Table of Contents

Comment No.	Comment Summary	Responses
	Duplicate Regulations	
2.30	The Energy Commission should adjust the definition of a State Regulated External Power Supply so that it does not include the wall-adaptor portion (external power supply) of a battery charger, so that there is not overlap between the two regulations.	This comment does not address the regulations or the process by which they were adopted. Rather, it requests a change to the definition of "state regulated external power supply," which is outside the scope of this rulemaking. Although no further response is required, the Energy Commission notes that the adopted regulations do not conflict with the external power supply regulations. A battery charger system is defined as a battery charger and batteries. A state-regulated external power supply is defined, in part, as a device that converts current from a single-voltage external alternating current to direct current or from alternating current to alternating current power supply, and that: *(6) does not have batteries or battery packs that physically attach directly (including those that are removable) to the power supply unit;* *[or]* *(7) does not have a battery chemistry or type selector switch and an indicator light; or, does not have a battery chemistry or type selector switch and a state of charge meter.*[1] Therefore, external power supplies that can be easily identified as specialized for battery charging are outside the scope of "state regulated external power supply" per the definitions within Section 1602(u). The adopted regulations do not propose to alter the state regulated external power supply regulations, nor was any intent to do so incorporated into the Notice of Proposed Action. Therefore this comment is outside of the scope of the rulemaking.

[1] *See* Cal. Code Regs., tit. 20, § 1602, subd. (u); *cf.* new § 1602, subd. (w). Unless otherwise specified, all subsequent citations in the Responses are to Title 20 of the California Code of Regulations.

Duplicate Regulations – Federal Standards

26.1 – 3, 4.16, 4.22, 27.1	The Department of Energy is currently considering an efficiency standard for battery charger systems. The Energy Commission should not pursue a battery charger rulemaking because its standards for consumer battery charger systems and for labeling all battery charger systems will be federally preempted when the Department of Energy adopts its proposed regulations.	It is critically important for California's energy and financial security to adopt these standards, to begin delivering energy savings to Californians and facilitate a federal standard that today remains speculative. The Department of Energy released its Notice of Proposed Rulemaking[2] on March 27, 2012, slightly more than three months after the Commission had adopted its regulations in January. The federal standard was not proposed until long after its statutory due date, has not yet been adopted, remains subject to modification or withdrawal, and is not expected to begin impacting consumer battery chargers until two years after the final rule becomes effective.[3] Moreover, the proposed federal standard is less stringent than the California regulations in many respects. California has been active in shaping and pushing for an intelligent, effective national standard. California's leadership in adopting its standards facilitates adoption of a national standard, and one which is similar to California's.[4] Finally, regardless of the ultimate outcome at the national level, pursuing regulations for consumer products provides significant energy savings for California. Regulations that take effect prior to any federal rules will result in devices that save energy throughout their lifecycles.

[2] By way of background, Title 3, Part B (redesignated A upon codification) of the Energy Policy and Conservation Act of 1975 (EPCA), Pub. L. 94–163 (42 U.S.C. §§ 6291–6309, as codified) established the Energy Conservation Program for Consumer Products Other Than Automobiles, an energy efficiency program with elements similar to that administered by the Energy Commission pursuant to California Public Resources Code section 25402, subdivison (c). This federal program authorizes energy efficiency standards for various consumer products, including battery chargers and external power supplies. The Department of Energy had been directed by Congress to propose federal efficiency standard for battery chargers by December 2009. (42 U.S.C. § 6295(u)(1)(E)(i)(I) [deadline within two years of enactment of the Energy Independence and Security Act of 2007, in December 2007].) Until recently, it had not done so, although it had conducted preliminary rule-making activities, including adopting federal test procedures for battery chargers and external power supplies. (*See* 10 C.F.R. Part 430, Subpart B, appendices Y and Z [respectively].) On March 27, 2012, the Department of Energy issued a notice of proposed rulemaking (NOPR) for amended energy conservation standards for Class A external power supplies and new standards for non-Class A external power supplies and for battery chargers. (77 Fed. Reg. 18478 (Mar. 27, 2012), available at: http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/bceps_nopr.pdf.) Federal energy conservation requirements generally preempt state laws or regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. § 6297(a)–(c).) Although the proposed federal rule set an initial compliance date of July 1, 2013, for battery chargers (77 Fed. Reg. 18647 (Mar. 27, 2012)), the Department of Energy also solicited comment on the compliance date, including whether an appropriate date would be two years after the effective date of the final rule. (77 Fed. Reg. 18556.) Subsequently, the Department of Energy staff stated in public presentations their intent to make the compliance date two years after the effective date of the final rule. (*See* Petrolati, Public Meeting on Energy Conservation Program for Consumer Products, Energy Conservation Standards for Battery Chargers and External Power Supplies, May 2, 2012, Tr. p. 20), available at: http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/050212meeting_doe_wd_final.pdf; and Presentation, slide 10, available at: http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/bceps_nopr_public_meeting_slides.pdf.)

[3] *See* 77 Fed. Reg. 18556 (Mar. 27, 2012).

26.1 – 3, 4.16, 4.22, 27.1	A federal standard that is different than the California standard, and preempts it, would impose a significant burden on manufacturers compelled to design products to comply with one standard and then another in such a short time. Duplicate federal and state regulations are unnecessary and wasteful. For manufacturers to meet two sets of regulatory requirements within a narrow time frame is unnecessarily disruptive to the marketplace and costly for manufacturers.	The federal standards impose no undue burden on manufacturers. The federal test method applies in California. The Notice of Proposed Rulemaking proposes a similar marking requirement adopted by California. The federal efficiency standard may be tightened to conform to the California standard, and if not then any product meeting the California standard will already meet a federal standard once it becomes effective.
2.1, 23.5, 26.2	The Energy Commission should only consider a rulemaking on battery chargers for those classes of products not being regulated by the Department of Energy.	The Energy Commission disagrees. The Department of Energy has not yet adopted efficiency standards for battery charger systems (indeed, the Department has missed its statutory deadlines to issue standards), but only test procedures, so consumer battery charger systems are not yet regulated by the Department, leaving the Energy Commission free to adopt its own standards.[5] Moreover, only "consumer battery charger systems" are proposed to be covered by federal efficiency regulations, leaving nonconsumer battery charger systems available for state regulation. It is important for the Energy Commission to set efficiency standards for both consumer and nonconsumer

[4] *See, e.g.,* California's Opening Statement in the federal battery standards rulemaking, May 2, 2012, available at http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/cec_opening_statement_nopr.pdf (hereafter California's Opening Statement); Rider, *Technical Comments on the Department of Energy's Notice of Proposed Rule for Battery Charger Systems and External Power Supplies*, May 29, 2012, Docket ID EERE-2008-BT-STD-0005-0117, RIN No. 1904-AB57, available at http://www.regulations.gov/#!documentDetail;D=EERE-2008-BT-STD-0005-0117 (hereafter Energy Commission Technical Comments); Rider, *Supplemental Energy Commission Staff Comments on the DOE BCEPS NOPR*, July 16, 2012, Docket ID EERE-2008-BT-STD-0005-0158, RIN No. 1904-AB57, available at http://www.regulations.gov/#!documentDetail;D=EERE-2008-BT-STD-0005-0158 [Nickel chemistry, inherent battery characteristics and efficiency] (hereafter Energy Commission Supplemental Technical Comments).

[5] *See* 42 U.S.C. §§ 6297 (on preemption generally), 6295 (on specific preemption rules with respect to battery charger systems).

		battery charger systems. California will achieve significant savings (approximately 200GWh) through the adopted regulations in just the first few months of compliance.[6] Whether preemption is sooner, later, or never, the adopted regulation will significantly reduce the demand for energy in California due to the high volume of product sales of generally short lived products.[7] Finally, setting state standards before the Department of Energy presents an opportunity to influence the eventual federal rulemaking for consumer battery charger standards.[8] Therefore, the Energy Commission has determined that now is the appropriate time to adopt standards for battery charger systems, based on the significant reduction in energy consumption that will occur upon regulation of these appliances, and the potential to impact and influence the eventual adoption of national standards.
2.2, 2.7a, 21.8, 41.1a, 52.13	The Energy Commission has not presented accurate information to show the proposed regulations would have any benefit before they are preempted. The Energy Commission should delay its regulations on consumer battery chargers until after the Department of Energy Notice Of Proposed Rulemaking so that it can determine what benefits a California regulation will have between its effective date and federal preemption. The Energy Commission should delay its regulations to ensure it has time to consider stakeholder input and the	The Energy Commission based its analysis on the models in Appendix A of the Final Staff Report,[9] which accurately calculate energy savings generated per year by the adopted standards for consumer battery charger systems. This analysis demonstrates that California will significantly reduce electricity consumption statewide and that Californians will save millions of dollars on their utility bills in just the first year of compliance. In addition, it is possible that the Energy Commission's standards will influence the Department of Energy in setting federal standards[10]. Therefore, the Energy Commission has determined that now is the appropriate time to adopt standards for battery charger systems, based on the significant reduction in energy consumption that will occur upon regulation of these appliances, and the potential to impact and influence the eventual adoption of national standards.

[6] California Energy Commission Staff Report "Proposed Efficiency Standards for Battery Chargers and Self-Contained Lighting Controls, October 2011, Publication No. CEC-400-2011-001-SF, at p. 10 (Table 1), identified in the Initial Statement of Reasons in the Documents Relied Upon [~406 GWh in first year] (hereafter Final Staff Report).
[7] Final Staff Report, at Table A-3.
[8] *See, e.g.,* California's Opening Statement; Energy Commission Technical Comments.
[9] Final Staff Report, at pp. 32-39.
[10] *See, e.g.,* California's Opening Statement; Energy Commission Technical Comments.

	integrity of the science in light of the imminent federal rulemaking.	
2.3	We are mindful of the need to save energy in California and other states, and we would argue there are a few ways to accomplish that aim that are already underway. For one, industry does take advantage of the Department of Energy's ENERGY STAR program, creating high efficiency products for the marketplace.	This comment is not directed at the proposed regulations or the process by which the regulations were adopted. It is directed at the policy decision reflected in the statute to regulate through efficiency standards. Notably, it does not assert or provide evidence that the ENERGY STAR program, a voluntary program that only applies to standby mode, would be an equally effective and less burdensome alternative than the regulations. In contrast, the Energy Commission reviewed the ENERGY STAR program after comments were made and found that energy savings from the ENERGY STAR program are not as compelling as the Energy Commission's adopted regulations.[11] Further, voluntary measures are outside the scope of this proceeding in particular and outside the scope of mandatory regulations in general.
2.4, 26.1	We support the more thorough approach of a federal rulemaking which will impact the entire country and not through two parallel rulemakings at the state and federal level on essentially the same timeline for the same products.	As a preliminary matter, the comment incorrectly assumes that both the timeline and the products regulated between the state and federal rulemakings are the same. Regarding timing, the Energy Commission's rule has already been adopted (January 12, 2012) and compliance will begin for some products as early as February 1, 2013, while the Department of Energy is well behind its statutory deadline for adopting a standard.[12] Regarding products, the Energy Commission's rule will regulate some products that the Department of Energy will eventually cover (consumer battery charger systems), but the Commission's rule also regulates some products that the Department of Energy does not propose to regulate (non-consumer battery charger systems and self-contained lighting controls). Moreover, the Energy Commission has found that California will achieve significant savings (approximately 200GWh) through the adopted regulations in just the first few months of compliance. Failing to adopt state regulations now will result in significant lost energy and lost monetary savings for Californians. Consequently it is appropriate and necessary for California to prevent inefficient and wasteful battery charger systems from remaining in the California market.

[11] *See* Final Staff Report, p. 9.

[12] Under the Energy Policy and Conservation Act, as amended by the Energy Independence and Security Act of 2007, the U.S. Department of Energy was required to adopt a final rule for external power supplies by July 1, 2011, which would apply to external power supplies manufactured on or after July 1, 2013, two years from the publication of the final rule. (42 U.S.C. § 6295(u)(3)(D).) The Department of Energy has proposed to make its battery charger standards effective at the same time as its external power supply standards. (U.S. Department of Energy (Sept. 2010) "Preliminary Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial Industrial Equipment: Battery Chargers and External Power Supplies", Docket Number EERE-2008-BT-STD-0005, Regulatory Information Number 1904-AB57, identified in the Initial Statement of Reasons in the Documents Relied Upon, at p. 1-2 (hereafter Preliminary TSD).) Therefore, it is reasonable to conclude that the effective date for battery chargers will also be at least

2.5, 2.6, 2.32, 4.23, 25.1a, 26.1, 52.7b	Differences between the Commission's standards and proposed U.S. Department of Energy standards will require manufacturers to change design and production practices twice. The Energy Commission erroneously concludes that product redesign will only impact manufacturers once as manufacturers will choose to comply with the more stringent standard (after preemption). Manufacturers will have to consider the costs of retooling to the Energy Commission standards to continue to offer products there, or suspending product offerings in California until the federal standard's compliance date. The Staff Report does not consider the ramifications of forcing manufacturers to retool multiple times seriously enough, based on distinct rulemakings. Therefore, the Energy Commission should not continue with this rulemaking	The Energy Commission is not required to evaluate the impacts on this rulemaking of unknown costs due to a potential, and speculative, federal rulemaking. The costs of any redesign imposed by a federal rule that becomes effective after the Commission's rule would be properly considered by the federal entity proposing to impose that change; it is not relevant to the Commission's determination of costs imposed by its own rule. The proposed federal regulations create 10 product classes. As described in the Energy Commission's comments on the proposed rule,[13] Table 9.1 of the Department of Energy's Technical Support Document (TSD) compares California's standards with the Department of Energy's proposed candidate standard levels (CSLs).[14] The Department of Energy product classes 1 and 8 are more stringent than the Commission's regulations. Classes 2-6 are less stringent than the Commission's regulations. Class 7 and 10 harmonize with the Commission's regulations. Class 9 is not subject to a standard. The products contained in classes 2 through 6 make up over 77% of product shipments in the U.S., according to table 9.5 of the TSD. Because California's standards are at least as or more stringent than the federal standard for most of the product categories regulated by the Department of Energy, products meeting California's standard will be in compliance with the federal standard if it takes effect and preempts the California standard. Re-design will not be necessary for these products, which comprise the majority of the market. Although this information became known to the Commission after it adopted its standards, the Commission did not rely on this information in adopting its standards; rather, this information merely confirms the Commission's understanding of the Department of Energy's proposed rulemaking, as described below. The Commission disagrees that manufacturers will necessarily have to redesign multiple times if a federal rule preempts the California rule because: (1) if federal standards are equal or less stringent than the Energy Commission's standards, then manufacturers will only have to redesign once to meet both standards; (2) if the federal standards are made effective soon after the Commission's standards, then manufacturers will only have to redesign once to meet whichever standard is more stringent, as both standards will be known even if the federal standard is not effective until after the Commission's standard;

two years from publication of the final federal rule. More recently, the Department of Energy tentatively confirmed a two year window between publication of the final rule and the compliance date for battery charger systems in its proposed rule. (77 Fed. Reg. 18556.)

[13] California's Opening Statement; Energy Commission Technical Comments.

[14] U.S. Department of Energy, Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Battery Chargers and External Power Supplies (Mar. 2012), at p. 9-4.

	process for battery chargers that are the subject of the federal rulemaking.	(3) if the federal standards are not effective until at least two years after the Commission's standards[15] and are more stringent than the Commission's standards, then the manufacturer may have to redesign twice; however, the costs of redesign can be absorbed in the natural design cycle[16]; (4) if federal standards never come to fruition, then the manufacturer will only have to redesign once to meet the California standard. Furthermore, the compliance pathways listed in the Commission's Final Staff Report and in the CASE Report (e.g., changes to the charge control circuitry or switching to a more efficient power supply) won't require manufacturers to redesign the product or its mold since the changes can be incorporated into existing product housings.[17] Consequently, no change to the regulations is appropriate or required in response to these comments.
2.36, 21.1, 52.17, 52.35a	The Commission's proposed regulations will be preempted by federal regulations before they become effective, and will disrupt the market.	Compliance with the Energy Commission's rule for most small consumer battery chargers will begin February 1, 2013. As discussed above, the Department of Energy has not yet published a final rule for the regulation of consumer battery charger systems, but based on its pre-rulemaking statements, will likely adopt an effective date that is at least two years after the final rule is published. The Notice of Proposed Rulemaking, which was published after the Commission's adoption, includes a proposed effective date for the federal rule of July 1, 2013.[18] However, the Notice of Proposed Rulemaking also states the Department of Energy's tentative conclusion that the effective date for battery chargers should be two years after the final rule is published.[19] It is therefore likely that the effective date for the federal rule for battery chargers will be, at earliest, in 2014. The Energy Commission has found that California will achieve significant savings (approximately 200GWh) through the adopted regulations in just the first few months of compliance. Failing to adopt state regulations now will result in significant lost energy and monetary savings for Californians. Consequently it is appropriate and necessary for California to prevent inefficient and wasteful battery charger systems from remaining in the California market.

[15] Indeed, where no final federal rule has been issued yet, any federal rule is likely to have a compliance date more than two years after the effective date of the California standards. See discussion above.
[16] Moreover, the costs to comply with a federal standard are uncertain and unknown, as no federal standard currently exists. Therefore, it is inappropriate for the Energy Commission to consider the costs of a potential redesign imposed by an uncertain and speculative federal rule.
[17] Ecos Consulting, Analysis of Standards for Options for Battery Charger Systems, Codes and Standards Enhancement (CASE) Initiative for PY2010: Title 20 Standards Development (Oct. 1, 2010), identified in the Initial Statement of Reasons in the Documents Relied Upon, at pp. 20-22 (hereafter CASE Report); Final Staff Report, at pp. 17-25.
[18] U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (Mar. 2012) "Energy Conservation Program: Energy Conservation Standards for Battery Chargers and External Power Supplies - Notice of Proposed Rulemaking (NOPR) and Public Meeting", 10 C.F.R. Part 430, Docket Number EERE–2008–BT–STD–0005, RIN: 1904–AB57.
[19] 77 Fed. Reg. 18556.

Consistency with Other Standards

9.1	The Off and Standby mode power limits in the ENERGY STAR, European Union, and other programs and requirements should be incorporated into the California regulations for consistency, because the proposed standards are inappropriate for non-dedicated battery chargers like those used in notebook portable computers.	The European Union's 0.5W standby/off limit (Commission Regulation (EC) No. 1275/2008)[20] is more stringent than the proposed 1.0W Maintenance and No Battery limit. Although the Energy Commission did not rely on them in adopting the regulations, this is demonstrated further in the Natural Resource Defense Council's (NRDC) public comments submitted in this proceeding.[21] While the adopted battery charger standards focus on battery charger efficiency, and the ENERGY STAR and European Union specifications focus on other efficiencies in notebook computers, compliance with a 0.5W standby/off limit should also lead to compliance with the comparable parts of the adopted battery charger standards. The Staff Report demonstrates that the adopted standards are reasonable, feasible and cost effective.[22] The energy allowance is based on available battery technologies. In this case, there are already compliant products sold in the market. The request to increase the allowance for this category of products is not supported by the data used in the CASE Report and in the Preliminary TSD.[23] Although notebooks have functions in addition to battery charging, the battery charging function in notebooks is a source of significant energy consumption,[24] which the adopted regulations would reduce, resulting in energy savings to the state. Therefore, the regulations appropriately apply to both dedicated and non-dedicated battery chargers.

Duplicate Regulations – External Power Supplies

40.2	The proposed amendments should exclude devices, such as Class A External Power Supplies, that are covered by existing Federal and California energy efficiency limits.	At present, the Energy Commission and Department of Energy regulate external power supplies.[25] External power supplies used to operate consumer products are federally regulated.[26] However, this does not preclude the Commission from regulating battery charger systems, regardless whether they incorporate a federally regulated external power supply. To create an even playing field for all products, the external power supply, if part of the battery charger system, is included as part of the standard so that there is no compliance advantage for products which use internal versus external power supplies. Excluding devices from the battery charger system standards on the basis of comprising, in part, an external power supply would be reduce the energy

[20] Commission of the European Communities, Official Journal of the European Union, L 339/45 (Dec. 17, 2008).
[21] Natural Resources Defense Council, Comments on 45-day language (Nov. 21, 2011), at pp. 3-7, Comment No. 37, pp. 0000437-441 (hereafter NRDC 45-Day Comments).
[22] Final Staff Report, pp. 13, 17, 39.
[23] CASE Report, p. 23 [showing more stringent standards as cost-effective and feasible, albeit over a two year compliance period, for laptops]; Preliminary TSD, at passim.
[24] *See* Final Staff Report, at p. 36 (calculating energy consumption from battery charger portion of laptops, portable electronics); Preliminary TSD, at pp. 2-59, 5-83 (teardowns for notebook computers look only at battery charger portion).
[25] *See* Cal. Code Regs., tit. 20, §§ 1605.1, subd. (u), 1605.3, subd. (u).
[26] *See* 10 C.F.R. §§ 430.2 [definition], 430.32, subd. (w) [efficiency standards].

		saved by the standards, and would therefore be less effective at meeting Public Resources Code section 25402, subdivision (c)(1).

Statutory Requirements

21.7, 21.7b, 21.7c, 21.7d	The Energy Commission did not demonstrate technological and economic feasibility for power tool chargers, as shown by the Berkley Research Group analysis *A Critique of the Regulations on Battery Charging Systems Proposed by the California Energy Commission*.	The adopted regulations are cost effective and technologically feasible, meeting the requirement of the Warren-Alquist Act[27] as demonstrated in the Final Staff Report.[28] A reasonable use pattern is demonstrated in Table A-4 on page 35 of the Final Staff Report. Cost effectiveness is demonstrated in Table A-7 through the savings consumers will achieve via lower utility bills. The Final Staff Report discusses many feasible options such as hysteresis charging (charge control integrated circuits, which are widely available) or more efficient power supplies that are applicable to Nickel Cadmium battery charger systems and generically to all systems.[29] Further, the Preliminary TSD and the CASE Report also discuss approaches to improving the efficiency of a battery charger system.[30] The statewide savings are significant as demonstrated in Table A-7 as 250.30GWh/yr. AHAM submitted a critique of the proposed standards conducted by the Berkeley Research Group.[31] The Commission reviewed the Berkeley Research Group model and determined that this analysis does not accurately determine the cost effectiveness for these standards. The Energy Commission has reviewed the Berkeley Research Group critique and finds that this report makes several errors and relies upon unsupported assumptions. Specifically: 1) The compliance cost of changing the stock over is compared to the annual monetized energy savings. Because many products last multiple years, this does not accurately reflect net savings of the standard. In Exhibit 3 of the Berkeley Research Group report, the stock energy savings column is incorrectly labeled $M (millions of dollars) instead of $M per year. In order to compare the costs and savings, they need to be over the same time period.

[27] Pub. Resources Code, § 25000 et seq.
[28] Final Staff Report, at pp. 13, 17, 39.
[29] Final Staff Report, at pp. 17-21.
[30] Preliminary TSD, at p. 4-3; CASE Report, at pp. 20-22.
[31] Wazzan & Eash, Berkeley Research Group, "Critique of the Regulations on Battery Charging Systems Proposed by the California Energy Commission", (Nov. 2011) (commissioned by the Association of Home Appliance Manufacturers, the Consumer Electronics Association, CTIA -The Wireless Association and TechAmerica) submitted with Comment No. 26, p. 0000358 et seq. (hereafter BRG Report).

		In the example of power tools, the stock of 15.3 million was multiplied by the incremental cost per product of $0.55 to yield the incremental cost of $8.42 million. The power tool energy savings are $28.82 million per year. For the net savings, the Berkeley Research Group simply subtracts these two numbers even though they do not have the same units. The fair comparison would be the energy savings over the discounted (taking into account the time value of money) life of the power tool, which is 5.57 years, or $160.5 million. Then the benefit to cost ratio would be 19, which agrees well with the Commission's estimated value of 21, as opposed to the Berkeley value of only 3.4. 2) The compliance cost of changing the stock was applied to the entire stock, rather than the noncompliant fraction. The Commission analysis accounts for compliance rates, and only applies costs and benefits to the non-compliant portion of the market. Again, in the power tool example, the entire stock was multiplied by the incremental cost per product, instead of just the 90% of products that are not compliant (See Exhibit 3). 3) When calculating the impact of federal preemption, the Berkeley Research Group analysis assumes that non-consumer products would be preempted as well. But this is not the case. Non-consumer products will continue to capture savings, even after compliance with the federal consumer standard is required. Examples of products that would not be preempted by the federal regulation include emergency backup lighting, handheld barcode scanners, and two-way radios. Furthermore, the Berkeley Research Group report makes a similar mistake of comparing costs and benefits in this scenario (see Exhibit 4). The incremental cost used is for the 2013 sales. However, the energy savings counted are only for the first year, even though most products last much longer than one year. This artificially underestimates benefit:cost ratios. 4) The Berkeley Research Group is wrong in stating that the Commission does not take into account the time value of money. The Commission considers this by using a discounted device life. In the power tool example, the design life is 6.5 years, so at a discount rate of 3%, this yields a discounted life of 5.57 years, as repeated in Exhibits 1-6. 5) In Exhibit 5, the Berkeley Research Group includes technological improvement in the form of a 10 percentage

[32] *See* BRG Report, at p. 5.
[33] Ecos March 3rd Presentation, slides 21-32.
[34] Preliminary TSD, p. 5-26, Table 5.19.
[35] Appliance and Process Energy Office Staff Workshop, Battery Chargers and Lighting Controls, Energy Commission Docket No. 09-AAER-2 [Battery Standards pre-rulemaking], March 3, 2011 (March 3rd Workshop), Tr., p. 131:10-14, at: http://www.energy.ca.gov/appliances/battery_chargers/documents/2011-03-03_workshop/2011-03-03_transcript.pdf.

		point improvement per year in the compliance rate (e.g. going from 10% compliance to 20% compliance), based on compliance with the ENERGY STAR voluntary standard for battery charger systems.[32] There is no support for applying a technology innovation curve like this based on the assumption it accurately projects market-wide efficiency improvement due to industry competition in the absence of standards or programs. Here, the error of applying the incremental cost to compliant products becomes even more egregious. There may very well be technological improvement without the standard, but this will help to increase the cost-effectiveness of the standards, not decrease it as claimed by the Berkeley Research Group. In the power tool example, if we conservatively assume that the noncompliant products have the same incremental cost and same energy savings in the future, the benefit to cost ratio remains at 19. However, according to the Berkeley research group, the benefit to cost ratio falls to 1.9. The Berkeley Research Group cites increasing ENERGY STAR compliance for support. However, ENERGY STAR for battery chargers only covers maintenance and no-battery mode, not active (charge) mode. Therefore, even if all products became ENERGY STAR compliant, important energy savings would be missed. 6) In Exhibit 6, the Berkeley Research Group includes manufacturer estimates for incremental costs. The Energy Commission's cost estimates are consistent with cost information attained from two independent tear downs: one performed by Ecos Consulting on behalf of the investor-owned utilities[33] and the second performed by iSuppli for the engineering analysis of the Department of Energy's battery charger standards rulemaking (Table 5.19 on page 5-26 of the Preliminary TSD[34]). In contrast, the manufacturers did not supply any data to support their estimates for higher incremental costs. In the power tool example, Ecos Consulting found an incremental retail cost of approximately $1.30.[35] This is consistent with the $0.55 incremental cost used by the Commission early on, once it had been marked up using Department of Energy markups (used in later Commission analysis). This corresponds to a benefit to cost ratio of approximately 10, as opposed to the Berkeley Research Group's claim of 0.2.

