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Attachment A

Summary of Comments and Responses to Proposed 45-Day and 15-Day Language

Comment #	Summary of Comment	Response
Comments Related to Federal Updates		
1.a, 1.b, 1.c, and 1.d	All computer room air conditioners are now federally regulated products, whether air-cooled, water-cooled, glycol-cooled or evaporatively-cooled. While the Department of Energy did not establish minimum energy conservation standards for evaporatively-cooled computer room air conditioners, these products became federally covered equipment in 2012 when DOE added the "computer room AC" product class in the code of federal regulation. Consequently, we believe that the CEC is preempted from establishing its own state regulations. In addition, the test procedure referenced in Table C-1 of Section 1604 (i.e. ASHRAE 127-2001) has been withdrawn, and the new edition (i.e. 2012) does not contain a method of test or rating conditions to test and rate evaporatively-cooled computer air conditioners. In fact, there are currently no test procedures available to rate and test these products. So even if CEC believes that it can regulate this product class, manufacturers won't be able to rate their products and meet the minimum efficiency standards listed in Table C-9. We ask the CEC to remove the ANSI/ASHRAE reference in Table C-1 of Section 1604 and paragraph (b) (2) of Section 1605.3 (including Table C-9). Consequently, we ask that Title 20 be amended to remove the reference to ANSI/ASHRAE 127-2001 in Table C-1 of Section 1604 and that paragraph (b)(2) of Section 1605.3	The issue of whether evaporatively-cooled computer room air conditioners are federally regulated products is outside the scope of the current rulemaking and not relevant to the proposed changes which simply update the language to comport with changes to reflect the current federal data reporting requirements as found in 10 C.F.R. § 431.91 to 431.97. No changes were proposed the Energy Commission relating to the use of ASHRAE 127-2001 test method. **No change is recommended.**

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	(including Table C-9) be deleted in its entirety.	
2.a, 2.b, 2.c, 2.d, and 2.e	CEC templates for heat pumps (GTHP, LAHP, and VLHP) all currently require the input of "Off mode power consumption;" however, this requirement is premature as there is no test procedure for this metric. On July 8, 2014, U.S. Department of Energy released an enforcement policy statement announcing that it will not assert civil penalty authority for violation of the off-mode energy consumption standards for residential central air conditioners and heat pumps until 180 days following the publication of the final rule on test procedures. AHRI requests that this statement should be included in Section 1606 to make exceptions for manufacturers of small air-cooled central air conditioners and small air-source heat pumps so that Average Off Mode Power Consumption won't be reported until the 180 day period is over.	The proposed changes are to ensure the language in the sections of the Commission's regulations that reflect federal law is consistent with recent updates to 10 C.F.R. sections 430 and 431. These updates added three types of heat pumps and air conditioners to the scope of existing test procedures; these test procedures are not covered by the policy statement issued on July 8. Instructions for measuring off mode power consumption for air cooled air conditioner and air source heat pumps are provided in 10 C.F.R. section 423.23 (m) and (Appendix M to Subpart B of part 430). In addition, DOE policy on enforcing federal standards is not controlling on the Energy Commission. Because this rulemaking does not address the Commission's enforcement authority, AHRI's comment is outside the scope of this proceeding. **No change is recommended.**
3.a, 3.b, 3.c, 3.d, and 3.e	AHRI believes the Fan Energy Rating (FER) metric for residential furnace fans is premature due to the Federal Regulations affecting this product going into effect after July 2019. AHRI ask that CEC make the FER field optional until it is federally mandatory.	The FER metric for residential furnace fans was finalized by DOE on January 3, 2014, and went into effect on July 2, 2014. Therefore, the requirement is federally required and appropriate for inclusion in the Appliance Efficiency Regulations.
5	The 45-day Language should be modified to accurately	Staff has made revisions in the 15 day language to

