[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 430

EERE-2020-BT-STD-0013

RIN 1904-AE50

Energy Conservation Program: Energy Conservation Standards for Battery Chargers

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

ACTION: Request for information.

SUMMARY: The U.S. Department of Energy is undertaking an early assessment review for amended energy conservation standards for battery chargers to determine whether to amend applicable energy conservation standards for this product. Specifically, through this request for information ("RFI"), DOE seeks data and information that could enable the agency to determine whether it should propose a "no new standard" determination because a more stringent standard: would not result in a significant savings of energy; is not technologically feasible; is not economically justified; or any combination of the foregoing. DOE welcomes written comments from the public on any subject within the scope of this document (including those topics not specifically raised in this RFI), as well as the submission of data and other relevant information concerning this early assessment review.

DATES: Written comments and information will be accepted on or before **[INSERT DATE 75 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *http://www.regulations.gov*. Follow the instructions for submitting

comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2020-BT-STD-0013, by any of the following methods:

1. *Federal eRulemaking Portal*: *http://www.regulations.gov*. Follow the instructions for submitting comments.
2. *E-mail*: *Batterychargers2020STD0013@ee.doe.gov*. Include the docket number EERE-2020-BT-STD-0013 in the subject line of the message.
3. *Postal Mail*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1445. If possible, please submit all items on a compact disc ("CD"), in which case it is not necessary to include printed copies.
4. *Hand Delivery/Courier*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., 6th Floor, Washington, DC, 20024. Telephone: (202) 287-1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

No telefacsimilies (faxes) will be accepted. For detailed instructions on submitting comments and additional information on this process, see section III of this document.

Docket: The docket for this activity, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at *http://www.regulations.gov*. All documents in the docket are listed in the *http://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.

The docket web page can be found at *http://www.regulations.gov/docket?D=EERE-2020-BT-STD-0013*. The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section III for information on how to submit comments through *http://www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT:

Mr. Jeremy Dommu, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-2J, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-9870. E-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

Mr. Michael Kido, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-8145. E-mail: *Michael.Kido@hq.doe.gov*.

For further information on how to submit a comment, or review other public comments and the docket contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by e-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

SUPPLEMENTARY INFORMATION:

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I. Introduction

DOE established an early assessment review process to conduct a more focused analysis of a specific set of facts or circumstances that would allow DOE to determine that, based on one or more statutory criteria, a new or amended energy conservation standard is not warranted. The purpose of this review is to limit the resources, from both DOE and stakeholders, committed to rulemakings that will not satisfy the requirements in EPCA that a new or amended energy conservation standard save a significant amount of energy, and be economically justified and technologically feasible. See 85 FR 8626, 8653-8654 (Feb. 14, 2020).

As part of the early assessment, DOE publishes an RFI in the Federal Register, announcing that DOE is considering initiating a rulemaking proceeding and soliciting comments, data, and information on whether a new or amended energy conservation standard would save a significant amount of energy and be technologically feasible and economically justified. Based on the information received in response to the RFI and DOE's own analysis, DOE will determine whether to proceed with a rulemaking for a new or amended energy conservation standard.

If DOE makes an initial determination based upon available evidence that a new or amended energy conservation standard would not meet the applicable statutory criteria, DOE would engage in notice and comment rulemaking before issuing a final determination that new or amended energy conservation standards are not warranted. Conversely, if DOE makes an initial determination that a new or amended energy conservation standard would satisfy the applicable statutory criteria or DOE's analysis is inconclusive, DOE would undertake the preliminary stages of a rulemaking to issue a new or amended energy conservation standard. Beginning such a rulemaking, however, would not preclude DOE from later making a determination that a new or

amended energy conservation standard cannot satisfy the requirements in EPCA, based upon the full suite of DOE's analyses. See 85 FR 8626, 8654 (Feb. 14, 2020).

A. Authority

The Energy Policy and Conservation Act, as amended ("EPCA"),[1] among other things, authorizes the Department of Energy ("DOE" or in context, "the Department") to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B[2] of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles. These products include battery chargers, the subject of this document. (42 U.S.C. 6291(32); 42 U.S.C. 6295(u) (directing DOE to issue a final rule that prescribes energy conservation standards for battery chargers (or classes of battery chargers) or determine that no energy conservation standard is technically feasible and economically justified). See 42 U.S.C. 6295(u)(1)(E)(i)(II))

Under EPCA, DOE's energy conservation program consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA include definitions (42 U.S.C. 6291), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), energy conservation standards (42 U.S.C. 6295), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

[1] All references to EPCA in this document refer to the statute as amended through America's Water Infrastructure Act of 2018, Public Law 115–270 (October 23, 2018).
[2] For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)-(c)) DOE may, however, grant waivers of Federal preemption in limited instances for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6297(d).

The Energy Policy Act of 2005 ("EPACT 2005"), Public Law 109-58 (Aug. 8, 2005), amended EPCA by defining the term “battery charger.” (42 U.S.C. 6291 and 42 U.S.C. 6295). That provision also directed DOE to prescribe definitions and test procedures related to the energy consumption of battery chargers and to issue a final rule that determines whether to set energy conservation standards for battery chargers or classes of battery chargers. (42 U.S.C. 6295(u)(1)(A) and (E))

Subsequently, the Energy Independence and Security Act of 2007 (“EISA 2007”), Public Law 110-140 (Dec. 19, 2007) established definitions for active, standby, and off modes and directed DOE to amend its test procedures for battery chargers to include a means to measure the energy consumed in standby mode and off mode. (42 U.S.C. 6295(gg)(2)(B)(i)). EISA 2007 also directed DOE to issue a final rule that prescribes energy conservation standards for battery chargers or classes of battery chargers or to determine that no energy conservation standard is technologically feasible and economically justified. (42U.S.C. 6295(u)(1)(E))

EPCA also requires that, not later than 6 years after the issuance of any final rule establishing or amending a standard, DOE evaluate the energy conservation standards for each

type of covered product, including those at issue here, and publish either (1) a notice of determination that the standards do not need to be amended, or (2) a notice of proposed rulemaking ("NOPR") that includes new proposed energy conservation standards (proceeding to a final rule, as appropriate). (42 U.S.C. 6295(m)(1)) In making a determination that the standards do not need to be amended, DOE must evaluate whether amended standards (1) will result in significant conservation of energy, (2) are technologically feasible, and (3) are cost effective as described under 42 U.S.C. 6295(o)(2)(B)(i)(II). (42 U.S.C. 6295(m)(1)(A); 42 U.S.C. 6295(n)(2)) Under 42 U.S.C. 6295(o)(2)(B)(i)(II), DOE must determine whether the benefits of a standard exceed its burdens by, to the greatest extent practicable, considering the savings in operating costs throughout the estimated average life of the covered product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered products which are likely to result from the imposition of the standard. If DOE determines not to amend a standard based on the statutory criteria, not later than 3 years after publishing a final determination not to amend standards, DOE must publish either a new determination that standards for the product do not need to be amended, or propose new energy conservation standards. (42 U.S.C. 6295(m)(3)(B)) DOE must make the analysis on which a determination is based publicly available and provide an opportunity for written comment. (42 U.S.C. 6295(m)(2))