Cost-Effectiveness

7.10, 52.1, 53.1	The Economic Analysis in the Commission's Notice of Proposed Amendments has not been updated to reflect the standards in the 15-Day language (which were	The 15 Day Language includes changes in the regulatory language addressing the effective date for USB chargers of 20 watts or more in Section 1605.3(w)(2)B on page 14. The effective date for these chargers was extended to January 1, 2014. The effective date for large battery charging systems was not changed from the 45-Day Language. Savings estimates detailed in the Final Staff Report and included in the Notice of Proposed Action, are based on

	ultimately adopted), particularly estimated savings that would not occur as a result of delaying the effective date of the regulations for larger battery charging systems and USB charging systems. Further, the NOPA combines the value of all standards for all battery chargers therefore it is unclear whether the economic justification for each of the types of chargers is sound.	annual sales, life cycle, and stock replacement. The energy savings begin once the standards become effective.[36] Since these larger USB charger systems are coming on the market,[37] delaying the effective date will not cause reduction or loss of energy savings or alter the economic analysis or energy savings benefits. The economic analysis for the proposed amendments is valid and accurate, although delayed. The energy savings for USB battery chargers with capacities of 20 watts or more will begin January 1, 2014. The Commission could not locate any evidence of sales of these products in 2011, and therefore there is no energy savings loss incurred due to delay in the effective date. Final Staff Report Appendix A Table 1 through Table 7 provides sales and stock volume, compliance rates, design life, duty cycle, baseline energy use, compliant energy use, and costs and savings calculations for each product category. Calculations in Appendix A are comprehensive and are based on the data acquired from the CASE Report, manufacturers and the Preliminary TSD. The combined value of the standards is appropriate given the scope of the regulation; nonetheless, the Final Staff Report breaks down the cost-effectiveness of the standards by product class, in Table A-7.
2.31	The Association of Home Appliance Manufacturers makes several comments, identified as comments 2.32 through 2.35, that the cost analysis supporting the battery chargers standards is flawed.	See specific responses to comments.
2.33	The proposed standard imposes technology prejudice towards lithium ion batteries; for several products, the standards are only attainable using lithium ion batteries, and will require product redesign, at significant cost for which the Energy Commission has not accounted.	The regulations on their face establish performance standards and do not address battery chemistry, or other aspects of product design like charging circuitry efficiency. Thus, if battery chemistry is inherently less efficient, the overall efficiency may be improved through increased charging circuitry efficiency. Nickel cadmium batteries have a lower charge acceptance than lithium-ion and tend to have a higher self-discharge rate.[38] These traits cause nickel cadmium batteries to require greater energy inputs to charge and additional energy to stay fully charged over extended periods. Nickel cadmium is far less sensitive to overcharge than lithium-ion and can sustain constant overcharge. Consequently, many nickel cadmium battery systems currently in the market typically do not include circuitry to cease charging when the battery is fully charged. This wastes energy being forced into batteries that are fully charged. Implementing charge termination circuitry that detects when the battery is full will increase system efficiency. Also, much lower maintenance charge rates like C/128 for constant current and C/512 for pulsed current can be used to keep nickel chemistries full and ready for use. These lower trickle rates will significantly reduce the power consumption of nickel cadmium charger systems and will also improve their 24-hour energy efficiency. [39]

[36] Final Staff Report, at Appendix A (Tables A-1 through A-7).
[37] *See* TechAmerica comment no. 7, Nov. 21, 2011, Att. A, Devices Utilizing USB External Power Supplies, p. 10, Comment p. 0000189.
[38] Final Staff Report, p. 22.
[39] Final Staff Report, pp. 17-21.

		Alternatively, nickel cadmium battery charging efficiency can be improved by implementing rapid charging. Increasing the charge rate requires charge termination circuitry to avoid severe overcharge, which will permanently damage the battery. This is the same charge termination circuitry that can be used to reduce maintenance mode power.[40] Thus, products may comply with the regulations using batteries of any chemistry type. Many products representative of all battery chemistries are already available in the market based on the data used for the CASE Report[41]. In addition, the Commission made changes to the proposed standards for small battery chargers to provide manufacturers more flexibility in complying with those standards. This included eliminating the power factor requirement, and combining the no battery and maintenance power modes into a single metric. These changes provide manufacturers with the ability to allocate power usage requirements at their discretion to meet the efficiency requirements of the standards. Furthermore, manufacturers have feasible design options other than switching battery chemistries.[42] Ecos Consulting, on behalf of the investor-owned utilities, performed a product tear down[43] on a power drill using nickel cadmium batteries. This tear down revealed that the inclusion of a switch in the charge control circuitry that simply shuts off the flow of electricity to the batteries after fully charged brought the drill into compliance. In addition, manufacturers can also switch to a more efficient power supply.[44]
2.34, 52.29b	The data, methodology and conclusions in the analysis by the consultant Ecosare flawed, particularly the source, manner of collection, and scope of data relied upon. The Commission should have relied upon the	Contrary to the comment, the Energy Commission based its cost analysis in part on data that was also available in the Preliminary TSD. The data Ecos Consulting used in the CASE Report was made public in the Department of Energy battery chargers docket and incorporated in the Preliminary TSD. For instance, on February 26, 2010, Ecos submitted the spreadsheet "2010-02-26 Pacific Gas and Electric Battery Charger Duty Cycle Assumptions and References List spreadsheet" and "2010-02-26 Pacific Gas and Electric Battery Charger Sources for Battery Charger Market Data spreadsheet".[45] These are just two examples of data Ecos Consulting submitted into the federal docket.

[40] Final Staff Report, p. 24.
[41] CASE Report, pp. 24-25.
[42] Final Staff Report, pp. 17-21 (discussing other compliance options); *see also* EPRI Solutions, Inc. (September 28, 2006) "Designing Battery Charger Systems for Improved Energy Efficiency: a Technical Primer", Prepared for the California Energy Commission, identified as reference 5 in the Final Staff Report, at pp. 17-24 (hereafter EPRI Battery Charger Technical Primer).
[43] Ecos March 3rd Presentation slides 21-32.
[44] Final Staff Report, pp. 24-25.
[45] "2010-02-26 Pacific Gas and Electric Battery Charger Duty Cycle Assumptions and References List spreadsheet" and 2010-02-26 Pacific Gas and Electric Battery Charger Sources for Battery Charger Market Data spreadsheet," Document ID No. EERE-2008-BT-STD-0005-0030, RIN 1904-AB57, Docket No. EERE-2008-BT-STD-0005. These reports are available at www.regulations.gov, by typing in the document title or document identification number and clicking "Search."

	data used by the Department of Energy to conduct its proposed rule-making, which was (more) carefully collected in a (more) transparent fashion allowing for stakeholders to review.	In preparing its analysis, Ecos relied on numerous reports, communications, and empirical data, including: Ecos lab testing (which, according to Ecos, is ISO-certified for quality control[46]), PG&E lab testing, Southern California Edison lab testing, Battery Charger Census, industry research papers, and other industry research materials.[47] Further, the CASE Report on which the Energy Commission relied in part was also based on independent analyses in the EPRI Battery Charger Technical Primer. Both of these studies in turn cite source documents. Key data used in conducting the cost model and analysis in Appendix A of the Final Staff Report included incremental costs to comply with the standards, product life cycles and duty cycles, and existing stock. We also point out that battery charger system manufacturers have not provided to the record significant data supporting their assertions and objections to the standards, despite numerous explicit requests to do so. Over the course of developing these regulations, the Energy Commission issued to all known stakeholders at least two requests for relevant, product specific data. The earlier request was made on November 5, 2008, and again on January 31, 2011 (in response to specific claims made to the Commission that Ecos' cost and duty cycle data was insufficient).[48] We note that only one manufacturer (and not the commenter) provided data and took advantage of the Commission's process for ensuring trade secrets are kept confidential.[49]
2.35	During the March 3, 2011 workshop, the following illustrates shortcomings of Ecos' poor analysis, and thus any other analysis on battery	Appendix A at the end of the Final Staff Report provides the cost model used in calculating the energy savings. The comment misunderstands the analysis on which the Commission relies (in part). As described on page 13 of the Final Staff Report, and in the underlying CASE Report analysis, the cost to comply is based on replacing a resistor with a chip of the same size and comparable cost which turns off the power to the battery after it is fully charged. This does not require any change in printed circuit board material.[50] Nevertheless, the Bill of Material

[46] As stated at the public hearing to adopt the regulations, Ecos' testing laboratory is certified to quality control standards of the International Standards Organization. Business Meeting Before the California Energy Commission, January 12, 2012 [2012 sic], (Adoption Hearing) Comment No. 52.29b, p. 0000726, Tr. p. 198:3-20, available at http://www.energy.ca.gov/business_meetings/2012_transcripts/2012-01-12_transcript.pdf/.
[47] *See* CASE Report, pp. 56-57 (references).
[48] *See, e.g.*, Leaon, Battery Charger Proceeding Data Request (Jan. 31, 2011), available at http://www.energy.ca.gov/appliances/battery_chargers/documents/2011-02-02_CEC_Letter_re_Battery_Charger_Proceeding_Data_Request_TN-59572.pdf. Ecos Consulting also asked battery charger system manufacturers to submit data to it when it began analyzing possible battery charger system standards, and remained open to additional information throughout the proceeding. The reporting matrix used to solicit information is available at: http://www.efficientproducts.org/product.php?productID=4; http://www.efficientproducts.org/reports/bchargers/Energy_Commission_BatteryChargerTestTemplate_v11.xls.
[49] *See* Energy Commission Docket Log Nos. 60579, 60804, Battery Standards pre-rulemaking, Docket No. 09-AAER-2; 20 Cal. Code Regs., § 2505 et seq.; Gov. Code, § 6254(k); Evid. Code, § 1060.
[50] *See* March 3rd Workshop, Transcript (Tr.) p. 155:7-11 [explaining basis for cost analysis].

	charger cost issues must necessarily be suspect. 1. The Bill of Material (BOM) cost analysis for a battery charger switch itself was faulty because it did not account for the cost difference of more expensive printed circuit board materials. 2. The price impact at retail as a result of material changes on the printed circuit board are not correctly reflected by the mark-up factor that Ecos selected. 3. Ecos' calculation of the energy benefit should be limited to that achieved through the proposed standard alone.	estimate included the cost of an additional printed circuit board (rather than an incremental difference for a different board). The analysis also encompasses overhead costs, such as for design, testing and packaging.[51] Furthermore, manufacturers may use a variety of technologies (timers, switches, sensors, pulse charging or hysteresis, etc.) as well as more efficient power supplies (which are widely available) to comply with the standards. These solutions were demonstrated as cost effective in the Final Staff Report[52]. Manufacturers have many technology options available at the cost of about one dollar that can provide efficient charge control to meet the standard.[53]
26.4	There is no current and reliable data for the base case of the market of battery charger system on which to premise a regulation. The data on which the Commission's analyses rely is several years old, which is inappropriate and unreasonable to use to consider new regulations. Outdated data artificially inflates the estimated energy "savings" from regulation.	It is appropriate to use long-term data to establish trends and make projections for the purpose of considering regulations. Furthermore, it is a mischaracterization to say the data supporting the standards are "stale". For example, the Energy Commission adopted the battery chargers test procedure in December of 2008 and this test procedure became effective in September 2009. Battery charger manufacturers tested their products and submitted data to Ecos Consulting in 2009. The CASE Report was prepared and submitted to the Energy Commission in October 2010. The data used in calculating energy savings is the latest and most current data available. Regarding the proposal that the Energy Commission should have used the ENERGY STAR data, ENERGY STAR data is similar in age and in some cases older and is based on a different test procedure. It is inappropriate to rely exclusively on that data to evaluate the cost-effectiveness of these standards. In addition, the model used to conduct the analysis was made available to the stakeholders. Alternative, more recent, or more relevant data have not been provided.

[51] *See* Foster-Porter & Denkenberger, Ecos Consulting, Codes and Standards Enhancement Initiative Comment Letter in Response to May 19, 2011, Committee Workshop, p. 7, identified in the Initial Statement of Reasons as a Document Relied Upon.
[52] Final Staff Report, pp. 13-20, 39.
[53] Final Staff Report, p. 13.

		We also note that the authority study attached to the comment itself relies on energy consumption trends, showing that the use of historical data to establish trends provided valuable insights. However, it should also be noted that the trend in the study based on ENERGY STAR data is inapplicable to the adopted standard and no analysis was conducted to draw parallels between ENERGY STAR and the adopted regulation. Using the study's assumption, any product category would comply with any standard in 10 years regardless of stringency. This ignores factors which would diminish market adoption of voluntary standards, including the fundamental shortcoming that nothing in a voluntary standard ensures incorporation of such products into the market, where consumers are free to choose products which do not meet the voluntary measure.
21.4, 26.5	When the potential energy savings from the proposed regulation for battery charger systems is calculated according to the method used by the Berkeley Research Group (BRG),[54] the costs to consumers outweigh the benefits in most cases. The corrected Energy Commission approach and BRG's model both show that the regulations have a net negative impact on consumers for a majority of battery charger-related product categories.	The Energy Commission has reviewed the Berkeley Research Group critique and finds that this report makes several errors and relies upon unsupported assumptions. Specifically: 1) The compliance cost of changing the stock over is compared to the annual monetized energy savings. Because many products last multiple years, this does not accurately reflect net savings of the standard. In Exhibit 3 of the Berkeley Research Group report, the stock energy savings column is incorrectly labeled $M (millions of dollars) instead of $M per year. In order to compare the costs and savings, they need to be over the same time period. In the example of power tools, the stock of 15.3 million was multiplied by the incremental cost per product of $0.55 to yield the incremental cost of $8.42 million. The power tool energy savings are $28.82 million per year. For the net savings, the Berkeley Research Group simply subtracts these two numbers even though they do not have the same units. The fair comparison would be the energy savings over the discounted (taking into account the time value of money) life of the power tool, which is 5.57 years, or $160.5 million. Then the benefit to cost ratio would be 19, which agrees well with the Commission's estimated value of 21, as opposed to the Berkeley value of only 3.4. 2) The compliance cost of changing the stock was applied to the entire stock, rather than the noncompliant fraction. The Commission analysis accounts for compliance rates, and only applies costs and benefits to the non-compliant portion of the market. Again, in the power tool example, the entire stock was multiplied by the incremental cost per product, instead of just the 90% of products that are not compliant (See Exhibit 3). 3) When calculating the impact of federal preemption, the Berkeley Research Group analysis assumes that non-consumer products would be preempted as well. But this is not the case. Non-consumer products will continue

[54] BRG Report.

		to capture savings, even after compliance with the federal consumer standard is required. Examples of products that would not be preempted by the federal regulation include emergency backup lighting, handheld barcode scanners, and two-way radios. Furthermore, the Berkeley Research Group report makes a similar mistake of comparing costs and benefits in this scenario (see Exhibit 4). The incremental cost used is for the 2013 sales. However, the energy savings counted are only for the first year, even though most products last much longer than one year. This artificially underestimates benefit:cost ratios. 4) The Berkeley Research Group is wrong in stating that the Commission does not take into account the time value of money. The Commission considers this by using a discounted device life. In the power tool example, the design life is 6.5 years, so at a discount rate of 3%, this yields a discounted life of 5.57 years, as repeated in Exhibits 1-6. 5) In Exhibit 5, the Berkeley Research Group includes technological improvement in the form of a 10 percentage point improvement per year in the compliance rate (e.g. going from 10% compliance to 20% compliance), based on compliance with the Energy Star voluntary standard for battery charger systems.[55] There is no support for applying a technology innovation curve like this based on the assumption it accurately projects market-wide efficiency improvement due to industry competition in absence of standards or programs. Here, the error of applying the incremental cost to compliant products becomes even more egregious. There may very well be technological improvement without the standard, but this will help to increase the cost-effectiveness of the standards, not decrease it as claimed by the Berkeley Research Group. In the power tool example, if we conservatively assume that the noncompliant products have the same incremental cost and same energy savings in the future, the benefit to cost ratio remains at 19. However, according to the Berkeley research group, the benefit to cost ratio falls to 1.9. The Berkeley Research Group cites increasing ENERGY STAR compliance for support. However, ENERGY STAR for battery chargers only covers maintenance and no-battery mode, not active (charge) mode. Therefore, even if all products became ENERGY STAR compliant, important energy savings would be missed. 6) In Exhibit 6, the Berkeley Research Group includes manufacturer estimates for incremental costs. The Energy Commission cost estimates are consistent with cost information attained from two independent tear

[55] BRG Report, at p. 5.
[56] Ecos March 3rd Presentation, slides 21-32.
[57] Preliminary TSD, p. 5-26, Table 5.19.
[58] March 3rd Workshop, Tr., p. 131:10-14.

		downs: one performed by Ecos Consulting on behalf the investor-owned utilities[56] and the second performed by iSuppli for the engineering analysis of the Department of Energy's battery charger standards rulemaking (Table 5.19 on page 5-26 of the Preliminary TSD[57]). In contrast, the manufacturers did not supply any data to support their estimates for higher incremental costs. In the power tool example, Ecos Consulting found an incremental retail cost of approximately $1.[58] This is consistent with the $0.55 incremental cost used by the Commission early on, once it has been marked up using Department of Energy markups (used in later Commission analysis). This corresponds to a benefit to cost ratio of approximately 10, as opposed to the Berkeley Research Group's claim of 0.2.
23.3	Many power tool chargers would not see the savings stated in the Staff Report. The incremental cost to comply for power tools is higher than the $0.55 currently indicated in the Staff Report. The actual cost will range from 7 to 20 times this estimated cost.	Although smaller (i.e., lower input power[59]) charger systems will typically save, per unit, less energy than larger (i.e. higher input power[60]) charger systems, compliance for smaller charger systems can be achieved at a lower cost as compared to larger systems, making such improvements cost-effective.[61] As described in the CASE Report at page 41, design improvements can enable a battery charger to reach the most stringent proposed standard levels (including large charger Tier 2 levels). The incremental costs for this analysis were developed considering the following design improvements: • As a general pattern, the cost of improving the efficiency increases as the size of the power system increases. For example, the cost to improve the efficiency of auto, marine or recreational vehicle battery chargers and uninterruptible power supplies (UPS) systems is higher than that of smaller power systems, such as for charging hand-held power tools. • Improving the efficiency of a low power product like a cordless telephone or hand-held power tool can cost less than $1.00, because changes can be as simple as swapping out linear power supplies with switch mode supplies. For a total incremental cost less than $2.00, switch controlled current regulating components, usually direct current (DC) to DC converters, can be incorporated to significantly reduce maintenance and no battery mode losses. Makita makes reference to a specific undefined product that would save less energy than shown by the Energy Commission in the Final Staff Report.[62] Makita fails to identify an alternate usage pattern, baseline efficiency, and compliant efficiency for consideration for this undefined product. Nor does Makita provide any details on what technology route they are proposing to use and why it is too costly for them to meet the standard. The purpose of the adopted regulations is to improve the efficiency of the battery chargers. Table A7 and the cost effectiveness calculations in the Final Staff Report are designed to present the average case across multiple product categories.

[59] *See* new Cal. Code Regs., tit. 20, § 1602, subd. (w) [definition of small battery charger system].
[60] *See* new Cal. Code Regs., tit. 20, § 1602, subd. (w) [definition of large battery charger system].
[61] Final Staff Report, p. 39, Table A-7 (for example, the unit energy savings from an automotive battery charger are much greater than for a cell phone)
[62] Final Staff Report, p. 39, Table A-7.

2.34, 21.4a	The Energy Commission justifies the necessity and benefit of pursuing this rulemaking upon the claim that consumers will see a net cost benefit owing to the high energy savings offset by a smaller increase in product price at retail. There have been numerous requests by industry for Energy Commission to review their analysis and assumptions with respect to this justification. The Commission has not done so.	Contrary to the comment, the Energy Commission has provided all the information related to the analysis in the Final Staff Report to stakeholders, including the CASE Report and the Preliminary TSD. The Commission also conducted three workshops and held many one-on-one meetings with manufacturers to discuss the staff analysis and cost model. The economic and energy savings model was posted March 3, 2011 on the Battery Chargers Pre-Rulemaking web page in the Excel file titled "BCS Model" as well as sent separately to stakeholders for discussion.[63] This model's energy savings and cost benefit analysis are based on credible, accurate and the most currently available data.
21.6, 25.2, 52.35b	The Power Tool Institute asserts that "for nearly every product their [sic] will be some cost to implement changes to comply with the regulation. Those costs are amplified through the normal mark-ups and overheads to the consumer as substantial price increase." The incremental cost to comply for power tools is between $3.76 and $20 at retail."The average price increase is in the range predicted by the Department of Energy's preliminary analysis."	The manufacturers did not provide data to support their assertions of incremental costs. In contrast, the CASE Report and Preliminary TSD provided data that the Energy Commission could then analyze to verify the asserted incremental costs. Accordingly, the Energy Commission based its cost effectiveness determination in part on the data used for the CASE Report. The Commission's cost model was made available to stakeholders in Appendix A of the Final Staff Report.[64] The Energy Commission cost estimates are also consistent with cost information attained from two independent tear downs: one performed by Ecos Consulting on behalf the investor-owned utilities[65] and the second performed by iSuppli for the engineering analysis of the Department of Energy's battery charger standards rulemaking.[66] Energy efficiency-based markups for incremental cost are less than markups applied on the total product because many costs associated with bringing a product to the consumer are unaffected by the efficiency standard, and therefore remain constant. Examples of costs unaffected by the standard include (but are not limited to): • Cost of retailing the product, including shelf space, time of stocking and time of check out. • Cost of distribution, including space for storage, fuel for shipping.[67] • Cost of marketing, including branding, packaging.

[63] BCS Model, *available at* http://www.energy.ca.gov/appliances/battery_chargers/documents/prerulemaking.html.
[64] Final Staff Report, at pp. 32-39.
[65] Ecos March 3rd Presentation, slides 21-32.
[66] Preliminary TSD, p. 5-26, Table 5.19.
[67] Preliminary TSD, at pp. 6-5 through 6-9. The Preliminary TSD identifies a composite markup for power tools categories as approximately 1.33 in Table 6.4.

	Another commenter, Wahl Clipper Corp., asserts that a more accurate mark-up rate is 4 times the manufacturing cost reflected in the retail price. Expected additional raw material costs of $2.00 will lead to increased consumer costs of $8.00 for many products, especially those with product runs of only a couple thousand per year. In sum, the high cost of compliance, short product life and duty cycle, and low energy savings on a per-unit basis negate the cost-effectiveness of the regulations.	There are no data in the record supporting the cost increases described by the commenter. As described in the response by California's Investor-Owned Utilities comment[68] supplementing the CASE report, substantial data supports the estimates of the costs expected to be incurred to comply with the regulations. However, even at the average incremental cost stated in this comment, the adopted standards are cost effective for power tools.[69]

Rulemaking Procedures

4.26	We're very interested in being a resource and have been in the past and continue to maintain that interest ongoing. We're certainly concerned about the fact that the concrete data that has been submitted through those comments and other opportunities have not yet been met either with a response or reflected in the rulemaking.	In developing the adopted standards, the Energy Commission reviewed the letters and comments submitted by all stakeholders, including AHAM. In doing so, the Commission determined that, for small battery chargers, it would remove the Power Factor requirement and combine the Maintenance Mode Power and No Battery Mode Power requirements into one overall requirement, and that, for non-consumer battery chargers, it would extend the effective dates for five years to allow more time for manufacturers to comply in the adopted regulations. The Commission did not make changes to the standards in instances in which stakeholders did not provide sufficient justification (evidence, information or data) to warrant them.

[68] Comments submitted for Staff Workshop on Battery Chargers and Lighting Controls, pre-rulemaking proceeding, Energy Commission Docket No. 09-AAER-2, available at: http://www.energy.ca.gov/appliances/battery_chargers/documents/2011-03-03_workshop/comments/PGE_SDGE_SCE_SCGE_comments_03-2011.pdf.
[69] Final Staff Report, p. 39, Table A-7.