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	reflect current federal standards.	accurately reflect current federal standards as noted by a number of stakeholders. **Changes were made to 45-day language and no additional changes are required at this time.**
6.a and 6.b	A number of comments relate to the commission's inclusion of federal appliance standards and test methods within the commission's regulatory language. These comments included adding proposed federal language that has yet to be adopted by the Department of Energy.	The federal portion of the Commission's regulations, found in section 1605.1 of Title 20, can only include final federal standards as published in the Code of Federal Regulations (CFR). As DOE makes changes to the CFR the commission updates Section 1605.1. Regardless of the language in the federal portion of the Commission's regulations, the language in the CFR controls. **No change is recommended.**
Comments Related to Heat Pump Water Chilling Packages		
4.a, 4.b, and 4.c	AHRI is asking not to collect data on heat pump water chilling packages by adopting a test and list measure, as it would be onerous to manufacturers.	The purpose of test and list is to develop a database of products based on the test procedure adopted by the Energy Commission. Heat pump water chilling packages are not certified to the Commission's database. Title 24 requires that only certified products that are in the Appliance Efficiency Database be installed in new construction. The adopted test procedure is needed to test heat pump water chilling packages for certification to the Commission's appliance database. Certification to the database would allow manufacturers to sell their equipment for installation. As a result, AHRI's proposed change would not be as or more effective at achieving the purpose of the regulation.

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		No change is recommended.
Comments Related to Air Filter Labeling		
7.a, 7.b, and 7.c	The proposal to certify air filter models in the Appliance Efficiency Database is expected to be burdensome for manufacturers and provide little value to consumers.	A number of stakeholder suggestions have already been incorporated to reduce certification burdens including the ability to test a limited range of sample air filter sizes and to extrapolate data for all other filter sizes. In addition, filing with the Commission can be done electronically reducing process costs. As fully analyzed in the staff report, Singh, Harinder and Ken Rider. 2015. *Staff Analysis of HVAC Air Filters, Dimming Fluorescent Ballasts, and Heat Pump Water Chilling Packages.* California Energy Commission. Publication Number: CEC-400-2015-007-SD, the adopted air filter regulations are cost effective. Air filter labeling regulations will save a significant amount of energy and natural gas statewide and will also help reduce maintenance costs and product failure. **No change is recommended.**
8.a, 8.b, and 8.c	Allowing manufacturers to report the efficiency and pressure drop ratings on their own websites instead of in the CEC database and on packaging.	Staff disagrees. While manufacturers are free to disclose the efficiency and pressure drop ratings on their website, point of purchase information is more effective for purposes of this air filter program than providing the information apart from the product. Reporting to the Commission's database ensures standardized information and markings which is critical for an effective labeling program. Consumers need to be able to purchase the correct air filter

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		regardless of manufacturer of the replacement filter. In addition, Title 24 requires filters to be labeled. Requiring online reporting at manufacturer's website as proposed by the AHRI would not meet the requirements of Title 24. **No change is recommended.**
9	Allowance for testing one filter size and scaling off of that for the other sizes of the same grade.	**Change was made in the 15-day language.**
10	Maximum allowable pressure drop should be consistent with actual filter performance.	**Change was made in the 15-day language.**
11	Air velocity for reporting the MERV rating must be specified in the air filter label.	HVAC system designers must choose a filter based on the HVAC system airflow rate. Cubic feet per minute (CFM) was identified as the preferred metric for the label in the Commission's staff report. In addition this approach is taken by AHRI standards 680-2009. After considering stakeholder comments the **changes were made to the air filter reporting labeling requirements.**
12	Fixing label either on the pleat pack or filter frame.	The Commission agrees that this would be as effective and less burdensome to manufacturers and **this change was made in the 15-day language.**
13	Label should provide guidance for statistical procedure such as the specification limit and confidence level, etc. for determining the performance MERV rating and pressure	AHRI test procedure already provides standardized test condition guidance and tolerances for conducting the test. Additional regulatory language detailing

