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[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 430

[Docket No. EERE-2014-BT-TP-0007]

RIN: 1904-AD17

Energy Conservation Program: Test Procedures for Ceiling Fan Light Kits

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

ACTION: Final rule.

SUMMARY: On October 31, 2014, the U.S. Department of Energy (DOE) published a notice of proposed rulemaking (NOPR) to amend the test procedures for ceiling fan light kits (CFLKs).

That proposed rulemaking serves as the basis for this final rule. In this final rule, DOE updates the current test procedures by replacing references to ENERGY STAR test procedures with references to DOE lamps test procedures for medium screw base lamps and to industry test procedures for pin-based fluorescent lamps. DOE is also adding test procedures to establish an efficacy-based metric for all lamps packaged with CFLKs and for CFLKs with integrated solid-state lighting circuitry. These additional test procedures also specify that DOE lamp test procedures be used to test lamps packaged with CFLKs, and where such test procedures do not exist, lamps packaged with CFLKs be tested according to current industry test procedures for those lamps. This final rule also replaces references to superseded ENERGY STAR Program requirements with tables that contain the specific performance requirements from the ENERGY STAR documents. This final rule addresses standby and off mode energy usage for CFLKs.

DOE also provides updated guidance related to accent lighting in CFLKs and the applicability of the existing energy conservation standards to accent lighting. In this final rule, DOE also reinterprets the definition of a ceiling fan to include hugger fans and clarifies that ceiling fans that produce large volumes of airflow also meet the definition. DOE is also issuing a reinterpretation as it relates to compliance with the 190 W limit requirement for CFLKs with sockets other than medium screw base and pin-based for fluorescent lamps.

DATES: The effective date of this rule is **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The final rule changes to appendix V will be mandatory for product testing starting **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The final rule test procedures specified by appendix V1 will be mandatory for product testing starting on the compliance date of any amended energy conservation standards (ECS) for CFLKs. Any final rule establishing amended CFLK ECS will provide notice of the required compliance date and corresponding required use of appendix V1.

The incorporation by reference of certain publications listed in this rule was approved by the Director of the Federal Register as of **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: The docket, which includes Federal Register notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at [regulations.gov](https://www.regulations.gov). All documents in the docket are listed in the [regulations.gov](https://www.regulations.gov) index.

However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

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

<http://www.regulations.gov/#!docketDetail;D=EERE-2014-BT-TP-0007>. This web page will contain a link to the docket for this notice on the regulations.gov site. The regulations.gov web page will contain simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact Ms. Brenda Edwards at (202) 586-2945 or by email: Brenda.Edwards@ee.doe.gov.

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SUPPLEMENTARY INFORMATION:

In this final rule, DOE incorporates by reference into part 430 the following industry standards:

(1) IES LM-79-2008 (“IES LM-79-08”), IES Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products, approved December 31, 2007.

(2) IES LM-66-2014 (“IES LM-66-14”), IES Approved Method for the Electrical and Photometric Measurements of Single-Based Fluorescent Lamps, approved December 30, 2014.

Interested persons can obtain copies of IES standards from the Illuminating Engineering Society, 120 Wall Street, Floor 17, New York, NY 10005-4001, (212) 248-5000, or www.ies.org.

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I. Authority and Background

Title III, Part B¹ of the Energy Policy and Conservation Act of 1975 (EPCA), Pub. L. 94-163 (42 U.S.C. 6291 et. seq.), established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering the ceiling fan light kits (CFLKs) that are the focus of this notice.² (6293(b)(16)(A)(ii), 6295(ff)(2)-(5))

Under EPCA, the energy conservation program consists essentially of four parts: (1) testing, (2) labeling, (3) energy conservation standards, and (4) certification and enforcement procedures. The testing requirements consist of test procedures that manufacturers of covered products must follow in order to produce data that is used for (1) certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA, and (2) making other representations about the efficiency of those products. (42 U.S.C. 6293(c); 42

¹ For editorial reasons, upon codification in the U.S. Code, Part B was re-designated Part A.