In cases where DOE proposes new standards, DOE must evaluate that proposal against the criteria of 42 U.S.C. 6295(o), as described in the following section, and follow the rulemaking procedures set out in 42 U.S.C. 6295(p). (42 U.S.C. 6295(m)(1)(B)) If DOE decides

to amend the standard based on the statutory criteria, DOE must publish a final rule not later than two years after energy conservation standards are proposed. (42 U.S.C. 6295(m)(3)(A))

B. Rulemaking History

Consistent with EPACT 2005, on December 8, 2006, DOE published a final rule that prescribed test procedures for a variety of products. 71 FR 71340, 71365-71375. That rule, which was codified in multiple sections of the Code of Federal Regulations ("CFR"), included a definition and test procedures for battery chargers. The test procedures for these products are found in 10 CFR part 430, Subpart B, Appendix Y ("Uniform Test Method for Measuring the Energy Consumption of Battery Chargers").

Pursuant to EISA 2007, DOE prescribed the test procedure for battery chargers in a final rule published March 27, 2009, to incorporate standby- and off-mode measurements. 74 FR 13318, 13334-13336. Additionally, DOE amended the test procedures for battery chargers to include an active mode measurement in a test procedure final rule. 76 FR 31750.

DOE initiated the first round of Energy Conservation Standards rulemaking by issuing a Framework Document for Battery Chargers and External Power Supplies (the Framework Document) on June 4, 2009. 74 FR 26816. The Framework Document, which explained the issues, analyses, and process DOE anticipated using in developing the energy conservation standards. On September 15, 2010, after having considered comments from interested parties, gathered additional information, and performed preliminary analyses for the purpose of developing potential amended energy conservation standards for Class A External Power

Supplies (“EPSs”) and new energy conservation standards for battery chargers and non-Class A EPSs, DOE announced a public meeting and the availability of a preliminary technical support document (“preliminary TSD”). 75 FR 56021. The preliminary TSD discussed the comments DOE received at the framework stage of that rulemaking and described the actions DOE took in response to those comments.

After considering all of the comments DOE received from the public meeting and in written comments, DOE published a proposal to set energy conservation standards for battery chargers. 77 FR 18478 (March 27, 2012) (“March 2012 NOPR”). Accompanying that proposal, DOE released the NOPR technical support document (“TSD”), which incorporated the analyses DOE conducted and accompanying technical documentation. In the March 2012 NOPR, DOE proposed establishing energy conservation standards for battery chargers according to battery energy, charging characteristics, and input power source.

Comments responding to the March 2012 NOPR expressed particular interest in the potential interplay between DOE's proposal and a competing battery charger energy efficiency requirement that had been approved by the California Energy Commission (“the CEC”) on January 12, 2012. (The CEC is California's primary energy policy and planning agency.) The CEC standards, which took effect on February 1, 2013, created an overlap between the classes of battery chargers covered by the CEC rule and those classes of battery chargers DOE proposed to regulate in the March 2012 NOPR. Additionally, the standards proposed by DOE differed from the ones issued by the CEC, with some being more stringent and others being less stringent than

the CEC standards. To better understand the impact of the CEC standards on the battery charger market in the U.S., DOE published a request for information ("RFI") on March 26, 2013 that sought stakeholder comment on a variety of issues related to the CEC standards. 78 FR 18253 ("March 2013 RFI").

DOE published a supplemental notice of proposed rulemaking ("SNOPR") in September 2015 to address stakeholder comments responding to the March 2013 RFI by updating and revising its analysis to propose standards that were approximately equivalent, or where justified, more stringent compared to the CEC standards. 80 FR 52850 (September 1, 2015) ("September 2015 NOPR"). In addition to updating its proposal to account for the impact of the CEC standards, DOE made several other changes in preparing these revised standards—including adjusting its analyses in line with updated information and data in the September 2015 SNOPR.

DOE issued a final rule in 2016 establishing energy conservation standards for battery chargers manufactured on or after June 13, 2018. 81 FR 38266 (June 13, 2016) ("June 2016 Final Rule"). The current energy conservation standards, codified in the CFR at 10 CFR 430.32(z), are paired with accompanying test procedures used to evaluate battery charger energy consumption. *See* 10 CFR part 430, subpart B, appendix Y ("Appendix Y").

II. Request for Information

DOE is publishing this RFI to collect data and information during the early assessment review to inform its decision, consistent with its obligations under EPCA, as to whether the Department should proceed with an energy conservation standards rulemaking. Accordingly, in the following sections, DOE has identified specific issues on which it seeks input to aid in its analysis of whether an amended standard for battery chargers would not save a significant amount of energy or be technologically feasible or economically justified. In particular, DOE is interested in any information indicating that there has not been sufficient technological or market changes since DOE last conducted an energy conservation standards rulemaking analysis for battery chargers to suggest a more-stringent standard could satisfy these criteria. DOE also welcomes comments on other issues relevant to its early assessment that may not specifically be identified in this document.

Pursuant to DOE's recently amended "Process Rule" (85 FR 8626 (Feb. 14, 2020)), DOE stated that as a first step in a proceeding to consider establishing or amending an energy conservation standard, such as the existing standards for the battery chargers at issue in this notice, DOE would publish a notice in the *Federal Register* announcing that DOE is considering initiation of a proceeding, and as part of that notice, DOE would request submission of related comments, including data and information showing whether any new or amended standard would satisfy the relevant requirements in EPCA for a new or amended energy conservation standard. Based on the information received in response to the notice and its own analysis, DOE would determine whether to proceed with a rulemaking for a new or amended standard, or issue a proposed determination that the standards do not need to be amended.

When prescribing new or amended standards for covered products, DOE must follow specific statutory criteria. EPCA requires that any new or amended energy conservation standard prescribed by the Secretary be designed to achieve the maximum improvement in energy or water efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) To determine whether a standard is economically justified, EPCA requires that DOE determine whether the benefits of the standard exceed its burdens by considering, to the greatest extent practicable, the following seven factors:

(1) The economic impact of the standard on the manufacturers and consumers of the affected products;

(2) The savings in operating costs throughout the estimated average life of the product compared to any increases in the initial cost, or maintenance expenses;

(3) The total projected amount of energy and water (if applicable) savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the products likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy ("the Secretary") considers relevant. (42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII))

DOE fulfills these and other applicable requirements by conducting a series of analyses throughout the rulemaking process. Table I.1 shows the individual analyses that are performed

to satisfy each of the requirements within EPCA.