4.26	AHAM further expresses a concern about the limitations of technologies that can be employed by the proposed rule. The presentation indicates that there are a number of technologies currently on the market and at low cost that could actually allow for products not in compliance to actually come into compliance.	As discussed in the Final Staff Report, to comply with the adopted regulations manufacturers can utilize very basic, off the shelf technologies that are available at a very low cost.[70] AHAM has not clearly explained whether the limitations cited are in regard to compliance technologies or products in the market. The Commission has reviewed these comments and has determined that no change is necessary.
4.5a, 52.31b, 52.7c	The Commission's rule-making process for all regulations, and especially for emergency lighting standards, should be as collaborative as its process with respect to lighting controls.	The relocation of existing standards for self-contained lighting controls was inherently less controversial than developing new standards for battery charger systems. Lighting control requirements had been demonstrated to be cost effective, technologically feasible, and energy saving in previous Title 24 rulemaking proceedings. Relocating these standards from Title 24 to Title 20 therefore leveraged that previous outreach and stakeholder engagement. When the idea was presented to affected parties, there was broad support. As described by the Commissioners upon adopting the regulations, the Energy Commission and its staff similarly worked diligently and in good faith to develop the proposed battery charger standards in cooperation with stakeholders. Staff conducted a lengthy pre-rulemaking process, including three workshops.[71] During the formal rulemaking process, the Commission held two more hearings, and modified the language from that initially proposed. Despite the Commission's best efforts to reach consensus on all aspects of the standards, significant differences of opinion remained. And, because the battery charger system regulations are cost-effective, technologically feasible and will save significant energy, for every affected application, the Energy Commission adopted them. The Commission and its staff remain committed to an open, transparent, and collaborative process as it develops additional standards, and determines how best to enforce those standards that have been adopted.[72]
52.17a	The process by which the regulations were adopted suppressed stakeholder participation. The hearing on the proposed regulations was "scheduled . . . during the [Consumer Electronics Show] Conference, where many of the	The Energy Commission provided numerous opportunities, before and during the rulemaking, for stakeholders to submit their input on the proposed regulations. The Commission conducted three pre-rulemaking workshops (on October 2010, March 2011, and May 2011)[73] and held many one-on-one meetings with manufacturers to discuss the staff analysis and cost model. During the formal rulemaking process, the Commission accepted public comment on the 45-day language, postponed its November 30, 2011 adoption hearing, issued 15-day language, and extended the comment period for this 15-day language from December 29, 2011 to January 3, 2012, all based on and in an effort to obtain further stakeholder input.[74] The Commission received no requests to reschedule the hearing.

[70] Final Staff Report, pp. 17-21 (technologies other than changing battery chemistry).
[71] See notices posted at http://www.energy.ca.gov/appliances/battery_chargers/notices/prerulemaking.html.
[72] *See, e.g.,* Adoption Hearing Tr. 221:15-228:8, Comment pp. 0000749-756 [comments of Commissioners upon adoption].
[73] See notices posted at http://www.energy.ca.gov/appliances/battery_chargers/notices/prerulemaking.html.
[74] *See* Notices announcing and continuing hearing dates, and noticing proposed regulatory language, available at: http://www.energy.ca.gov/appliances/battery_chargers/notices/.

	industries that are going to be affected by the Regulation are there showcasing their new products."	Significant, numerous, voluminous written comments were received on the proposed regulations, which have been responded to in great detail and given equal consideration. The public and affected industry had ample opportunity, and did, participate in this proceeding.
44.1, 55.1	The Energy Commission has not responded to comments made on the 45 day language.	The Energy Commission has reviewed comments submitted by Philips and other stakeholders on the initially proposed regulations (the 45-Day language), and issued changes to the proposed regulations in response, titled 15-Day language. As required by law, the Commission responds here in writing to all comments directed at the proposed regulations or the process by which they were adopted. While the Final Statement of Reasons and associated responses to comments contain the analysis of proposals, Commission staff and the Commissioners were available to discuss the proposed regulations before and over the duration of the rulemaking period. Staff contacts were provided as part of the notices and presentations. Staff further held many one-on-one meetings with manufacturers to discuss the staff analysis and cost model before proposing the regulations to address stakeholder concerns.
53.2	Comment 53 is from the California Legislative Assembly Committee on Utilities and Commerce, to the Energy Commission, regarding implementation of the regulations The fact that the regulations are not yet in final adopted form, but are nearing the effective date reflected in the regulations, creates uncertainty and may negatively impact small businesses.	As the Commissioners explicitly stated at the hearing to adopt these regulations, they considered this letter very seriously.[75] Public Resources Code section 25402, subdivision (c)(1), states that the standards shall become effective no sooner than one year after the date of adoption. The effective date for the consumer battery charger system standard was established as February 1, 2014 at the time of adoption at the Commission's January 2012 business meeting. Consequently, there is no ambiguity regarding the effective dates for the battery charger system standards. The effective date will not change as a result of Office of Administrative Law (OAL) review. OAL only reviews the rulemaking file to verify that the requirements of the Administrate Procedure Act (APA) were followed in promulgating the regulations. Specifically, OAL reviews the entire rulemaking file to ensure that the regulations are adopted under the procedures mandated by the APA. OAL does not review the efficacy of the standards themselves. Therefore, the regulations adopted by the Commission at its January 12, 2012 meeting are final. There are no substantive changes to the adopted regulations anticipated as a result of OAL review. In addition, there is no evidence in the record that "small businesses and construction contractors . . . may not be able to replace or purchase new products that meet the requirements of these regulations." Numerous compliance pathways are readily available to develop compliant products.[76] In addition, small non-consumer battery charger systems have an additional five years to comply as the effective date for that class of system is January 1, 2017. Furthermore, products manufactured prior to the effective date do not have to meet the standards. Lastly, manufacturers can test their products to verify compliance prior to effective date of the regulations to verify whether or not they will meet the standard. Typically, the Commission posts certification

[75] *See* Adoption Hearing, Tr. pp. 227:22-228:8, Comment pp. 0000755-756.
[76] Final Staff Report, pp. 17-25 [compliance pathways], 29 [explaining changes made to the regulations from pre-rulemaking proposal to ensure timely compliance].

		forms three (3) months prior to the effective date to allow manufacturers to begin certifying their products in advance of the effective date. The Commission will follow this same practice with the battery charger regulations and post the certification forms at least three (3) months prior to the effective date for all the standards. In conclusion, there is no basis for manufacturers not to prepare to certify their regulated products that will be manufactured after the effective date of the standards and sold or offered for sale in California.
2.28	There is little or no recognition or discussion of AHAM's submission of data and comments, and the Commission has not responded directly to these comments in writing.	With respect to AHAM's comments, AHAM has not submitted alternative data or information to the Energy Commission that would alter the Commission's conclusion in regard to the cost effectiveness or feasibility of the standards. Notably, AHAM did not provide data in response to the Commission's "Battery Charger Proceeding Data Request" which was sent to stakeholders on January 31, 2011, and docketed with the Commission and made available on its web page for this proceeding on February 2, 2011. This letter requested industry to provide data, assumptions and citations on alternate product duty cycles, alternate product lifecycle and alternate incremental cost per unit to those specified in the CASE Report. AHAM did not fulfill this request. The Commission has reviewed and considered all stakeholder comments. Many substantive changes were made to the proposed regulations, both during pre-rulemaking process and as reflected in the changes from the 45 to the 15-day language. In addition, throughout the proceeding the Commission provided multiple opportunities for AHAM and manufacturers to clarify their issues with the standards. The pre-rulemaking stakeholder process itself included three workshops (October 2010, March 2011, and May 2011). The Commission is required to respond in writing to comments in the Final Statement of Reasons and to notify all parties of hearings related to the regulations in a timely manner.[77] This document fulfills the requirement to respond to comment, and the Energy Commission properly notified all parties of the hearing date for adoption.[78]
2.11, 52.11	By rushing forward with a mid-February 2011, Staff Report publication date, the Energy Commission is acting prematurely and will not have time to adequately review and consider stakeholder input.	The Energy Commission solicited and considered stakeholder input for several years related to battery charger system efficiency standards, leading up to this rule-making. In a November 2008 letter, the Energy Commission requested submission of energy data from manufacturers to inform them of the development of battery charger standards. No manufacturers submitted the requested energy data in response to this invitation. Consequently, the investor-owned utilities utilized data provided through PIER research[79] and through their own product testing to develop a proposed standard in the CASE Report which was presented at an October 13, 2010 staff workshop. After this workshop, manufacturers were asked again to provide alternative energy data from what the investor-owned utilities relied on. None was submitted. Subsequently, prior to the staff workshop on March 3, 2011 presenting the Energy Commission proposed battery charger standard (based on analysis of the CASE

[77] Gov. Code, §§ 11346.9(a)(3), 11346.8(b).
[78] Notice of Commission Adoption Hearing, Availability of 15-Day Language and Opportunity for Comment (Dec. 14, 2011).
[79] Ecos Consulting (October 2006) "Final Field Research Report", prepared for the California Energy Commission under PIER contract # 500-04-030, cited in the CASE Report.

		Report and stakeholder comments from the October workshop) staff docketed a formal data request letter on January 31, 2011 to once more ask for any alternative energy data that manufacturers wanted the Commission to consider. While AHAM and Power Tool Institute provided responses, no data was provided by them or the manufacturers. After the staff workshop, an Efficiency Committee Workshop was conducted on May 19, 2011 to take comments on the revised staff draft report. At this workshop, Jennifer Cleary from AHAM acknowledged that the trade association had not submitted data.[80] While the Commission did subsequently receive data from one manufacturer,[81] the data, once analyzed, did not alter any of the Commission's findings regarding technological feasibility or cost effectiveness for any of the products covered under the rule. Based on this review, and on consideration of other comments received from stakeholders after the Committee workshop, the Commission determined that it had sufficient information to proceed with the rulemaking.

Test Procedures

4.18, 10.4	The language in the test procedure proposed in May 2011 for small battery charger systems regarding end-of-discharge voltage should be added where appropriate.	The Energy Commission agrees that for the test procedures for small non-consumer battery charger systems, which are not preempted by the federal test procedures, the battery manufacturer's recommended end of discharge voltage may be used in place of the test method values as appropriate. The Energy Commission has therefore added section 1604(w)(1)(D) to its 15-day language to state: "Small battery charger systems that are not consumer products may use the battery manufacturer's recommended end of discharge voltage in place of values in the test method Table 5.2 where the table's values are not applicable."
4.1, 4.3	<u>Testing Recommendations</u> Intel/ITI comments that the best way to isolate the battery circuitry of multi-function mobile computer systems is to test energy consumption with all functions on, and subtract non-battery functions away from the power levels to determine the battery charge and	The adopted regulations are based on the energy consumption measurement defined in the federal test method. This federal test procedure preempts the Energy Commission from using different test requirements for consumer battery chargers. In addition, the allowance provided in the adopted regulations is reasonable given that manufacturers have several compliance pathways that are cost effective and feasible, as described more fully in the Final Staff Report.[82] This alternative proposal for an additional power allowance would lead to less energy savings and is rejected as it is less efficacious at implementing Public Resources Code section 25402, subdivision (c)(1).

[80] Efficiency Committee Workshop, In the Matter of 2011 Rulemaking on Appliance Efficiency Regulations, May 19, 2011 (May 19th Workshop), referenced in Final Staff Report, p.29, n. 47, Tr., at p. 135:12-25.
[81] *See* Energy Commission Docket Log Nos. 60579, 60804, Phase II on Appliance Efficiency Regulations Pre-Rulemaking Appliance Efficiency Standards for Battery Chargers and Moving Lighting Control Regulation From Title 24 to Title 20, Docket No. 09-AAER-2; Cal. Code Regs., tit 20 § 2505 et seq.; Gov. Code, § 6254(k); Evid. Code, § 1060.
[82] Final Staff Report, pp. 13, 17-25.

	maintenance power. Further, the test method should be harmonized with the federal test method. On small devices, ranging from 50 watt hours to 100 watt hours, the standard should be set a defined minimum, rather than a sliding formula. In addition, in the maintenance and off mode test, there should be allowed an additional 100 milliwatts because of the fixed power losses with the AC functions.	
4.17	Battery Testing Safety Concern Motorola Solutions is concerned that the federal test method's requirement to test batteries at a prescribed end of discharge voltage based on battery chemistry may exceed the manufacturer's recommended safe discharge level.	The Energy Commission addressed the comment by modifying Section 1604, subd. (w)(1)(D), providing for alternate discharge levels for non-consumer battery chargers.
13.5	The European Union's Lot 6 requirements are not more stringent than the battery charger specification. The Energy Commission's proposed battery charging specification assumes that all non battery functions can be turned off, which is not the case once the battery is present. That is one of the considerations why the	Regarding EU Lot 6 regulation, which is a proposed standard for standby power consumption, the Natural Resources Defense Council (NRDC) submitted a comment letter dated November 21, 2011 to the record that demonstrates that the Commission's proposed limits are less stringent than EU's Lot 6 with a detailed breakdown of laptop power use.[83] The Energy Commission concurs with NRDC's analysis. The impact of non-battery charging functions on the battery charger system test results may be minimized or eliminated as allowed by section 4.4 of the test procedure. Therefore, it is possible that the non-battery functions would not be factored into the efficiency test for the purpose of determining compliance. If non-battery charging functions are unable to be turned off or disconnected, then the device is to be set in the mode that minimizes the power consumption of such features for purposes of determining compliance.

[83] NRDC 45-Day Comments, Comment pp. 0000453-457, pp. 3-7.

	EU's Lot 6 regulation both relies on the explicit removal of the battery and scope limited to AC powered devices. ITI's original proposal was based on EU's Lot 6 specifications. Those proposals requested much more power allocated to the non battery functions. To be consistent with EU Lot 6 targets, Energy Commission battery charger limits would require the following (based on ITI's presentation dated June 2011, without subtracting non-battery functions): (http://ec.europa.eu/energy/efficiency/ecodesign/doc/legislation/guidelines_for_smes_1275_2008_okt_09.pdf).	
4.2c, 13.6	The test procedures only define the accuracy of the test equipment. However, the test guardbands [i.e., tolerances for quality control testing] used by manufacturers need to ensure that all devices would meet the limit, especially if a user or third party inspects or samples these systems given the test procedures identified. Though neither the test procedures nor efficiency limits address the measurement error that occurs when dynamic test measurements are conducted using the accuracy level defined, manufacturers need to incorporate that measurement error into their manufacturing	The commenter is clarifying its comment on manufacturing variability. This issue is addressed in the Energy Commission's response to comment nos. 4.2a et al.

	test guardbands to ensure that all systems, as manufactured, meet the standards.	

Alternatives – Voluntary Programs

26.9	The Energy Commission should recognize market-oriented approaches as an alternative to mandatory standards. For battery charger systems, the federal ENERGY STAR program is having a meaningful impact in moving the market toward higher levels of energy efficiency in ways that are beneficial to consumers, industry competition, and innovation.	The Commission did recognize the ENERGY STAR program and discussed its consideration of these standards on page 9 of the Final Staff Report. The intent of the Energy Commission appliance efficiency standards and the ENERGY STAR program are inherently different and are not interchangeable. The voluntary requirements under the ENERGY STAR program seek to incentivize the purchase of the most efficient products in the market. The Energy Commission standards are intended to transform the market by removing the least efficient products from the market place. Each has a complementary role and together can achieve significant energy efficiency savings. In regard to battery chargers specifically, the current Energy Star specifications are limited to only standby energy for battery chargers. They do not address active mode energy use. As a result, no one-to-one comparison between the ENERGY STAR and Regulations can be made. In addition, ENERGY STAR's scope does not include all of the products covered in the adopted regulations. The Energy Commission agrees that voluntary approaches are an important complement to - but should not supplant – the minimum cost-effective, technologically feasible achievable standards that the Commission is directed by statute to adopt. That only one third of the market (according to the figures cited in the BRG report) meets the ENERGY STAR program for battery charger systems,84 which is less stringent than the California standards and narrow in scope as described below, and there is no assurance that all of the market will meet the next iteration of the voluntary standards, shows that it is not an equally effective and less burdensome alternative than the regulations.

Compliance Dates

53.3	Due to the uncertainty associated with new authority to assess violations of the appliance standards, the compliance date for small consumer products should be delayed.	The assertion that the standards will negatively impact economic activity is unsupported. Compliance with the standards will spur economic activity in the state of California by reducing the wasteful and inefficient use of electricity. Instead of paying for electricity to overcharge already full batteries, California's citizens and businesses can spend that money (about $300 million per year after full implementation)[85] on other goods and services, resulting in job growth as employers hire people to meet increased demand. The record does not support the assertion that the Commission's authority to assess penalties will hinder

[84] *See* BRG Report, at p. 5, comment no. 21, p. 0000299; http://www.energystar.gov/index.cfm?c=partners.unit_shipment_data_archives.
[85] *See* Notice of Proposed Action, at p. 16.

		compliance. Rather, the authority is intended to ensure compliance.
1.6, 2.8, 4.12a, 4.19, 4.24,52.8, 56.16, 56.6	The proposed effective date is too soon to reconfigure uninterruptible power supply systems to meet the standards, considering past product development cycles. The standards should begin going into effect in May 2014.	The Commission adopted the regulations with an effective date of February 1, 2013. The 12-month compliance timeframe is reasonable based on the changes for small battery chargers that the Energy Commission made to the standards, summarized below, and especially the changes eliminating the Power Factor requirement and combining Maintenance and No Battery Mode Power into one requirement. The Commission also extended the effective dates beyond those originally proposed.[86] These changes were made for the specific purpose of giving manufacturers sufficient flexibility and time to meet the standards, and to set the efficiency levels that would not require extensive product redesign. In summary, for small battery chargers, the Commission made the following changes in response to stakeholder concerns raised during the pre-rulemaking proceeding about meeting the one-year compliance timeframe: • Combining the power consumption in the battery maintenance and no battery modes and increasing the allowance for fixed losses gave more flexibility to manufacturers to trade fixed losses between modes in order to meet the standard. • Deleted the power factor requirement for small battery charger systems which simplified any needed redesign and reduced the need to manage fixed losses. Finally, for all regulated product classes, including those in the one-year compliance timeframe, the Commission found, based on substantial evidence in the record, that the adopted standards are technologically feasible and cost-effective.[87] Therefore, no change is necessary in response to this comment.
2.7, 2.8, 4.12a, 4.19, 4.24, 41.1c, 41.2, 41.4, 45.3. 46.5, 52.24a, 52.24b, 52.24c, 52.24d, 52.25, 52.29a.	The February 2013 effective date ignores manufacturers' time needs for product redesign and retooling. There should be at least a two year lead-in period before the effective date. Also, AHAM would like an explanation as to why the Energy Commission is willing to extend the effective date to the year of 2014 for some appliances and not others.	The twelve month compliance timeframe is reasonable based on the changes that staff made to the standards and effective dates as originally proposed (before the 45-Day Language). These changes were made for the specific purpose of giving manufacturers sufficient flexibility and time to meet the standards, and to set the efficiency levels so they would not necessitate extensive product redesign. In summary, for small battery chargers, the Commission made the following changes in response to stakeholder concerns raised during the pre-rulemaking proceeding about meeting the one-year compliance timeframe: • Combining the power consumption in the battery maintenance and no battery modes and increasing the allowance for fixed losses to give more flexibility to manufacturers to trade fixed losses between modes in order to meet the standard. • Deleting the power factor requirement for systems less than 100 Watts to simply any needed redesign and reduce the need to manage fixed losses.

[86] Final Staff Report, p. 29, n. 47.
[87] Final Staff Report, at pp. 13, 17, 39.

		In addition, the evidence in the record supports the Commission's determination that a one-year compliance timeframe is feasible: • Consumer products are regularly redesigned to encourage consumer upgrade to new models and to distinguish products in the market, which means that battery charger improvements can be incorporated into this regular redesign process.[88] • A teardown of a power tool performed by Ecos Consulting demonstrated that the improvements needed to meet the adopted standards do not require changes to the product molding (as components required are small and fit on existing circuit board space), which means that substantial product redesign (and the associated time for such redesign) is unnecessary to meet the standards.[89] • Full UL testing is not always required, if the only changes are to use a previously certified and efficient external power supply, or the changes to circuitry are within the standard range specified by the battery manufacturer, which means that less time will be necessary to test the improved battery chargers.[90] Finally, for some products, such as USB chargers for batteries with a 20Wh or greater capacity, commenters presented credible data and analysis that demonstrated that a one year compliance timeframe was not feasible and that delaying the compliance date would not result in lost energy savings (where such products were not on the market until later). Other products did not have barriers to technological feasibility, and delaying the compliance date would result in lost energy savings. Therefore, the Energy Commission did not change the compliance date for these products.
48.1	MSI asked that the energy conversion losses to develop the DC source should not be included in the test measurement, and assurance was received during the May 2011 workshop from Mr. Rider. We hope that this type of clarification will be published in a future "FAQ" document or other support material.	This document has been published and is available here: http://www.energy.ca.gov/2012publications/CEC-400-2012-FS/CEC-400-2012-FS-002.pdf

[88] Adoption Hearing Tr., Comment no. 52, pp. 188:2-189:24, pp. 0000694-695; Pacific Gas and Electric Company, et al., Battery Charger System Energy Efficiency Standards (Mar. 3, 2011), at p. 3.
[89] Ecos March 3rd Presentation, slides 21-32; March 3rd Workshop Tr., at pp. 127-133 [discussing teardowns].
[90] Adoption Hearing Tr., Comment no. 52, pp. 190:1-14, pp. 0000696.

5.2, 7.10a, 45.5a, 52.11a	The scope of the regulations have been evolving, a "moving target", over the past four years. The revised timeline is too aggressive and will make it difficult for manufacturers to perform all of the necessary research, testing, and production to meet the proposed requirements. Therefore, the implementation date should be extended to January 1, 2014.	As described above, the Energy Commission has been working on these regulations for the past four years in a public process. The effective date is based on the analysis of the CASE Report, the product tear downs demonstrating that the redesign necessary to comply with the standards can be met through changes to circuitry using available, off-the-shelf components, and the Commission's modifications to the standards, based on manufacturer input, to make it easier to comply with the standards in one year rather than the two years proposed in the CASE Report.[91] The Commission also granted additional time to larger USB charger systems (battery capacity of 20 Wh or more) in section 1605.3(w) of the 15-day language.
2.7, 2.8, 7.5, 24.4, 25.1, 41.1, 41.1b, 52.11a, 52.12, 52.18a, 52.21, 52.29a, 52.39	The compliance date for the regulations should be at least two years from the adoption date, i.e., the compliance date should be pushed back until January/February 2014, because: a. The CASE Report recommends an effective date in 2012, based on a two year period from its date of	The Energy Commission deliberately established a one year timeline for compliance, in contrast to the CASE Report. The CASE Report recommended a two year compliance timeframe based on requiring more stringent standards and a minimum Power Factor for all products.[92] However, the Commission made changes to the proposed standard to ensure that one year would be sufficient time for compliance, based on input from manufacturers during the pre-rulemaking proceeding. This was achieved by combining the power consumption in maintenance and no battery modes; increasing the maintenance and no battery mode to 1 watt; adding battery scaling allowance, a 16 watt minimum allowance for batteries of 2.5 or less wattage; and removing the power factor requirement for small battery chargers.[93] These changes along with many other changes, including extension for USB chargers with battery capacity over 20 Watts, were made at the request of manufacturers so they can meet the standards in one year.[94] In addition, there is evidence in the record to demonstrate that the standards do not require changes to the product molding (avoiding lengthy redesign of the product), that consumer products are regularly redesigned (so that changes to meet the standards can be

[91] CASE Report, pp. 20-22 (describing technologically feasible compliance pathways); Tr. (Mar. 3, 2011), at pp. 127-133 (product teardowns); Preliminary TSD, at Section 5.6 (product teardowns); Final Staff Report, at p. 29 (modifications to standards to make compliance feasible in one year); *see also* response to comments 2.7 et al. (explaining changes made and the rationale for a one year compliance timeframe).
[92] CASE Report, at p. 23 (proposing more stringent standards than those proposed by the Commission).
[93] Rider, "Proposed Battery Charger System Standards" presentation, May 19th Committee Workshop, slides 2-20, at http://www.energy.ca.gov/appliances/battery_chargers/documents/2011-05-19_workshop/presentations/Rider_Ken_Proposed_Battery_Charger_System_Standards.pdf.
[94] *See, e.g.,* Habben, Wahl Clipper Corp., 2010 Rulemaking Proceeding Phase II on Appliance Efficiency Regulations Comments (May 31, 2011), p. 2, available at http://www.energy.ca.gov/appliances/battery_chargers/documents/2011-05-19_workshop/comments/WAHL_Comments_on_Draft_Regulations.pdf; Benedict, Sony Electronics, Inc., Comments of Sony Electronics Inc. on 2010 Rulemaking Proceeding Phase II on Appliance Efficiency Regulation (May 31, 2011), p. 2, available at http://www.energy.ca.gov/appliances/battery_chargers/documents/2011-05-19_workshop/comments/SONY_Electronics_Inc_Comments_on_2010_Rulemaking_2011-05-31_TN-60967.pdf.

	publication in 2010, and the Energy Commission failed to adjust the effective date of the proposed regulations to be two years from their date of final adoption. b. The Energy Commission's proposed January 2013 effective date underestimates the time needed for the manufacturer for product redesign, retooling, and re-certification, which will take at least two years. c. The proposed compliance time period is very short and unrealistic, and lacks a rationale.	incorporated into these regular redesigns), and full UL testing is not always required (shortening the time for testing).[95] As indicated by the energy savings analyses conducted in the Final Staff Report, extending the compliance time would result in lost energy savings to the state and would delay the goal of removing the most inefficient products from market.[96] The effective dates were revised since originally proposed from July 1, 2012 (proposed in the March 3, 2011 workshop), to January 1, 2013 (proposed in the 45-day language), to February 1, 2013 (proposed in the 15-day language) to ensure that manufacturers would have at least one year from the adoption date to comply with the adopted standards. Delaying the standards will decrease the amount of energy savings accomplished by the standards by allowing a greater number of non-compliant products to be sold in California. Therefore the alternate proposal is less efficacious at achieving the energy-conservation requirements of Public Resources Code section 25402, subdivision (c)(1). One manufacturer confirmed the Energy Commission's conclusion that with the changes to the proposed rules, the compliance dates could be met.[97]
23.1, 52.35c	The proposed compliance period of one year for power tool manufacturers lacks a rationale. The compliance period should be at least two years from adoption.	Ecos Consulting conducted a tear down of a power drill on behalf of the investor-owned utilities. This tear down revealed that no redesign of the tool was required as changes to meet the standard could be accomplished with improvements to just the charge control circuitry.[98] The Energy Commission disagrees with extending the compliance period from one year to two years for the reasons stated above in response to comments 2.7-52.39.
2.7b, 2.9, 2.10	By rushing forward with a November 30, 2011 adoption hearing date, the Energy Commission is acting prematurely and will not have time to adequately review and	In an effort to ensure a comprehensive review and thorough analysis of all stakeholder input, the November 30, 2011 adoption hearing date was postponed. Instead, the Energy Commission issued 15-day language which was adopted January 12, 2012. In addition, the request that the comment period be extended was granted and the review period was extended from December 29, 2011 to January 3, 2012.