² All references to EPCA in this document refer to the statute as amended through the Energy Efficiency Improvement Act of 2015, Pub. L. 114-11 (Apr. 30, 2015).

U.S.C. 6295(s)) Similarly, DOE must use these test requirements to determine whether products comply with any relevant standards established under EPCA. (42 U.S.C. 6295(s))

EPCA requires that test procedures for ceiling fan light kits be based on the “ENERGY STAR® Program Requirements for CFLs” and the “ENERGY STAR Program Requirements for Residential Light Fixtures” in effect as of August 8, 2005. (42 U.S.C. 6293(b)(16)(A)(ii)) DOE published a final rule in December 2006 (December 2006 final rule) and established DOE’s current test procedures for ceiling fan light kits under 10 CFR part 430, subpart B, appendix V. 71 FR 71340 (Dec. 8, 2006) EPCA also provides, however, that DOE “may review and revise” the ceiling fan light kit test procedures. (42 U.S.C. 6293(b)(16)(B)). Accordingly, as discussed in section III.A, DOE is replacing the existing references to ENERGY STAR program requirements with direct references to the latest versions of the appropriate industry test methods.

General Test Procedure Rulemaking Process

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

In addition, if DOE determines that a test procedure amendment is warranted, it must publish proposed test procedures and offer the public an opportunity to present oral and written

comments on them. (42 U.S.C. 6293(b)(2)) In any rulemaking to amend a test procedure, DOE must also determine to what extent, if any, the proposed test procedure would alter the product's measured energy efficiency as determined under the existing test procedure. (42 U.S.C. 6293(e))

EPCA requires DOE, at least once every 7 years, to evaluate all covered products and either amend the test procedures (if the Secretary determines that amended test procedures would more accurately or fully comply with the requirements of 42 U.S.C. 6293(b)(3)) or publish a determination in the Federal Register not to amend them. (42 U.S.C. 6293(b)(1)(A)) DOE published a NOPR to propose amendments for its test procedures for CFLKs (October 2014 NOPR). 79 FR 64688 (October 31, 2014).

For test procedures of covered products that do not fully account for standby mode and off mode energy consumption, EPCA directs DOE to amend its test procedures to account for standby mode and off mode energy consumption, if technically feasible. (42 U.S.C. 6295(gg)(2)(A)) If integrated test procedures are technically infeasible, DOE must prescribe separate standby mode and off mode test procedures for the covered product, if technically feasible. *Id.*

In the October 2014 NOPR, DOE proposed amendments to the current test procedures and new test procedures that would support amendments to the CFLK energy conservation standards currently being considered by DOE. The October 2014 NOPR also proposed to replace references to ENERGY STAR performance requirements with tables that contain the specific performance requirements from the ENERGY STAR documents and proposed updated

guidance related to accent lighting in CFLKs. DOE conducted a public meeting to discuss and receive comments on the October 2014 NOPR on November 18, 2014.

Background on Related CFLK Standards Rulemaking

EPCA, as amended, established separate energy conservation standards for three groups of CFLKs: (1) those with medium screw base sockets, (2) those with pin-based sockets for fluorescent lamps, and (3) all other CFLKs. (42 U.S.C. 6295(ff)(2)-(4)) In a technical amendment published on October 18, 2005, DOE codified the statute's requirements for CFLKs with medium screw base sockets and CFLKs with pin-based sockets for fluorescent lamps. 70 FR 60413. For all other CFLKs, EPCA specified that the prescribed standard for these CFLKs would become effective only if DOE failed to issue a final rule on energy conservation standards for CFLKs by January 1, 2007. (42 U.S.C. 6295(ff)(4)(C)) Because DOE did not issue a final rule on standards for CFLKs by January 1, 2007, DOE published a technical amendment that codified the statute's requirements for all CFLKs other than those with medium screw base and pin-based sockets for fluorescent lamps. 72 FR 1270 (Jan. 11, 2007). DOE subsequently published another technical amendment to codify the EPCA requirement that CFLKs with sockets for pin-based fluorescent lamps be packaged with lamps to fill all sockets. 74 FR 12058 (Mar. 3, 2009).

