets the applicable standard. iRobot requested that, if DOE is planning on using enforcement data to check represented values in the compliance certification, DOE explain the exact method of comparison to be used in an additional NOPR and grant stakeholders an opportunity to comment on the exact method of comparison. (iRobot, No. 7, p. 3) Similarly, ITI argued that DOE should not use enforcement data to check values that do not have limits assigned in the applicable energy conservation standards. (ITI, No. 17, p. 5) Additionally, NRDC, et al. expressed concern that if DOE were to use enforcement data to check representations of E_{24}, E_{Batt}, P_m, P_{sb} and P_{off}, then manufacturers will be encouraged to report non-typical values of these measures, which will not be representative of reality. (NRDC, et al., Pub. Mtg. Tr., No. 4, pp. 110–11)

As discussed in section III.E above, battery charger manufacturers will be required to certify the UEC metric, which will be calculated according to the primary or secondary equation in section 5.13 of appendix Y to subpart B of 10 CFR part 430, for each battery charger basic model, and according to the statistical requirements at 10 CFR 429.39(a). Additionally, manufacturers of battery chargers will be required to certify values for E_{24}, E_{Batt}, P_m, P_{sb}, P_{off} and t_{cd}, each of which is simply the arithmetic mean of the measured values from the units tested. In light of the discussion in section III.E, DOE's proposal in the August 2015 NOPR to add appendix D to 10 CFR part 429 subpart C is no longer necessary. DOE will instead continue to follow the sampling plan for enforcement testing already stated in appendix A to subpart C of 10 CFR part 429 for battery chargers. In response to comments from the Joint Commenters and PTI, appendix A to subpart C of 10 CFR part 429 includes the standard error for the measured energy performance.

Additionally, PTI inquired whether a value of UEC calculated during enforcement testing, which is below the applicable energy conservation standard but above the represented value in a compliance certification, is a case of noncompliance. (PTI, Pub. Mtg. Tr., No. 4, pp. 81–82) iRobot and Schneider Electric recommended that DOE provide manufacturers access to units that fail enforcement testing. (iRobot, No. 7, p. 3, Schneider Electric, Pub. Mtg. Tr., No. 4, p. 109)

If DOE conducts enforcement testing, appendix A to subpart C of 10 CFR part 429 sets forth the method for determining whether a basic model complies with the applicable energy conservation standard. If, during testing, DOE finds that the measured UEC is above the certified value, DOE typically

investigates the reason for the discrepancy. Depending on the circumstances, DOE may seek civil penalties, as knowing misrepresentation by a manufacturer by certifying a value for a covered product in a manner that is not supported by test data is a prohibited act. 10 CFR 429.102. Units provided by the manufacturer for enforcement testing are returned to the manufacturer after the enforcement case is closed.

Further, DOE received comments from P. R. China requesting that DOE clarify the sample size to be used during enforcement testing and whether different sample sizes will be used for different manufacturers. (P. R. China, No. 5, p. 3) For enforcement testing of battery chargers, the initial sample size is four units. DOE may test up to 21 units, in accordance with the provisions of appendix A to subpart C of 10 CFR part 429.

G. Corrections to Typographical Errors

In this test procedure final rule, DOE is updating Table 3.1 of appendix Y to subpart B of 10 CFR part 430 to correct cross-reference errors and eliminate a redundant column. The ''Battery Discharge Energy'' item on the second line in this table currently references section 4.6, when it should instead reference section 5.8, ''Battery Discharge Energy Test''. The ''Initial time and power (W) of the input current to the connected battery'' item on the third line in this table currently references section 4.6, when it should instead reference section 5.6, ''Testing Charge Mode and Battery Maintenance Mode.'' The ''Active and Maintenance Mode Energy Consumption'' item on the fourth line in this table currently references section 5.8, when it should instead reference section 5.6, ''Testing Charge Mode and Battery Maintenance Mode.'' Therefore, DOE is updating the second, third and fourth items in the ''Reference'' column of Table 3.1 to state ''Section 5.8'', ''Section 5.6'' and ''Section 5.6,'' respectively. Additionally, DOE is removing the current ''Value'' column from Table 3.1 because the information from this column is being inserted in the column labeled ''Name of measured or calculated value'' to reduce complexity. DOE is also replacing ''0.2 °C'' in section 5.8(c)(2) of appendix Y to subpart B of 10 CFR part 430 with ''0.2 C'' to correct a typographical error. The section covers discharge current during a battery discharge energy test and C-rate (''C'') is the correct measurement unit for discharge current.