[95] Ecos March 3rd Presentation, slides 21-32; March 3rd Workshop Tr., at pp. 127-133 [discussing teardowns]; Adoption Hearing Tr., Comment no. 52, pp. 188:2-189:24, 190:1-14, pp. 0000694-696; Pacific Gas and Electric Company, et al., Battery Charger System Energy Efficiency Standards (Mar. 3, 2011), at p. 3.
[96] Final Staff Report, at p. 13.
[97] Bartell, Motorola Solutions, Inc., 2010 Rulemaking Proceeding Phase lion Appliance Efficiency Regulations Comment No. 10 (Oct. 19, 2011) at p. 2, comment p. 000206.
[98] Ecos March 3rd Presentation, slides 21-32; March 3rd Workshop Tr., at pp. 127-133 [discussing teardowns].

	consider stakeholder input.	
52.13a, 52.36, 52.38	The Commission should not adopt the Proposed Rule or, barring that, should consider extending the deadline for the effective date an additional 12 months, to February 2014.	The Commission considered the alternative of not adopting a standard on page 19 of the NOPA and determined that it would be less effective at achieving the reduction of energy consumption as described in Public Resources Code section 25402 and therefore was rejected. Regarding the extension of time for an additional year, see responses above.
23.2	The regulations should allow non-compliant chargers to be sold as replacement parts for 10 years instead of 5 years. End-users of power tools, especially contractors, make significant investments in sets of power tools using a common charging platform and a useful life of ten years or more. This investment becomes worthless without the appropriate replacement chargers. The commenter requests a response to its comments.	The Commission did not extend the replacement part effective date to 10 years because the additional years would lessen the reduction in energy consumption achieved to meet Public Resources Code section 25402, subdivision (c)(1), and therefore is a less effective alternative to the adopted regulations. To clarify, the standards apply to replacement parts *manufactured* after the effective date. It does not prevent replacement parts manufactured before the effective date from being sold after the effective date. Efficient replacement battery charger systems can be designed to be compatible with older tools and batteries. Five years is an appropriate and reasonable period of time for replacement parts to comply with the standards, as these products, like non-consumer battery charger systems, are manufactured in lower volumes and less frequently than other consumer products. Written responses to comments directed at the regulations or the process by which they were adopted are provided here.

Usage and Duty Cycles

2.12, 21.7a	The proposed standard should be based on only one metric combining 24 hour charge and maintenance energy with maintenance and no battery modes, and include a usage factor. A usage factor is required under Public Resources Code section 25402, subdivision (c), which states that the	The Energy Commission considered two different approaches in developing the metrics for the battery charger standards: the approach outlined in the Preliminary TSD (the “federal approach”), and the approach described in the CASE Report (the “CASE approach”). These approaches diverge in establishing regulated metrics and product categories. First, the federal approach proposes to regulate battery chargers based on an annual energy use calculation, while the CASE approach proposes four metrics: 24-hour charge, maintenance mode, power factor, and no-battery mode. Using an annual energy use metric like Department of Energy requires assumptions about duty cycles on a per product basis. In contrast, using four metrics like the CASE approach allows the proposed regulations to cover a broad array of products with representative duty cycles. Second, to address the differences in duty cycles, battery capacities, and technologies, the federal approach suggests ten product categories for consumer products, while the CASE approach only uses three product categories for small battery charger systems.

	regulations shall be "based on a reasonable use pattern."	The Commission rejected the federal approach (which is what the comment proposes as an alternative) because it concluded that it would be inappropriate to base regulations for several different classes of products with different duty cycles by grouping them arbitrarily, and because duty cycles, closely tied to consumer behavior and likely to evolve with time, are an imprecise measure of efficiency.[99] In contrast to the federal approach, the CASE approach does not require duty cycle assumptions to calculate standards, and there is no need to subdivide the standards and add complexity to the degree of the federal approach (10 product classes versus 3). The CASE approach further ensures efficiency in all modes of battery charger system operation, regardless of duty cycle. Finally, the CASE approach provides for energy allowances to allow the standards to cover multiple products in a cost-effective way.[100] Therefore, the Commission adopted the CASE approach to regulations, with some modifications. While the Commission concluded that using duty cycle (usage pattern) to establish the performance standard itself was inappropriate, it did use these usage patterns to calculate energy savings and cost effectiveness in Appendix A of the Final Staff Report. The cost-effectiveness models were used to set the standards based on a goal of reducing the amount of energy wasted by 40% (5000 to 2100 GWH), and focusing on removing the most inefficient products from the market. Thus, the regulations are based on the reasonable use patterns as required under Public Resources Code section 25402, subdivision (c)(1) and the duty cycles were used to calculate the cost savings in the Staff Report.

[99] Final Staff Report, p. 10.
[100] CASE Report, pp. 41-46.

2.29, 6.19	The Staff Report overstates the energy savings from most of the categories of consumer battery chargers because many such products are infrequently charged and thus have less potential for energy savings, resulting in an unfavorable payback period. The Energy Commission ignores existing data on infrequently charged products, including DOE data. Therefore, infrequently charged products should be a separate product class.	The duty cycle is an estimate of consumer behavior for battery charger systems. It is directly tied to how often a product is used and how long it takes to charge the battery. For some products that use backup batteries, it is assumed that the battery will rarely be charged as the product is predominantly connected to a power line and only in rare cases of emergency needs to be recharged. The duty cycles used for the Final Staff Report are altered from the figures in the CASE Report: The duty cycle for personal care products was altered to match the Preliminary TSD estimates and to address comments made by personal care product manufacturers received over the course of the pre-rulemaking process.[101] Thus, the Energy Commission clearly considered DOE data regarding personal care products. The duty cycles represent current average usage to make meaningful estimates of product energy consumption and savings. These figures rely on metering and field studies[102] and use reasonable estimates where this type of information is unavailable. The Commission then created two standards to regulate battery charger system by size (large or small). It also created separate standards for inductive chargers and uninterruptible power supplies based on their unique applications. Therefore, products are disaggregated in unique groupings by these categories. The energy savings in each of these categories is significant. Based on the analysis in the Final Staff Report, the cost modeling for regulated products in these four categories demonstrates that the standards are cost effective based on the duty cycles for these products. The cost modeling also takes into account the duty cycles of different product classes (see Table A-7 for a breakdown of cost-effectiveness by product type). Therefore, because the Energy Commission considered the duty cycle in setting the standard, it has already accounted for the infrequency of charging for some products. It is therefore unnecessary to create a separate product class for these types of products.
21.5	Because the proposed regulations do not use a single energy usage metric, but essentially apply artificial, prescribed usage factors to calculate energy savings [i.e., 24-hour and maintenance mode, and maintenance and no-battery mode], they create a circumstance where a compliant product may consume more energy in use than a non-complaint product.	Energy Commission analyses and findings do not support PTI's argument that the adopted standards would create this circumstance. The adopted standards will not lead to an increase in the consumption of a battery charger system. There are two cases for existing battery charger systems on the market today: 1) Products which already comply with the standards. These products will not need to be redesigned, and therefore the standards will lead to no change in energy consumption. 2) Products which do not currently comply with the standards. These products will need to improve their efficiency performance by reducing: 24 hour energy, maintenance mode power, and/or no battery mode power. Improvements to any of these metrics can only lead to a reduction in energy consumption. While the standards allow manufacturers to make some tradeoffs to allow for flexibility in compliance paths, there is no evidence to suggest that these tradeoffs will ultimately result in more energy being consumed. The commenter has not provided an example of a product (and the Energy Commission is not aware of one) that would have such drastically different usage patterns between maintenance and no battery mode, or between 24-hour and maintenance mode, that the overall energy use would increase through tradeoffs made to comply with the regulations.

[101] Compare Final Staff Report, Table A-4 (at p. 35) with the CASE Report, Table 6 (at pp. 15-16).
[102] Ecos Final Field Research Report.

		The Energy Commission specifically contemplated a single energy usage metric and rejected the concept.[103] The single energy use metric itself can create a circumstance where a compliant product may consume more energy in use than a non-compliant product. The single energy usage metric only ensures energy efficiency if consumers use the products in the same way that the metric assumes. Using an assumed usage pattern for an aggregated product class is necessary to calculate the weightings between charge, maintenance, and no battery modes of operation, but if the usage assumptions are inaccurate, if consumer behavior changes over time, or if products within an aggregated class has different usage patterns, then the single metric approach would encourage tradeoffs that may favor increased energy consumption. Thus, the proposed alternative would not resolve the issue that PTI identifies – it could actually exacerbate it. In contrast, the Energy Commission has no evidence to suggest that the adopted standards would create a circumstance where a compliant product consumes more energy than a noncompliant product. Therefore, no change is warranted.

Intellectual Property

2.37	The Energy Commission should determine if any classes of products would require proprietary technology in order to meet the proposed standards.	There is no evidence in the record to indicate that the adopted regulations will require manufacturers to use proprietary technology to comply. AHAM did not provide details related to proprietary technology. The proposed standard is technology neutral and there are number of economical technology options available to manufacturers and currently deployed in the market to comply with the regulations. Any costs associated with intellectual property rights have already been absorbed by and are reflected in the market and the data used to develop the regulations and determine they were cost-effective. Manufacturers can comply by using an efficient power supply or a switch in the battery charger system's charge control circuitry that will reduce or turn off power after the batteries are charged. The Commission did not adopt prescriptive standards that require manufacturers to use any specific technology, proprietary or otherwise
19.6, 20.4	The proposed regulation of automotive battery chargers will create a monopoly due to an existing patent on the high frequency/switch technology for engine start. (U.S. Patent No. 6,822,425)	Schumacher fails to demonstrate why the regulations will create a monopoly. The Final Staff Report discusses many generic approaches to improving battery charger efficiency that are basic, common electrical engineering approaches that should not require the use of patented technology.[104] However, even if a patent is held on one particular type of technology to improve charger efficiency, the regulations do not mandate that a specific technology be used to comply with the standards. The Energy Commission has identified multiple feasible and cost-effective compliance paths.[105] Therefore, there is no evidence in the record to support Schumacher's assertion that requiring efficient automotive battery chargers will create a monopoly.

[103] Final Staff Report, at p. 10.
[104] Final Staff Report, at pp. 17-21.
[105] Final Staff Report, at pp. 13, 17-21, 39; CASE Report, pp. 20-22.

Product Data

2.38	The Ecos data used as a basis for the CASE report should either be made publicly available or be stricken from the record. The CASE report is not as detailed as the prior TSD, does not consider all of the elements of the TSD, and uses inappropriately old data, including data for products in the market before the Energy Commission's external power supply standards were adopted.	The Commission relied on several sources of data, including the Preliminary TSD and the CASE Report. The Commission openly requested industry data multiple times during the proceeding. For instance, a January 31, 2011 letter from the Energy Commission requested industry to provide data, assumptions and citations on alternate product duty cycles, alternate product lifecycle and alternate incremental cost-per-unit to comply with the standards specified in the CASE Report. However, neither AHAM nor other stakeholders criticizing the Commission's analysis provide relevant data to inform the proceeding.[106] As described elsewhere, the confidential data submitted by Philips was very limited and unpersuasive. Instead, AHAM submitted the BRG Report criticizing the CASE Report and Final Staff Report. As described above, the BRG Report does not accurately analyze the cost effectiveness for these standards. The Preliminary TSD incorporates much of the CASE Report's information, and in fact the data and information in the CASE Report is available both through the Preliminary TSD and through the investor-owned utilities' submission of comments to the Department of Energy through its framework process.[107] The data therefore is and was publicly available.

Product Categorization

4.7, 4.9, 4.11, 4.12, 6.20	The broad product categories established in the standards group many dissimilar products. Certain products within these random categories will have difficulty meeting the standards. For example, vehicle battery chargers, laptops, cell phones, and power tools are grouped together. These products have widely varying	The Final Staff Report demonstrates that the adopted regulations are cost effective and feasible. The Energy Commission regulations establish two standards based on battery capacity, small and large battery charger systems. However, the cost effectiveness analysis supporting the standard levels covered 18 different product categories.[108] Each of the product categories can comply through one of several cost effective and technologically feasible solutions.[109] The regulations are designed to ensure that they do not interfere with the operation of the end product. Schumacher's request that auto charging products be excluded from the standard because they are used to charge several different kinds of batteries is unsupported by the record. The large battery charger system standard provides a scaling allowance to increase the allowance directly proportional to the size of the battery to facilitate compliance. These chargers may be tested with the different kinds of batteries they are capable of charging, to ensure they meet the standard. The federal test procedure adopted for small battery charger

[106] *See, e.g.*, May 19, 2011 Committee Pre-Rulemaking Workshop Tr., at p. 135:12-25 [AHAM's representative stating that they had not submitted data].
[107] *See, e.g.*, "2010-02-26 Pacific Gas and Electric Battery Charger Duty Cycle Assumptions and References List spreadsheet" and 2010-02-26 Pacific Gas and Electric Battery Charger Sources for Battery Charger Market Data spreadsheet," Document ID No. EERE-2008-BT-STD-0005-0030, RIN 1904-AB57, Docket No. EERE-2008-BT-STD-0005. These reports are available at www.regulations.gov, by typing in the document title or document identification number and clicking "Search."
[108] Final Staff Report, p. 39, Table A-7.
[109] Final Staff Report, pp. 17-25, 39.

	usage patterns and power needs. Further, with respect to vehicle chargers, they are designed for many different kinds and sizes of batteries. These chargers should be considered separately.	systems and the California test procedure for large battery charger systems are both equipped to handle multi-port, multi-voltage, and multi-capacity battery charger systems. For example, Table 4.1 of the federal test procedure discusses how to select a battery and test chargers that are capable of testing a diverse number of batteries. In addition, the Commission considered the issue of duty cycle for auto-chargers and found that even at a duty cycle of one percent, these products could still cost effectively meet the standard. While the duty cycle for residential auto-chargers may be less than this, the combined duty cycle for auto, marine and RV, using a weighted average for these devices, is appropriate for ensuring that all of these devices are energy efficient.
2.39	The proposed energy efficiency standards are grouped in an insufficiently small number of categories. The technological assessment in the CASE report assumes that all chargers will become "fast chargers" when such a feature is not necessary, nor would this provide the value to the consumer for most consumer products applications. The assumption seems to be that "somehow, somewhere, someone will invent a product"-it is not a technological assessment. Should the Energy Commission continue with its proposed standards, they should be set based on what is available in each product class today, and not based on what Ecos Consulting speculates will be available in the future.	The energy allowance provided for regular battery chargers is divided into four categories respective to battery capacity and is available in Table W-2, Section 1605.3, subd. (w), of the Standards. Special consideration is granted to backup battery chargers and inductive chargers. Large battery charger systems also have their own standards. These categories are cost- effective, technologically feasible, and will save energy.[110] Having more specific categories would not be less burdensome or more effective. While the Commission certainly looked at technologies applied within specific product types, the Commission chose to develop broad performance-based standards to encourage the transfer of innovative technologies from one product area to another. The CASE Report, the Preliminary TSD, and the Final Staff Report discuss many approaches applicable across multiple product types to improve energy efficiency.[111] It is based on available battery technologies in many products currently on the market. The “intelligent” controls present in fast chargers transitions these products into a lower power state to prevent damage to the battery. The technological feasibility to transition to this low power state applies to slow chargers as well. The technology does not need to be invented, and the Final Staff Report at page 24 cites recommendations by battery charger manufacturers for termination of charge even for slow chargers.

[110] Final Staff Report, at pp. 11, 13, 17.
[111] CASE Report, at pp. 20-22; Preliminary TSD, at p. 4-3; Final Staff Report, at pp. 17-25.

3.5, 54.5	Bose Corporation urges the Energy Commission to partition battery capacities ranges and modify limits to better align with real-world operating conditions for varying powers capacities.	The Energy Commission addressed the issue of fixed losses by combining the maintenance and no battery power modes into one requirement. Energy allowance for battery chargers is divided into four categories of battery capacity and is available in Table W-2, Section 1605.3, subd. (w), of the Standards. The energy allowance was assigned according to the technologies sold in the market via the analysis in the Final Staff Report.[112] The result is a continuous small battery charger system standard across the full range of products. The first segment is for very small capacity batteries and is a flat line based on requests by Wahl Clipper and the Association of Home Appliance Manufacturers (AHAM). The standard then follows a sliding scale from 2.5 Wh to 100 Wh, and flattens again at the 100 Wh and 1000 Wh capacities. These new flattened levels align better with the levels proposed in the Preliminary TSD "improved efficiency" level rather than its "baseline efficiency" level. Bose's proposal is less stringent than the adopted regulations, and thus would decrease the energy savings accomplished by the standards. Therefore the alternate proposal is less efficacious at achieving the energy-conservation requirements of Public Resources Code section 25402, subdivision (c)(1).
4.2b, 4.14, 5.1, 45.2	The regulations should allow variability in performance among devices in a production run, especially for very low power devices, to ensure manufacturers can meet margins.	CTIA and others are essentially requesting that the standards be written as design standards, rather than production standards, to in effect allow poor production quality control to excuse an undefined percentage of battery charger systems that fail to meet the standards. The Commission set the standards at levels that are feasible and cost effective, as demonstrated in the Final Staff Report. The standards apply uniformly as minimum thresholds that all products must meet. Manufacturers must design their products and their manufacturing processes to ensure all their products meet the standards. For example, changes can be made to the charge control circuitry to replace high tolerance components with low tolerance components to help address the variability issue. The adopted regulations can be met using simple and common technologies and designs, as described in the Technical Feasibility section (pages 17-26) of the Final Staff Report. Alternatively, manufacturers can avoid variability issues by developing battery charger products that are slightly more efficient, considering their manufacturing variability, than the bare minimum performance required by the regulations. Allowing for an unspecified number of products to fail to meet the standard would reduce the potential energy savings from the standards.

Maintenance Standard Level

13.1	To accommodate considerations of integration of the battery and AC circuitry, energy consumption of non-battery functions in off mode, and manufacturing capacities, ITI recommended the following changes:	Energy consumption by non-battery charging functions can be reduced for purposes of demonstrating compliance with the standards using the procedures in the test method which allow disabling such functions during the test, rather than by altering the proposed standard. The proposed standards levels for the no battery mode are based on the ENERGY STAR criteria. However, the test procedure for ENERGY STAR products is different than the federal test procedure. It does not account for active mode. Changes to the proposed energy efficiency standard or the test method could significantly decrease the expected energy savings from the standards.

[112]Final Staff Report, pp. 29, 36-37.

	- Maintenance and no-battery mode power to 1.2W for devices with Eb<=100Whrs - 24hour maintenance limit to 20+1.6Eb for devices with Eb<=50Whrs Alternatively, the standards should include a sliding scale relative to the battery capacity (Eb). The suggested standard would represent an over 50% reduction in power for the population of devices considered in the 2009 ENERGY STAR data.	The Commission has found the adopted regulations to be cost effective and feasible. The alternate proposal presented in this comment would be less effective at reducing energy consumption because of the less stringent standards and would therefore be less effective at meeting Public Resources Code section 25402, subdivision (c)(1).

Uninterruptible Power Supply (UPS) Systems

22.1b, 4.20, 4.21, 56.9	Uninterruptible power supply (UPS) systems are, in function, not battery charger systems. They are used to provide power instantaneously in the event of unexpected power loss, by monitoring line voltage into the device. Currently, systems on the market do not meet the standard, because of the under-voltage correction capability and other functions. The systems	Schneider and other commenters are concerned about non-battery charging features (i.e. the under-voltage system) that may be turned off during testing to determine compliance with the standards. This can be accomplished a number of ways, including by designing the under–voltage system with a switch to turn off during testing.[113] In addition, the allowances that are included in the standard can be used to accommodate standby levels of other non-battery charger functions. The Preliminary TSD and Final Staff Report also show it is feasible to make compliant UPS systems.[114]

[113] *See also* Foster-Porter & Denkenberger, Codes and Standards Enhancement Initiative Comment Letter in Response to October 7, 2011, 45-Day Language for Battery Charger System Energy Efficiency Standards, Nov. 21, 2011, Comment no. 22, at p. 2, Comment p. 0000331 [also responding to this comment and providing additional means of compliance] (hereafter CASE 45-Day Comment Letter).
[114] Preliminary TSD, at p. 5-147; *id.*, at Appendix 5-B, under "Test Results" (unit ID # 729.2.1 tested as compliant); Final Staff Report, at pp. 25 (technological feasibility of UPS systems), 33 ("emergency systems" under Table A-2). *See also* CASE Report, at p. 25 (battery backup system for emergency exit sign tested as compliant).

	do not protect against overvoltage conditions. There is a gap between the categories within the IEC document. These systems should be exempt.	
47.1, 34.1, 34.2, 56.3, 56.4, 56.10	NEMA recommends changing the test method as described in the regulations for uninterruptible power supplies because they perform other functions than charging batteries, and are not intended to be operated without a battery, unlike a battery charger system.	The recommendation would require a change in the required test method. The Commission adopted the federal test procedure for all small battery charger systems and is preempted from requiring other test methods for consumer uninterruptible power supplies. Further, the data and assumptions used to draft the proposed standards, energy savings, and cost effectiveness are based upon results from this test methodology, which is different from that proposed by NEMA. The federal test procedure applicable to uninterruptible power supplies recognizes that some battery charger systems include additional functionality and contains methodology for minimizing the energy impacts of these functions.[115]
1.2, 4.18b, 56.12	All UPS with output Voltage Regulating Transformers or at least VFD UPS capable only of correcting under-voltage should be excluded from the regulations.	While some types of uninterruptible power supplies warranted exemption (i.e., voltage independent or voltage and frequency independent products), those with output Voltage Regulating Transformers and Voltage and Frequency Dependent ("VFD") capable only of correcting under-voltage did not warrant exemption. Such uninterruptible power supplies behave in ways similar to other small battery chargers.[116] The uninterruptible power supplies exempted from the standards, as identified in section 1601, subd. (w), do not,[117] and therefore were outside the scope of the research and analysis for this rulemaking.
4.18c, 52.7e, 56.1	Although the Energy Commission has shown one data point of an uninterruptible power supply system that already meets the proposed standards, we have been unable to identify any in the market.	In addition to the data point shown in the Final Staff Report, the Preliminary TSD identifies a product (ID No. 729.2.1) that complies with the proposed standard.[118] In addition, the CASE Report shows the results of a test for a battery backup system (which is similar to non-exempt uninterruptible power supplies as described above) for an emergency exit sign, and found it to comply with the standard. Both of these products were taken and tested from the market of available uninterruptible power supplies and backup battery systems, and therefore help demonstrate the technological feasibility of compliance for uninterruptible power supplies.
1.4, 4.19, 4.21, 52.8, 52.10, 56.14	The effective date for consumer UPS should be changed to July 1, 2014, to give manufacturers sufficient	The Energy Commission does not find technological support in its record for extending the effective date of February 1, 2013, for consumer UPS systems. The options for complying with the proposed standards are already established.[119] Specifically, the necessary electronic components to make modifications that will meet the standards (i.e. switches and sensors, more efficient power supplies) are off-the-shelf, inexpensive

[115] *See* 10 C.F.R. Part 430, Subpart B, Appendix Y, § 4.4(c).
[116] Final Staff Report, at p. 25; CASE 45-Day Comment Letter, at pp. 5-7, Comment pp. 0000334-336.
[117] Initial Statement of Reasons, at pp. 2-3.
[118] Preliminary TSD, Appendix 5-B (under "Test Results").
[119] For established options, see Final Staff Report, at p. 25; EPRI Battery Charger Technical Primer, at p. 7.

	time to comply with the new standards.	technologies. In addition, two product tear downs demonstrated that the necessary components can be included in existing charge control circuitry, and are small enough to be included in a wide variety of products, including consumer UPS, without having to change the mold for product housings or redesign the product itself.[120] Therefore compliance does not require a lengthy redesign of the product. In addition, manufacturers have been aware that this standard was under consideration by the Energy Commission since 2008.[121] The 45-day language was available as early as October 7, 2011, and final language was adopted on January 12, 2012, with an effective date in February 2013, giving manufacturers more than a year to comply. Therefore, manufacturers have had ample time to anticipate and plan for possible design changes associated with a battery charger efficiency standard.
1.3, 52.9, 52.10, 56.13	Maintenance mode requirement for VFD UPS without output Voltage Regulating Transformers should be changed to 1.8 + 0.0021 x Eb Watts. VFD UPS with output Voltage Regulating Transformers should be changed to 3.8 + 0.0021 x Eb Watts.	The suggested changes in the comments would decrease the stringency of the standard, thereby reducing energy savings and permitting inefficient systems to remain in the market. The suggested alternative therefore is not as effective at reducing energy consumption as the proposed standard, which is cost-effective and technologically feasible.
1.5	Because uninterruptible power supplies almost never discharge and need to keep batteries at 100% capacity at all times, they need to constantly float charge. Therefore, the only requirement for UPS should be that (Pmaint - Pnobatt) < A + B x Eb. A and B will have to be determined by testing some uninterruptible power supplies and batteries.	The commenter's suggested standard would require the Energy Commission to set a standard for and measure no battery mode. The Energy Commission lacks any data or information related to no battery mode power for uninterruptible power supplies to support such a standard, and the commenter does not provide sufficient information to support a no battery mode. This lack of data is because uninterruptible power supplies are rarely in no battery mode, nor are they proposed to be regulated in no battery mode.[122] Moreover, the Commission is also preempted from adopting test procedures different from the federal test procedure to address the potential issues with measuring the no battery mode of consumer uninterruptible power supplies.

[120] Ecos March 3rd Presentation, slide 31; March 3rd Workshop Tr., at pp. 127-133.
[121] *See* CASE 45-Day Comment Letter, at p. 2, Comment p. 0000331 [timeline of the development of battery charger standards].
[122] *See* Final Staff Report, at pp. 30, 35, Table A-4.