EPCA allows DOE to amend energy conservation standards for CFLKs any time after January 1, 2010. (42 U.S.C. 6295(ff)(5)) In a separate rulemaking proceeding, DOE is proposing

amending energy conservation standards for CFLKs.³ DOE initiated that rulemaking by publishing a Federal Register notice announcing a public meeting and availability of the framework document. 78 FR 16443 (Mar. 15, 2013). DOE held a public meeting to discuss the framework document for the CFLK standards rulemaking on March 22, 2013. DOE issued the preliminary analysis for the CFLK energy conservation standards rulemaking on October 31, 2014. 79 FR 64712 (Oct. 31, 2014). DOE held a public meeting to discuss the preliminary analysis for the CFLK standards rulemaking on November 18, 2014. DOE subsequently issued a NOPR for the CFLK energy conservation standards rulemaking (hereafter “CFLK ECS NOPR”) and held a public meeting on August 18, 2015. 80 FR 48624 (August 13, 2015).

II. Synopsis of the Final Rule

This final rule amends DOE’s current test procedures for CFLKs contained in 10 CFR part 430, subpart B, appendix V; 10 CFR 429.33; and 10 CFR 430.23(x). This final rule: (1) requires that representations of efficacy, including certifications of compliance with CFLK standards, be made according to DOE lamp test procedures, where they exist, and industry test procedures where relevant DOE test procedures do not exist; (2) replaces references to superseded ENERGY STAR⁴ requirements in appendix V with references to the latest versions of industry standards; and (3) for ease of reference, replaces references to ENERGY STAR requirements in existing CFLK standards contained in 10 CFR 430.32(s) with the specific requirements.

³ DOE has published a framework document, preliminary analysis, and NOPR for amending energy conservation standards for CFLKs. Further information is available at www.regulations.gov under Docket ID: EERE-2012-BT-STD-0045.

⁴ ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and DOE that establishes a voluntary rating, certification, and labeling program for highly energy efficient consumer products and commercial equipment. Information on the program is available at: <http://www.energystar.gov>.

To support the ongoing ECS rulemaking for CFLKs, this final rule also establishes test procedures for a single efficiency metric measured in lumens per watt (hereafter, “efficacy”), that is applicable to all CFLKs. These procedures are set forth in a new Appendix V1. Where possible, the CFLK efficiency is determined by measuring the efficacy of the lamp(s) packaged with the CFLK (hereafter, “lamp efficacy”) and requires the use of existing DOE lamp test procedures, so that lamps will be tested and rated in a uniform manner. Where it is technically infeasible to measure lamp efficacy (e.g., for CFLKs with integrated solid-state lighting⁵ circuitry), CFLK efficiency is determined by measuring the efficacy of the CFLK itself (hereafter, “luminaire efficacy”). DOE also sets forth the test procedures for CFLKs packaged with inseparable light sources that require luminaire efficacy testing and for CFLKs packaged with lamps for which DOE test procedures do not exist in the new Appendix V1. Because these amendments will likely change the measured values required to comply with the existing CFLK standards for all CFLKs except CFLKs with medium screw base sockets, DOE is requiring the use of the new appendix V1 and corresponding updates to 10 CFR 429.33, 10 CFR 430.3 and 10 CFR 430.23(x) to be concurrent with the compliance date of any standards established by the ongoing ECS rulemaking for CFLKs. 79 FR 64712 (October 31, 2014).

In this final rule, DOE also modifies previously issued guidance regarding accent lighting in CFLKs to specify that such light sources in CFLKs must be tested and are subject to current energy conservation standards. DOE also reinterprets the EPCA definition of ceiling fan to include hugger fans and clarifies that ceiling fans that produce large volumes of airflow also

⁵ Solid-state lighting or “SSL” refers to a class of lighting technologies based on semiconductor materials. Light emitting diodes (LEDs) are the most common type of SSL on the market today.

meet the EPCA definition. As a result, CFLKs attached to these fans are subject to existing CFLK energy conservation standards. DOE is also clarifying its interpretation regarding compliance with the 190 W limit requirement in 10 CFR 430.32(s)(4) for CFLKs with sockets other than medium screw base and pin-based for fluorescent lamps.