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	drop.	statistical procedures are unnecessary to establish the characteristics of an air filter and would add additional burden on the test laboratory and manufacturers without added benefits and energy savings. **No change is recommended.**
14.a and 14.b	Recommend removing from pressure drop definition "also known as particle size removal efficiency."	Staff identified the error during the adoption hearing and the **correction was included in the adopted language.**
15.a and 15.b	CEC should specify exact filter size categories and require results specific to that filter size. CEC should also confirm that there is adequate clarity for how to scale results from a single test under AHRI 680. The pressure drop across the filter sizes at a given flow rate depends on the size of the filter, even if the filter type is the same. Since initial resistance is reported at CFM and not based on face velocity under AHRI680, a larger filter will have smaller initial resistance at a given CFM compared to small filter of the same type.	Manufacturers make many filter sizes and categorized filters sizes based on retail sales. Regulating size categories of air filters for labeling purposes will interfere with manufacturer's sales strategies without adding energy savings benefits. Commission staff believes that manufacturers should determine how they want to apply the test results for categorizing the size of their products. The adopted language allows a manufacturer to test representative air filter device sizes (small, medium, and large) of each filter media type and pleat density (same performance grade.) Adopted language allows manufacturers to scale the results of a single test. Staff agrees that this statement is true. No additional discussion is needed. **No change is recommended.**
16.a, 16.b, 16.c,	The CEC has missed an opportunity to align air filters	MERV is one of the requirements. MERV can only be

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and 16.d, 18	under a single system. Allowing both the use of the MERV and particle size efficiency rating may confuse consumers, contractors, and design professionals. It would be best to utilize just one rating system to avoid this market confusion. Given the wide-spread use of the MERV system, we recommend that the CEC require the use of the MERV rating both in Title 20 and Title 24. Manufacturers could continue to test using either ASHRAE 52.2 or AHRI 680 by using a crosswalk with AHRI 680 to convert the test results into MERV ratings.	determined by using the ASHRAE 52.2 test procedure. ASHRAE test dust is not suitable to test electronic filters and may cause damage to electronic filters. AHRI 680 test is suitable for testing all filter types and technologies. AHRI test values and formula provide results in particle size efficiency (PSE) but not in MERV. There is no direct conversion from AHRI 680 PSE to MERV. Requiring use of MERV measurement would limit the labeling and sale to fewer filters in the California market. Both MERV and PSE can be used to comply with Title 24. The commission's regulations are not the appropriate vehicle to harmonize two different industry test methods for overlapping products. **No change is recommended**
17	NRDC recommends that air filters be labeled with initial resistance at consistent air flow rates to allow for comparison across filters.	The proposed language is not a specification for air filter rating, but does specify a requirement for air filters to be labeled and disclose the performance data determined according to existing test standards AHRI 680 or ASHRAE 52.2. Thus the proposed label format can be used to report data from either of the test methods. Adopted air filter label requirements meet the needs of Title 24 regulations, which require that consumers be able to properly match air filters to their HVAC system by looking at a label. Because the primary purpose of the proposed air filter regulations is to make available the necessary information to building system designers and installers for installing the appropriate system to ensure maximum energy savings, additional labeling requirements are unnecessary to meet this purpose.

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		No change is recommended.
Comments Related to Fluorescent Dimming Ballasts		
19	Weighted Ballast Luminous Efficiency (Weighted BLE) Definition: The CA IOUs support the adoption of the Weighted BLE metric. This metric adequately captures performance of the ballast at 100%, 80%, and 50%, thereby allowing for the efficiency of dimming ballasts when operated at part load to be effectively evaluated and regulated. We believe the current section of the 45-day language that defines the method for calculating Weighted BLE can be improved, and we provide the following comments and proposed changes (proposed language identified with red text) accordingly. Currently, CEC defines Weighted BLE in Section 1604(j)(3)(D) as follows: Using P100, P80, and P50 to represent BLE at 100%, 80%, and 50% can cause confusion, given that P100, P80, and P50 can also be understood to represent ballast input power at 100%, 80%, and 50%, respectively. We suggest that CEC adopt the following definition of Weighted BLE. In addition, we recommend that CEC adopt the following changes within Section 1604.(j), to more clearly define intermediate measurements used to calculate weighted BLE: (B) Three sets of input power and arc power shall be measured using the federal test procedure with the total arc power tuned to 100, 80, and 50 percent of the measured maximum arc power. If a step dimming ballast or a ballast that can only turn connected lamps on or off has dimming steps other than 80 and 50 percent, then the closest step that	**Corresponding changes were incorporated in 15 day language** to achieve the enhanced clarity requested by this stakeholder.