Table I.1 EPCA Requirements and Corresponding DOE Analysis

EPCA Requirement	Corresponding DOE Analysis
Significant Energy Savings	• Shipments Analysis • National Impact Analysis • Energy and Water Use Determination
Technological Feasibility	• Market and Technology Assessment • Screening Analysis • Engineering Analysis
Economic Justification:	
1. Economic Impact on Manufacturers and Consumers	• Manufacturer Impact Analysis • Life-Cycle Cost and Payback Period Analysis • Life-Cycle Cost Subgroup Analysis • Shipments Analysis
2. Lifetime Operating Cost Savings Compared to Increased Cost for the Product	• Markups for Product Price Determination • Energy and Water Use Determination • Life-Cycle Cost and Payback Period Analysis
3. Total Projected Energy Savings	• Shipments Analysis • National Impact Analysis
4. Impact on Utility or Performance	• Screening Analysis • Engineering Analysis
5. Impact of Any Lessening of Competition	• Manufacturer Impact Analysis
6. Need for National Energy and Water Conservation	• Shipments Analysis • National Impact Analysis
7. Other Factors the Secretary Considers Relevant	• Employment Impact Analysis • Utility Impact Analysis • Emissions Analysis • Monetization of Emission Reductions Benefits • Regulatory Impact Analysis

As noted in Section I.A, DOE is publishing this early assessment review RFI to collect data and information that could enable the agency to determine whether DOE should propose a

"no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of the foregoing. DOE also seeks input and data from interested parties to aid in the development of the technical analyses on which DOE will ultimately rely to determine whether (and if so, how) to amend the standards for battery chargers.

In this early assessment review RFI, DOE seeks comment on whether there have been any technological or market changes since the June 2016 Final Rule that would justify a new rulemaking to consider, for existing standards, an amendment to establish more stringent standards, or whether a "no new standard" determination is appropriate pursuant to the criteria set forth in Section I.

A. Products Covered by This Process

This RFI covers those products that meet the various battery charger definitions, as codified at 10 CFR 430.2. A battery charger is a device that charges batteries for consumer products, including battery chargers embedded in other consumer products. 10 CFR 430.2. The definitions for specific classes of battery chargers were most recently amended in a test procedure final rule, which defined and excluded back-up battery chargers[3] from the test procedure's scope. 81 FR 31827 (May 20, 2016).

[3] The term "back-up battery charger" means a battery charger (but excluding an uninterruptible power supply) 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 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. 10 CFR 430.2.

Issue 1: DOE requests comment on the appropriateness of the current definitions for battery charger (and its related battery charger classes).

1. Wireless Battery Chargers

In the June 2016 Final Rule, DOE specified that for battery chargers with inductive connections (*i.e.,* wireless battery chargers), only those that are more technologically mature – specifically, those that are designed to operate in wet conditions – would be subject to standards. 81 FR 38266, 38282. DOE planned to address wireless chargers designed for dry environments in a separate rulemaking to avoid unintentionally impeding the development of a then-nascent technology -- wireless charging. *Id.*

With regard to wireless battery chargers, DOE seeks public input on the following topics.

Issue 2: DOE requests information and data on the technologies used in wireless battery chargers, including those designed for dry environments, the performance characteristics of the technologies, the potential consumer utility provided by such technologies, and the impact such technologies have on the energy consumption of the wireless battery charger.

Issue 3: DOE seeks information on design options that are (1) currently used in wireless battery chargers to reduce energy consumption or (2) could be used to reduce energy consumption. DOE also requests information on any such technologies currently used in prototypes. DOE requests information on the associated costs for any identified technologies.

Issue 4: DOE requests information on whether industry or other organizations have developed, or are in the process of developing, industry or voluntary standards for wireless battery chargers, including those designed for dry environments.

B. Market and Technology Assessment

The market and technology assessment that DOE routinely conducts when analyzing the impacts of a potential new or amended energy conservation standard provides information about the battery charger industry that will be used to determine whether DOE should propose a "no new standard" determination. DOE uses qualitative and quantitative information to characterize the structure of the industry and market. DOE identifies manufacturers, estimates market shares and trends, addresses regulatory and non-regulatory initiatives intended to improve energy efficiency or reduce energy consumption, and explores the potential for efficiency improvements in the design and manufacturing of battery chargers. DOE also reviews product literature, industry publications, and company websites. Additionally, DOE considers conducting interviews with manufacturers to improve its assessment of the market and available technologies for battery chargers.

1. Product Classes

When evaluating and establishing energy conservation standards, DOE may divide covered products into different product classes by the type of energy used, or by capacity or other performance-related features that justify a different standard. (42 U.S.C. 6295(q)) In making a determination whether capacity or another performance-related feature justifies a different standard, DOE must consider such factors as the utility of the feature to the consumer and other factors DOE deems appropriate. (*Id*.)

For battery chargers, the current energy conservation standards specified in 10 CFR 430.32(z) are based on seven product classes determined according to the following performance-related features that provide utility to the consumer: rated battery energy, rated battery voltage, and inductive charging capability specifically designed for use in a wet environment. Table II.1 lists the current seven product classes for battery chargers.

Table II.1 Current Battery Charger Product Classes

Product Class	Product Class Description	Rated Battery Energy (watt-hours ("Wh"))	Special Characteristic or battery voltage
1	Low-energy	≤ 5 Wh	Inductive connection and designed for use in wet environment
2	Low-energy, Low-voltage	< 100 Wh	< 4 volts ("V")
3	Low-energy, Medium-voltage		4 – 10 V
4	Low-energy, High-voltage		> 10 V
5	Medium-energy, Low-voltage	100-3000 Wh	< 20 V
6	Medium-energy, High-voltage		≥ 20 V
7	High Energy	> 3000 Wh	

Issue 5: DOE requests feedback on the current battery charger product classes and whether changes to these individual product classes and their descriptions are needed or whether certain classes should be merged or separated (*e.g.*, merge Low-energy, Low-voltage product class with that of Low-energy, Medium-voltage *etc*.). DOE also seeks feedback on the potential impacts from combining certain classes, such as the elimination of performance-related features or the availability of products to meet the current energy conservation standard for these products. DOE also requests comment on separating any of the existing product classes and

whether it would impact product utility by eliminating any performance-related features or reduce any compliance burdens.

DOE is also aware that there may be new configurations and features available for battery chargers that may not have been available at the time of the last energy conservation standards analysis.

Issue 6: DOE seeks information regarding any other new product classes it should consider for inclusion in its analysis. Specifically, DOE requests information on the performance-related features (*e.g.*, inductive charging vs. conductive charging, presence of charging indicators, fast charging capability, etc.) that provide unique consumer utility and data detailing the corresponding impacts on energy use that would justify separate product classes (*i.e.*, explanation for why the presence of these performance-related features would increase energy consumption).

2. Technology Assessment

In analyzing information to determine whether DOE should propose a "no new standards determination" for existing battery charger standards, DOE uses information about existing and past technology options and prototype designs to help identify technologies that manufacturers could use to meet and/or exceed a given set of energy conservation standards under consideration. In consultation with interested parties, DOE intends to develop a list of technologies to consider in its analysis. That analysis will likely include a number of the technology options DOE previously considered during its most recent standards rulemaking for

battery chargers. A complete list of those prior options appears in Table II.2 of this RFI. As certain technologies have progressed since the June 2016 Final Rule, Table II.3 of this RFI lists additional technology options that DOE may also consider in a future battery charger energy conservation standards rulemaking.