In this final rule, DOE also addresses standby mode and off-mode power consumption for CFLKs. (42 U.S.C. 6295(gg)(2)(A) and (3)) In summary, DOE accounts for standby mode energy consumption of CFLKs under the efficiency metric for ceiling fans rather than under the CFLK efficiency metric.

III. Discussion

In response to the October 2014 NOPR and in addition to comments received during the November 2014 public meeting, DOE received written comments from the American Lighting Association (ALA) and a joint comment filed on behalf of the Appliance Standards Awareness Project, the Alliance to Save Energy, the American Council for an Energy-Efficient Economy, the Natural Resources Defense Council, the Northwest Energy Efficiency Alliance, and the Northwest Power and Conservation Council (ASAP et al.). The issues on which DOE received comments, as well as DOE's responses to those comments and the resulting changes to the test procedures for CFLKs, are discussed in this section.

A. Amendments to Existing Test Procedures

This final rule amends existing test procedures to replace references to superseded ENERGY STAR requirements in appendix V with references to existing DOE lamp test procedures or the latest versions of industry standards. As discussed in the paragraphs that

follow, DOE has concluded that these changes will not affect any measurements required to comply with existing standards.

1. Test Procedures for CFLKs Packaged With Medium Screw Bases

For CFLKs with medium screw base sockets, the current DOE test procedure references the “CFL Requirements for Testing” of the “ENERGY STAR Program Requirements for Compact Fluorescent Lamps,” Version 3.0, which in turn references the Illuminating Engineering Society of North America (IES) LM-66-00 test procedures for lamp efficacy testing. In the October 2014 NOPR, DOE proposed to replace the reference to the ENERGY STAR specification with a reference to the current DOE test procedure for medium screw base compact fluorescent lamps (located at 10 CFR 430, subpart B, appendix W). DOE notes that Appendix W currently references IES LM-66-11 and that DOE has proposed to update Appendix W to reference IES LM-66-14. (80 FR 45724, July 31, 2015). DOE received comments from ALA and from ASAP et al. supporting the approach to replace references to ENERGY STAR specifications with references to current DOE test procedures. (ALA, No. 6⁶ at p. 1; ASAP et al., No. 5 at p. 1) Consequently, DOE is adopting the proposal without modification, which references 10 CFR 430, subpart B, appendix W for CFLKs packaged with medium screw bases.

2. Test Procedures for CFLKs Packaged With Pin-Based Fluorescent Lamps

For CFLKs with pin-based sockets for fluorescent lamps, the current DOE test procedure at Appendix V references the “ENERGY STAR Program Requirements for Residential Light

⁶ A notation in this form provides a reference for information that is in the docket of DOE’s rulemaking to develop test procedures for CFLKs (Docket No. EERE-2014-BT-TP-0007), which is maintained at www.regulations.gov. This notation indicates that the statement preceding the reference is document number 6 in the docket for the CFLKs test procedure rulemaking, and appears at page 1 of that document.

Fixtures,” Version 4.0, which in turn references IES LM-66-00 (for compact fluorescent lamps [CFLs]) and IES LM-9-99 (for all other fluorescent lamps). In the October 2014 NOPR, DOE proposed to replace the reference to the ENERGY STAR specification with direct references to the current industry test procedures. At the time of the October 2014 NOPR, the relevant industry standards for pin-based fluorescent lamps were IES LM-66-11 and IES LM-9-09. Subsequent to the October 2014 NOPR, IES LM-66-11 was replaced with IES LM-66-14 as the latest industry version. The IES LM-66-14 update makes a number of changes, including clarifying that electrodeless CFLs are within the scope of LM-66-14. DOE notes that LM-66-11 and LM-66-14 contain the same methodology for testing compact fluorescent lamps and has concluded, based on a review of the updated test method, that there are no changes between LM-66-11 and LM-66-14 that will materially impact the measurement values of pin-based fluorescent lamps, which are tested on commercially available ballasts. In keeping with DOE’s proposal from the October 2014 NOPR to reference the most current industry standards, DOE references LM-66-14 in this final rule.