Additionally, DOE is revising the definition of C-rate in section 2.10 of appendix Y to subpart B of 10 CFR part 430 by adding ''(C)'' as a unit for C-rate. DOE believes this will further reduce the possibility of any ambiguity associated with interpreting the test procedure. The revised definition reads ''C-rate (C) is the rate of charge or discharge, calculated by dividing the charge or discharge current by the rate charge capacity of the battery.''

Lastly, DOE is renaming ''rated battery voltage'', ''rated charge capacity'' and ''rated energy capacity'', which are defined at sections 2.19, 2.20 and 2.21 of appendix Y to subpart B of 10 CFR part 430, as ''nameplate battery voltage'', ''nameplate battery charge capacity'', and ''nameplate battery energy capacity,'' respectively, throughout the battery charger test procedure codified at appendix Y to subpart B of 10 CFR part 430. The revised names will reduce the possibility of confusion between nameplate values and rated values submitted by manufacturers as part of compliance certification reports.

H. Limiting Other Non-Battery-Charger Functions

DOE received comments from iRobot recommending specific language changes in the current test procedure for battery chargers. First, iRobot recommended that DOE remove the word ''optional'' from section 4.4(b) of appendix Y to subpart B of 10 CFR part 430 to eliminate ambiguity. Second, iRobot recommended replacing ''manual'' with ''user-accessible'' in section 4.4(d) of appendix Y to subpart B of 10 CFR part 430. (iRobot, No. 7, pp. 1–2) DOE notes that the word ''optional'' in section 4.4(b) of the current test procedure highlights that any additional functionality not associated with battery charging should be turned off prior to testing. As a result, only the battery charging portion of the battery charger is measured during testing. Similarly, while conducting the test procedure for battery chargers, a technician may have the option of turning off a manual switch that is not user-accessible to limit any optional functions that are not associated with the battery charging process. Therefore, replacing the word ''manual'' with ''user-accessible,'' as recommended by iRobot, would further reduce the avenues available to manufacturers to limit non-battery charger related functions, which would likely result in DOE receiving a number of test procedure waiver inquiries. After careful consideration, DOE is not changing the language recommended by iRobot in section 4.4 of appendix Y to subpart B of 10 CFR part 430.

I. Discharging Lithium Ion Batteries

DOE received comments from NEMA describing the difficulties with discharging lithium ion batteries to the end of the discharge voltages specified in Table 5.2. NEMA explained that some batteries have internal protections that prevent batteries from being discharged to such low levels. NEMA recommended that DOE allow manufacturers to end discharge tests at voltages specified by the manufacturer, which can be higher than those listed in Table 5.2. (NEMA, No. 13, p. 4) DOE understands the need for protective circuitry in certain volatile battery chemistries and has acknowledged the presence of protective circuitry in section 4.5(e) of the current battery chargers test procedure, published at appendix Y to subpart B of 10 CFR part 430. In response to the comment from NEMA, DOE is updating Table 5.2 of appendix Y to subpart B of 10 CFR part 430 to further state that if the presence of protective circuitry in a lithium ion battery prevents the battery from being discharged to the end of the discharge voltage specified, then the manufacturer must discharge the battery to the lowest possible discharge voltage permitted by the protective circuity and report the end of the discharge voltage on the certification report.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

The Office of Management and Budget (''OMB'') has determined that test procedure rulemakings do not constitute ''significant regulatory actions'' under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (''OIRA'') in OMB.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Fairness Act of 1996) requires preparation of a final regulatory flexibility analysis for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003 to ensure that the

potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's Web site: *http://energy.gov/gc/office-general-counsel*.

This final rule prescribes amendments to the battery charger test procedure. These amendments update the battery selection criteria for multi-voltage, multi-capacity battery chargers, harmonize the instrumentation resolution and uncertainty requirements with the second edition of the IEC 62301 standard for measuring standby power, define and exclude back-up battery chargers from the testing requirements of this rulemaking, outline provisions for conditioning lead acid batteries, specify sampling and certification requirements for compliance with future energy conservation standards, detail an enforcement testing sampling plan for battery chargers, and correct typographical errors in the current test procedure.