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	is between 90 and including 65 percent shall be used for 80 percent testing, and the closest step that is between 65 and including 35 percent shall be used for 50 percent testing. If no step exists in the above prescribed ranges, then no result shall be recorded for that percentage dimming test. The resulting arc powers shall be recorded and referred to as AP100, AP80, and AP50; the resulting input powers shall be recorded and referred to as P100, P80, and P50. BLE100, BLE80, and BLE50 shall be calculated as AP100/P100, AP80/P80, and AP50/P50, respectively. Accordingly, in Section 1605.3(j), where the standard level is presented, the variables in the equation can be more clearly defined to ensure that manufacturers are correctly interpreting the rule. We recommend the following changes to Section 1605.3(j): These recommended changes will help clarify the definition and determination of Weighted BLE and increase the likelihood that the metric and corresponding standard is properly understood.	
20.a, 20.b, 20.c, and 20.d	CEC should set a power factor of 0.9 for operating modes of 50 and 80 percent of arc power, not just at 100 percent and require a 0.5 watt standby mode power draw. By relaxing PF requirements for dimming ballasts operating below 100%, CEC risks opening a loophole to allow for poor PF performance which could lead to manufacturers adjusting their products accordingly.	Staff incorporated power factor correction requirements at 100 percent output. This power factor correction should lead to similar benefits at other dimming ranges. NRDC's comments include a chart that shows that some power supplies are turning off power factor correction at lower outputs. However those outputs are all below 50% of full output, and would be outside of the range of the levels tested in the regulations. Further the behavior identified by the NRDC study is used to save more energy by disabling power factor correction. "It can be argued that the power factor

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		control mechanism described above is activated only when the load exceeds a predetermined threshold. This is probably aimed at obtaining good efficiency performances at lower output current values. Whenever the power factor control enters into action, this results into a clear reduction of the efficiency values which implies remarkable energy losses." Page 38 of *An energy-aware survey on ICT device power, 2012,* supplies, http://www.itu.int/dms_pub/itu-t/oth/4B/01/T4B010000070001PDFE.pdf. Manufacturers will have to include power factor control circuitry to comply with the 100% load point and will have no financial incentive to reduce the effectiveness of included features. **No change is recommended.**
21.a, 21.b, 21.c, 21.d, and 21.e	CEC should set the standby power limit to 0.5 watt instead of 1 watt.	A 0.5 watt power level was considered and found to increase the amount of energy savings of the standards. However, the impacts to functionality were unclear, as only one digitally controlled ballast was found that meets the proposed level. It is unclear whether a more stringent standard than the 1 watt level would have negative implications to critical functionality. This warrants additional research and investigation. However, a delay in adopting the standards would further delay implementation and reduce the bulk of energy savings. When considering the tradeoff of delay and potential savings, the Commission decided to adopt the standards at a less stringent level.
22	The first one regards one of the plots that were shown a little bit earlier, where there was a ballast input that related	Staff investigated the IP issue as it was raised during the pre-rulemaking process. Data submitted to the

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	with a green and red plot showing the cathode cut-out characteristics. Yeah, that's it there. And I'd just like to remind the Commission that there is intellectual property wrapped around the cathode cut-out technology. And by mandating such an action there may be issues within different companies about how to best accomplish this methodology. So again, I just wanted to remind about the IP issues that are embedded with the cathode cut-out technology.	Commission by the California IOUs revealed that each major manufacturer implements cathode cut-out in at least some of the dimming ballasts they make. It is therefore clear that cut-out is widely available and implemented and any IP issues, if they exist, have been overcome to provide a multi-manufacturer competitive marketplace. See page 31 of Singh, Harinder and Ken Rider. 2015. *Staff Analysis of HVAC Air Filters, Dimming Fluorescent Ballasts, and Heat Pump Water Chilling Packages.* California Energy Commission. Publication Number: CEC-400-2015-007-SD. In addition, the standards set performance levels rather than design requirements. Therefore, they do not specify the use of the cathode cut-out or cut-out method, thereby avoiding any further IP issues.
23	Regarding the Ballast Luminous Efficiency (BLE) measurement at 50 and 80 percent of light output, there is a considerable fixture in capacitor effects that occur with multi-lamp fluorescent ballasts during deep dim because typically in most cases the deep dimming is accomplished by raising the frequency. That makes any wiring effects if the contractor was not so neat with their wiring techniques and placement. The ballasts are sensitive to this type of effect and may cause reading errors or measurement errors when tested.	The California IOU contractor Daniel Young provided testimony that this was investigated and not observed to be an issue in dimming ballast tests. This investigation included involvement with industry members, and measurement error and difficulty reproducing results were not found. See page 4 of "Respsonse [sic] to 15-day language for Deep-Dimming Ballasts," CA IOUs, May 8, 2015.
24.a, 24.b, and 24.c	The California IOUs support the test methodology for BLE for dimming ballasts operated at 50% of full output. The IOUs provided test data and will provide additional detail to the docket on the testing in response to concerns about the reliability of the proposed test procedure, specifically	This comment supports the regulations and does not request changes to the regulations. The IOUs refer to issues raised by stakeholders regarding measurement of dimmed states lower than those included in the regulation. NEMA submitted a thorough write-up