In the NOPR, DOE referenced sections 4-11 of IES LM-66-11 for testing CFLKs with pin-based compact fluorescent lamps. In this final rule, DOE is referencing sections 4-6 of the updated IES LM-66-14. Further, in the NOPR, DOE incorrectly referenced sections 3-7 of IES LM-9-09 for testing CFLKs with pin-based sockets for all other types of fluorescent lamps. In this final rule, DOE is appropriately referencing sections 4-7 of the IES LM-9-09.

The ENERGY STAR program requirements referenced in the current DOE test procedures for CFLKs with pin-based sockets at Appendix V also specify that the efficacy of the lamp should be measured using the ballast with which it is packaged rather than a reference

ballast. DOE noted in the October 2014 NOPR that although both IES LM-66-11 and IES LM-9-09 specify that lamps with external ballasts (e.g., pin-based fluorescent lamps) be tested on a reference ballast, they also contain provisions that allow for such lamps to be tested on commercially available ballasts, rather than on a reference ballast, when it is desirable to measure the performance (e.g., system efficacy) of a specific lamp ballast platform. DOE notes that IES LM-66-14 maintains this provision. Because changing the current test procedure to require measurement of pin-based fluorescent lamps on a reference ballast would result in a change in measured values, DOE proposed to specify in appendix V that system efficacy testing of pin-based fluorescent lamps be conducted with ballasts packaged with CFLKs. DOE received comments from ALA and from ASAP et al. supporting this approach. (ALA, No. 6 at p. 1; ASAP et al., No. 5 at p. 1)

In this final rule, DOE is adopting the proposed methodology without modification by specifying in appendix V that system efficacy testing of pin-based fluorescent lamps be conducted with ballasts packaged with CFLKs.

3. Clarifications to Energy Conservation Standard Text at 10 CFR 430.32(s)

CFLK energy conservation standards are codified in 10 CFR 430.32(s). Currently the text in 10 CFR 430.32(s) refers to the superseded ENERGY STAR Program requirements for Compact Fluorescent Lamps, version 3.0, for standards applicable to CFLKs packaged with medium screw base lamps and to the superseded ENERGY STAR Program requirements for Residential Light Fixtures, version 4.0, for standards applicable to CFLKs packaged with pin-based fluorescent lamps. In the October 2014 NOPR, DOE proposed to replace the references to ENERGY STAR with tables that contain the specific performance requirements from the

ENERGY STAR documents, to state more clearly the minimum requirements for these products. For CFLKs packaged with medium screw base CFLs, the requirements include efficacy, lumen maintenance at 1,000 hours, lumen maintenance at 40 percent of lifetime, rapid cycle stress, and lifetime requirements. Measurements of these parameters are as defined in 10 CFR 430, subpart B, appendix W. For CFLKs packaged with medium screw base light sources other than CFLs, the requirements include efficacy requirements. For CFLKs packaged with pin-based fluorescent lamps, the requirements include system efficacy and a requirement that electronic ballasts be utilized.

ALA, the only stakeholder to comment on this proposal, agreed with DOE's approach to clarify the text specifying existing standards for CFLKs. (ALA, No. 6 at p. 6) This final rule updates 10 CFR 430.32(s) to directly specify the requirements for CFLKs with medium screw base sockets and for CFLKs with pin-based sockets for fluorescent lamps rather than by referencing ENERGY STAR documents to eliminate confusion for stakeholders.