1.5, 56.15	APC by Schneider Electric recommends changes to the test procedure to be run with the output off or on at the manufacturer's choosing.	Test methods for consumer battery charger systems, which include uninterruptible power supplies, are established under federal law and California is preempted from making any changes to the federal test procedure.[123] Although the Energy Commission is not preempted from establishing or making changes to test methods for non-consumer battery charger systems, the Commission declined to make such changes to ensure consistent testing between products that are held to the same standards.
56.2, 56.5, 56.11	We measure many additional systems which we believe represent more than 50% of the market space. Of those systems we measured none that have the attribute of the single system that the rulemaking is written around and in fact are double or more of the proposed limit. The rulemaking assumes that all battery chargers are equal, regardless of the purpose of the equipment. This is not the case, and insufficient attention has been focused upon the differences in the marketplace of technology deployed across the equipment identified as containing battery chargers, such as uninterruptible power supply systems. Even though APC by Schneider Electric products are among the most efficient in the industry today; they all would be excluded under the	Schneider presents additional test results for their products and competitive products, none of which comply with the standards as shown by the line drawn on the graph presented with the comment to represent the adopted standards. One particular product with additional functionality is particularly far from compliance. However, we note that the x-axis of the data provided is incorrect as the regulations scale by battery capacity, and not an uninterruptible power supply's output power rating. APC by Schneider Electric argues that differences in technology and products should be incorporated into the standards. However the test procedure is specifically designed to minimize those differences and distill them down to differences in battery charging efficiency. Indeed, some products already comply with the standards (see responses to comment nos. 4.18c, 52.7e, and 56.1). Further, readily available, cost effective, off-the shelf improvements are available to improve the efficiency and maintenance mode power of battery charger systems, including uninterruptible power supplies.[124] As described by APC by Schneider in its comments the additional functionality of uninterruptible power supplies can increase the maintenance power consumption measured from the test procedure if the functionality is not disabled, disconnected or minimized. Compliance for the products tested and presented by APC by Schneider Electric may be accomplished by limiting the measurement of these features as allowed by the test procedure or by making the cost-effective and technologically feasible design changes described in the documents relied upon and referenced above.

[123] 10 C.F.R. Part 430, Subpart B, Appendix Y.
[124] Preliminary TSD, pp. 5-145 and 5-146; Final Staff Report, pp. 13-26

	rules as currently proposed (based on preliminary in house testing). Our internal evaluations of competitive products indicate that our products are not unique in this regard.	
56.7	Tradeoffs to uninterruptible power supply system design to optimize battery charger performance may cause the supplies to be less efficient with the output on, resulting in a counterproductive increase in energy consumption.	As the test procedure differs from real-world usage it becomes vulnerable to manufacturers designing to the test with differences in the performance in practical operation. The Commission is preempted from altering the test procedure for the consumer uninterruptible power supplies like those that APC by Schneider Electric manufactures. The Commission adopted the federal test procedure that balances testing battery charger systems to simulate real world use and limiting the measurement of non-battery charging functions. This was necessary to adopt broadly applicable battery charger standards.
56.8	The battery charger and battery circuitry is not in the direct path of power. However, other component such as filters and surge suppressors are. What this means practically is that measuring the battery charger components outside the influence or control of other components is an unreasonable burden on the design for uninterruptible power supply systems.	The diagram provided by APC by Schneider Electric shows the battery charger system to be in parallel and isolated from the surge suppressor and filter. If the output is not connected to a load, the losses across the surge suppressor and filter should be negligible as no current will flow through that path. This is particularly true if the transfer switch is set to the battery charger pathway. Since, per the test method, there will be no end use load driving power through the “direct path of power” the losses should not cause products to consume more energy or cause products to not comply with the standards.

Emergency Lighting

22.3a, 14.1, 14.3, 14.5, 31.1,	NEMA requests that emergency lighting products be defined and exempted	NEMA has not provided adequate justification, evidence or supporting data for its proposed exemption. Creating an exception for emergency lighting and equipment covered by UL 924 or NFPA 101 § 7.9 is not warranted as the battery charger system regulations do not conflict with those standards. UL 924 and the NFPA standards do

4.29	from the battery charger system requirements. Emergency lighting is subject to consensus performance standards for battery charging and capacity, to meet requirements for life safety and illumination under emergency conditions. These consensus standards include Underwriters Laboratories (UL) safety standard 924 and National Fire Protection Association (NFPA) 101 Life Safety Code § 7.9. Battery charger systems cannot meet these safety-based standards if they also must meet the efficiency standard. NEMA proposes specific wording changes to effectuate these comments. The investor-owned utilities' codes and standards enhancement program supports the regulations, and opposes exempting emergency lighting from the standards.	not address charging efficiency, or contain any criteria (such as requiring trickle charging) that conflicts with the efficiency standard.[125] By using technologies readily available for other battery chargers such as switch mode power supplies and hysteresis charging, batteries can be maintained at full performance with significantly less energy use while also meeting specifications required under UL 924.[126] The maximum maintenance power for backup battery charger systems scales with battery size so that larger battery capacity emergency egress lighting systems can also meet the proposed standard. NEMA's proposal would narrow the proposed regulations (thereby reducing energy savings by not resulting in more efficient products) by including emergency lighting under the exemption for illuminated exit signs. The illuminated exit sign exemption was provided because federal efficiency regulations preempt California standards for illuminated exit signs. This exemption also applies to combination battery charger products containing an exit sign and egress lighting as a single unit because they are "used to charge a battery or batteries of an illuminated exit sign." However, federal regulations do not preempt state regulations for egress lighting more generally. The Energy Commission includes emergency lighting (except as described above) in the scope of its regulations because the energy efficiency improvements to emergency backup lighting are cost-effective with a net unit savings of $7.48 per unit.[127] In addition, the energy efficiency improvements to emergency backup lighting are technologically feasible.[128] It should also be noted that Comment No. 22 is a letter of support for the regulations, responding to these and other concerns and objections.

[125] Foster-Porter & Denkenberger, Codes and Standards Enhancement Initiative, Comment Letter in Response to December 14, 2011, 15-Day Language for Battery Charger System Energy Efficiency Standards, Jan. 3, 2012, at p. 3, comment no. 51, p. 0000524 (hereafter CASE 15-Day Comment Letter).
[126] *See* CASE 15-Day Comment Letter, pp. 2-4, Comment pp. 0000524-527.
[127] Final Staff Report, at p. 39, Table A-7.
[128] Final Staff Report, at pp. 17-25; CASE Report, at p. 35.

3.5, 6.1, 6.2, 6.6, 6.7a, 6.11a,, 6.11b, 52.31, 52.31a	The record does not support the determinations that the standards are technologically feasible or cost-effective for emergency lighting products. The confidential data submitted by Philips in opposition to the standards is for one product that does not meet the standards. The record does not show that the other battery charger system technologies which it is contended are suitable for emergency lighting applications can be used to meet the standards, where emergency lighting systems must meet very stringent and exacting performance criteria. By giving emergency lighting products five years to comply, and staff has asserted the time is given to allow manufacturers to develop compliant products, the Commission concedes that the standards are not technologically feasible. The Commission's Final Staff	The data on which the Energy Commission relies is more than sufficient to support its findings on technological feasibility and cost-effectiveness of the efficiency standards for emergency lighting products: TECHNOLOGICAL FEASIBILITY The Energy Commission has analyzed several approaches to reducing power consumption using technologically feasible means.[129] For example, the Preliminary TSD analyzed backup power supplies which perform the same function as emergency lighting backup power supplies that provide continuous power in the event that the main supply is corrupted or interrupted.[130] The improvements to efficiency are generic and applicable across the wide range of chargers. Emergency lighting technologies are similar to other standby and backup battery supplies discussed in the Final Staff Report. Manufacturers can improve the efficiency of these products by simply replacing an inefficient power supply with a more efficient supply, without affecting the end-use, here, the emergency lighting.[131] The Final Staff Report does identify several technology options in various price ranges available to manufacturers that they can use to comply with the adopted regulation, including options specific to backup-battery charging systems such as intermittent charging for nickel metal-hydride batteries.[132] During the pre-rulemaking phase of the proceeding, the Commission examined the data used in the CASE Report[133] which included full efficiency test data on one emergency egress system, and examined the design and application of two other systems. From the test and examinations, the Commission concluded that the technologies were very similar to other battery charger systems also covered by the scope of the proposed standards, and that technologies found in other non-emergency egress markets were transferable to these systems. Further, technological solutions to reduce maintenance power are available from many component suppliers. In addition to the above, the Commission reviewed confidential data provided by Philips. The data represented a single class of non-compliant products and examples of expensive improvements. This information does not negate substantial evidence in the record showing that there are products that can and do comply, and inexpensive ways to achieve compliance. Therefore, the Commission concluded that there are viable technological solutions to bring this class of product into compliance using inexpensive, existing technologies. Furthermore, bringing emergency egress lighting battery charger systems into compliance does not affect the performance of these products. Specifically, the standard does not impact the type, amount, or quality of the light used with emergency egress systems. Instead, it only ensures that the battery used to power the light in the event of an outage is maintained in an efficient way.

[129] Final Staff Report, at pp. 13-26.; CASE 45-Day Comment Letter, pp. 5-7, comment pp. 0000334-336; CASE Report, at pp. 20-22.
[130] Preliminary TSD, at pp. 5-139 through 5-146.
[131] CASE 45-Day Comment Letter, at p. 6, Comment p. 0000335.
[132] Final Staff Report, at pp. 24 (intermittent charging), 17-26 (other solutions).
[133] CASE Report, at passim (as "emergency backup lighting").

	Report does not discuss the technological feasibility of batteries or chargers used in an emergency lighting setting.	Regarding the effective date for non-consumer chargers, Philips incorrectly assumes that non-consumer products were given five years to comply because the Energy Commission could not demonstrate technological feasibility or cost effectiveness for these classes of systems. As the Commission has previously clarified for Philips, the fact that non-consumer products have five years to comply does not establish that Energy Commission failed to make the finding required by the statute. The Energy Commission Staff Report makes those findings and documents that these systems can cost effectively and feasibly comply with standard. COST-EFFECTIVENESS (ECONOMIC FEASIBILITY) Contrary to the commenters' unsupported assertions, extensive analyses throughout the Final Staff Report, the CASE Report and the Preliminary TSD reveal that the proposed standards for emergency lighting products are economically feasible and cost effective.[134] This is based on the estimated stock and sales, compliance rates, design life, duty cycle, baseline energy use, compliant energy use, and costs and savings estimated for emergency back-up lighting.[135] Therefore, the Energy Commission specifically looked at emergency lighting systems in evaluating the cost-effectiveness of the regulations, and found that the regulations were cost-effective for those systems.[136]
14.4	The proposed emergency lighting standards would only decrease energy usage by .0146% per year when compared with California's overall usage, and therefore does not meet the requirements of Public Resources Code section 25402, subdivision (c), which only allows regulation of appliances that use a "significant amount of energy" on a statewide basis.	The Energy Commission's adopted battery charger standards incorporate numerous products that, individually, use a relatively small amount of energy but, in the aggregate, consume a significant amount of energy on a statewide basis. Here, the Commission calculated that savings from emergency lighting at full compliance are 33.58 GWh per year, while the Commission calculated that the statewide energy savings resulting from the entire scope of the regulations is 2,187 GWh per year.[137] The Energy Commission has found this to be a significant amount of energy.[138]
4.5, 6.2	Because the Department of Energy rulemaking does not cover emergency lighting	While the federal rulemaking on Consumer Battery Charger Systems and External Power Supplies does not propose to regulate emergency lighting products as a class or non-consumer battery charger systems, it does propose to regulate, and therefore evaluated, backup battery chargers and uninterruptible power supplies, which

[134] Final Staff Report, at pp. 39, Table A-7; Preliminary TSD, at p. 5-147; CASE Report, at 39 (savings) and 41-45 (incremental cost and lifetime benefits).
[135] Final Staff Report, at pp. 32-39, Tables A-1 through A-7; CASE Report, at pp. 30-31, 32-34, 35, 38-40, 41-46.
[136] Final Staff Report, at p. 39, Table A-7.
[137] Final Staff Report, at pp. 11, 39, Table A-7.
[138] Notice of Proposed Action (Oct. 7, 2011), at p. 19; Final Staff Report, at pp. 8, 11-13; Order Adopting Regulations and Directing Additional Rulemaking Activities, Order No. 12-0112-12, January 12, 2012 (Adoption Order), p. 3.

	products, the record of the federal rulemaking does not provide data relevant to these standards regarding those products. The federal data is limited to that for consumer products, so it is not relevant to support standards for non-consumer products.	are similar to those used in non-consumer emergency lighting systems. Therefore, the Department of Energy data is relevant to the development of state regulations related to backup battery systems and uninterruptible power supplies, including those used to power emergency lighting systems.
6.3, 6.4, 6.5a	The CASE Report is flawed because it only looked at one low end product which emits very little light and is used in off-shore applications. This category of products comprises dozens designed to be used in a wide variety of environments and applications including parking decks, open air warehouses, hazardous locations and manufacturing facilities. This standard, which will only allow low end products to enter the market, will result in increased costs to Californians.	The commenter confuses the battery charger system with the end-use product's application. The standards do not impact the application of the battery charger system. Both the CASE Report and the Preliminary TSD examined a range of battery charger systems, from high- to low-end.[139] These studies found that the battery charger systems could be cost-effectively modified, and that such modifications were technologically feasible. Moreover, while the commenter asserts that the product is "low-end" because of the limited light output, the light output was not relevant to the evaluation of the battery charger system. Indeed, the efficient and low cost battery charger system could be used with a higher-end light without affecting the system's ability to meet the standards.
6.3a	The CASE Report makes a critical mistake, repeated by the Energy Commission Staff Report, in focusing on energy used in individual products rather than energy needed to meet code requirements.	The commenter confuses the performance of the end-use product (the energy needed to meet code requirements) with the performance of the battery charger system (the energy used in the products). Specifically, the efficiency standard does not impact the type, amount, or quality of the light used with emergency lighting products. Instead, it only ensures that the battery used to power the light in the event of an outage is maintained in an efficient way. In other words, efficient battery charger systems are compatible with both high performance and low performance light fixtures.

[139] Preliminary TSD, 5-139 through 5-146; CASE Report, pp. 20-22.

6.5	The proposed standard ignores the way in which various battery chemistries are used to accommodate varying ambient temperature conditions, which can have negative effects on batteries. The proposed standard thereby limits the capacity ratings of emergency lighting equipment, which will result in products with inferior light output that require more individual pieces of equipment to provide adequate emergency egress lighting in accordance with the Federal Codes.	The proposed standard is technology neutral and based on the feasibility and cost-effectiveness criteria. Battery charger efficiencies can be obtained without altering the operation or diminishing the capability of meeting federal performance requirements for emergency lighting. The regulations do not make prescriptive requirements for battery chemistry or battery capacity. The Energy Commission has identified technological solutions to comply with the regulations that can apply to multiple battery chemistries.[140] The adopted regulations also provide large allowances in the standard to maintain a fully charged battery, and these fully charged batteries will be able to light the emergency exit in case of power failure.[141] The standard scaled with battery capacity, so it can be met if a large battery is required to be able to provide sufficient power at hostile temperatures. Thus, the proposed standards will improve the efficiency of the battery-charging process without negatively affecting product performance. Further the federal test procedure dictates an ambient temperature of 15-25 degrees Celsius (59-77 degrees Fahrenheit) on new products and batteries (10 C.F.R., Part 430, Subpart B, Appendix Y, §§ 3.3 and 4.2) and therefore special charge profiles for extreme heat and cold are not tested. Nothing in the record demonstrates that a battery charger system that meets the standard according to the test method at normal indoor temperatures would prevent an emergency lighting system from functioning as required under emergency-situation conditions and temperatures.
6.7a	The base demand of a nickel cadmium battery, with no other portion of the equipment electronics in play, would easily surpass the charging limitations of the proposed regulations.	The "base demand" described in the comment letter is discussed as self-discharge in the Final Staff Report.[142] However, this trickle charging does not need to occur immediately after a charge cycle as battery self-discharge in nickel chemistries is a long-term battery storage issue. The citation in the Final Staff Report points to a battery charger manufacturer (Panasonic) handbook for its nickel metal-hydride batteries where it recommends intermittent charging specifically for emergency back-up power applications.[143] Maintenance mode, the only regulated characteristic for back-up power supplies per section 1605.3, subd. (w)(4) of the adopted regulations, is measured directly after charging a depleted battery. Thus, in an intermittent charge scheme the maintenance mode power requirement for nickel chemistry batteries after a full charge is zero and therefore not affected by the standard. Using an intermittent charge scheme is one of many feasible compliance paths for emergency lighting equipment using nickel cadmium batteries.[144]
6.9	Increasing the internal system voltage to meet the efficiency standards would require additional losses in order to reduce the voltages being	Increasing the internal system voltage was only one suggested compliance path of several available to meet the standards for emergency lighting equipment. The Final Staff Report, EPRI Battery Charger Technical Primer, and CASE Report identify other cost effective and technologically feasible compliance paths that manufacturers could use to meet the standards for emergency lighting equipment.[145] For example, battery sensing circuitry can be used to implement hysteresis and other schemes to lower maintenance mode power, and can be part of a

[140] Final Staff Report, at pp. 17-21.
[141] CASE 45-Day Comment Letter, at p. 7, Comment p. 0000336.
[142] Final Staff Report, at p. 24.
[143] Final Staff Report, at p. 24, n. 43 (referring to the *Panasonic Nickel Metal Hydride Batteries Technical Handbook*, at p. 18).
[144] Final Staff Report, at p. 22; *see also* Preliminary TSD, at pp. 5-145-146.
[145] Final Staff Report, at p. 17-26; EPRI Battery Charger Technical Primer, at pp. 24-29; CASE Report, at pp. 20-22.

	delivered to the battery assembly. This is because the system voltages for Emergency Lighting equipment are specifically designed for the VDC rating of the battery systems being charged, i.e. 6, 12 or 24 VDC battery backup systems.	strategy to comply with the proposed standards. In addition, there are a wide variety of design approaches to enhance the efficiency of battery charger systems, including backup battery systems. The adopted regulations are non-prescriptive and give manufacturers the freedom to choose design changes to their product that they deem appropriate in reaching compliance.
4.6, 6.4a, 6.7, 6.8, 6.10, 6.10a	Reducing charge currents to meet the efficiency standards can and will result in product becoming noncompliant with UL standard 924. Emergency lighting equipment cannot have a "no battery mode" without being out of compliance with safety regulations. Separately, the Energy Commission has not evaluated the other codes that currently apply to emergency lighting, which would increase costs and energy use.	UL 924 does not address energy efficiency or contain any criteria that conflicts with the efficiency standard. By using technologies readily available for other battery chargers such as switch mode power supplies and hysteresis charging, batteries can be maintained at full performance with significantly less energy use while also meeting specifications required under UL 924.[146] The standards do not apply to “no battery mode” for uninterruptable power supplies or backup battery charger systems. These systems always operate in “maintenance mode” and rarely in “no battery” or “recharging” mode. The standards regulate the maximum amount of electricity used by regulated battery chargers in a 24-hour test, not the electricity used by the product in its operation. Therefore, the standards do not expressly conflict with or restrict compliance with UL 924 safety requirements. The Commission researched codes affecting emergency lighting and found no barriers to compliance with the adopted regulations. Other comments filed in this proceeding demonstrate that emergency lighting battery charger systems are similar to other battery charger systems and that both can comply with the efficiency standards.[147] The Commission also considered existing regulations for emergency exit signs (i.e., federal efficiency regulations that preempt California’s) and therefore removed these products from the scope of the regulations.[148]
6.14	The Energy Commission Staff Report’s analysis of energy and cost savings for emergency lighting is fundamentally flawed because it relies on	The commenter argues that the stock and sales of emergency-lighting equipment should be lower to account for the exemption of certain products from the regulations. However the amount of stock and sales would not affect the per unit cost effectiveness of these products and would therefore not impact the benefit to Californians who purchase such equipment. As seen in Table A-7 the unit incremental benefit for efficient emergency backup lighting is $7.48 per unit, which is a substantial savings to the purchaser.[149] Further, reducing statewide energy use benefits the environment and electrical system reliability, furthering the policies of the State.[150] Thus, the

[146] *See* CASE 15-Day Comment Letter, pp. 2-4, Comment pp. 0000523-525.
[147] CASE 45-Day Comment Letter, p. 6, Comment p. 0000335.
[148] Initial Statement of Reasons, at p. 3.
[149] Final Staff Report, at p. 39, Table A-7.
[150] Pub. Resources Code, §§ 25001 and 25002.

	inaccurate costs and savings data because they do not reflect the removal of products (illuminated exit signs, voltage and frequency independent uninterruptible power supplies). Without these products, the Energy Commission cannot show that the regulations for emergency-lighting equipment benefit the consumer.	cost-effectiveness data does not rely on the exempted products, although the CASE Report does examine an illuminated exit sign to demonstrate that it is technologically feasible (and at low cost) to comply with the adopted standards.
6.11	Existing emergency lighting does not meet the proposed maintenance mode power standard because of inherent performance attributes and battery chemistries used.	As described in the responses to the above comments, the Energy Commission has identified technologically feasible and cost-effective compliance paths for battery chargers used with emergency lighting products. In addition, the Energy Commission has provided a later compliance date (January 1, 2017) in its 15-day language, section 1605.3(w)(4), for emergency lighting systems (which are generally non-consumer backup battery systems) to facilitate incorporating these technologies into the emergency lighting form factor.
6.12, 6.13, 6.16a, 52.32	The proposal is potentially dangerous for occupancy safety. The Energy Commission should take greater efforts with emergency lighting than with other products to ensure that its regulations will not have an adverse effect on life safety.	Emergency lighting can meet the adopted standards without sacrificing safety. As described above, battery charger efficiencies can be accomplished without affecting the operational and federal performance requirements associated with emergency lighting. This standard does not impact the type, amount, or quality of the light used with emergency egress applications, and instead only ensures that the battery used to power the light in the event of an outage is maintained in an efficient way. All available battery chemistries can meet the regulation and there are various technological solutions available to the manufacturer to comply with the regulations. Second, the regulations for these products do not affect the way that batteries are charged after a power failure, nor the lighting itself, because the regulations for emergency lighting only regulate the energy consumption while the battery is fully charged and the product is connected to a power source (maintenance mode), and is neutral as to the end-use of the battery charger system. Finally, as these products spend nearly all of their time connected to power and in non-emergency scenarios (that is, in “maintenance mode”), it is in this mode, and not emergency scenarios, that efficient improvements are feasible and cost-effective.[151]

[151] *See* Final Staff Report, at Table A-4 (duty cycle for “emergency backup lighting”); CASE Report, at Table 6 (accord); *see also* EPRI Battery Charger Technical Primer, at pp. 17-28 (technological solutions); Final Staff Report, at pp. 17-25 (technological feasibility), Table A-7 (cost-effectiveness).

6.15, 6.15a, 6.15b, 14.2	The scope in Section 1605.1(l) applying to "Emergency Lighting, which is illuminated exit signs, and self-contained lighting controls" appears to combine emergency lighting and illuminated exit signs. This scope is overly broad by failing to distinguish the component technologies of emergency lighting, including luminaires, inverters, and battery charger systems.	The efficiency standards in section 1605.3(l) apply to emergency lighting that is either (1) an illuminated exit sign or (2) a self-contained lighting control. The efficiency standards for battery charger systems (including systems functioning as backup battery chargers or uninterruptible power supplies) are separately regulated, irrespective of whether they are incorporated into emergency lighting. These are located under Section 1605.3(w) of the regulations. The commenter suggests that the Commission should consider each type of emergency lighting as a product class for purposes of these regulations. During the pre-rulemaking phase of the proceeding, the Commission examined the data used in the CASE Report, which included full efficiency test data on an emergency egress system, and examined the design and application of two other systems. From the test and examinations, the Commission concluded that the technologies were very similar to other battery charger systems also covered by the scope of the proposed standards, and that technologies found in other non-emergency egress markets were transferable to these systems. Further, technical solutions to reduce maintenance power are available from many component suppliers.[152] The commenter confuses the performance of the end-use product with the performance of the battery charger system. Specifically, the efficiency standard does not impact the type, amount, or quality of the light used with emergency lighting products. Instead, it only ensures that the battery used to power the light in the event of an outage is maintained in an efficient way. In other words, an efficient battery charger system can be connected to a light fixture designed to meet code requirements.
6.16	The Energy Commission should exempt emergency lighting products from regulation because: a. the CASE report does not consider existing building code requirements for emergency lighting, b. the record lacks support for findings required under the Warren-Alquist Act, and c. exempting emergency lighting is consistent with federal legislation that	The commenter has not provided evidence that emergency lighting systems are a kind of unique application that warrants a separate class of products from other battery charger systems. Rather, the Final Staff Report establishes that the proposed standards are both technologically feasible (see section Technical Feasibility on pages 13-26) and cost effective (see Table A-7 on page 39) for this class of product. The federal legislation to which the commenter refers only extends the time (until 2018) that security or life safety alarm or surveillance systems have to comply with the federal standards; it did not exempt those systems entirely. In addition, that federal legislation does not apply to emergency lighting at all. Further, the Commission has provided additional time to comply, similar to the federal standards. Emergency lighting battery charger systems apply to such products manufactured on or after January 1, 2017. For discussion on considered codes see response to comment nos. 4.6 et cet., and 22.3a et cet. For discussion on energy saving, feasibility, and cost-effectiveness findings, see response to comments no. 3.5 et cet.

[152] Final Staff Report, at pp. 17-25; EPRI Battery Charger Technical Primer, at pp. 17-28.

	exempts security or life safety alarm or surveillance systems from federal external power supply regulations.	
4.35, 11.1	Egress lighting, like exit signs, should be exempt from regulation due to their similar status as Life Safety equipment and because both categories are exempt from federal regulation based on their safety related function. The definition for "Exit Sign" should be expanded to include egress lighting.	The adopted regulations exempt illuminated exit signs from the scope of covered products because federal regulations preempt state regulations for illuminated exit signs. This exemption also applies to combination battery charger products containing an exit sign and egress lighting as a single unit because they are "used to charge a battery or batteries of an illuminated exit sign." However, federal regulations do not preempt state regulations for egress lighting more generally. Therefore, the regulations that would apply to battery charging systems located within egress lighting are different from existing regulations for illuminated exit signs. The Energy Commission includes egress lighting (except as described above) in the scope of its regulations because the energy efficiency improvements to emergency backup lighting, which includes egress lighting, are cost-effective with a net unit savings of $7.48 per unit.[153] In addition, the energy efficiency improvements to emergency backup lighting, including egress lighting, are technologically feasible.[154] The illuminated exit sign exemption was provided because federal efficiency regulations preempt California standards for illuminated exit signs. This exemption also applies to combination battery charger products containing an exit sign and egress lighting as a single unit because they are "used to charge a battery or batteries of an illuminated exit sign." However, federal regulations do not preempt state regulations for egress lighting more generally.