DOE reviewed this final rule under the provisions of the Regulatory Flexibility Act and DOE's own procedures and policies published on February 19, 2003. DOE has concluded that this final rule will not have a significant impact on a substantial number of small entities. The factual basis for this certification is as follows.

The Small Business Administration (''SBA'') considers a business entity to be a small business, if, together with its affiliates, it employs less than a threshold number of workers specified in 13 CFR part 121. These size standards and codes are established by the North American Industry Classification System (''NAICS''). The threshold number for NAICS classification code 335999, which applies to ''All Other Miscellaneous Electrical Equipment and Component Manufacturing,'' and includes battery chargers, is 500 employees.

As discussed in the March 2012 NOPR for battery charger energy conservation standards (77 FR 18478), DOE identified one battery charger original device manufacturer that was a small business with domestic manufacturing. Based on manufacturer interviews and DOE's research, DOE believes that almost all battery charger manufacturing takes place abroad.

DOE estimates that this one small business may have to purchase testing equipment and have employees perform tests on covered battery chargers in order to comply with test procedures required from the adopted test procedure. DOE estimates a small business would need to purchase a computer with data acquisition software, battery analyzer, battery analyzer amplifier, power meter, interface cable, and single phase AC power source. DOE estimates this equipment would cost approximately $10,000 to $12,000.

DOE estimated the necessary labor associated with performing the adopted test procedure to a single covered battery charger. DOE estimates that it would likely take between 80 and 115 hours to perform the test procedure on a single model. To get the labor rate of an employee to perform these test DOE used the median hourly wage of an electrical technician, $28.76.[6] DOE adjusted the hourly wage by 23 percent [7] to account for the total fringe benefits, resulting in an estimated total hourly rate of $35.37. Therefore, DOE estimates a total labor burden of between $2,830 and $4,068 to test for each covered product.

DOE estimates that the one small businesses will need to test 41 models to comply with the adopted battery charger test procedure. This means the small business' total labor burden would be between $116,030 and $166,788 to test all their covered battery chargers to the adopted test procedure. Therefore, DOE's total testing burden, labor burden and testing equipment, is estimated at between $126,030 and $178,788.

Therefore, DOE certifies that this rule will not have a significant economic impact on a substantial number of small entities. DOE has submitted a certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

If DOE adopts the energy conservation standards proposed in the September 1, 2016, battery chargers energy conservation standards Supplemental Notice of Proposed Rulemaking (SNOPR), manufacturers of battery chargers will be required to certify that their products comply with those standards. In certifying compliance, manufacturers must test their products according to the applicable DOE test procedure, including any amendments adopted for that test procedure. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, and is finalizing specific requirements for battery chargers in this rule. *See* 10 CFR part 429, subpart B. The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910–1400. This information collection was renewed in January 2015 to include certification requirements for battery chargers. 80 FR 5099 (January 30, 2015). Public reporting burden for the certification is estimated to average 30 hours per respondent per year, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

In this final rule, DOE amends its test procedure for battery chargers, which will likely be used to develop and implement future energy conservation standards for battery chargers. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this final rule amends the existing test procedure without affecting the amount, quality or distribution of energy usage, and, therefore, would not result in any environment impacts. Thus, this rulemaking is covered by Categorical Exclusion A5 under 10 CFR part 1021, subpart D, which applies to any rulemaking that interprets or amends an existing rule without changing the environmental effect of that rule. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

[6] Taken from the Bureau of Labor Statistics' Occupational Employment and Wages, May 2014 (17–3023 Electrical and Electronics Engineering Technicians). *http://www.bls.gov/oes/current/oes173023.htm*.

[7] This is based on the ratio of total fringe benefits compared to the annual payroll taken from the 2014 Annual Survey of Manufacturers for NAICS code 335999. *http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ASM_2014_31GS101&prodType=table*.

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (August 4, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE examined this final rule and determined that it will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; (3) provide a clear legal standard for affected conduct rather than a general standard; and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action resulting in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. (This policy is also available at *http://energy.gov/gc/office-general-counsel*). DOE examined this final rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of $100 million or more in any year, so these requirements do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This final rule will not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (March 18, 1988), that this regulation will not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that: (1) Is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use if the action is implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

This regulatory action is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse

effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

L. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; FEAA) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (''FTC'') concerning the impact of the commercial or industry standards on competition.