4. Clarifications for Accent Lighting

EPCA requires that CFLKs other than those with medium screw base sockets and pin-based sockets for fluorescent lamps not be capable of operating with lamps that total more than 190 watts. (42 U.S.C. 6295(ff)(4); 10 CFR 430.32(s)(4)) In a December 6, 2006 interpretation, DOE stated that DOE does not consider ceiling fan accent lighting that is not a significant light source to be part of the 190-Watt limitation. (71 FR 71340, Dec. 8, 2006) In the October 2014 NOPR, DOE proposed to withdraw this guidance because DOE determined that the guidance requires a subjective determination of what constitutes "a significant light source" that could result in inconsistency in the application of CFLK standards.

While ASAP et al. supported DOE's proposal, noting that the proposal would more accurately represent CFLK energy consumption, ALA opposed DOE's proposal. (ASAP et al., No. 5 at pp. 1-2; ALA, No. 6 at pp. 3-5) ALA claimed that DOE did not provide sufficient rationale for changing its position and also claimed that accent lighting falls outside the statutory definition of a CFLK. ALA claimed that DOE's proposed change would result in some previously unregulated products becoming covered products and that substantial lead time would be required to redesign, test, certify and label these products. ALA concluded that this would in effect constitute the establishment of a new standard for certain types of CFLKs. ALA noted that EPCA often provides substantial lead time before compliance when a new standard is required and that EPCA also requires that new standards not be amended for six years. ALA recommended that, to avoid a "staggering" effect, in which different types of CFLKs would have different compliance dates, DOE should make the new accent lighting guidance effective on the compliance date of the current ECS rulemaking. (ALA, No. 6 at pp. 3-5)

In response, consistent with its statements in the October 2014 NOPR, DOE has reconsidered the conclusions that led to the 2006 interpretation. DOE concluded in the 2006 rule that, because EPCA defines a ceiling fan light kit, in part, as equipment "designed to provide light" (42 U.S.C. 6291(50)), and because accent lighting is typically used for decorative purposes rather than to provide "direct" light, accent lighting is not within the EPCA definition of a CFLK. DOE also stated that it was concerned with addressing energy consumption by light sources aligned with the "primary purpose" of the ceiling fan light kit. For ceiling fan light kits, DOE stated that the general illumination provided by the light kit is its principal function, and thus should be subject to the 190-watt limitation. DOE believed that other ancillary lighting, such

as accent lighting, serves primarily an aesthetic purpose and is therefore not part of the general illumination function of the ceiling fan light kit. DOE further concluded that not subjecting accent lighting to the 190 watt limitation was consistent with EPCA's treatment of ceiling fan light kits with medium-screw base sockets and those with pin-based sockets for fluorescent lamps. For these two types of ceiling fan light kits, DOE noted that section 325(ff) of EPCA regulates only lamps inserted into screw base or pin-based sockets, and not any accent lights otherwise incorporated into the fan. (42 U.S.C. 6295(ff)(2)–(3))

In reconsidering its conclusions from the 2006 interpretation, DOE notes that the purpose of accent lighting is to provide light. Because EPCA does not specify that only “direct” or “general” lighting fits within the definition at 42 U.S.C. 6291(50), DOE has determined that its previous conclusion was too narrow a reading of the definition of CFLK. The term “designed to provide light” can be interpreted to encompass accent lighting, which provides decorative light. In addition, the 190-watt limitation in 42 U.S.C. 6295(ff)(4)(C) applies to “lamps” to be used in a CFLK, and the term “lamps” does not include or refer to any language limiting its scope to direct or general lighting. Thus, the term “lamps,” in this provision, can be interpreted to encompass lamps or light sources used or intended to be used for accent lighting.