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	the accuracy and repeatability of the test for lamps operated in a dimmed state.	regarding this measurement issue in the pre-rulemaking process "NEMA Comments on Staff Analysis of HVAC Air Filters, Dimming Fluorescent Ballasts, and Heat Pump Water Chilling Packages," NEMA, June 18, 2014. (available here: http://www.energy.ca.gov/appliances/2014-AAER-01/prerulemaking/comments/14-AAER1_NEMA_Comments_on_Title_20_Dimming_Ballast_Proposal_2014-06-18_TN-73229.pdf see page 4.) The industry analysis determined that measurements at 50% dimming levels and above did not suffer from these accuracy limitations. In addition they found that regulating based on BLE would reduce accuracy problems. The adopted regulations only measures within the range recommended by NEMA, and also moved to a regulation based on BLE. The California IOUs also submitted a comment in the 45-day comment period supporting the accuracy of the test method "Comments on 45-day language for Dimming Ballasts," IOUs, April 9, 2015, see pages 5 and 6 along with supporting testimony at the March 17, 2015 hearing (see transcript pages 42 and 43).
25.a and 25.b	The CEC still has not restricted the scope of products impacted by the proposal to sufficiently reflect the limited data sets provided for analysis. Philips and NEMA disagree with the IOU comments of November 18, 2014 which attempted to rebut our assertions that their submissions and proposal were not representative or statistically significant. The cited data sets of products actually tested and	Substantial evidence in the record shows that the proposed regulations are cost-effective and technically feasible, including for one- and two-lamp T8 and T5 ballasts, and three- and four-lamp ballasts. The alternative of reducing the scope was considered but was found to not result in the same level of cost effective energy savings. In addition, the record

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	evaluated are very limited in scope, by both their technology and the number of lamps driven, and are not representative or statistically significant. When more test data becomes available for additional products in terms of manufacturer, number of lamps, and control types, then CEC staff should expand the scope and applicability of the standard as the data and evidence suggests is appropriate. Scope should be limited to one- and two-lamp T8 ballasts, and remove T5 ballasts and three- and four-lamp ballasts.	indicates there are already existing products which comply with the standard. See Singh, Harinder and Ken Rider. 2015. *Staff Analysis of HVAC Air Filters, Dimming Fluorescent Ballasts, and Heat Pump Water Chilling Packages.* California Energy Commission. Publication Number: CEC-400-2015-007-SD. NEMA has not provided any evidence to contradict this information. Therefore, **no change is recommended.**
26.a, 26.b	NEMA and Philips request that the CEC raise the maximum allowance for standby power from 1.0W to 1.5W. Standby power is directly tied to functionality and flexibility for communicating ballasts. Consumer demand for wireless control, utility demand response, and other connectivity pathways is becoming increasingly important in the building landscape and NEMA is concerned that 1W of standby power is too low and will stifle innovation and flexibility in lighting control. It is important to note that the variety of protocols and internal differences within protocols greatly affects overall standby power consumption. That is, most protocols involve the flexibility to use less or more standby power depending on the degree of connectivity needed for the product and the system the product is part of. Thus we cannot state that certain protocols will be unavailable, or that there is some specific trigger point at which connectivity is overly throttled. At the same time, there is growing global interest in the "Internet of Things" and much of this connectivity is expected to be wireless, escaping the confines of specific	Staff is aware of the "internet of things" and the concept of wireless interconnectivity and "smart appliances." The record indicates that 1 watt is feasible and saves more energy than 1.5 watts, and therefore better meets the goals of the standards to cost-effectively save energy. The 1 watt standard is also supported by other stakeholders, such as the IOUs and NRDC, since there are current products that comply. See the economic analysis show cost effective energy savings in Singh, Harinder and Ken Rider. 2015. *Staff Analysis of HVAC Air Filters, Dimming Fluorescent Ballasts, and Heat Pump Water Chilling Packages.* California Energy Commission. Publication Number: CEC-400-2015-007-SD. There is nothing in the record that identifies specific functionality of a wireless ballast that would be inhibited by the 1 watt standard. While the comment asserts that too-low standby power will eliminate many wireless controls, this is mere speculation that 1 watt is