Notebooks, Mobile Computers and Devices

13.4	The regulations will require effectively "migrating" the battery charger system efficiency of notebook devices, regardless of increased functionality or application, to become 25% better than the top 25% of	The standards, which are performance-based, technologically feasible and cost-effective, are not targeted at any particular market share. There are compliant laptop products on the market today according to the data in the Preliminary TSD and data used for the CASE Report.[155] Laptops typically employ lithium ion batteries which are not tolerant of significant maintenance current as described in the Final Staff Report.[156] It is therefore highly feasible to achieve low maintenance mode and no battery mode performance in laptops regardless of 2008 ENERGY STAR data. ITI's comments suggest that compliance is difficult to achieve because of the power draw of non-battery charger

[153] Final Staff Report, at p. 39, Table A-7.
[154] Final Staff Report, at pp. 17-25; CASE Report, at p. 35.
[155] Preliminary TSD, at Appendix 5-B, under "Test Results" (notebook computer ID # 632.2.1 is compliant); CASE Report, at p. 35 (showing that some laptops are compliant with standards that are more stringent than the Commission's adopted standards).
[156] Final Staff Report, at p. 21.

	those devices on the market in 2008.Further, with respect to the availability of market data on which to develop regulations, a full market assessment of this product category was not feasible earlier this year. Commission staff recognized that there were very limited samples to adequately investigate the issues highlighted by the industry. As a result, the industry has utilized design and manufacturing knowledge, internationally recognized engineering practices, and sample data to demonstrate feasible options for these products. The 2008 ENERGY STAR data [for notebook computers] provided demonstrates the variability that exists even for a narrow portion of the market.	functionality. Laptop manufacturers can meet the standards by utilizing efficient power supply functionality and techniques such as turning off the charger once batteries are fully charged.[157] The power consumed due to the additional functionality in laptops can be further reduced using software approaches as described under the adopted test procedure. This can be used to drive down the functionality that is the cause of the high power draw so products can comply with the battery charging system standards.
46.6, 52.22	We believe the efficiency formula remains too strict for mobile computing devices.	The analysis in the Final Staff Report demonstrates that these systems can meet the standard with widely available, inexpensive, off the shelf technologies with the energy allowances currently provided.[158] As stated in response to similar comments, the Commission has identified many mobile computing devices that comply with the adopted regulations in the market today.[159]
4.1a, 7.1, 7.2, 7.3, 12.1, 24.1, 52.7a, 52.22	The limit (standard) or the multiplier for mobile devices of less than 50Whr should be increased because the current limit does not take	The Energy Commission disagrees. The commenter relies on data from the ENERGY STAR for Computers v. 5.0 dataset. This data is inapplicable to the analysis for the adopted regulations because the adopted regulations use different test methods, formulas, and requirements than those used by ENERGY STAR. The data in the CASE Report and the Preliminary TSD apply the appropriate test procedures across all operating modes, and is therefore more relevant to the Commission's analysis.

[157] Final Staff Report, at pp. 17-21.
[158] Final Staff Report, at pp. 17-25.
[159] E.g., Preliminary TSD, at Appendix 5-B, under "Test Results" [units ID #s 630.2.1, 632.2.1, 712.2.1, 735.2.1, 737.2.1, 738.2.1, and 740.2.1 tested compliant].

	into account fixed losses due to added functionality, as these features cannot be "turned off" in test procedures. The 2008 ENERGY STAR data for notebook computers should be taken into account when reviewing the technological feasibility of the standards, even though the data is of narrow scope.	The data provided by the commenter (which was used to develop ENERGY STAR 5.0) is also out of date. A dataset of products available that subsequently certified with ENERGY STAR, and an updated dataset for ENERGY STAR specification 5.2 show better performance in meeting efficiency targets. The Commission investigated this publicly available data (on ENERGY STAR's website) after the close of the comment period and found that these products performed significantly better than those presented in ITI's comment. In addition, the Preliminary TSD provides several examples of products that currently comply with the adopted regulations.[160] Laptop manufacturers can meet the standards by utilizing efficient power supply functionality and techniques such as turning off the charger once batteries are fully charged.[161] The power consumed due to the additional functionality in laptops can be further reduced using software approaches as described under the adopted test procedure. This can be used to drive down the functionality that is the cause of the high power draw so products can comply with the battery charging system standards. The request to increase the allowance for this category of products would reduce the amount of energy savings achieved by the standards.[162] Because the product data and evidence in record demonstrate that the standards are reasonable, feasible, and cost effective,[163] the Energy Commission finds no reason to increase the limit in the regulations to account for added functionality.

Wireless, Inductive, and Loosely-Coupled Charger Systems

22.3b	Tightly-coupled systems, such as those used to charge electric wireless toothbrushes in wet environments, should be subject to a unique standard, in light of the safety considerations such systems are meant to address.	The Energy Commission's proposed regulations include an alternative standard for inductive charging systems due to the unique safety concerns present for those products. Therefore, the comment supports the proposed regulations and does not ask for changes to the proposed regulations.

[160] Preliminary TSD, at Appendix 5-B, under "Test Results" [units ID #s 630.2.1, 632.2.1, 712.2.1, 735.2.1, 737.2.1, 738.2.1, and 740.2.1 tested compliant].
[161] Final Staff Report, at pp. 17-21.
[162] Final Staff Report, at p. 39, Table A-7.
[163] CASE Report, at pp. 20-22, 41-46; Final Staff Report, at pp. 13-26.

6.17, 52.23	The Energy Commission should confirm that charging system elements, such as a base station, are outside the scope of the proposed regulations unless packaged with a receiver.	Under the adopted regulations, a base station, when sold separately from the product containing the charge control circuitry, is not a battery charger system within the scope of this regulation. Rather, a battery charger system is one that includes a power supply, charge control circuitry, and batteries.[164] Therefore, no change is necessary to the regulations.
6.17a, 17.3	Qi products should be exempt from this rulemaking.	Qi products are a type of interoperable loosely coupled inductive power supply.[165] It is not necessary to exempt Qi products from this rulemaking because loosely coupled inductive power supplies, including Qi products or Qi "transmitters", when sold separately from the product containing the charge control circuitry, are not a battery charger system within the scope of this regulation. Rather, a battery charger system is one that includes a power supply, charge control circuitry, and batteries.[166] Therefore, no change is necessary to the regulations.
4.15, 4.29a, 5.4, 7.7, 8.1, 16.1, 16.2, 16.3, 16.4, 16.5, 17.2, 18.1, 18.2, 24.6, 26.6, 26.7, 26.8, 45.4a, 45.5, 46.2, 50.1, 52.7d, 52.18	The Energy Commission should limit the scope of its regulations to tightly-coupled wireless charging systems, and not regulate loosely-coupled wireless charging systems because: a. The Energy Commission did not evaluate loosely-coupled wireless charging systems as they are not on the market yet. b. Regulating loosely-coupled wireless charging systems would stifle innovation. c. Loosely-coupled wireless charging systems provide benefits that cannot be measured solely through	The Energy Commission has determined that no change is necessary. Loosely-coupled inductive power systems, if sold without the product that contains battery charging circuitry, are not within the scope of this regulation.[167] However, should loosely-coupled inductive power systems incorporate charging circuitry or be packaged with a product that contains charging circuitry, then it would be included in the scope of the regulation and be required to meet the efficiency standards for inductive charging systems. The Final Staff Report considers inductive chargers as they currently exist in the market. These systems have a special, less stringent, standard (see 1605.3(w)(4)) because of their unique technological challenges. In considering inductive chargers, the Energy Commission found that compliance with the standards was cost-effective and technologically feasible, as the approaches to improving battery charger system efficiency generally are also applicable to inductive charging systems.[168] The Commission's standards apply broadly to encourage more efficient products and innovations to reach the market on a level playing field, and to encourage efficiency to play a role in initial product design, if the product falls into the defined class of regulated products. The Energy Commission was not able to conduct detailed analyses of "loosely-coupled inductive charging systems" because none yet exist on the market. However, if a product is later sold or offered for sale in California and meets the definitions of a battery charger system as proposed in the adopted regulations, it will have to comply with the standards applicable to others that meet those definitions.

[164] Compare new section 1602, subd. (w), under "Battery Charger System."
[165] "Qi" was the term adopted by the Wireless Power Consortium to identify interoperable wireless charging.
[166] Compare new section 1602, subd. (w), under "Battery Charger System."
[167] Compare new section 1602, subd. (w), under "Battery Charger System."
[168] Final Staff Report, at p. 17-25, 39.

	energy savings. The Energy Commission should exempt loosely-coupled wireless charging systems from the efficiency standards. Overly broad regulation would delay and possibly prevent the future sale of new and useful loosely-coupled wireless charging systems in California.	
6.17	Wireless power standards should be addressed in a separate rulemaking for all products, battery chargers and non battery chargers, to ensure consistency.	The commenter has not provided support to demonstrate that exempting wireless powered products from a battery charger systems rulemaking is warranted. In contrast, the Energy Commission has found that the standards for inductive charging systems are both cost-effective and technologically feasible. [169] Moreover, removing these products from the battery charger standards would result in fewer energy savings, making it a less effective alternative to achieving the purposes of the rulemaking. Wireless power standards for non-battery charger systems are outside the scope of this rulemaking, and therefore no further response is necessary to address that portion of the comment.
17.1, 17.4	The WPC proposes a new test method for measuring efficiency for inductive power supplies.	For inductive power systems that are regulated under these standards, the test method is prescribed by federal regulation for consumer battery chargers or external power supplies, and the Energy Commission is preempted from making changes to those test procedures. (The Energy Commission has not received any evidence regarding non-consumer inductive charger systems, so it is unable to evaluate whether a new test method for such products is appropriate.) Therefore, the Energy Commission has rejected the suggested alternative test method.
28.1	The definition of inductive chargers should be explicitly defined to refer only to tightly-coupled systems of proprietary chargers and receivers sold as an exclusive set (i.e. non-interoperable). Interoperable inductive charging systems should be exempt from regulation.	No change is necessary in response to this comment, as the regulations already cover those products specified by the commenter (tightly-coupled systems and inductive chargers sold with the product containing the charging circuitry); and the regulations do not cover inductive chargers that do not contain charging circuitry and that are sold separately from the product that contains the charging circuitry. However, to the extent that interoperable inductive charging systems contain charging circuitry or are packaged with the product that contains the charging circuitry, the standards in these regulations do apply. The Energy Commission rejects an exemption for such systems, as it would decrease the energy savings realized from the efficiency improvements, and the efficiency standards for such systems are both cost-effective and technologically feasible.[170]

[169] Final Staff Report, at p. 13, 17.
[170] Final Staff Report, at p. 13, 17.

6.18	The inductive charger standard requires that for active charge mode, the limit is "an average of less than 1 W over a 24 hour test period." However, the federal test procedure could last more than 24 hours if full-charge indication is not present. We suggest that the Energy Commission modify the inductive charger standard to align with the federal test procedure.	The Energy Commission made changes to Section 1605.3(w)(3) in 15-Day Language to incorporate the suggested changes by specifying that the alternative standard for inductive chargers (like electric toothbrushes) is: "less than 1 watt in maintenance mode, less than 1 watt in no battery mode, and an average of 1 watt or less *over the duration of the 24-hour charge and maintenance mode test*." (Emphasis added.)

Small Battery Charger Systems

2.14	UL standards (UL 2575) will mandate additional testing and certification requirements for lithium ion battery packs. Because the Commission's regulations will require manufacturers to switch to lithium ion batteries, the additional time for this testing and certification must be considered. Imminent U.S. Department of Transportation shipping specifications for lithium ion batteries will add costs. The Energy Commission must analyze these costs in its cost and payback analysis.	There is no support or evidence provided by stakeholders to justify the claim that manufacturers will be required to change battery chemistry to lithium ion batteries. In contrast, analysis in the Final Staff Report demonstrates that all types of battery chemistries can comply through various technological options that are available to manufacturers at low incremental cost increases that are recovered over the life of the product, without switching battery chemistries.[171] Because the adopted regulations do not require products to switch to lithium ion battery chemistry, it is not necessary to consider additional testing and certification time or increased costs associated with shipping lithium ion batteries in setting the compliance timeline or calculating cost-effectiveness.

[171] Final Staff Report, at pp. 17-21,; *see also* CASE Report, at pp. 20-22.

2.13, 2.15, 2.17, 2.18, 4.27, 21.3	The Energy Commission has not demonstrated that the proposed energy efficiency standards are technologically feasible for nickel cadmium batteries. The proposed regulations require a market shift from Nickel Cadmium to Lithium Ion chemistries, but the Energy Commission has not considered this shift in its cost or payback analysis. The proposed standards fail to consider the charge acceptance of nickel based chemistry cells over the entire charge cycle and the minimum current required for the maintenance portion of the measurement. The Energy Commission's standards would require a Level V (external power supply) efficiency for nickel-based batteries. The Energy Commission's proposed amendments would outlaw nickel-based chemistry chargers, including continuous rate nickel based	There is no support or evidence provided by stakeholders to justify the claim that manufacturers will be required to change battery chemistry. In contrast, analysis in the Final Staff Report demonstrates that all types of battery chemistries can comply through various technological options that are available to manufacturers at low incremental cost increases that are recovered over the life of the product, although the analyses also show that there are many inefficient nickel-based products.[172] Nonetheless, the adopted standards are technology neutral – the Commission is not requiring manufacturers to use a specific battery chemistry, nor do the regulations require the use of level V external power supplies. There are various feasible and cost effective technology options available to manufacturers that can be applied to all types of battery chemistries and charging systems. Although manufacturers could switch to more efficient power supplies (like lithium ion batteries) to meet the standards, they could also use simple, inexpensive charge control systems to comply. The Final Staff Report references a battery charger product teardown and alteration performed by Ecos Consulting on behalf of the investor-owned utilities to demonstrate the technological feasibility and associated efficiency improvement for a nickel-based battery charger.[173] This demonstrates that by incorporating these technologies, nickel-based battery charger systems will be able to meet the standards. Thus, the Final Staff Report demonstrates that the battery charger efficiency levels are cost-effective and feasible for all battery chemistries.[174] Further, the standards for small battery charger systems were revised to remove the Power Factor requirement and combine the Maintenance Mode Power and No Battery Mode Power individual requirements into one overall requirement. This was done to provide greater flexibility to manufacturers in how they allocate power usage allowance in order to meet the standards.[175]

[172] Final Staff Report, at pp. 17-21; *see also* CASE Report, at pp. 20-22. On inefficient nickel-based products, see CASE Report, at pp. 24-25.
[173] Final Staff Report, at p. 23 (referencing Ecos March 3rd Presentation, slides 21-32; March 3rd Workshop Tr., at pp. 127-133 [describing teardowns].
[174] Final Staff Report, at pp. 13, 17, 39.
[175] Final Staff Report, at p. 29.

	chargers.	
2.15, 21.3	The Energy Commission has not demonstrated technological feasibility for nickel-based batteries that exceed 20Wh capacity.	The Energy Commission did not distinguish between the technological feasibility for large nickel batteries (greater than 20Wh) and small nickel batteries (smaller than 20Wh) because the distinction is not relevant. This is because the changes that can be made to improve the efficiency of a large nickel battery charger are as technologically feasible and cost-effective as the improvements to a small nickel battery charger.[176] Nonetheless, the Energy Commission also found that the standards are technologically feasible for large nickel-based batteries, such as a power tool. These types of products can meet the standard with hysteresis charging or other charge control mechanisms. Analysis in the Final Staff Report demonstrated that these changes to the charge control circuitry do not require a redesign of the product's mold or functions.[177] These changes can be made quickly with existing, off the shelf components. In addition, a teardown of a power tool demonstrates that there are ways to improve the efficiency of chargers used in these applications that are cost-effective[178].
2.16	The Energy Commission's proposed amendments neglect a power requirement of nickel-based chemistry due to the secondary recombination reaction that occurs in the sealed cells.	AHAM argues that an inefficient charging process with large energy allowance is needed to maintain the full charge in a nickel-based battery due to its chemistry. This is not true; an efficient pulse charger can do the job at much less power. The Final Staff Report addresses this concept, taking into consideration both constant current and pulse current charge rates.[179]
2.19, 2.20	The Energy Commission should amend its equations for 24-Hour charge and maintenance energy, and maintenance mode and no battery mode, to make it feasible for nickel-based products to meet the standard.	It is not necessary to amend the equations for energy allowance as the comment suggests. The allocated allowance is cost-effective and feasible for all chemistries, as shown by the analysis in the Final Staff Report.[180] Decreasing the stringency of the standards would forego energy savings because it would allow less efficient products to continue to be sold or offered for sale in California, making any change to the equations less effective at meeting the goals of the rulemaking to significantly reduce energy consumption.

[176] Final Staff Report, at pp. 17-25.
[177] Final Staff Report, at p. 23.
[178] Preliminary TSD, at pp. 5-113 through 5-124.
[179] Final Staff Report, at p. 22.
[180] Final Staff Report, at pp. 17-21, 39.

2.19	Increasing the size of the battery in order to meet a standard level is contrary to the Energy Commission's goals. Accordingly, we propose a floor to allow these products to meet the standard.	AHAM suggests that manufacturers of products in the 2.5 Wh to 100 Wh range may comply with the standards by increasing the size of the battery rather than improving the efficiency of the charger. This is not explained or supported with evidence. The standards require increasing the system efficiency as the capacity of the battery increases. The equation in this range of products for 24-hour charge and maintenance energy is 12 + 1.6 x Eb (the energy capacity of the battery, in watt-hours, as measured in according to the test procedure). At the low end of this equation (2.5 Wh) the efficiency is (battery energy stored divided by battery energy consumed) 2.5/16, or 15.6%, whereas at the high end of this equation (100 Wh), is 100/172, or 58.1% . Thus, a larger battery would require better 24-hour efficiency. With improved efficiency, a higher capacity battery used with the same end-use product would result in fewer recharges, with each recharge occurring at a higher efficiency. Therefore, *less* energy would be used overall, contrary to AHAM's assertion. AHAM's proposed alternative would set a 24-hour efficiency level that is less stringent than what the Commission adopted. Because this alternative would reduce energy savings, the Energy Commission rejects this alternative as less effective at achieving the energy saving goals of the regulations.
2.26	We urge the Energy Commission to adopt the Department of Energy's testing approach, as the law requires it to do. But the federal testing approach will discourage some features, such as LED charge status indicators -apart from that of "no battery" mode –that encourage energy saving consumer behavior. The Energy Commission should adopt the federal test procedure, but provide a credit to products that provide features that promote energy-saving behavior.	Allowing a "credit" for products with certain features that may promote energy conservation is not warranted. There is no reliable data or test procedure to quantify the energy savings of the LED feature versus the energy consumption of the LED feature. The proposed alternative would increase energy consumption by allowing products to consume more power with an indeterminate offset from "energy conservation" from given features. The energy allowance provided for battery chargers is sufficient to include the energy used for LED indicator lights; the suggested features may therefore be added to battery charger systems which meet the standards without necessarily causing them to be out of compliance. The Commission therefore rejects the stakeholder proposal.
3.1, 3.2, 3.3, 3.4,	The Commission should revise its test procedure for	Non-battery charging functions that cannot be switched off can be disconnected or otherwise disabled for testing per section 4.4, subdivision (c) of the federal test procedure:

52.7, 54.1, 54.2, 54.3, 54.4,	small battery chargers to account for the problem where a device with a compliant battery charger system is unable to meet the standards because the test procedure fails to account for or allow the power consumption of non-battery charger functions (e.g., internal power supplies, microcontrollers, audio amplifiers) that cannot be shut off during testing and that continue to consume a significant amount of energy in low power mode. These added functionalities are either required by consumer demand or by foreign regulations; some may have a net efficiency gain that is otherwise disincentivized. The standards thus unfairly penalize multi-function battery charger systems by holding them to the same standards as simpler systems.	*If the battery charger takes any physically separate connectors or cables not required for battery charging but associated with its other functionality (such as phone lines, serial or USB connections, Ethernet, cable TV lines, etc.), these connectors or cables shall be left disconnected during the testing.*[181] The federal test procedure preempts California from adopting its own test procedure for consumer battery charger systems; thus, the Commission cannot make changes to these test procedures for consumer battery charger systems as requested. The standards and energy allowances in the adopted regulations are sufficient based on the market analysis and technological feasibility assessment in the Final Staff Report and can be met by complex, multi-function products as well as simple products.[182] For instance, in the Preliminary TSD, cordless phone ID # 664.2.2 complies as well as notebook computer ID # 632.2.1.[183] The NRDC comments demonstrate how even notebook computers, which are at least as complicated as audio products, can comply with the adopted standards.[184] Finally, the analysis of personal audio products in the CASE Report indicates that these multi-function products are "mostly compliant" (although portable electronics and laptops are "rarely compliant," this suggests that some are compliant).[185] The regulation merely requires manufacturers to increase the energy efficiency of appliances with a battery charger system through improvements to power supply or charge circuitry.
13.2	The current testing method assumes that a battery charging system will function	Non-battery charging functions that cannot be switched off can be disconnected or disabled for the purpose of testing. Nonetheless, the adopted regulations include an energy allowance for fixed losses, such as those associated with added functionality.

[181] See federal test procedure, incorporated by reference, 10 C.F.R. Part 430, Subpart B, Appendix Y, § 4.4(c).
[182] Final Staff Report.
[183] Preliminary TSD, at Appendix 5-B, under "Test Results."
[184] NRDC 45-Day Comments, p. 3, comment p. 0000453.
[185] CASE Report, at p. 35, Table 13 [analysis of personal audio products, laptops, and portable electronics].

	while the product is in an "Off" or "Standby" state. Some products will only activate the battery charger in the "On" state where there is significant power being consumed by functions other than the battery charger. The current test method cannot measure the efficiency of the battery charger function embedded in systems such as these.	In addition, the federal test procedure preempts the state from adopting a different test procedure for consumer battery charger systems.[186] For nonconsumer products, the Energy Commission has provided additional time to enable manufacturers to develop ways to isolate functionality in section 1605.3(w)(2)(C). Finally, ITI does not provide any examples of products that would have this problem, making it impossible for the Energy Commission to evaluate whether the products can meet the standards or to determine what changes may be appropriate. Therefore, the Commission did not make any changes to address this comment in its adopted regulations.
40.1	Brother urges the Energy Commission to exclude from the regulations products that contain rechargeable batteries that are incorporated into products to power non-primary product functions during back-up power conditions.	Rechargeable battery systems within these devices can be made compliant using the technologies available to all battery charger systems,[187] or alternative design approaches could be employed to eliminate the need for a battery charger system.[188] In addition, non-battery charging functions that cannot be switched off can be disconnected or otherwise disabled for testing, per the federal test procedure.[189]

Two-Way Radios

27.1	The requirements for two-way radios are not cost-effective, and will only be in effect for a short period of time before being preempted. The duty cycle in Table A-4 is	The duty cycle used for two-way radios in the Final Staff Report only includes commercial two-way radios.[190] Residential two-way radios are subsumed in the category "portable electronics," where the duty cycle is typically much lower.[191] In the category of portable electronics, the incremental cost will be approximately $.40 and a lifetime energy savings $1.71, for a benefit to cost ratio of 2.8.[192] We note that Cobra did not provide any estimates of its costs to comply with the standards, and that an anticipated cost of $0.40 is still cost-effective compared to Cobra's estimate of lifetime energy savings of at minimum $0.68. Therefore, this regulation, across the market, will save the consumer more than it costs.

[186] 10 C.F.R. Part 430, Subpart B, Appendix Y, § 4.4(c).
[187] Final Staff Report, at pp. 17-25.
[188] *See* CASE 15-Day Comment Letter, at p. 4.
[189] 10 C.F.R. Part 430, Subpart B, Appendix Y.
[190] Final Staff Report, at p. 35, Table A-4.
[191] CASE Report, at p. 59, Appendix A; *see also id.*, at p. 35, Table A-4 [showing different duty cycles for the two product classes].
[192] Final Staff Report, p. 39, Table A-7.

	unrealistic for two-way radios. The estimated energy use calculation doesn't consider the sales volume differences between different models. The actual dollar savings of the proposed regulations will be much less than what the commission is projecting. This is a substantial difference between Cobra's numbers and the ones used in the Energy Commission Staff Report to calculate energy savings to the people of California.	Two-way radio standards include both consumer and commercial applications. This particular product category is estimated to have a large commercial market relative to other battery charger systems. Therefore the duty cycles cited are appropriate given this market dynamic. It is unclear how Cobra suggests the assumptions made in the Final Staff Report should be changed relative to their own findings. Final Staff Report calculations and assumptions are accurate and based on information in the CASE Report, Preliminary TSD, and other documents noted in the Initial Statement of Reasons.[193]

FDA Class I Products

4.9a, 43.1	Food and Drug Administration designated Class I products should be excluded from the regulations.	Class II and III products are life safety equipment justifying an exemption. Class I medical products, such as electric toothbrushes, are not critical to the immediate preservation of life, and therefore are not appropriate for exemption on this basis. Further the Commission has investigated the efficiencies of such devices and determined that standards are cost effective and feasible.[194]

Communications Equipment

46.3, 7.8, 52.19, 5.5, 5.6, 24.7, 45.5b,	Network backup batteries may not enter sleep mode and continue to fulfill their function of being available	The regulations exempt battery chargers with input that is three phase of line-to-line 300 volts root mean square or more and are designed for a stationary power application; and systems that are voltage independent or voltage and frequency independent uninterruptible power supplies as defined by International Electrotechnical Commission (IEC) 62040.3 ed.2.0.[195] If "network backup batteries" or "critical communications equipment" use

[193] Initial Statement of Reasons, pp. 12-13.
[194] Final Staff Report, at p. 39, Table A-7 (under "Personal Care").
[195] Cal Code Regs., tit. 20, § 1601, subd. (w)(4) and (6).