Table II.2 Technology Options for the June 2016 Final Rule

1	Elimination/Limitation of Maintenance Current
2	Elimination of No-Battery Current
Slow Charger	
3	Improved Cores
4	Termination of Charge Current at Full Charge
5	Switched-Mode Power Supply
Fast Charger	
6	Low-Power Integrated Circuits
7	Schottky Diodes and Synchronous Rectification
8	Phase Control to Limit Input Power

Table II.3 Additional Technology Options for Battery Chargers

1	Printed Circuit Boards with Higher Copper Content
2	Alternative Semiconductor Materials
3	More Efficient SMPS Topologies such as synchronous rectification

Issue 7: DOE seeks information on the technologies listed in Table II.2 of this RFI regarding their applicability to the current market and how these technologies may impact the energy consumption of battery chargers as measured according to the DOE test procedure. DOE also seeks information on how these technologies may have changed since they were considered in the June 2016 Final Rule analysis. Specifically, DOE seeks information on the range of efficiencies or performance characteristics that are currently available for each technology option.

Issue 8: DOE seeks information on the technologies listed in Table II.3 of this RFI regarding their market adoption, costs, and any concerns with incorporating them into products (*e.g.*, impacts on consumer utility, potential safety concerns, manufacturing/production/implementation issues, etc.), particularly as to changes that may have occurred since the June 2016 Final Rule.

Issue 9: DOE seeks comment on other technology options that it should consider for inclusion in its analysis and if the incorporation of these technologies may impact product features or consumer utility of battery chargers.

C. Screening Analysis

The purpose of the screening analysis is to evaluate the technologies that improve equipment efficiency to determine which technologies will be eliminated from further consideration and which will be passed to the engineering analysis for further consideration. In this early assessment RFI, DOE seeks data and information with respect to technologies previously screened out or retained that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of the foregoing.

DOE determines whether to eliminate certain technology options from further consideration based on the following criteria:

(1) *Technological feasibility*. Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install, and service.* If it is determined that mass production of a technology in commercial products and reliable installation and servicing of the technology is unlikely to be achieved on the scale necessary to serve the relevant market at the time of the compliance date of the standard, then that technology will not be considered further.

(3) *Impacts on equipment utility or equipment availability.* If a technology is determined to have significant adverse impact on the utility of the equipment to significant subgroups of consumers, or result in the unavailability of any covered equipment type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as equipment generally available in the United States at the time, it will not be considered further.[4]

(4) *Adverse impacts on health or safety.* If it is determined that a technology will have significant adverse impacts on health or safety, it will not be considered further.

(5) *Unique-Pathway Proprietary Technologies*. If a design option utilizes proprietary technology that represents a unique pathway to achieving a given efficiency level,

[4] For example, in the analysis for the June 2016 Final Rule DOE screened out the option to lower charging current or increase charging voltage so that product utility would not be adversely impacted. See 81 FR 38266, 38285.

that technology will not be considered further.

10 CFR part 430, subpart C, appendix A 6(c)(3) and 7(b)

Technology options identified in the technology assessment are evaluated against these criteria using DOE analyses and inputs from interested parties (*e.g.*, manufacturers, trade organizations, and energy efficiency advocates). Technologies that pass through the screening analysis are referred to as "design options" in the engineering analysis. Technology options that fail to meet one or more of these criteria are eliminated from consideration.

Table II.4 summarizes the technology options that DOE screened out in the June 2016 Final Rule, and the applicable screening criteria.

Table II.4 Previously Screened Out Technology Options from the June 2016 Final Rule

	Screening Criteria (X = Basis for Screening Out)				
Screened Technology Option	**Technological Feasibility**	**Practicability to Manufacture, Install, and Service**	**Adverse Impact on Product Utility**	**Adverse Impacts on Health and Safety**	**Unique-Pathway Proprietary Technologies**
Non-inductive Chargers for Use in Wet Environment				**X**	
Capacitive Reactance				**X**	
Lowering Charging Current or Increasing Voltage			**X**		

Issue 10: DOE requests feedback on what impact, if any, the screening criteria described in this section would have on each of the technology options listed in Table II.2 and Table II.3 of this RFI with respect to battery chargers. Similarly, DOE seeks information

regarding how these same criteria would affect any other technology options not already identified in this document with respect to their potential use in battery chargers.

Issue 11: With respect to the screened out technology options listed in Table II.4 of this RFI, DOE seeks information on whether these options would, based on current and projected assessments regarding each of them, remain screened out under the screening criteria described in this section. With respect to each of these technology options, what steps, if any, could be (or have already been) taken to facilitate the introduction of each option as a means to improve battery charger energy efficiency? What impact, if any, is there likely to be to the consumer utility of these products with respect to the adoption of each of these previously screened out options?

D. Engineering Analysis

The engineering analysis estimates the cost-efficiency relationship of products at different levels of increased energy efficiency ("efficiency levels"). This relationship serves as the basis for the cost-benefit calculations for consumers, manufacturers, and the Nation. In determining the cost-efficiency relationship, DOE estimates the increase in manufacturer production cost ("MPC") associated with increasing the efficiency of products above the baseline, up to the maximum technologically feasible ("max-tech") efficiency level for each product class. In this early assessment review RFI, DOE seeks data and information with respect to these cost-benefit calculations that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically

justified; or (4) any combination of the foregoing.

DOE historically has used the following three methodologies to generate incremental manufacturing costs and establish efficiency levels ("ELs") for analysis: (1) the design-option approach, which provides the incremental costs of adding to a baseline model design options that will improve its efficiency; (2) the efficiency-level approach, which provides the relative costs of achieving increases in energy efficiency levels, without regard to the particular design options used to achieve such increases; and (3) the cost-assessment (or reverse engineering) approach, which provides "bottom-up" manufacturing cost assessments for achieving various levels of increased efficiency, based on detailed cost data for parts and material, labor, shipping/packaging, and investment for models that operate at particular efficiency levels.

1. Baseline Efficiency Levels

For each established product class, DOE selects a baseline model as a reference point against which any changes resulting from new or amended energy conservation standards can be measured. The baseline model in each product class represents the characteristics of common or typical products in that class. Typically, a baseline model is one that meets the current minimum energy conservation standards and provides basic consumer utility.

The current minimum energy conservations standards (which went into effect August 12, 2016) represent the current baseline efficiency levels for each product class. The current standards for each product class are based on unit energy consumption ("UEC"). The current standards for battery chargers are found at 10 CFR 430.32(z).

Issue 12: DOE requests feedback on whether using the current established energy conservation standards for battery chargers are appropriate baseline efficiency levels for DOE to consider in evaluating whether DOE should propose a "no new standard" determination. DOE requests data and suggestions to evaluate the baseline efficiency levels in order to better evaluate amending energy conservation standards for these products.