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	physical connections and hard-wired protocols. Low standby power stifles this flexibility. Likewise, the CEC can already discern that hard wired lighting controls have become a challenge in California, as evidenced in the vocal expressions of concern from lighting retrofitters during the Title 24 March 2-3, 2015 hearings. These retrofitters have specifically cited the cost of controls, particularly hard wired controls, as a hurdle that stops lighting retrofit. Wireless controls greatly reduce the need for pulling additional wiring, yet too-low standby power will eliminate many of these products. While existing buildings can make controls wiring part of the design, retrofitting existing buildings is more challenging. We hope the CEC will afford consumers and contractors as much flexibility as possible as they pursue energy-efficiency lighting retrofits in the State. The Commission should take this larger, holistic view into account in this rulemaking. Stakeholders suggest aligning the standby power test procedure with the DOE procedure defined in 10 CFR 430 Appendix Q, which does not include a measurement for P_0. If no additional allowance is made, we urge the CEC to limit the scope of standby measurements to communications enabled ballasts, until such time similar data is made available for other dimming technologies.	in fact too low – no evidence has been presented to show that a 1 watt standby power has or will limit functionality. The Commission is aligned with DOE testing, except has additional guidance on how the control setting is selected. **No change is recommended.**
27.a and 27.b	Cathode Cutout and Lamp-to-Ballast Compatibility. NEMA cautions against restricting the proposed allowances for performance any farther, either in this proceeding or in future proceedings. Not evidenced in the IOU testing or arguments due to the IOUs' limited product selection and	The design standard NEMA LL9 describes minimum filament heating requirements to ensure compatibility of dimming ballasts with linear fluorescent lamps. This becomes relevant when looking at cathode cutout at lower dimming levels. If too little heat is provided,

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	evaluation and minimal life testing is the fact that different designs/brands of fluorescent lamp have differing needs for filament heating. Some lamps do not need as much filament heat, while some do. There is a wide availability of T5 and T8 lamps in the marketplace and price often dictates product selection rather than pairing lamps to ballasts on a same-manufacturer basis. As long as ballasts are afforded flexibility in the amount of filament heat they provide, compatibility is less of a problem. An overly-strict limitation of filament heating power will result in increased lamp to ballast incompatibility, which can contribute to early lamp failure. To ensure maximum consumer satisfaction during the maintenance phase, NEMA recommends a broad range of ballast energy allowances and thus greater potential lamp-to-ballast compatibility and interoperability in the field, as is reflected in the recommendations of NEMA Standard LL-93. For additional information regarding lamp-to-ballast compatibility we invite interested parties to review a presentation given by NEMA members to the IEC about the findings of our 5-year lamp survivability test study which examined lamp life based on lamp-to-ballast combination variation at multiple dimming levels. This presentation was submitted to the docket with our previous comments of June of 2014 under filename "14-AAER-1 NEMA LS-11 Paper_20070221_final". Philips recommends the CEC should follow the recommendations of NEMA Standard LL-9 to ensure the greatest flexibility in lamp/ballast compatibility.	lamp flickering, cycling, or failure to light can occur. The more stringent a standard, the more important it is to reduce extra and unnecessary cathode heat. If a standard were more stringent than those adopted, then pressure to reduce cathode heat that might affect lamp performance would occur. However, the proposed standards do not require cathode-cut out at very low dimming levels and therefore do not contradict the NEMA standard. NEMA suggested this alignment with NEMA LL9 would only become an issue if the stringency of the standards were further increased, which they were not. **No change is recommended.**
28.a and 28.b	NEMA and Philips propose testing 1- and 2-lamp 32W T8	80% is a key measurement point because it represents a