52.26, 52.29	instantaneously. They should be exempt from these rules. The Energy Commission should explicitly exempt equipment that must be able to respond at a moment's notice, and may not enter a sleep mode. This would include critical communications equipment, like that associated with 911 emergency communication systems, and network backup batteries.	battery charger systems that meet these definitions, then they are exempt.[196] A blanket exemption for "critical communication equipment" or "network backup batteries" is not necessary because the standard only affects the battery charger system efficiency and does not impact the operation of emergency systems. There is no exception for voltage and frequency dependent uninterruptible power supplies, or single-phase battery charger systems that are incorporated in the uninterruptable power supply systems, and which are sold for the multipurpose function to support communications, telecommunications, broadband and/or other information services, and/or video equipment employed by service providers, whether within their networks or on customer premises. This type of uninterruptible power supply can also be used to provide backup power in other kind of applications. The analysis for the adopted regulations shows that this category of battery chargers systems can comply with the adopted regulations.[197] The analysis also shows that adopted regulations for this product category are cost effective and technologically feasible.[198] The record does not show that these regulations will reduce telecommunication system reliability. In contrast, exempting this product class would reduce energy savings, making the proposed change less effective at achieving the goals of the regulations. Therefore, the Commission has made no change in response to these comments.

Automotive Battery Chargers

19.2	All automotive battery chargers should be classified as non-consumer products.	Because the definition of a consumer product (Cal. Code Regs., tit. 20, § 1602(w)) is not within the scope of these regulations, this comment does not address the regulations or the process by which they were adopted, and therefore no further response is required. The classification of consumer product for all battery charger systems will be determined via the existing definition.[199]
19.3	The statements in the NOPA that: "The Energy Commission has determined based on the record that there are multiple	The Energy Commission disagrees, as automotive battery chargers were analyzed in the Preliminary TSD and the CASE Report. Automotive chargers tested in these analyses were largely non-compliant with the adopted standard due to high fixed losses in maintenance and no-battery modes.[200] However, these losses can be avoided by using a simple switch that terminates the losses when the battery is fully charged or when there is no battery attached.[201] Further improvements can be made using high efficiency power conversion technologies.[202]

[196] *See* APC by Schenider Electric, Comment on 45-Day Language (Oct. 18, 2011), at p.4, Comment no. 1, Comment p. 00006, and Attachment, at p. 3, Comment p. 000011 [explaining that the uninterruptible power supply topology for small business, web, and departmental servers is commonly IEC 62040-3 VI category, which are exempt from these regulations under section 1601(w)].
[197] Final Staff Report, at pp. 25 [technological feasibility of UPS systems], 33 ["emergency systems" under Table A-2]; *see also* Preliminary TSD, at p. 5-147; *id.*, at Appendix 5-B, under "Test Results" [unit ID # 729.2.1 tested as compliant]; CASE Report, at p. 25 [battery backup system for emergency exit sign tested as compliant].
[198] Final Staff Report, pp. 13, 17; Adoption Hearing Tr., pp. 185-187 [installing an on-off switch controlling the output of the UPS can turn off other communication functions].
[199] *See also* Preliminary TSD, at Appendix 3-A, at p. 2 (covered applications in federal rulemaking include automotive battery chargers).
[200] CASE Report, at p. 35; Preliminary TSD, at pp. 5-126 through 5-135.
[201] Final Staff Report, at pp. 17-21; CASE Report, at pp. 20-22; Preliminary TSD, at pp. 5-133, 5-134; *see* also EPRI Battery Charger Technical Primer, pp. 20-24.

	technologies used in battery chargers currently being built and sold on the market, that cheaply and effectively reduce energy consumption" and "such technologies have not imposed, and will not impose, a large cost on either the manufacturer or consumer" are inaccurate and without basis when discussing automotive battery chargers.	These changes can be made at relatively low cost ($10 per unit), with substantial resulting energy savings (313.91 Kwh per year per unit). [203] Therefore, there is sufficient support in the record to demonstrate that the efficiency standards are both cost-effective and technologically feasible for automotive battery chargers.
19.4	There are currently no automotive battery chargers utilizing over 150 amp engine start with switch mode technology, and therefore it is inaccurate to state there is 'readily available technology' to convert all automotive battery chargers from linear to switch mode.	According to product data and manufacturer feedback in the Preliminary TSD and analyzed in the CASE Report, switch mode can be incorporated into standard charging separately from a high power transformer used for engine start, and thereby significantly reduce energy consumption.[204] Moreover, because the standard is technology neutral, switch mode technology is just one option available to comply with the standard. Automotive battery chargers can also comply by altering their charge profile to maximize efficiency and by turning the charger off when the battery is full to minimize no-battery mode and maintenance mode waste. As seen in table A-5 and A-6 of the Final Staff Report, there are large improvements available in maintenance and no battery mode consumption, including redesigning to reduce fixed losses in the product circuitry or installing a switch that turns the product off when the battery is full. There are three different technology topologies currently available that can achieve power conversion efficiency of around 90%, including high frequency (switch mode), silicon-controlled rectifier (SCR), and hybrid.[205] Although these technologies are suggested primarily for large battery charger systems, they also apply to automotive battery chargers, particularly 150 amp systems, because they are of higher power than other small battery chargers (c.f., shavers, cell phones, etc.). The Commission also notes that engine start is not a battery charging function; rather, it is an added function to start the engine of a car. Therefore, engine start is not tested or regulated under the adopted standards, and the test procedure contains provisions to minimize or eliminate the power consumed by such added functions.[206] In addition, if 150 amps are necessary to charge automotive batteries (which is contradicted by an earlier statement of the commenter that the chargers are "small battery chargers"), the chargers would be large battery chargers and different standards would apply.

[202] CASE Report, at pp. 21-22; Preliminary TSD, at p. 5-134; Final Staff Report, at p. 26.
[203] Final Staff Report, at p. 39, Table A-7.
[204] Preliminary TSD, at pp. 5-133 through 5-134.
[205] Final Staff Report, p. 15, fig. 1.
[206] 10 C.F.R. Part 430, Subpart B, Appendix Y, § 4.4.

19.5	Replacing linear power supplies with switch mode power supplies will impose a large cost to consumers, and can cost up to 72% more per unit.	The Energy Commission has identified other feasible and cost-effective compliance paths, if switch mode technology is not the best choice for the manufacturer.[207] Automotive battery chargers can also comply by altering their charge profile to maximize efficiency and by turning the charger off when the battery is full to minimize no-battery mode and maintenance mode waste. As seen in table A-5 and A-6 of the Final Staff Report, there are large improvements available in maintenance and no battery mode consumption, including redesigning to reduce fixed losses in the product circuitry or installing a switch that turns the product off when the battery is full. There are three different technology topologies currently available that can achieve power conversion efficiency of around 90%, including high frequency (switch mode), silicon-controlled rectifier (SCR), and hybrid.[208] Although these technologies are suggested primarily for large battery charger systems, they also apply to automotive battery chargers, particularly 150 amp systems, because they are of higher power than other small battery chargers (c.f., shavers, cell phones, etc). The Energy Commission has found these standards to be cost-effective and technologically feasible for all battery chargers based on the data in its analyses.[209] In contrast, the comparisons made in Schumacher's tables to demonstrate large costs vary in feature sets and are not directly comparable. These comparisons therefore do not support a change to the regulations.
4.11a, 19.7	All automotive battery chargers with the engine start feature should be excluded from the Commission's Efficiency Standards due to patent and cost implications.	As described in response to comment nos. 19.6, 20.4, the Energy Commission has found that the patent and cost implications raised by the commenter are speculative or based on data that is not comparable due to differing feature sets. In contrast, the Energy Commission has found that efficiency standards for automotive battery chargers are both technologically feasible and cost-effective.[210] Moreover, as explained above, the engine start functionality is not regulated or tested by the adopted standards, is allowed to be turned off or disconnected during testing, and therefore should not be impacted by the standards. Exempting automotive battery chargers with the engine start feature would reduce energy savings without any improved benefit, and is thus less effective at achieving the goals of the regulation. Therefore, the Energy Commission has not made the requested change.
4.10, 20.1	12 Volt Automotive Battery Chargers are improperly categorized with Marine/RV battery chargers because: a. The duty cycles for automotive battery chargers are overstated, because	The Energy Commission disagrees that categorizing automotive battery chargers with marine and RV battery chargers is inappropriate. First, there is essentially no technological difference between automotive and marine battery chargers, other than the end-use (marine versus automotive). Marine chargers charge 12 volt lead acid batteries in the same wattage range as automotive chargers. Many products are in fact advertised to charge auto, marine, and RV batteries. Thus, these products are appropriately grouped because of their technological similarities. [211]

[207] Final Staff Report, at pp. 13, 17-21 (compliance paths include higher voltage systems, switch-mode power supplies, synchronous rectification, improved semiconductor switches, lithium-ion batteries, and lower current rate for charge and discharge); CASE Report, pp. 20, 21.
[208] Final Staff Report, p. 15, fig. 1.
[209] Final Staff Report, at p. 13, 17-21, 39.
[210] Final Staff Report, at pp. 13, 17-21; CASE Report, pp. 20-22.
[211] *See also* Preliminary TSD, p. 3-26 [finding that battery chargers for RV accessories, automotive and motorcycle starter batteries, and marine trolling motor batteries are "functionally equivalent"].

	automotive battery chargers spend no charge time in no-battery or maintenance modes, during which the charger is unplugged or not used; in contrast, Marine/RV battery chargers are not unplugged in no battery mode and their batteries must be maintained. b. The proposed standards for automotive/Marine/RV battery chargers are too strict compared to other categories, and have a 0% compliance rate.	Second, the adopted regulations are cost-effective for automotive, marine, and RV battery chargers, even where the product is used less frequently than presented in table A-4 of the Staff Report. For example, the investor-owned utilities compared an automotive battery charger left unplugged 66% of the time (up from the Final Staff Report's 15%), and the incremental cost of compliance was $24 (up from the Final Staff Report's $10).[212] Nonetheless, the regulations were still cost effective with a payback of 1.4 years.[213] Finally, although it is true that there are no products that currently comply with the Auto/Marine/RV battery charger standards, this does not make a recategorization appropriate or change the technological feasibility of the standards. The Energy Commission has identified multiple, cost-effective approaches for these products to meet the standards, regardless of their end use in a car, boat, or camper.[214] Extending the compliance date for products with low compliance rates would undermine the intent of the regulations to transform the market by removing the least efficient products from the market place. This is especially true as many of these products are designed to be used across many possible end uses including auto/marine/RV. In addition, manufacturers have been aware that this standard was under consideration by the Energy Commission since 2008.[215] The 45-day language was available as early as October 7, 2011, and final language was adopted on January 12, 2012, with an effective date in February 2013, giving manufacturers more than a year to comply. Therefore, manufacturers have had ample time to anticipate and plan for possible design changes associated with a battery charger efficiency standard. No change is therefore warranted in response to this comment.
20.2	Automotive applications should have a longer time frame for compliance because 0% of Auto/Marine/RV chargers currently comply.	Because the standards are cost-effective and technologically feasible within the 12-month time frame for all small consumer battery chargers, the Energy Commission does not find any evidence to support extending the date for automotive applications in particular. The effective dates are neutral regarding the application of the product and are based on the analysis of the CASE Report, the product tear downs demonstrating that the redesign necessary to comply with the standards can be met through changes to circuitry that can be quickly and efficiently achieved with off the shelf components, and the Commission's modifications to the standards, based on manufacturer input, to make it easier to comply with the standards in one year rather than the two years proposed in the CASE Report.[216] In contrast, delaying the effective date will result in lost energy savings, making a delay less effective at achieving the energy saving goals of the regulations.

[212] CASE 15-Day Comment Letter, at p. 2, p. 0000523.
[213] CASE 15-Day Comment Letter, at p. 2, p. 0000523.
[214] Final Staff Report, at pp. 17-25; CASE Report, at pp. 20-22.
[215] *See* CASE 45-Day Comment Letter, at p. 2, p. 0000331 [timeline of the development of battery charger standards].
[216] CASE Report, pp. 20-22 [describing technologically feasible compliance pathways]; March 3rd Tr., at pp. 127-133 [product teardowns]; Preliminary TSD, at Section 5.6 [product teardowns]; Final Staff Report, at p. 29 [modifications to standards to make compliance feasible in one year].

		In addition, manufacturers have been aware that this standard was under consideration by the Energy Commission since 2008.[217] The 45-day language was available as early as October 7, 2011, and final language was adopted on January 12, 2012, with an effective date in February 2013, giving manufacturers more than a year to comply. Therefore, manufacturers have had ample time to anticipate and plan for possible design changes associated with a battery charger efficiency standard. Therefore, the Energy Commission has not extended the compliance timeline for automotive applications.
20.3	The Energy Commission needs to review its data and the standard to ensure that small battery charger systems (such as Automotive Battery Chargers) with large wattage systems and virtually no "no-battery percentage" and low "maintenance percentage" are able to comply with the standards without harming the industry and California's consumers with large cost impacts.	The Energy Commission has sufficient data to support its finding that small battery charger systems with large wattage systems can comply with the regulations in a cost-effective and technologically feasible way. The Energy Commission's Staff Report analysis demonstrates that the adopted regulations are cost effective in all three modes (no battery, maintenance, and active charge).[218] The energy savings calculations are also based on the existing stock and duty cycles for all three modes and add to the significant reduction in energy use statewide.[219] As discussed above in response to comments 19.4 and 19.5, the Energy Commission has identified other technologically feasible and cost-effective compliance paths, in addition to switch mode technologies that switch off the charger when the product does not operate in maintenance or no battery mode. [220]
4.9b	Schumacher questions whether multi-battery chargers are subject to the standards, and if so, how compliance may be measures where the chargers are capable and used to charge multiple kinds and capacities of batteries for a range of vehicles.	An "a la carte charger" is defined as "a battery charger that is individually packaged without batteries. À la carte chargers include those with multi-voltage or multi-port capability."[221] If Schumacher's battery charger meets this definition, then the "a la carte charger" standards would apply. However, it is difficult to provide a more detailed response without knowing the precise product to which Shumacher refers. Both state (non-consumer battery charger systems) and federal (consumer battery charger systems) test procedures are equipped to handle multi-port, multi-voltage, and multi-capacity battery charger systems. Table 4.1 of the federal test procedure (10 C.F.R., Part 430, Subpart B, Appendix Y) discusses how to select a battery and test chargers that are capable of testing a diverse number of batteries.

[217] *See* CASE 45-Day Comment Letter, at p. 2, comment p. 0000331 [timeline of the development of battery charger standards].
[218] Final Staff Report, Appendix A.
[219] Final Staff Report, at Table A-1 (p. 32) and Table A-4 (p. 35).
[220] CASE Report, at pp. 20-22; Final Staff Report, at pp. 17-21.
[221] New § 1602, subd. (w), under "a la carte charger."

Electric Vehicles

29.1	The commenter objects that the regulations should be more stringent for electric vehicles, where federal and municipal taxes are funding smart electrical grid improvement, electric vehicles and other energy infrastructure improvements.	Governmental funding is not a criteria the Commission explicitly considers when determining whether to adopt an efficiency standard, under either the Warren-Alquist or Administrative Procedure Acts. Battery chargers for electric vehicles were exempted from these regulations because they have unique characteristics that were outside the scope of study and research conducted by the Energy Commission and the test procedure.[222] However, the Commission may consider standards for these systems in the future.
30.1, 42.1, 52.5	Golf cars (carts) should be classified as non-consumer products since they are primarily sold to commercial businesses. The effective date for golf car battery charging systems should be extended to the date for non-consumer small battery charging systems (January 1, 2017). The design cycle and testing required to develop a golf cart battery charger system takes over two years.	Golf cart chargers are classified as consumer products in the Department of Energy's covered products list in the Preliminary TSD.[223] The federal definition preempts any contrary California definition for purposes of these standards. And even if it did not, the Commission has harmonized its definition of a consumer product with the same definition used by the Department of Energy in order to maximize consistency and minimize the burden on the regulated community. In addition, this category of battery charger system is similar to auto and marine type systems, and several off the shelf technologies are available that can meet the regulation by the effective date as demonstrated in the Final Staff Report.[224] We also note several reasons the regulations do not impose an undue burden on manufacturers. In response to manufacturer input, both during the pre-rulemaking proceedings and as part of the formal rulemaking process, the Commission removed the Power Factor requirement for small battery chargers to harmonize with the proposed federal standard, and combined the Maintenance Power and No Battery Power modes for small battery chargers into one requirement, which allows tradeoffs between the two and also harmonizes with the proposed federal standard, to give manufacturers more design flexibility to address their concerns about meeting the standard in the time allotted.[225] In addition, manufacturers typically have a mix of products, some of which may already pass the standard, so production of these models could be ramped up in the near-term.[226]

[222] Initial Statement of Reasons, pp. 2-3.
[223] Preliminary TSD, at p. 2-11.
[224] Final Staff Report, at pp. 17-21.
[225] Final Staff Report, at p. 29; *see also* Preliminary TSD, at p. 3-40, Table 3.35 [showing that roughly 30% of the battery charger market already meets standards roughly equivalent to the Commission's adopted standards].
[226] CASE Report, pp. 22, 28.

USB Charger Systems

24.2, 7.9, 7.10	The standard is difficult for USB chargers to meet, which are inherently less efficient than standard voltage systems. A multiplier should be added to the standard, or an alternative standard should be adopted, for USB-charged devices to ensure that such devices continue to provide the benefits associated with USB chargers, such as multiple device connectivity, thereby reducing waste.	Many of the products currently on the market that use USB chargers, such as cell phones, comply with the standard.[227] The Commission has also found that the regulations are cost-effective and technologically feasible for all charging systems, and that exempting USB charging systems from the regulations would be less effective at reducing energy consumption and achieving the energy saving goals of the regulation.[228] The record does not support making the requested changes to the standards. USB chargers will continue to be widely available because it's feasible to manufacture efficient low-voltage substitute external power supplies.[229] This improvement is central to the external power supply rather than the end use product, which makes meeting the standards easier. Furthermore, 5 volt USB chargers intended to be used solely with a DC power source (e.g., USB port power sources) may more easily meet the adopted standards (compared with battery chargers intended for use with a wall outlet) because the test method may not count the energy conversion losses from going from AC to DC power.
4.17, 9.3, 10.2, 10.3	The regulations should clarify that the energy conversion losses to develop the DC source should not be included in the test measurement under 10 CFR 430.23(aa), Appendix Y to Subpart B of Part 430, Section 3.4 (regarding the testing of certain USB chargers). The Energy Commission should confirm that power consumption may be measured using a recommended or an appropriate AC adaptor with	The Energy Commission must rely on the federal test procedure[230] for testing small consumer battery charger systems, including USB chargers, since this test method preempts the California test method. Section 3.4(b) and (c) of the federal test procedure addresses this issue. The federal test procedure states: *"b. If a charger is powered by a low-voltage DC or AC input, and the manufacturer packages the charger with a wall adapter, sells, or recommends an optional wall adapter capable of providing that low voltage input, then the charger shall be tested using that wall adapter and the input reference source shall be 115 V at 60 Hz. If the wall adapter cannot be operated with AC input voltage at 115 V at 60 Hz, the charger shall not be tested.* *"c. If the [unit under test] is designed for operation on DC input voltage and the provisions of paragraph 3.4(b) above do not apply, it shall be tested with one of the following input voltages: 5.0 V DC for products drawing power from a computer USB port or the midpoint of the rated input voltage range for all other products. The input voltage shall be within +/- 1 percent of the above specified voltage."* Therefore, no change to the adopted regulations is necessary.

[227] Final Staff Report, Table A-2 (p. 33); *see also* CASE Report, at p. 35.
[228] Final Staff Report, p. 13, 39, Table A-7.
[229] *See* Preliminary TSD, Fig. 3-8 (p. 3-52) [battery charger systems meeting EnergyStar efficiency measures]; page 5-107 [USB power supply that is 75% efficient].

	USB output.	
4.2a, 12.2, 12.3, 52.22	The limit (standard) or the multiplier for very small battery chargers (less than 20Whr) should be made less stringent because the current limit does not take into account USB conversion losses, resulting in products that would fail or become un-manufacturable (marginal, in the range of <5%) to those limits.	The Energy Commission has already increased the allowance for very small (less than 2.5 Wh) battery chargers from the standards suggested during the pre-rulemaking proceedings, in response to stakeholder concerns. With the adopted allowance, the CASE Report and the Preliminary TSD provide several examples of products with USB chargers that currently comply with the adopted regulations, even accounting for the manufacturing margin.[231] The request to increase the allowance again for very small battery chargers and USB chargers or to carve out a separate standard for these chargers would reduce the amount of energy savings achieved by the standards, and is not supported by any evidence.[232] In contrast, the product data and evidence in the record demonstrate that the standards are reasonable, feasible, and cost effective, and that relaxing the standard would not be as effective or less burdensome.
4.30, 7.4, 24.3	The Commission should add a battery capacity multiplier for devices that use USB chargers and include the power adapter in box, because USB chargers have a low voltage and low power output that requires them to charge in active mode for a longer period, making them test as less efficient. TechAmerica requests that USB charging systems, which are inherently limited to 5 volts, be accommodated through changes in the test procedure or formulas, to account for the longer	The request to increase the multiplier for USB chargers would reduce the amount of energy savings achieved by the standards.[233] Because the product data and evidence in the record demonstrate that the standards are reasonable, feasible, and cost effective, the Energy Commission finds no evidence to support increasing the multiplier to respond to the low voltage and lower power output of USB chargers. TechAmerica's statement that the adopted regulation becomes more difficult to meet as the battery capacity increases is only true when using a less efficient power supply. The equation for compliance in 24-hour charge and maintenance mode for battery capacities between 2.5 Wh and 100 Wh is 1.6 x Eb + 12. As battery capacity increases the compliance equation becomes more and more driven by the variable coefficient than by the fixed coefficient. For example at Eb = 2.5 the variable portion of the equation (1.6 x Eb) provides an allowance of 4 Wh (25% of the allowance) whereas the fixed portion of the equation (+12) provides an allowance of 12 Wh (75% of the allowance). When Eb is increased to the maximum of this range (100 Wh) the variable portion of the equation provides an allowance of 160 Wh (93% of the allowance) and the fixed portion of the equation still provides 12 Wh (7% of the allowance). Therefore the efficiency of the power supply, if low, will make it increasingly difficult for a product to comply as the battery capacity increases, as the power supply is a contributing factor to the charger's variable losses. However if the efficiency of the power supply is above a certain threshold it will make the standard easier and easier to comply as the capacity increases. TechAmerica argues that the efficiency of low voltage, low output power supplies that USB chargers use are

[230] 10 C.F.R. Part 430, Subpart B, Appendix Y.
[231] CASE Report, at p. 35 [compliance rates]; Preliminary TSD, at Appendix 5-B [units ID #s 735.2.1, 737.2.1, 738.2.1, 740.2.1 (no external power supply tested as compliant by an almost 25% margin; units ID #s 629.2.1, 687.2.1 (with external power supply) tested as compliant by at least a 5% margin].
[232] Final Staff Report, at p. 39, Table A-7.
[233] Final Staff Report, at p. 39, Table A-7.

	charging time for large capacity batteries.	less efficient because of the specifications set by ENERGY STAR and ErP lot 7 (68.2% to 73.4%). However, these are minimum compliance levels, and there are external power supplies that perform at superior levels.[234] Moreover, efficiency improvements can occur at low cost.[235] Improving variable efficiency will also allow manufacturers to compensate for fixed losses for larger battery capacity USB charger systems. However, the Energy Commission agrees that compliance may be more difficult to meet for high battery capacity (20 Wh or greater) USB charger systems, as they are constrained to 5V whereas other products are not, therefore limiting access to even higher efficiency power supplies than those discussed above. The Commission therefore extended the effective date for these products to January 1, 2014.
5.7, 45.6, 52.28	We request either (a) that the implementation schedule be adjusted for all USB devices to 2014, or b) that the Commission exempt USB devices from the regulations. USB charging systems could be negatively impacted by the proposed regulations. The Commission should exempt USB based chargers from the scope of the regulations.	The Energy Commission modified its regulations in 15-day language to give USB battery charger systems with 20 watt-hour or greater capacity batteries more time to comply, in response to the technical issues presented in Appendix A of TechAmerica's November 21, 2011 comment letter. USB charger systems with smaller capacities do not share the same impediments to feasibility and additional delay would forego energy savings. Therefore, the Energy Commission rejects the suggested alternative to extend the deadline for all USB charger systems. The Energy Commission has not exempted USB devices from the regulations, as it found that the regulations are cost-effective and technologically feasible for all charging systems, and exempting USB charging systems from the regulations would be less effective at reducing energy consumption and achieving the energy saving goals of the regulations.[236] The Commission therefore rejected the suggested alternative.

Cordless Phones

32.1	The Commission should consider excluding telephone base units from the proposed regulations, because the function of the base unit is unrelated to the battery charger system for the cordless handset.	Based on the analysis in the Final Staff Report[237], the adopted standard for telephone base units is cost effective and feasible. According to Table A-7 on page 39, cordless telephones have a positive net value of $8.44 under the adopted regulations, indicating the standards are cost effective. There are multifunctional devices that currently meet the standards. For instance, in the Preliminary TSD, cordless phone ID # 664.2.2 complies as well as notebook computer ID # 632.2.1.[238] These are just two examples. As the comment recognizes, the federal test procedure[239] has a provision that allows a battery charger system's

[234] *See, e.g.*, Preliminary TSD, Appendix 5-A [identifying product 804 as a 5 volt USB power supply with efficiency as high as 79.4%].
[235] Preliminary TSD, at p. 5-56, Tables 5.29 and 5.30 [a 2.5% efficiency gain costs $0.08].
[236] Final Staff Report, p. 13, 39, Table A-7.
[237] Final Staff Report, at pp. 13, 17, 39.
[238] Preliminary TSD, Appendix 5-B, under "Test Results."

	The Energy Commission should determine the power consumption of battery charger systems for cordless telephones according to the proposed formula, to account for the fact that the circuitry that provides telephone functionality when the battery function is active, but disconnected from the phone line, can not be disabled.	additional functionality (such as radio, clock, message machine, etc.) to be turned off during testing. In addition, the phone may be tested in non-operational mode (not connected to the telephone line-in, with no signal to the phone's voicemail) to ensure that only battery charger system functions are measured. Furthermore, the Commission is preempted from making the changes recommended by the stakeholder since the test method is a federal test method. Changing the standard for cordless telephones, or exempting such devices from the standard, would significantly reduce the energy savings from the regulations and be less effective at meeting Public Resources Code section 25402, subdivision (c)(1).