The final rule incorporates testing methods contained in the following commercial standards: IEC Standard 62301 ''Household electrical appliances—Measurement of standby power.'' DOE has evaluated these testing standards and believes that the IEC standard complies with the requirements of section 32(b) of the Federal Energy Administration Act (*i.e.,* that they were developed in a manner that fully provides for public participation, comment, and review). DOE has, however, consulted with the Attorney General and the Chairwoman of FTC concerning the effect on competition of requiring manufacturers to use the test method in this standard.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule before its effective date. The report will state that it has been determined that the rule is not a ''major rule'' as defined by 5 U.S.C. 804(2).

N. Description of Material Incorporated by Reference

DOE previously adopted instrumentation resolution and measurement uncertainty requirements for testing battery chargers identical to those in the IEC 62301 standard and codified these requirements at 10 CFR part 430, subpart B, Appendix Y on June 1, 2011. 76 FR 31750. The IEC published Edition 2.0 of IEC 62301 in January 2011, which is available from the American National Standards Institute, 25 W. 43rd Street, 4th Floor, New York, NY 10036 or at *http://webstore.ansi.org/.* This revised version of the testing standard refined the test equipment specifications, measuring techniques, and uncertainty determination to improve the method for measuring loads with high crest factors and/or low power factors, such as the low power modes typical of battery chargers operating in standby mode. These provisions were contained in section 4 of IEC 62301, with informative guidance provided in Annex B and Annex D on measuring low power modes and determining measurement uncertainty. DOE has already incorporated by reference Edition 2.0 of IEC 62301 in 10 CFR part 430 for use with other test procedures, and is now incorporating by reference Edition 2.0 in appendix Y as well.

V. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subjects

10 CFR Part 429

Confidential business information, Energy conservation, Household appliances, Imports, Reporting and recordkeeping requirements.

10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Incorporation by reference, Intergovernmental relations, Small businesses.

Issued in Washington, DC, on May 6, 2016.

Kathleen B. Hogan,

Deputy Assistant Secretary for Energy Efficiency, Energy Efficiency and Renewable Energy.

For the reasons stated in the preamble, DOE is amending parts 429 and 430 of chapter II of title 10, Code of Federal Regulations as set forth below:

PART 429—CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 1. The authority citation for part 429 continues to read as follows:

Authority: 42 U.S.C. 6291–6317.

■ 2. Revise § 429.39 to read as follows:

§ 429.39 Battery chargers.

(a) *Determination of represented values.* Manufacturers must determine represented values, which include certified ratings, for each basic model of battery charger in accordance with the following sampling provisions.

(1) *Represented values include:* the unit energy consumption (UEC) in kilowatt-hours per year (kWh/yr), battery discharge energy (E_{batt}) in watt-hours (Wh), 24-hour energy consumption (E_{24}) in watt-hours (Wh), maintenance mode power (P_m) in watts (W), standby mode power (P_{sb}) in watts (W), off mode power (P_{off}) in watts (W), and duration of the charge and maintenance mode test (t_{cd}) in hours (hrs).

(2) *Units to be tested.* (i) The general requirements of § 429.11 are applicable to battery chargers; and

(ii) For each basic model, a sample of sufficient size shall be randomly selected and tested to ensure that the represented value of UEC is greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the UEC of the ith sample or,

(B) The upper 97.5-percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{0.975}\left(\frac{s}{\sqrt{n}}\right)$$

and $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t-statistic for a 97.5-percent one-tailed confidence interval with n-1 degrees of freedom (from appendix A of this subpart).

(3) Using the sample from paragraph (a)(2) of this section, calculate the represented values of each metric (*i.e.,* maintenance mode power (P_m), standby power (P_{sb}), off mode power (P_{off}), battery discharge energy (E_{Batt}), 24-hour energy consumption (E_{24}), and duration of the charge and maintenance mode test (t_{cd})), where:

$$\text{where: } Represented\ Value\ Mean = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, is x is the metric, the sample mean; n is the number of samples; and x_i is the measured value of the ith sample for the metric x.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to battery chargers.

(2) Pursuant to § 429.12(b)(13), a certification report must include the following product-specific information: The nameplate battery voltage of the test battery in volts (V), the nameplate battery charge capacity of the test battery in ampere-hours (Ah), and the nameplate battery energy capacity of the test battery in watt-hours (Wh). A certification report must also include the represented values, as determined in paragraph (a) of this section for the maintenance mode power (P_m), standby mode power (P_{sb}), off mode power (P_{off}), battery discharge energy (E_{batt}), 24-hour energy consumption (E_{24}), duration of the charge and maintenance mode test (t_{cd}), and unit energy consumption (UEC).