Issue 13: DOE requests feedback on the appropriate baseline efficiency levels for any newly analyzed product classes that are not currently in place or for the combined product classes discussed in section II.B.1 of this document. For newly analyzed product classes, DOE requests energy use data to develop a baseline relationship between energy use and adjusted volume.

2. Maximum Available and Maximum Technologically Feasible Levels

As part of DOE's analysis, the maximum available efficiency level is the highest efficiency unit currently available on the market, or as in the case of battery chargers, the unit currently available on the market with the lowest energy consumption. For the June 2016 Final Rule, DOE analyzed all seven battery charger product classes. For each product class, DOE selected a representative unit on which it conducted its engineering analysis and developed a cost-efficiency curve. The representative unit is meant to be an idealized battery charger typical of those used with high-volume applications in its product class. Because results from the analysis of these representative units would later be extended or applied to other units in each respective product class, DOE selected high-volume and/or high-energy consumption applications that use batteries that are typically found across battery chargers in the given

product class. The analysis of these battery chargers applies to all applications in the product class under the assumption that all battery chargers with the same battery voltage and energy provide similar utility to the user, regardless of the actual end-use product with which they work. See 81 FR 38266, 38286 and chapter 5 of the preliminary analysis technical support document ("TSD")[5] for that rulemaking. The maximum efficiencies currently available for these seven analyzed product classes are included in Table II.5 of this RFI.

Table II.5 Maximum Efficiency Levels Currently Available

Product Class	Best-in-market Unit Energy Consumption (kWh/yr)
1	3.04
2	1.58
3	0.74
4	3.63
5	21.39
6	33.53
7	131.44

DOE defines a "max-tech" efficiency level to represent the theoretical maximum possible efficiency if all available and compatible design options are incorporated in a model. In many cases, the max-tech efficiency level is not commercially available because it is not economically feasible. In the June 2016 Final Rule, DOE determined max-tech efficiency levels using engineering analysis. DOE determined the maximum technologically feasible improvements in energy use for battery chargers by examining a variety of relevant sources of information, including the design parameters used by the least consumptive products available on the market,

[5] The June 2016 Final Rule TSD is available at: *https://www.regulations.gov/document?D=EERE-2008-BT-STD-0005-0257*.

conducting interviews with manufacturers, vetting available manufacturer data with subject matter experts, and obtaining public feedback on DOE's analytical results. 81 FR 38266, 38278. For additional discussion of the prior max-tech analysis see chapter 5 of the June 2016 Final Rule TSD.

DOE is considering the likelihood of achieving "significant energy savings" from an amended standard by examining the projected energy savings that would result from amended standards. If DOE determines that a more stringent energy conservation standard would not result in an additional 0.3 quad of site energy savings or an additional 10-percent reduction in site energy use over a 30-year period, DOE would propose to make a no-new-standards determination. DOE's most recent standards rulemaking resulted in standards that produced an estimated energy savings (based on the full fuel cycle) of 0.173 quad over a 30-year period, compared against the estimated 0.703 quad in energy use reduction if the max-tech levels from that rulemaking had been adopted. DOE seeks comment on the potential energy savings that could be expected from more-stringent standards for battery chargers.

Issue 14: DOE seeks data and information on the range of potential reductions in energy usage available for battery chargers including those alternatives analyzed in the last energy conservation standards rulemaking as well as those not directly analyzed, what alternative approaches for achieving potential reductions in energy usage should DOE consider when analyzing battery chargers and why? Relatedly, DOE seeks feedback

on what design options (if any) are available to incorporate into a potential updated max-tech efficiency level and the related efficiencies of those individual options. As part of this request, DOE also seeks information as to whether there are limitations on the use of certain combinations of design options.

3. Intermediate Efficiency Levels

DOE may also define intermediate efficiency levels in between the baseline and max-tech efficiency levels. Typically, DOE identifies intermediate efficiency levels, where appropriate, based on a variety of sources including, but not limited to: (1) clusters of models currently on the market at intermediate efficiency levels; (2) efficiency levels defined by programs such as ENERGY STAR; or (3) "gap-fill" levels to bridge large divides between existing clusters in the market. From the June 2016 Final Rule, DOE established four trial standard levels ("TSLs") containing some intermediate efficiency levels for each of the seven battery charger product classes, listed in Table II.6 of this RFI. 81 FR 38307.

Table II.6 Trial Standard Levels for Battery Chargers

Product Class	**Trial Standard Level**			
	TSL 1	**TSL 2**	**TSL 3**	**TSL 4**
1	EL 1	EL 2	EL 2	EL 3
2	EL 1	EL 1	EL 2	EL 4
3	EL 1	EL 1	EL 2	EL 3

4	EL 1	EL 1	EL 2	EL 3
5	EL 1	EL 2	EL 3	EL 3
6	EL 1	EL 2	EL 3	EL 3
7	EL 1	EL 1	EL 2	EL 2

For battery charger PC 1 (low-energy, inductive), DOE examined trial standard levels corresponding to each of three ELs developed in the engineering analysis. TSL 1 is an intermediate level of performance above the baseline. TSLs 2 and 3 are equivalent to the best-in-market and corresponds to the maximum consumer net present value. TSL 4 is the max-tech level and corresponds to the greatest national energy savings ("NES").

For its second set of TSLs, which covers PCs 2 (low-energy, low-voltage), 3 (low-energy, medium-voltage), and 4 (low-energy, high-voltage), DOE examined four TSLs of different combinations of the various efficiency levels found for each product class in the engineering analysis. In this grouping, TSLs 1 and 2 are intermediate efficiency levels above the baseline for each product class and corresponds to the maximum consumer net present value ("NPV"). TSL 3 corresponds to an incremental efficiency level below best-in-market for PC 2, and the best-in-market efficiency level for PCs 3 and 4. Finally, TSL 4 corresponds to the max-tech efficiency level for all product classes and therefore, the maximum NES. Note that for PC 2 only, EL 3 (corresponding to a best-in-market efficiency level) was not analyzed in any given TSL due to the negative LCC savings results for this product class at EL 3 and the fact that only four TSLs were analyzed.

DOE's third set of TSLs corresponds to the grouping of PCs 5 (medium-energy, low-voltage) and 6 (medium-energy, high-voltage). For both product classes, TSL 1 is an intermediate efficiency level above the baseline. TSL 2 corresponds to the best-in-market efficiency level for both product classes and is the level with the highest consumer NPV. Finally, TSLs 3 and 4 correspond to the max-tech efficiency level for both product classes and the maximum NES.

For PC 7 (high-energy), DOE examined only two ELs because of the paucity of products available on the market. TSLs 1 and 2 correspond to an efficiency level equivalent to the best-in-market and maximizes consumer NPV. TSLs 3 and 4 comprise the max-tech level corresponding to the level with the maximum NES.