Power Tools

21.2, 52.35d	Existing battery charger systems for power tools largely fail to meet the regulations. This shows there are not readily available solutions for achieving compliance in power tools. Manufacturers would need to redesign nearly all their battery charger systems, and there are insufficient resources in most companies to fulfill this redesign in the time required. Power tools comprise a small share of the market of consumer battery chargers.	As described in the Final Staff Report, numerous battery charger-neutral technology options are available to manufacturers to comply with the regulations.[240] Current compliance rates are not indicators of the availability of efficient technology. Rather they indicate the deployment of available inefficient technologies in a market that does not communicate the true operating cost of a product to consumers. Large-capacity nickel batteries, such as those used with power tools, can meet the standard with hysteresis charging or other charge control mechanisms. These changes to the charge control circuitry do not require a redesign of the product's mold or functions.[241] These changes can be made with existing, off the shelf components. In addition, exempting these products would have a significant impact on the ability of the standards to deliver energy efficiency. The Final Staff Report estimates average savings of 15 KWh/year from these kinds of products. First year savings from power tool standards would be approximately 47GWh for California, and it will save 250GWh/year after the full stock turnover.[242] This is a significant energy savings. Changing the standard for battery chargers used in power tools, or exempting such devices from the standard, would significantly reduce the energy savings from the regulations and be less effective at meeting Public Resources Code section 25402, subdivision (c)(1).

[239] 10 C.F.R. Part 430, Subpart B, Appendix Y.
[240] Final Staff Report, at pp. 17-25.
[241] Final Staff Report, at p. 23. *See also* March 3rd Workshop Tr., pp. 127-133 (describing tear down of power tool that demonstrated cost-effectiveness and technological feasibility).
[242] Final Staff Report, at Table A-7 (p. 39).

	Making the power tool requirements less stringent would not significantly diminish the overall energy-saving benefits of the regulation.	
23.4	Power tools should be regulated as a separate product class.	Commenters have not presented evidence to justify that power tools should be treated differently from other small battery charger systems. In contrast, the Energy Commission has found that standards for power tools are technologically feasible and cost-effective.[243] Large-capacity nickel batteries, such as those used with power tools, can meet the standard with hysteresis charging or other charge control mechanisms. These changes to the charge control circuitry do not require a redesign of the product's mold or functions.[244] These changes can be made quickly with existing, off the shelf components. Separating power tools from other battery chargers to provide more lenient standards would reduce the energy savings achieved overall, making such a change less effective at meeting Public Resources Code section 25402, subdivision (c)(1).

Lighting Controls

15.1	"Partial off" is not an individual, self-contained lighting control product, but is a description of specific sequences of operation required by Title 24 and thus this definition should be modified or removed. By listing performance requirements as definitions for partial-off, we believe that the Commission has unwittingly defined a product that doesn't exist.	The Energy Commission determined that it was not appropriate to remove any of the five compliance options because that would disallow such products to be introduced into the market place. In any case, the "partial off" product was included in the Title 24 language to allow a combination of components or a unitary control for compliance. This standard accommodates any manufacturer who wants to voluntarily make a unitary device.
15.2	The proposed language in Section 1605.3(l)(2)(G)(1)(f) should only refer to vacancy sensors, not occupancy sensors or partial-on sensors.	The Energy Commission made part of the recommended change in its 15-day language, section 1605.3(l)(2)(G)(1)(f), which removes language that formerly prohibited occupancy sensors from converting between manual and automatic functionality or incorporating DIP switches. The Energy Commission further modified provisions related to "partial-on" and vacancy sensors to prohibit the use of DIP or other switches in those devices, which the comment seems to support. This is to ensure that "partial-on" sensors that receive an

[243] Final Staff Report, at Table A-7 (p. 39).
[244] Final Staff Report, at p. 23. *See also* March 3rd Workshop Tr., pp. 127-133 (describing tear down of power tool that demonstrated cost-effectiveness and technological feasibility).

	Meeting the efficiency standards will be problematic for devices that are commonly used in commercial applications because commercial sensors are commonly designed to be field or factory configurable. If the decision is made to keep the language as-is, then the language should be written so that dip switches can still be used to convert a pole that is auto-on to manual-on, to ensure users have options to decrease the amount of light that comes on automatically. It should be made clear that the phrase "[DIP] switches or other manual means" applies to elements on the device itself and not to elements allowing the device to be programmed remotely.	energy credit under Title 24, Part 6, are not later able to convert to a less efficient appliance after receiving the credit. The Energy Commission did not make changes to the definition of DIP switch. WattStopper provided no evidence that a remotely programmable device was different than manually changing the device via a DIP switch, warranting the requested changes.
15.3	The 50% dimming requirement for dimming Occupant Sensing Devices should only apply to products used to meet the "Partial-on" requirement, not to all occupant sensing devices.	The Energy Commission revised the regulations in response to this comment. The requirement for Occupant Sensing Devices incorporating dimming to automatically turn on to no more than 50% of the lighting load was removed in 15-Day Language.
52.2	The regulations ambiguously describe the scope of the standards in Title 20 for lighting control systems sold or offered for sale in California, and the scope of	As described at the hearing at which the regulations were adopted, the regulations are intended to, and do, establish standards both for lighting control systems sold or offered for sale in California, and for the installation of such systems in buildings in California. (Re)locating regulations in Title 20 to regulate lighting control systems sold or offered for sale in California does not change or abrogate the regulation of those systems installed in buildings in California, in compliance with the Energy Code, at Title 24, Part 6, of the California Code of Regulations.[245]

[245] Adoption Hearing Tr. p. 135:5-17, comment p. 0000663.

	Title 24, regulating installation of lighting control systems in buildings.	
33.1	The definitions should be changed, in Section 1602, subd. (l), of "Astronomical time-switch control", "Dimmer", and "Lighting photo control".	The Energy Commission incorporated suggested changes for "Astronomical time-switch controls" and "dimmers" as recommended. While the Commission modified the language for "lighting photo control" for the purpose of clarity, it did not include the word "exterior" as suggested, because doing so would narrow the wide range of uses of photo controls as lighting controls, and thereby reduce potential energy savings from application of this technology.
33.2	The comment suggests changes to the definitions in Section 1602(l) of "Occupant sensor".	The Energy Commission revised the regulation in response to this comment. Specifically, the language of the regulation was modified to make it clearer and consistent with standard terminology already used in industry.
33.3	Section 1605.3, subd. (l)(2)(C)(3): Delete this sentence. This feature is unnecessary and does not directly relate to energy savings. Many devices may use day of week instead of date. It is unclear if current or programmed sunrise and sunset times are displayed. Small devices may have difficulty displaying all these data.	The Energy Commission did not make changes to the regulations. The language as adopted is consistent with what currently exists in the California Energy Code, Title 24, Part 6, of the California Code of Regulations, and was moved in this rulemaking into Title 20.
33.4	1605.3(l)(2)(D)(1): Change "day lighting" to "daylight". Editorial change.	This change was made.
33.5	1605.3(l)(2)(F)(1)(a): Add text "by a minimum of 65 percent, or the lowest limit of the light source, when the dimmer is at its lowest level." This accounts for some technologies which currently cannot reduce power consumption by 65% (some HID lighting, for example, can	The Energy Commission found that high-intensity discharge (HID) lighting, including metal halide lighting, did require dimming at a different percentage than other lighting technologies. Further, existing language in Sections 1605.3(n)(2)(B)(2 & 3) requires some kinds of HID lighting (i.e., metal halide) to be able to be reduced by at least 40 percent. There is no evidence in the record corroborating that 65 percent is not achievable. Additionally, the percentage recommended is inconsistent with requirements in Section 1605.3 (n)(2)(b), and requirements in the recently-adopted revisions to the California Energy Code in Title 24, Part 6, Section 130.1(b), of the California Code of Regulations

	reduce power consumption by 30%).	
33.6, 33.7, 33.8, 33.9	The comments suggest changes in Section 1605.3, subd. (l)(2)(G), to improve clarity and consistency, and remove ambiguities.	The Energy Commission made these suggested changes in the 15-Day Language as adopted.
33.10	NEMA requests an opportunity for additional review of the Data Submittal Checklist for Self-Contained Lighting Controls before it is finalized, if any changes are made to it as a result of the public comment and review process.	NEMA reviewed the proposed language prior to publication of 45-Day Language and did not suggest changes at that time. Further, many requested changes were made in the 15-Day Language that was made available for public comment prior to adoption.
57.1	Lighting controls should not be moved to Title 20. They should remain as options that can be used by the end users to achieve the energy savings and peak demand reductions of the Energy Code (Cal. Code Regs., tit. 24, Part 6)	Both lighting controls, and lighting control systems, were already regulated in Section 119 of the Energy Code (Cal. Code Regs., tit. 24, part 6). The majority of the requirements in Title 24 were specifically for self contained lighting controls, whereas lighting control systems were only recently added as an alternate method to comply with the requirements for self contained lighting controls. The majority of the requirements for the installation of lighting control applications in Title 24 are for self contained lighting controls, not lighting control systems.
57.2, 57.3	By moving the entire lighting control technology into Title 20, the technology will be viewed as regulating single devices instead of integrated control systems. Discrete devices only save energy when installed as part of comprehensive systems.	The Energy Code has long treated lighting controls as integral parts of systems. The energy savings comes from reducing the lighting load. Neither an energy management control system, nor a self contained lighting control system saves energy unless it reduces a lighting load. Moving self contained lighting controls from Title 24 to Title 20 did not change the fact that both lighting controls and lighting control systems can be used to achieve compliance with the Energy Code. There is no evidence in the record that a “one-stop energy management solution” will save more energy than self contained lighting controls. In fact, it is much easier to re-program an energy management control system to be ineffective in saving energy than it is to re-program a simple self contained lighting control, making it more likely that an efficient self contained lighting control will achieve energy savings. Energy management control systems are allowed in Title 24 as a voluntary option, to comply with the requirements for self contained lighting controls.
57.4	The regulations should differentiate components of lighting control systems, such as occupancy sensors, from true control systems that include the interface between	Self contained lighting controls contain all components necessary to provide full functionality and are installed, wired, and programmed into one integrated package. Energy management control systems are not lighting control systems unless every necessary component is installed, wired, programmed, and commissioned. Self contained lighting controls are established technology for controlling lighting power, to meet the energy savings directive of Public Resources Code section 25402, subdivision (c)(1).

	the control device, sensors and communication devices.	

Cost Effectiveness - Labeling

4.13	CTIA contends the costs associated with the labeling requirements have not been accurately estimated.	Costs of the battery charger standards are based on data supplied through the CASE Report, manufacturer submittals, the Preliminary TSD, and a subsequent life cycle analysis in the Energy Commission Final Staff Report, which demonstrates that the regulations are cost effective. The adopted regulations do not require new stickers or labels, but rather marking or labeling on existing product nameplates or retail packaging (and, if included, the instructions); thus any costs are negligible. In addition, CTIA did not provide additional cost information that would alter this conclusion.

Labeling

12.4a, 41.3, 52.33a	The labeling requirement is superfluous and should be removed. The Energy Commission should reconsider the decision to require placing a label directly on covered products and allow manufacturers to place compliance statements and related information in product documentation. Retailers have sophisticated systems to ensure they sell products that comply with applicable requirements. A mark or label is not necessary.	The mark is intended to facilitate compliance verification by manufacturers, distributors, retailers, regulators, and consumers. Without a marking requirement, regulators and other interested persons would have to check the appliance efficiency database for every product to determine its compliance, which is far more burdensome than simply checking the product in hand for a mark. Marking allows easy, visual, and immediate identification of a battery-operated product with a compliant charger in site visits at retail locations. We note, as described at the October 11, 2010 Staff Workshop on the proposed standards, the Energy Commission led the way to create an international mark for external power supplies, which is now adopted world-wide and referenced by multiple jurisdictions.[246] Given this precedent, and the possibility associated with a similar international scheme for battery charges, the Department of Energy has proposed adopting the marking requirement similar to California's. Once a federal rule takes effect, then the Energy Commission labeling requirement will be preempted, such that manufacturers will only have to comply with one marking requirement at any given time. Further, the Commission revised the marking requirement to give manufacturers the option of marking the product nameplate or the retail packaging and cover page of the instructions.
3.7, 3.8, 4.4, 4.13, 4.31	Labeling, if required, should be required on the retail packaging or product documentation and not on the product's nameplate.	The Energy Commission made changes to the proposed 45-day language in response to several comments from manufacturers. The 15-day language, specifically amendments to section 1607(d)(12), provides manufacturers flexibility to comply by allowing marking either the product or the product's packaging to address concerns about impacts to the functionality of the battery charger system.

[246] Staff Workshop, 2010 Rulemaking Proceedings, Phase II on Appliance Efficiency Regulations, Oct. 11, 2010, Tr. 102:19 – 103:10, available at http://www.energy.ca.gov/appliances/battery_chargers/documents/2010-10-11_workshop/2010-10-11_Transcript.pdf.

	Labeling the charger could decrease its functionality by blocking airflow.	
2.21, 2.22, 2.23, 3.6, 3.7, 4.13, 4.25, 4.31, 5.3, 9.2, 12.4b, 41.3a, 35.1, 52.33	The labeling requirement should be removed because it is unnecessary, is aesthetically displeasing, and its purposes are served by the certification requirement. Labeling requirements are wasteful, not useful to consumers and disruptive to global trade.	The label is reasonably necessary for compliance and enforcement, and serves other purposes, including establishing a model that can be adopted by other jurisdictions. The mark provides an efficient means for government agencies (regulators), utilities, retailers, consumers and others to quickly verify compliance with the standards in field inspections, and to differentiate products sold with compliant chargers from those that are not.[247] In contrast, without a marking requirement, regulators and others would have to check the appliance efficiency database for every product to determine its compliance, which is far more burdensome than simply checking the product in hand for a mark. Moreover, marking was instrumental in driving international adoption of the external power supply efficiency standards in China, Australia, Europe and Canada.[248] It may therefore have the same effect on battery charger standards.[249] Harmonization is desirable because rapid global adoption of battery charger system efficiency standards are expected to further lower the cost of high efficiency battery charger systems due to economies of scale, making the standard even more cost-effective for Californians.[250] Moreover, it is reasonable to infer that industry will receive cost and certainty benefits from having a consistent set of regulations with which to design to and comply.
8.2, 12.4b, 50.2, 52.33b	Labeling should not be required because it is costly. The costs and benefits of requiring a physical label should be compared.	Minor incremental costs associated with printed labeling will not negate the cost-effectiveness of the regulations. Table A-7 of the Final Staff Report shows that the standards are extremely cost effective, and would still be cost effective even with additional minor incremental costs.[251] Potentially high costs for physical marking (e.g., up to $2,000 for each physical marking change on each product, but much less for changing printed labels on packaging and product documentation)[252] can be avoided under the regulations.
4.4, 5.3, 7.6, 8.2, 12.4d, 13.3, 24.5, 45.4, 46.4,	Alternate methods of displaying compliance, such as statements in user guides or electronic labels, would be more effective at informing	Electronic labeling provides no compliance or enforcement value to regulators, retailers, utilities, consumers or others because compliance could only be verified if the product were activated to view a display screen. It is more difficult to unpack, charge, turn on and check devices for compliance, than to view a physical or printed label on a device, its packaging, or documentation.

[247] *See* Appliance Standards Awareness Project, American Council for an Energy-Efficient Economy, Northeast Energy Efficiency Partnerships, Northwest Energy Efficiency Alliance, November 21, 2011 (Advocates Support Letter), Comment no. 35.1, Comments, pp. 0000441-442; CASE 45-Day Comment Letter, p. 4.
[248] NRDC 45-Day Comments, p. 7, Comments, p. 0000457; Advocates Support Letter, Comments, p. 0000442; CASE 45-Day Comments, p. 4, Comments , p, 0000333.
[249] Advocates Support Letter, Comments, p. 0000442.
[250] *See* NRDC 45-Day Comments, at pp. 7-8, Comments, pp. 0000457-458.
[251] Final Staff Report, p. 39.
[252] *See* Adoption Hearing Tr., p. 208:4-17, comments p. 0000736.

50.2, 52.20, 52.33, 52.34	consumers and more cost effective.	Similarly, labeling the user guide alone reduces the compliance and enforcement value of the mark because it is more burdensome to regulators, retailers, utilities, and consumers to unpack the product and search the user guide for the mark than to simply check the product or package. Measures that have the potential to reduce compliance with the standards are less effective at meeting Public Resources Code section 25402, subdivision (c)(1).
9.2	The label should only be required for dedicated battery chargers.	As a preliminary matter, the marking requirement is primarily intended to aid regulators and retailers with compliance, in addition to informing consumers. Requiring a labeling requirement only for dedicated battery chargers does not help with compliance or enforcement for other battery charger systems. Moreover, the commenter has not shown that requiring a label on only dedicated battery chargers is a more cost-effective or feasible option. Battery charger systems are built for many different purposes, making it difficult for manufacturers to determine in advance or control whether the product will be used as a dedicated battery charger. Thus, it is impractical to require marks on some types of products, but not others. Therefore, the Energy Commission did not make the proposed change.
2.21, 2.22, 2.23, 2.24, 2.25, 4.7, 4.8, 4.31, 6.21, 12.4c, 26.3, 41.3b	The labeling requirement raises questions of undue burden by the potential for imminent preemption by a different federal standard. It should be removed or delayed until federal labeling requirements are known.	The Energy Commission is not required to evaluate the impacts from a potential, and speculative, federal rulemaking on the existing state rulemaking. The timing and form of the federal labeling requirement was speculative at the time of the adoption hearing and continues to be uncertain. As of adopting the regulations on January 12, 2012, the Department of Energy was months past its statutory deadline to adopt regulations for battery charger systems and had not proposed a rule. Any undue burden imposed by a federal rule that becomes effective after the Commission's rule is properly considered by the federal entity proposing to impose that change; it is not relevant to the Commission's determinations related to its own labeling requirement. The Energy Commission also disagrees with the suggested alternative, as it would be less effective at achieving energy savings where compliance is made more difficult. Because of the compliance and harmonization benefits of a marking requirement, which in turn will increase actual energy savings sought from the regulations, the Energy Commission chose to go forward with marking requirements rather than remove these requirements for a federal label that did not exist, even in proposed form. It is also possible that the Department of Energy will adopt a marking requirement similar to the Energy Commission's. The Department of Energy discussed a labeling requirement similar to California's in an early technical support document for its battery charger and external power supply efficiency rulemaking.[253] Indeed, influencing the federal rulemaking on battery charger systems is one of the goals of the Energy Commission's rulemaking.[254] Finally, because a federal labeling requirement would be preemptive in nature, there would be no duplicated label requirement. The marking requirements of the Commission and past marking requirements of the

[253] Preliminary TSD, at pp. 2-87
[254] *See, e.g.,* California's Opening Statement in the federal battery standards rulemaking, May 2, 2012, at http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/cec_opening_statement_nopr.pdf.

		Department of Energy are based upon manufacture date. This means there will be a clear division of when manufacturers would need to comply with California labels, and when they will need to comply with Federal labels. Therefore, the Energy Commission does not find that there will be an undue burden on manufacturers with having to comply with federal marking requirements when they preempt California's.

Voluntary Programs– Rebates

15.4	The Energy Commission should consider the impact of the proposed regulations on product choices for utility market transformation and rebate programs, given the language in Senate Bill No. 454, Stats. 2011, ch. 591.	This comment is not directed at the proposed regulations or the process by which the regulations were adopted. It is directed at the policy decision reflected in the statute to regulate energy consumption through efficiency standards and other requirements and programs. Nevertheless, the Commission is currently developing the regulations to implement Senate Bill No. 454. Please see Docket No. 12-AAER-1, http://www.energy.ca.gov/appliances/enforcement/. Interested persons are encouraged to participate in that proceeding. The Commission is not aware of any adverse impact of the adopted regulations on utility programs. Lighting controls that complied and were certified under Title 24 lighting control regulations, and that are in the scope of the adopted regulations, simply need to be recertified to the Commission and should not negatively impact utility programs.

Comments in Support of the Regulations

10.1, 22 (all), 35.1, 36.1, 37.1, 52.3, 52.4, 52.6, 52.15, 52.16, 52.24, 52.30, 52.37, 52.40.	Several comments were submitted in support of the proposed battery charger system regulations.	These comments support the regulations, which were adopted, and do not request modification at this time.
4.32	Investor-owned utilities' Statewide Codes and Standards Team requests that inductive chargers, like all chargers, remain subject to the standards.	This comment supports the proposed regulations and does not ask for changes to the proposed regulations.

1.1, 4.18a	APC by Schneider Electric supports three aspects of the regulations.	This comment supports aspects of the adopted regulations and does not request changes to the referenced sections of the regulations.
4.34	Because the Department of Energy has not met its statutory obligation to publish a final rule establishing efficiency standards for battery chargers by July 1, 2012, the Energy Commission should adopt battery charger system standards to achieve energy savings for California, which go beyond the scope of and are more stringent than proposed federal standards.	This comment supports the adopted regulations and does not request changes to the regulations.
49.1, 49.2, 51.1, 52.29c, 52.30	Various commenters support the Energy Commission's Battery Charger Systems regulations. Delaying the regulations will forfeit energy savings for Californians and an opportunity to influence the U.S. Department of Energy rulemaking. The standards do not penalize USB charging systems, and will not delay the introduction of new loosely-coupled wireless chargers.	This comment supports the adopted regulations and does not request changes to the regulations.
49.1, 52.14	NRDC strongly supports the California Energy Commission's efficiency standards for battery charger systems to save energy for Californians and influence the US Department of Energy	This comment supports the adopted regulations and does not request changes to the regulations.

	rulemaking.	
45.1, 46.1, 49.3	[W]e support the Commission's recommendation as a fair compromise. Commenters support the added flexibility in marking requirements and the extended timeline for large USB chargers.	This comment supports the adopted regulations and does not request changes to the regulations.
52.36a	Semiconductor technologies that will enable many battery charger systems to meet these standards are available in high volume at minimal costs.	This comment supports the adopted regulations and does not request changes to the regulations.
22.2	The compliance timeframe is sufficient even for products with low compliance rates with the proposed standard.	This comment supports the adopted regulations and does not request changes to the regulations.
10.5	[W]e are confident the proposed regulation gives us the time needed to develop solutions that will accomplish the energy savings goals of the Commission while preserving product performance and minimizing disruption to our California customers.	This comment, from a manufacturer, supports the timeframe for the regulations.
4.28, 22.2a, 52.25, 52.24a, 52.24b, 52.24c, 52.24d	The 12-month time frame for compliance is feasible and cost-effective as described in the CASE Report. Most products will not need to be re-certified if only small changes are made to the product design, and that	This comment supports the adopted regulations and does not ask for changes to the regulations.

	redesign can be absorbed into regular manufacturing schedules. The Commission should adopt the 45-Day Language requirements for computer systems.	
38.1	iGo supports the California Energy Commission's proposed efficiency standards for battery chargers.	This comment supports the adopted regulations and does not request changes to the regulations.
22.3	USB charging systems should not be given an extra allowance.	This comment supports the regulations and does not propose changes to the regulations.
4.33, 22.1a, 52.35	We support the California Energy Commission moving forward with its Battery Charger System Standards and emphasize that there are many technologies available to increase battery charger efficiency.	This comment supports the adopted regulations and does not ask for changes to the regulations

Submissions to the public comment file that do not constitute objections to the proposed regulations or the process by which they were adopted.[255]

11.4	Focusing attention on the Building Energy Efficiency Standards in the Energy Code, Title 24, Part 6, of the California Code of Regulations will yield more energy savings than is possible through the appliance efficiency regulations in Title 20,	These comments do not address the proposed regulations or the process by which they were adopted and therefore do not require further response.

[255] These comments are not required to be responded to in the Final Statement of Reasons. (Gov. Code, § 11346.9, subd. (a)(3).)

	Section 1601 et seq. of the California Code of Regulations.	
11.3	Health issues should not be addressed by the Energy Commission.	These comments do not address the proposed regulations or the process by which they were adopted and therefore do not require further response. The comments were made in response to a separate scoping workshop held to discuss potential new appliance efficiency proceedings.
52.27	The Final Statement of Reasons should include language to encourage innovation to address e-waste and to reduce the number of devices that need to be charged or plugged in.	The comment does not address the regulations or the process by which they were adopted, and therefore merits no further response. However, the Commission notes that the adopted regulations do not incent the sale of internal or external power supplies, and may even encourage reducing e-waste because products without an AC to DC power supply should have an easier time complying with the adopted standards under the Section 3.4(c) test procedure because the waste energy of the external power supply is not measured in this special case.
11.2	NEMA makes suggestions regarding dimming ballasts, Ballast Luminous Efficacy (BLE), multifaceted reflector lamps, Solid state lighting, Outdoor lighting luminaires, lighting accessories, lamps exempted by EISA 2007, and alternate methods of displaying compliance.	These comments do not address the proposed regulations or the process by which they were adopted and therefore do not require further response. The comments were made relative to a scoping workshop held to discuss potential new appliance efficiency proceedings and do not address this proceeding.
4.10a, 19.1	The Commission should clarify consumer versus non-consumer small battery charging systems by, for example, adopting the federal definitions, as it is difficult to determine when the products are expected to comply (as the compliance dates are different for consumer versus non-consumer battery charging systems).	The definition of “consumer product,” which already exists in the Commission’s regulations (Cal. Code Regs., tit. 20, § 1602(a), under “Consumer Product”) is outside the scope of these regulations, as no amendments or changes to this definition are proposed. As this comment does not address the regulations or the process by which they were adopted, no further response is required.
2.27	The Energy Commission should adopt the Department of Energy's definition of	This comment doesn’t address the regulations or the process by which they were adopted. This is because “consumer product” is an existing definition in the Energy Commission’s regulations (Cal. Code Regs., tit. 20, section 1602, subd. (a), “Consumer product”) referencing the federal definition in 42 U.S.C. § 32901(a)(3), and is

	"consumer product".	not proposed to be changed in this rulemaking. Therefore, no further response is required.
46.7	We request that the Energy Commission decline to regulate in future rulemakings those products (such as notebooks) whose efficiency is already regulated via the battery charger system regulations.	This comment does not address the regulations or the process by which they were adopted. Rather, it addresses the scope of future Commission rulemakings. Therefore, no response is required.