(3) Pursuant to § 429.12(b)(13), a certification report must include the following product-specific information: The manufacturer and model of the test battery, and the manufacturer and model, when applicable, of the external power supply.

■ 3. Revise paragraph (e) of § 429.110 to read as follows:

§ 429.110 Enforcement testing.

* * * * *

(e) *Basic model compliance.* DOE will evaluate whether a basic model complies with the applicable energy conservation standard(s) based on testing conducted in accordance with the applicable test procedures specified in parts 430 and 431 of this chapter, and with the following statistical sampling procedures:

(1) For products with applicable energy conservation standard(s) in § 430.32 of this chapter, and commercial prerinse spray valves, illuminated exit signs, traffic signal modules and pedestrian modules, commercial clothes washers, and metal halide lamp ballasts, DOE will use a sample size of not more than 21 units and follow the sampling plans in appendix A of this subpart (Sampling for Enforcement Testing of Covered Consumer Products and Certain High-Volume Commercial Equipment).

(2) For automatic commercial ice makers; commercial refrigerators, freezers, and refrigerator-freezers; refrigerated bottled or canned vending machines; commercial air conditioners and heat pumps; commercial packaged boilers; commercial warm air furnaces; and commercial water heating equipment, DOE will use an initial sample size of not more than four units and follow the sampling plans in appendix B of this subpart (Sampling Plan for Enforcement Testing of Covered Equipment and Certain Low-Volume Covered Products).

(3) If fewer than four units of a basic model are available for testing (under paragraphs (e)(1) or (2) of this section) when the manufacturer receives the notice, then:

(i) DOE will test the available unit(s); or

(ii) If one or more other units of the basic model are expected to become available within 30 calendar days, DOE may instead, at its discretion, test either:

(A) The available unit(s) and one or more of the other units that subsequently become available (up to a maximum of four); or

(B) Up to four of the other units that subsequently become available.

(4) For distribution transformers, DOE will use an initial sample size of not more than five units and follow the sampling plans in appendix C of this subpart (Sampling Plan for Enforcement Testing of Distribution Transformers). If fewer than five units of a basic model are available for testing when the manufacturer receives the test notice, then:

(i) DOE will test the available unit(s); or

(ii) If one or more other units of the basic model are expected to become available within 30 calendar days, DOE may instead, at its discretion, test either:

(A) The available unit(s) and one or more of the other units that subsequently become available (up to a maximum of five); or

(B) Up to five of the other units that subsequently become available.

(5) For pumps, DOE will use an initial sample size of not more than four units and will determine compliance based on the arithmetic mean of the sample.

(6) Notwithstanding paragraphs (e)(1) through (5) of this section, if testing of the available or subsequently available units of a basic model would be impractical, as for example when a basic model has unusual testing requirements or has limited production, DOE may in its discretion decide to base the determination of compliance on the testing of fewer than the otherwise required number of units.

(7) When DOE makes a determination in accordance with paragraph (e)(6) to test less than the number of units specified in paragraphs (e)(1) through (5) of this section, DOE will base the compliance determination on the results of such testing in accordance with appendix B of this subpart (Sampling Plan for Enforcement Testing of Covered Equipment and Certain Low-Volume Covered Products) using a sample size (n_1) equal to the number of units tested.

(8) For the purposes of this section, available units are those that are available for distribution in commerce within the United States.

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 4. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

■ 5. In § 430.2 add in alphabetical order the definition of ''Back-up battery charger'' to read as follows:

§ 430.2 Definitions.

* * * * *

Back-up battery charger means a battery charger excluding UPSs:

(1) That is embedded in a separate end-use product that is designed to continuously operate using mains power (including end-use products that use external power supplies); and

(2) Whose sole purpose is to recharge a battery used to maintain continuity of power in order to provide normal or partial operation of a product in case of input power failure.

* * * * *

§ 430.3 [Amended]

■ 6. In § 430.3, paragraph (p)(5) is amended by removing ''and Z of subpart B'' and adding in its place '', Y, and Z of subpart B''.

■ 7. In § 430.23, revise paragraph (aa) to read as follows:

§ 430.23 Test procedures for the measurement of energy and water consumption.