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	fluorescent dimming ballasts at 100% and 50% arc power (and not at 80% arc power), and using these two test points to set minimum Ballast Luminous Efficiency (BLE) requirements, for which products to be sold in California must equal or exceed for each dimming level.	commonly used level and a key point of cathode heat cutout that leads to energy savings. This is can be seen in the data submitted by the California IOUs Dimming Fluorescent Ballasts Codes and Standards Enhancement Initiative. August 5, 2014, PG&E SCE SDG&E SCG, Table 4.1, pp 13, and repeated in Figure 6 of the staff report. The duty cycle of dimming ballasts at 80% is more than any other operating point other than off. Testing at only 50% and 100% arc power would not provide this measurement and therefore would inaccurately reflect the actual energy consumption of the dimming ballast. As a result, NEMA and Philips' recommendation would be less effective at achieving the purpose of the adopted standard, to accurately measure the energy consumption of dimming ballasts. **No change is recommended.**
29.a and 29.b	NEMA and Philips propose that the CEC align its reporting format with the DOE requirements, in which BLE is reported to three decimal places, and which would allow manufacturers to use existing data collection and reporting systems. We propose changing item J in Table X to correspond with this proposal	In the Energy Commission's regulations, Table X includes all relevant DOE reporting requirements related to federally regulated appliances. While there are some voluntary categories of information not found in the DOE reporting requirements, those categories have been included at the request of previous stakeholders in prior rulemakings and are not the subject of this rulemaking. The Commission requires reporting for all fields necessary to demonstrate compliance with the proposed standards. **No change is recommended.**
32	While Philips appreciates the CEC decision to maintain the lowest arc power efficacy test point at 50% arc power, we	The proposed regulations evaluate overall efficiency. Efficiency at one point is more important than at

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	believe that testing at three test points to determine ballast efficiency is unnecessary and overly burdensome to manufacturers. In addition, the weighted ballast luminous efficacy metric is overly complex and adds unnecessarily to the reporting burden. We question the validity of the data used to develop the relative usage values table used for the calculation described in 1604(j)(D). NEMA proposes to remove weighted levels, and instead use two separate targets.	another, which is why weighted aggregation is used. Weighted aggregation also better aligns with real world product use (duty cycle), ensuring that the measured results accurately reflect the energy consumption of the product. Philips' and NEMA's proposal to eliminate test points or weighted levels could result in underreporting the actual efficiency of dimming ballasts, thereby reducing energy savings without gaining any clear benefit. As a result, this would not be as or more effective at achieving the goals of the regulation. **No change is recommended.**
31	NEMA proposed that measured BLE for products to be sold in California must equal or exceed the minimum BLE derived from their recommended equation with the same confidence level in reporting as is required by the DOE for fixed-output ballasts	The adopted standards utilize the DOE test procedure, and therefore the reporting of BLE as a result of such tests should be harmonized with those of DOE regulated fixed-output ballasts. **No further change is recommended.**
30	NEMA disagrees with setting any requirements for power factor, flicker, or other quality parameters beyond those addressed in the Staff Report. Power factor is not effective energy efficiency metric, and there are no reliable, effective, repeatable test methods for flicker. Manufacturers today address these issues through consumer satisfaction processes and internal (proprietary) striation and flicker testing and we contend that they are sufficient. No additional quality metrics should be added to the proposed regulation.	There are no requirements in the adopted regulations for flicker or other quality parameters. The adopted standards do include a requirement for power factor. A power factor of 0.9 or greater is cost-effective and technically feasible. Evidence in the record includes a dimmable ballast tested by the IOUs that had a power factor of 0.98 or higher. This also means that a high power factor is standard practice across manufacturers, arc-power, cathode cutoff, control type, and number of attached lamps. Power factor is an important metric because:http://docketpublic.energy.ca.gov/PublicDocu

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		ments/15-AAER-01/TN203717_20150220T141247_Staff_Analysis_of_HVAC_Air_Filters_Dimming_Fluorescent_Ballasts.pdf Page 38 and 41. **No change is recommended.**
Comments Related to Toilets, Faucets, and Urinals		
	A number of comments were received in 45-day language regarding toilets, urinals, and faucets.	These products are no longer part of this rulemaking, and the proposed regulations are already adopted.

List of Full Commentaries found at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=15-AAER-01