DOE emphasizes the stated purposes of EPCA include the conservation of energy supplies through energy conservation programs and the improved energy efficiency of major appliances and certain other consumer products. *See generally* 42 U.S.C. 6201. A reading of 6291(50) and 6295(ff)(4)(C) that treats accent lighting the same as other uses of lighting is more consistent with these statutory purposes than the more narrow interpretations adopted by DOE in

2006. DOE further notes that many products on the market today cast doubt on important assumptions that underlay DOE's 2006 interpretation. Many of the lamps marketed as "accent lighting" attached to fans currently on the market are not low wattage lamps used for aesthetic purposes, but instead high wattage lamps that consumers actually use for more general lighting purposes. Up-lighting, which in 2006 DOE did not recognize as a well-defined term, is an example of this phenomenon. Lights aimed upward from a fan do not directly illuminate a room, and they are often marketed as accent lights. But the indirect illumination from an up-light, reflected from a ceiling, can be effective as the primary light source for a room, much like a torchiere – another covered product subject to a 190-Watt limitation. In general, the ways in which lighting is marketed and in which consumers use lighting show that the distinction between "accent" and "direct" lighting is much more fluid than DOE appreciated in 2006. DOE is concerned that treating as excluded from the statutory standards a wide scope of lighting that consumers use in the same way as regulated lighting undermines the stated purposes of EPCA.⁷

DOE has also found that changes in technology since 2006 have made it less important to exclude those accent lighting from the 6295(ff)(4) standard. New lighting technologies that have become common in the market since 2006 make it possible to provide substantial amounts of lighting at low wattage. Thus, the small amount of energy used by lamps that are effective only for accent lighting is not likely to be large enough to cause significant difficulty in complying with the 6295(ff)(4) energy conservation standard. DOE's reconsideration of its conclusions in

⁷ For these same reasons, DOE's previous focus on consistency with EPCA regulation of only those lamps inserted into screw base or pin-based sockets, pursuant to 42 U.S.C. 6295(ff)(2)-(3), and not any accent lighting otherwise incorporated into the fan, is also an overly-narrow reading of 42 U.S.C. 6295(ff)(4). The difference between "accent" and "direct" lighting is not as clear a distinction as DOE believed in 2006, and is not really analogous to the quite clear distinction between lights that have screw bases and those that do not.

the 2006 technical amendment is also consistent with DOE’s concerns in the 2014 NOPR regarding the subjective determination about what constitutes a “significant light source”. EPCA’s provisions at 42 U.S.C. 6291(50) and 6295(ff)(4) are not limited to the significance or, relatedly, purpose of the light source.

In this final rule, after considering public comment, DOE is revising its interpretation of the CFLK definition to state that the requirement for a CFLK to be “designed to provide light” includes all light sources in a ceiling fan light kit – that is, accent lighting in addition to direct or general lighting. DOE is also revising its interpretation of 6295(ff)(4)(C) so that the 190-watt limit covers all lamps—including accent or direct—with which a CFLK is capable of operating. DOE has determined that its previous interpretations were too narrow a reading of the applicable EPCA provisions and led to subjective determinations about what constituted accent lighting that was not a “significant light source” subject to the standard. DOE’s reinterpretations do not constitute an energy conservation standard for which 42 U.S.C. 6295(ff)(5) or 6295(m) would specify a compliance date some years from publication. These provisions apply to amended standards issued under DOE’s authorities to amend EPCA standards. See 42 U.S.C. 6295(m)(4) (specifying compliance date for “an amendment prescribed under this subsection”); 42 U.S.C. 6295(ff)(5)(B) (prescribing compliance date for “amended standards issued under subparagraph (A)”). In this final rule, DOE is not prescribing or amending a standard using those authorities. Rather, DOE is reinterpreting the definition of “ceiling fan light kit” and the provision establishing the 190-watt limitation such that kits including only “accent” lighting will be considered CFLKs and all lamps will count toward the 190-watt limit prescribed by EPCA.

DOE recognizes that, as ALA pointed out, the change in DOE's interpretation of the statutory standard changes how the standard operates and how it affects some products. Specifically, some products currently on the market are not consistent with the 190-watt limitation because they enable use of too much energy for the light kit. DOE does not believe that consequence elevates DOE's interpretive action into an amended standard. Every interpretation of a statutory standard has an influence on how the standard operates. Administration of the appliance standards program contemplates the agency's ability to take a variety of different administrative steps that do not rise to an amendment to a standard level; to treat all interpretations as being akin to standards amendments would unnecessarily constrain DOE's ability to undertake necessary steps to implement the statutory regime effectively.