* * * * *

(aa) *Battery Chargers.* (1) Measure the maintenance mode power, standby power, off mode power, battery discharge energy, 24-hour energy consumption and measured duration of the charge and maintenance mode test for a battery charger in accordance with appendix Y to this subpart.

(2) Calculate the unit energy consumption of a battery charger in accordance with appendix Y to this subpart.

* * * * *

■ 8. Appendix Y to Subpart B of Part 430 is amended by:

■ a. Revising the introductory text to appendix Y;

■ b. Revising section 1, Scope;

■ c. Revising sections 2.10, 2.17, 2.19, 2.20 and 2.21;

■ d. Revising Table 3.1 and section 3.2;

■ e. Revising the undesignated center heading directly above section 4.1. General Setup;

■ f. Revising sections 4.3.b. and 4.3c. and Table 4.1;

■ g. Revising sections 5.1, 5.3.a., 5.3.d., 5.8.c.(2), and Table 5.2; and

■ h. Adding a new section 5.13, Unit Energy Consumption Calculation.

The revisions and additions read as follows:

Appendix Y to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Battery Chargers

Prior to November 16, 2016, manufacturers must make any representations regarding the energy consumption of battery chargers based upon results generated under this appendix or the previous version of this appendix as it appeared in the Code of Federal Regulations on January 1, 2016. On or after November 16, 2016, manufacturers must make any representations regarding the energy consumption of battery chargers based upon results generated under this appendix.

1. Scope

This appendix provides the test requirements used to measure the energy consumption for battery chargers operating at either DC or United States AC line voltage (115V at 60Hz). This appendix does not provide a method for testing back-up battery chargers or uninterruptable power supplies.

2. * * *

2.10. *C-Rate (C)* is the rate of charge or discharge, calculated by dividing the charge or discharge current by the nameplate battery charge capacity of the battery.

* * * * *

2.17. *Multi-voltage charger* is a battery charger that, by design, can charge a variety of batteries (or batches of batteries, if also a batch charger) that are of different nameplate battery voltages. A multi-voltage charger can also be a multi-port charger if it can charge two or more batteries simultaneously with independent voltages and/or current regulation.

* * * * *

2.19. *Nameplate battery voltage* is specified by the battery manufacturer and typically printed on the label of the battery itself. If there are multiple batteries that are connected in series, the nameplate battery voltage of the batteries is the total voltage of the series configuration—that is, the nameplate voltage of each battery multiplied by the number of batteries connected in series. Connecting multiple batteries in parallel does not affect the nameplate battery voltage.

2.20. *Nameplate battery charge capacity* is the capacity, claimed by the battery manufacturer on a label or in instructions, that the battery can store, usually given in ampere-hours (Ah) or milliampere-hours (mAh) and typically printed on the label of the battery itself. If there are multiple batteries that are connected in parallel, the nameplate battery charge capacity of the batteries is the total charge capacity of the parallel configuration, that is, the nameplate charge capacity of each battery multiplied by the number of batteries connected in parallel. Connecting multiple batteries in series does not affect the nameplate charge capacity.

2.21. *Nameplate battery energy capacity* means the product (in watts-hours (Wh)) of the nameplate battery voltage and the nameplate battery charge capacity.

* * * * *

3. * * *

* * * * *

TABLE 3.1—LIST OF MEASURED OR CALCULATED VALUES

Name of measured or calculated value	Reference
1. Duration of the charge and maintenance mode test, t_{cd} (hrs).	Section 5.2.
2. Battery Discharge Energy, E_{Batt} (Wh).	Section 5.8.
3. Initial time and power (W) of the input current of connected battery (A).	Section 5.6.
4. Active and Maintenance Mode Energy Consumption (W, hrs).	Section 5.6.
5. Maintenance Mode Power, P_m (W).	Section 5.9.
6. 24 Hour Energy Consumption, E_{24} (Wh).	Section 5.10.
7. Standby Mode Power, P_{sb} (W).	Section 5.11.
8. Off Mode Power, P_{off} (W)	Section 5.12.
9. Unit Energy Consumption, UEC (kWh/yr).	Section 5.13.

3.2. *Verifying Accuracy and Precision of Measuring Equipment*

Any power measurement equipment utilized for testing must conform to the uncertainty and resolution requirements outlined in section 4, ''General conditions for measurements'', as well as annexes B, ''Notes on the measurement of low power modes'', and D, ''Determination of uncertainty of measurement'', of IEC 62301 (incorporated by reference, see § 430.3).