4. Manufacturer Production Costs and Manufacturing Selling Price

As described at the beginning of this section, the main outputs of the engineering analysis are cost-efficiency relationships that describe the estimated increases in manufacturer production costs associated with higher-efficiency products for the analyzed product classes. For the June 2016 Final Rule, DOE developed the cost-efficiency relationships by estimating the efficiency improvements and costs associated with incorporating specific design options into the assumed baseline model for each analyzed product class. See chapter 5 of the June 2016 Final Rule TSD for the cost-efficiency curves developed in that rulemaking.

Issue 15: DOE requests feedback on how manufacturers would incorporate the technology options listed in Table II.2 and Table II.3 of this document to reduce the energy consumption of battery chargers from the baseline while continuing to maintain the same utility

of these products. This includes information on the order in which manufacturers would incorporate the different technologies to incrementally improve product efficiency. DOE also requests feedback on whether the increased energy efficiency would lead to other design changes that would not occur otherwise. DOE is also interested in information regarding any potential impact of design options on a manufacturer's ability to incorporate additional functions or attributes in response to consumer demand.

Issue 16: DOE also seeks input on the increase in MPC associated with incorporating each particular design option. Specifically, DOE is interested in whether, and if so how, the costs estimated for the design options examined in the June 2016 Final Rule have changed since the time of that analysis. DOE also requests information on the investments necessary to incorporate specific design options, including, but not limited to, costs related to new or modified tooling (if any), materials, engineering and development efforts to implement each design option, and manufacturing/production impacts.

Issue 17: DOE requests comment on whether certain design options apply to (or present compatibility issues with) specific product classes.

As described in section II.D.2 of this document, DOE analyzed seven product classes in the June 2016 Final Rule. DOE developed cost-efficiency curves for each of these product classes that were used as the input for the downstream analyses conducted in support of that rulemaking. See chapter 5 of the June 2016 Final Rule TSD for the cost-efficiency curves developed in that rulemaking.

Issue 18: DOE seeks feedback on whether the approach of analyzing representative units from each product class by selecting idealized battery chargers typical of those used with high-volume applications in their product classes is appropriate for a future battery charger energy conservation standards rulemaking. Additionally, DOE welcomes comment on whether the approach used to apply the analyzed representative unit results to the other products within its product class is appropriate – and if not, why not? For example, if it is necessary to individually analyze additional battery charger models other than the representative units used in the June 2016 Final Rule, please provide information on why aggregating certain products is not appropriate. If this approach is not appropriate, what alternative approaches should DOE consider using and why?

To account for manufacturers' non-production costs and profit margin, DOE applies a non-production cost multiplier (the manufacturer markup) to the MPC. The resulting manufacturer selling price ("MSP") is the price at which the manufacturer distributes a unit into commerce. For the June 2016 Final Rule, DOE developed a markup for each product class based on the shipment-weighted average of the markups for different end-use product categories. Detailed tables and derivations are published in chapter 5 of the June 2016 Final Rule TSD.

Issue 19: DOE requests feedback on whether manufacturer markups used in the June 2016 Final Rule remain appropriate and applicable in evaluating whether to amend the current standards for battery chargers.

E. Markup Analysis

In this early assessment review RFI, DOE seeks data and information with respect to markups for battery chargers that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of the foregoing.

To carry out the life-cycle cost ("LCC") and payback period ("PBP") calculations, DOE would need to determine the cost to the residential consumer of baseline products, and the cost of more-efficient units the consumer would purchase under potential amended standards. By applying a multiplier called a "markup" to the MSP, DOE is able to estimate the residential consumer's price. In generating end-user price inputs, DOE must identify distribution channels (*i.e.*, how the products are distributed from the manufacturer to the consumer) and estimate relative sales volumes through each channel. In the June 2016 Final Rule, DOE determined that the dominant distribution channel for battery chargers typically involves an end-use product manufacturer (*i.e.*, an OEM) and retailer.

DOE typically determines an average manufacturer markup by examining the annual Securities and Exchange Commission ("SEC") 10-K reports filed by publicly traded manufacturers of appliances whose product range includes battery chargers. DOE also typically determines an average retailer markup by analyzing both economic census data from the U.S. Census Bureau and the annual SEC 10-K reports filed by publicly traded retailers.

In addition to developing manufacturer and retailer markups, DOE typically develops and includes sales taxes to calculate appliance retail prices. DOE uses an internet source, the Sales Tax Clearinghouse, to calculate applicable sales taxes.

Issue 20: DOE requests information on the existence of any significant distribution channels other than the retail outlet and end-use product manufacturer distribution channels that are used to distribute the products at issue into the market. DOE also requests data on whether the distribution channels identified in the June 2016 Final Rule remain appropriate and applicable to the market.

F. Energy Use Analysis

In this early assessment review RFI, DOE seeks data and information with respect to energy use of battery chargers that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of the foregoing.

As part of the rulemaking process, DOE conducts an energy use analysis to identify how products are used by consumers, and thereby determine the energy savings potential of energy efficiency improvements. DOE bases the energy consumption of battery chargers on the rated annual energy consumption as determined by the DOE test procedure. Along similar lines, the energy use analysis is meant to represent typical energy consumption in the field.

Battery chargers work as power conversion devices that transform an input voltage to a suitable voltage for the batteries they are powering. A portion of the energy that flows into a battery charger flows out to a battery or end-use product and, thus, cannot be considered to be consumed by the battery charger. However, to provide the necessary output power, battery chargers consume energy due to internal losses as well as overhead circuitry. Therefore, the traditional method for calculating energy consumption by measuring the energy a product draws from mains while performing its intended function(s) is not appropriate for battery chargers because the method would not factor in the energy delivered by the battery charger to the battery, and would overestimate the energy consumption of the battery charger. Instead, energy consumption is the energy losses that occur while battery chargers convert and deliver power to end-use products or batteries. The energy and power requirements of the end-use products and batteries, once determined, are considered fixed, and DOE considers only how standards would affect the energy consumption of battery chargers themselves.

The energy conservation standards for battery chargers rely on the UEC metric to represent an annualized amount of the non-useful energy consumed by a battery charger in all modes of operation. The UEC equation combines various performance parameters including 24-hour energy, measured battery energy, maintenance mode power, standby mode power, off mode power, charge test duration, and usage profiles. See Appendix Y, Section 3.3.13. Table 3.3.3 of Appendix Y defines usage profiles that represent time spent in each mode of operation, specific to each defined product class. DOE developed scaling relationships based on battery charger efficiency level and additional test results, and determined the maximum UEC allowed as a function of rated battery energy for each product class. The current energy conservation

standards for each product class are presented in Table II.7 of this RFI.