* * * * *

4. Unit Under Test Setup Requirements

* * * * *

4.3. * * *

b. From the detachable batteries specified above, use Table 4.1 to select the batteries to be used for testing, depending on the type of battery charger being tested. The battery charger types represented by the rows in the table are mutually exclusive. Find the single applicable row for the UUT, and test according to those requirements. Select only the single battery configuration specified for the battery charger type in Table 4.1.

If the battery selection criteria specified in Table 4.1 results in two or more batteries or configurations of batteries of different chemistries, but with equal voltage and capacity ratings, determine the maintenance mode power, as specified in section 5.9, for each of the batteries or configurations of batteries, and select for testing the battery or configuration of batteries with the highest maintenance mode power.

c. A charger is considered as:

(1) Single-capacity if all associated batteries have the same nameplate battery charge capacity (see definition) and, if it is a batch charger, all configurations of the batteries have the same nameplate battery charge capacity.

(2) Multi-capacity if there are associated batteries or configurations of batteries that have different nameplate battery charge capacities.

* * * * *

TABLE 4.1—BATTERY SELECTION FOR TESTING

Type of charger			Battery or configuration of batteries to select (from all configurations of all associated batteries)
Multi-voltage	Multi-port	Multi-capacity	
No	No	No	Any associated battery.
No	No	Yes	Highest charge capacity battery.
No	Yes	Yes or No	Use all ports. Use the maximum number of identical batteries with the highest nameplate battery charge capacity that the charger can accommodate.
Yes	No	No	Highest voltage battery.
Yes	Yes to either or both		Use all ports. Use the battery or configuration of batteries with the highest individual voltage. If multiple batteries meet this criteria, then use the battery or configuration of batteries with the highest total nameplate battery charge capacity at the highest individual voltage.

* * * * *

5. * * *

5.1. *Recording General Data on the UUT*

The technician must record:

(1) The manufacturer and model of the battery charger;

(2) The presence and status of any additional functions unrelated to battery charging;

(3) The manufacturer, model, and number of batteries in the test battery;

(4) The nameplate battery voltage of the test battery;

(5) The nameplate battery charge capacity of the test battery; and

(6) The nameplate battery energy capacity of the test battery.

(7) The settings of the controls, if the battery charger has user controls to select from two or more charge rates.

* * * * *

5.3. * * *

a. No conditioning is to be done on lithium-ion batteries. Proceed directly to battery preparation, section 5.4, when testing chargers for these batteries.

* * * * *

d. Batteries of chemistries, other than lithium-ion, that are known to have been through at least two previous full charge/discharge cycles must only be charged once per step c.(5) of this section.

* * * * *

5.8. * * *

c. * * *

(2) Set the battery analyzer for a constant discharge rate and the end-of-discharge voltage in Table 5.2 of this appendix for the relevant battery chemistry.

* * * * *

5.10. * * *

* * * * *

TABLE 5.2—REQUIRED BATTERY DISCHARGE RATES AND END-OF-DISCHARGE BATTERY VOLTAGES

Battery chemistry	Discharge rate C	End-of-discharge voltage * volts per cell
Valve-Regulated Lead Acid (VRLA)	0.2	1.75
Flooded Lead Acid	0.2	1.70
Nickel Cadmium (NiCd)	0.2	1.0
Nickel Metal Hydride (NiMH)	0.2	1.0
Lithium Ion (Li-Ion)	0.2	2.5
Lithium Polymer	0.2	2.5
Rechargeable Alkaline	0.2	0.9
Nanophosphate Lithium Ion	0.2	2.0
Silver Zinc	0.2	1.2

* If the presence of protective circuitry prevents the battery cells from being discharged to the end-of-discharge voltage specified, then discharge battery cells to the lowest possible voltage permitted by the protective circuitry.

* * * * *

5.13. *Unit Energy Consumption Calculation*

Calculate unit energy consumption (UEC) for a battery charger using one of the two equations (equation (i) or equation (ii)) listed below. If a battery charger is tested and its charge duration as determined in section 5.2 of this appendix minus 5 hours is greater than the threshold charge time listed in table 5.3 below (*i.e.* $(t_{cd} - 5) * n > t_{a\&m}$), use equation (ii) to calculate UEC; otherwise calculate the battery charger's UEC using equation (i).

$$\text{(i) } UEC = 365\left(n\left(E_{24} - 5P_m - E_{batt}\right)\frac{24}{t_{cd}} + \left(P_m\left(t_{a\&m} - \left(t_{cd} - 5\right)n\right) + \left(P_{sb}t_{sb}\right) + \left(P_{off}t_{off}\right)\right)\right) \text{ or,}$$

$$\text{(ii) } UEC = 365\left(n\left(E_{24} - 5P_m - E_{batt}\right)\frac{24}{\left(t_{cd}-5\right)} + \left(P_{sb}t_{sb}\right) + \left(P_{off}t_{off}\right)\right)$$

Where:

E_{24} = 24-hour energy as determined in section 5.10 of this appendix,

E_{batt} = Measured battery energy as determined in section 5.8 of this appendix,

P_m = Maintenance mode power as determined in section 5.9 of this appendix,

P_{sb} = Standby mode power as determined in section 5.11 of this appendix,

P_{off} = Off mode power as determined in section 5.12 of this appendix,

t_{cd} = Charge test duration as determined in section 5.2 of this appendix, and

$t_{a\&m}$, n, t_{sb}, and t_{off}, are constants used depending upon a device's product class and found in the following table:

TABLE 5.3—BATTERY CHARGER USAGE PROFILES

Product class				Hours per day***			Charges (n)	Threshold charge time *
No.	Description	Rated battery energy (Ebatt)**	Special characteristic or battery voltage	Active + maintenance ($t_{a\&m}$)	Standby (t_{sb})	Off (t_{off})	Number per day	Hours
1 ...	Low-Energy	≤5 Wh	Inductive Connection ****.	20.66	0.10	0.00	0.15	137.73
2 ...	Low-Energy, Low-Voltage.	<100 Wh	<4 V	7.82	5.29	0.00	0.54	14.48
3 ...	Low-Energy, Medium-Voltage.	.....	4–10 V	6.42	0.30	0.00	0.10	64.20
4 ...	Low-Energy, High-Voltage.	.....	>10 V	16.84	0.91	0.00	0.50	33.68
5 ...	Medium-Energy, Low-Voltage.	100–3000 Wh	<20 V	6.52	1.16	0.00	0.11	59.27
6 ...	Medium-Energy, High-Voltage.	.....	≥20 V	17.15	6.85	0.00	0.34	50.44
7 ...	High-Energy	>3000 Wh	.....	8.14	7.30	0.00	0.32	25.44

* If the duration of the charge test (minus 5 hours) as determined in section 5.2 of appendix Y to subpart B of this part exceeds the threshold charge time, use equation (ii) to calculate UEC otherwise use equation (i).

** E_{batt} = Rated battery energy as determined in 10 CFR part 429.39(a).

*** If the total time does not sum to 24 hours per day, the remaining time is allocated to unplugged time, which means there is 0 power consumption and no changes to the UEC calculation needed.

**** Inductive connection and designed for use in a wet environment (e.g. electric toothbrushes).

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2014–0006; Directorate Identifier 2013–NM–147–AD; Amendment 39–18519; AD 2016–10–08]

RIN 2120–AA64

Airworthiness Directives; Airbus Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for all Airbus Model A330–200 Freighter, A330–200, A330–300, A340–200, A340–300, A340–500, and A340–600 series airplanes. This AD was prompted by the results of endurance qualification tests on the trimmable horizontal stabilizer actuator (THSA), which revealed a partial loss of the no-back brake (NBB) efficiency in specific load conditions. This AD requires inspecting certain THSAs to determine the number of total flight cycles the THSA has accumulated, and replacing the THSA if necessary. We are issuing this AD to detect and correct premature wear of the carbon friction disks on the NBB of the THSA. Such a condition could lead to reduced braking efficiency in certain load conditions and, in conjunction with the inability of the power gear train to keep the ball screw in its last commanded position, could result in uncommanded movements of the trimmable horizontal stabilizer (THS) and loss of control of the airplane.

DATES: This AD is effective June 24, 2016.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of June 24, 2016.

ADDRESSES: For service information identified in this final rule, contact Airbus SAS, Airworthiness Office—EAL, 1 Rond Point Maurice Bellonte, 31707 Blagnac Cedex, France; telephone +33 5 61 93 36 96; fax +33 5 61 93 45 80; email *airworthiness.A330-A340@airbus.com;* Internet *http://www.airbus.com.* You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425–227–1221. It is also available on the Internet