Table II.7 Energy Conservation Standards for Battery Chargers

Product Class	Maximum UEC (kWh/yr) (as a function of rated battery energy ("E_{batt}"))
1	3.04
2	0.1440 * E_{batt} + 2.95
3	For E_{batt} <10 Wh, 1.42 kWh/y E_{batt} ≥10 Wh, 0.0255 * E_{batt} + 1.16
4	0.11 * E_{batt} + 3.18
5	0.0257 * E_{batt} + .815
6	0.0778 * E_{batt} + 2.4
7	0.0502 * E_{batt} + 4.53

1. Active Mode and Maintenance Mode Energy Consumption

"Active mode" or "charge mode" is the mode in which the battery charger system is connected to the main electricity supply (*i.e.*, the electrical outlet), and the battery charger is delivering current, equalizing the cells, and performing other one-time or limited-time functions in order to bring the battery to a fully charged state. See Appendix Y, Section 2.1. Active mode energy consumption is measured as a part of 24-hour energy consumption, which is incorporated into the UEC calculation to assess the energy consumption of battery chargers. Twenty-four hour energy consumption also accounts for energy consumed by the battery charger in battery maintenance mode. "Battery maintenance mode" or "maintenance mode" is the mode when the battery charger is connected to the main electricity supply and the battery is fully charged, but is still connected to the charger. See Appendix Y, Section 2.8. In maintenance mode, the charger

is performing functions intended to keep the battery fully charged while protecting it from overcharge. Active mode and maintenance mode energy consumption contribute to the majority of the inefficiencies (i.e. energy not transferred to the battery) that occur during all modes of operation. While DOE does not require specific efficiency performances for each mode of operation, DOE utilizes the UEC calculation to account for overall battery charger energy consumption, allowing the standard to be met by a configuration of modal energy use determined by the manufacturer.

Issue 21: DOE requests feedback on whether the current active mode and maintenance mode energy measurements produce results that are representative of these modes during an average period of use. If not, DOE requests alternate approaches to these measurements along with supporting use data.

Issue 22: DOE seeks information on whether any new (or revised) industry or voluntary standards for measuring battery charger active mode and maintenance mode energy consumption have been developed since the June 2016 Final Rule.

2. Standby Mode and Off Mode Energy Consumption

"Standby mode" or "no-battery mode" is the mode in which the battery charger is connected to the main electricity supply; with no battery connected to the charger, and all the manual on-off switches turned on. See Appendix Y, Section 2.25. "Off mode" is the mode of operation similar to standby mode, but with all the manual on-off switches turned off. See Appendix Y, Section 2.20. The test procedure at Appendix Y incorporates by reference IEC

62301 standard to provide specific resolution and measurement tolerances for standby power measurements. See Appendix Y, Section 3.1.2. Appendix Y integrates the standby mode and off mode energy consumption combined with usage profiles specific to each product class to further refine the UEC calculation so that it accounts for all modes of battery charger operations. See Appendix Y, Table 3.3.3.

Issue 23: DOE requests information on technology options for battery chargers that could reduce standby mode and off mode energy consumption and the costs associated with each option.

G. Life-Cycle Cost and Payback Analysis

In this early assessment review RFI, DOE seeks data and information with respect to manufacturer impacts that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of the foregoing.

DOE conducts the LCC and PBP analysis to evaluate the economic effects of potential energy conservation standards for battery chargers on individual customers. The effects of more stringent energy conservation standards on a consumer of battery chargers include changes in operating expenses (usually decreased) and changes in purchase prices (usually increased). DOE would analyze data input variability and uncertainty by performing the LCC and PBP calculations on a representative sample of households from RECS or similar survey data for the considered product classes using Monte Carlo simulation and probability distributions. For any

given efficiency level, DOE measures the PBP and the change in LCC relative to an estimated baseline level. The LCC is the total customer expense over the life of the equipment, consisting of purchase, installation, and operating costs (expenses for energy use, maintenance, and repair). Inputs to the calculation of total installed cost include the cost of the equipment—which includes MSPs, distribution channel markups, and sales taxes—and installation costs. Inputs to the calculation of operating expenses include annual energy consumption, energy prices and price projections, repair and maintenance costs, product lifetimes, discount rates, and the year that compliance with new and amended standards is required. DOE assumes there is little to no maintenance and repair costs due to the nature of battery charger devices, and the life cycle cost would mainly consist of purchase and energy use costs.

> Issue 24: DOE requests information and data on the frequency of repair and repair costs by product class for the technology options listed in Table II.2 and Table II.3. While DOE is interested in information regarding each of the listed technology options, DOE is also interested in whether consumers simply replace the products when they fail as opposed to repairing them.

H. Shipments Analysis

In this early assessment review RFI, DOE seeks data and information with respect to battery charger shipments that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of the foregoing.

DOE develops shipments forecasts of battery chargers to calculate the national impacts of potential amended energy conservation standards on energy consumption, net present value ("NPV"), and future manufacturer cash flows. DOE shipments projections are based on available historical data broken out by product class and battery characteristics. Current sales estimates allow for a more accurate model that captures recent trends in the market.

In the June 2016 Final Rule, DOE relied on historical data for battery charges as shown in Table II.8 of this RFI.

Table II.8 Historic Shipments by Product Class from the June 2016 Final Rule

Category	Rated Battery Energy	Special Characteristic or Battery Voltage	Shipments in 2011 (Thousand Units)
Low-Energy	⩽5 Wh	Inductive Connection	15,100
Low-Energy, Low-Voltage	<100 Wh	<4 V	383,006
Low-Energy, Medium-Voltage		4-10 V	25,934
Low-Energy, High-Voltage		>10 V	76,731
Medium-Energy, Low-Voltage	100-3000 Wh	<20 V	4,517
Medium-Energy, High-Voltage		⩾20 V	640
High-Energy	>3000 Wh		229

Issue 25: DOE requests available annual sales data (*i.e.,* number of shipments) for the years 2012-2018 based on product class and application (i.e. rechargeable toothbrush chargers, smartphone chargers, etc.). If available, DOE also requests data on the fraction of shipments to residential and commercial sectors in each product class. If disaggregated fractions of annual

sales are not available, DOE requests more aggregated fractions of annual sales at the product class level.

I. National Impact Analysis

In this early assessment review RFI, DOE seeks data and information with respect to national impacts that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of foregoing. DOE also seeks comment on any relevant national impacts information for its consideration of standards for a "short cycle" product class.

The purpose of the national impact analysis ("NIA") is to estimate aggregate impacts of potential efficiency standards at the national level. Impacts reported by DOE include the national energy savings ("NES") from potential standards and the national NPV of the total consumer benefits. The NIA considers lifetime impacts of potential standards on battery chargers shipped in a 30-year period that begins with the expected compliance date for amended standards.

Analyzing impacts of potential amended energy conservation standards for battery chargers requires a comparison of projected U.S. energy consumption with and without the amended standards. The forecasts contain projections of annual battery charger shipments (section II.H of this document), the annual energy consumption of new battery chargers (section

II.F of this document), and the purchase price of new battery chargers (section II.E of this document).

A key component of DOE's estimates of NES and NPV would be the battery charger efficiency forecasted over time for the no-standards case and each of the potential standards cases. For the projection made in the June 2016 Final Rule, DOE considered historical trends in efficiency and various forces that are likely to affect the mix of efficiencies over time. DOE compared the no-standards case with projections characterizing the market for each product class if DOE adopted new standards at specific energy efficiency levels (i.e., the TSLs or standards cases) for that class. For the standards cases, DOE considered how a given standard would likely affect the market shares of products with efficiencies greater than the standard.

Issue 26: DOE seeks historical estimated annual energy consumption data since the June 2016 Final Rule for battery chargers by product class. DOE also seeks historical market share data showing the percentage of product shipments by efficiency level for each of the product classes to the extent possible.

J. Manufacturer Impact Analysis

In this early assessment review RFI, DOE seeks data and information with respect to manufacturer impacts that could enable the agency to determine whether to propose a "no new standard" determination because a more stringent standard: (1) would not result in a significant savings of energy; (2) is not technologically feasible; (3) is not economically justified; or (4) any combination of the foregoing.

The purpose of the manufacturer impact analysis ("MIA") is to estimate the financial impact of amended energy conservation standards on manufacturers of battery chargers, and to evaluate the potential impact of such standards on direct employment and manufacturing capacity. The MIA includes both quantitative and qualitative aspects. The quantitative part of the MIA primarily relies on the Government Regulatory Impact Model ("GRIM"), an industry cash-flow model adapted for each product in this analysis, with the key output of industry net present value ("INPV"). The qualitative part of the MIA addresses the potential impacts of energy conservation standards on manufacturing capacity and industry competition, as well as factors such as product characteristics, impacts on particular subgroups of firms, and important market and product trends.

As part of the MIA, DOE intends to analyze impacts of amended energy conservation standards on subgroups of manufacturers of covered products, including small business manufacturers. DOE uses the Small Business Administration's ("SBA") small business size standards to determine whether manufacturers qualify as small businesses, which are listed by the applicable North American Industry Classification System ("NAICS") code.[6] Manufacturing of consumer battery chargers is classified under NAICS 335999, "All Other Miscellaneous Electrical Equipment and Component Manufacturing," and the SBA sets a threshold of 500 employees or less for a domestic entity to be considered as a small business. This employee threshold includes all employees in a business' parent company and any other subsidiaries.

[6] Available online at *https://www.sba.gov/document/support--table-size-standards*.

One aspect of assessing manufacturer burden involves examining the cumulative impact of multiple DOE standards and the product-specific regulatory actions of other Federal agencies that affect the manufacturers of a covered product or equipment. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Assessing the impact of a single regulation may overlook this cumulative regulatory burden. In addition to energy conservation standards, other regulations can significantly affect manufacturers' financial operations. Multiple regulations affecting the same manufacturer can strain profits and lead companies to abandon product lines or markets with lower expected future returns than competing products. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to appliance efficiency.

Issue 27: To the extent feasible, DOE seeks the names and contact information of any domestic or foreign-based manufacturers that distribute battery chargers in the United States.

Issue 28: DOE identified small businesses as a subgroup of manufacturers that could be disproportionally impacted by amended energy conservation standards. DOE requests the names and contact information of small business manufacturers, as defined by the SBA's size threshold, of battery chargers that manufacture products in the United States. In addition, DOE requests comment on any other manufacturer subgroups that could be disproportionally impacted by amended energy conservation standards. DOE requests feedback on any potential approaches that could be considered to address impacts on manufacturers, including small businesses.

Issue 29: DOE requests information regarding the cumulative regulatory burden impacts on manufacturers of battery chargers associated with (1) other DOE standards applying to different products that these manufacturers may also make and (2) product-specific regulatory actions of other Federal agencies. DOE also requests comment on its methodology for computing cumulative regulatory burden and whether there are any flexibilities it can consider that would reduce this burden while remaining consistent with the requirements of EPCA.

K. Other Energy Conservation Standards Topics

1. Market Failures

In the field of economics, a market failure is a situation in which the market outcome does not maximize societal welfare. Such an outcome would result in unrealized potential welfare. DOE welcomes comment on any aspect of market failures, especially those in the context of amended energy conservation standards for battery chargers.

2. Network Mode / "Smart" Technology

DOE published an RFI on the emerging smart technology appliance and equipment market. 83 FR 46886 (Sept. 17, 2018). In that RFI, DOE sought information to better understand market trends and issues in the emerging market for appliances and commercial equipment that incorporate smart technology. DOE's intent in issuing the RFI was to ensure that DOE did not inadvertently impede such innovation in fulfilling its statutory obligations in setting efficiency standards for covered products and equipment. As part of this early assessment review, DOE seeks comments, data and information on the issues presented in the RFI as they may be applicable to energy conservation standards for battery chargers.

3. Other Issues

Additionally, DOE welcomes comments on other issues relevant to the conduct of this early assessment review that may not specifically be identified in this document. In particular, DOE notes that under Executive Order 13771, "Reducing Regulation and Controlling Regulatory Costs," Executive Branch agencies such as DOE are directed to manage the costs associated with the imposition of expenditures required to comply with Federal regulations. See 82 FR 9339 (Feb. 3, 2017). Consistent with that Executive Order, DOE encourages the public to provide input on measures DOE could take to lower the cost of its energy conservation standards rulemakings, recordkeeping and reporting requirements, and compliance and certification requirements applicable to battery chargers while remaining consistent with the requirements of EPCA.

III. Submission of Comments

DOE invites all interested parties to submit in writing by the date specified in the **DATES** section of this document, comments and information on matters addressed in this document and on other matters relevant to DOE's consideration of amended energy conservations standards for battery chargers. After the close of the comment period, DOE will review the public comments received and may begin collecting data and conducting the analyses discussed in this document.

Submitting comments via http://www.regulations.gov. The *http://www.regulations.gov* web page requires you to provide your name and contact information. Your contact information

will be viewable to DOE Building Technologies Office staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. If this instruction is followed, persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *http://www.regulations.gov* information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information ("CBI")). Comments submitted through *http://www.regulations.gov* cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through *http://www.regulations.gov* before posting. Normally, comments will be posted within a few days of being submitted. However, if large

volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that *www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery/courier, or postal mail. Comments and documents submitted via email, hand delivery/courier, or postal mail also will be posted to *http://www.regulations.gov*. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via postal mail or hand delivery/courier, please provide all items on a CD, if feasible, in which case it is not necessary to submit printed copies. No faxes will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery/courier two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

DOE considers public participation to be a very important part of the process for developing energy conservation standards. DOE actively encourages the participation and interaction of the public during the comment period in this process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE. Anyone who wishes to be added to the DOE mailing list to receive future notices and

information about this process or would like to request a public meeting should contact Appliance and Equipment Standards Program staff at (202) 287-1445 or via e-mail at *ApplianceStandardsQuestions@ee.doe.gov*.

Signing Authority

This document of the Department of Energy was signed on August 21, 2020, by Alexander N. Fitzsimmons, Deputy Assistant Secretary for Energy Efficiency, Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on August 21, 2020.

X Alexander N. Fitzsimmons

Signed by: ALEXANDER FITZSIMMONS
Alexander N. Fitzsimmons
Deputy Assistant Secretary
for Energy Efficiency
Energy Efficiency and Renewable Energy