DOE further observes that the compliance date rules in 6295(ff)(5) and 6295(m) are directed specifically at standards amendments, and they address concerns specific to such amendments. EPCA gives DOE fairly wide latitude, within various constraints, to devise the standards best suited to fulfill the statutory purposes as markets and technologies evolve over time. Thus, when DOE develops a new standard, it could in principle be different in nature from the prior standards applicable to a given product. At the same time, DOE must prescribe test procedures for such a new standard. Depending on what new or amended standard DOE prescribes, working out how best to interpret and apply the standard, developing industry expertise with the test procedures, and understanding how to design products to comply with a new standard can require a substantial period of time. Not every amended standard will need the full ramp-up period, but 6295(ff)(5) and 6295(m) ensure that an extended phase-in period will be available whenever DOE prescribes a new or amended standard. By contrast, when DOE simply reinterprets an existing statutory standard, the scope of potential change is much more limited.

The standard at issue is familiar and established, and the industry already has experience working with the standard. Thus, the purposes that motivate the compliance date provisions in 6295(ff)(5) and 6295(m) are much less relevant for a reinterpretation.

While DOE's reinterpretation of the CFLK definition and the 190-watt limit requirement will take effect immediately, DOE appreciates the concerns ALA has raised regarding the lead time needed for manufacturers to bring affected products into compliance with the relevant statutory standards. Specifically, ALA contends that "the process of redesigning, obtaining regulatory approval for, and manufacturing and delivering redesigned CFLKs could take eight to sixteen months under normal circumstances. However, because much of the CFLK industry will be engaged in this process at the same time, these steps could take two years or more for a typical manufacturer." ALA further commented in its written comments that if DOE were to withdraw the accent lighting guidance, the effective date of this change should be at the compliance date for the amended CFLK efficiency standards. In its upper bound estimate, ALA factored in delays due to redesign, backlog at third-party test laboratories, and/or shipping delays for fans, light kits, or components. (ALA, No. 6 at p. 4)

In addition, at the November 2014 public meeting, a representative of Emerson Electric estimated that it would take 120 days minimum to redesign and requalify new imports for safety organizations such as UL, and requested that it be afforded about six months. Further Emerson Electric stated that 30 days lead time was enough for existing inventory of CFLKs that would be reinterpreted as accent lighting to be sold. (Emerson Electric, Public Meeting Transcript, No. 4 at p. 76) Also, noting that DOE's proposed reinterpretation of ceiling fans (see section III.A.5) affects light kits Westinghouse stated that 30 days would not be sufficient to review the CFLK

product lines, to modify or build materials, and add wattage limiters in applicable products. (Westinghouse, Public Meeting Transcript, No. 4 at pp. 73-74) The Minka Group provided further information regarding timing noting that products shipped from Asia realistically require 30 days to reach the U.S. with possible additional times for customs. (The Minka Group, Public Meeting Transcript, No. 4 at p. 83)

In its consideration of these comments, DOE recognizes that re-designing, testing and rating, manufacturing, and shipping fan lighting products that comply with the 190-watt limit will take many months. DOE relied on estimates provided by manufacturers to determine an appropriate lead time to bring products that are compliant with this requirement to market. DOE used ALA's upper bound estimate for each of the processes ALA identified to get a conservative lead time estimate as well as taking the manufacturer-specific feedback into consideration. ALA estimated up to six months for redesign, up to 4 months for testing and rating, and up to 6 months for production and shipping, resulting in a total upper bound lead time of 16 months under normal conditions (ALA, No. 6 at p. 4) DOE understands that delays may occur if a large part of the industry is conducting these activities simultaneously. In response to the October 2014 ceiling fan test procedure NOPR, ALA submitted a similar comment that estimated the total upper bound lead time to be 18 months including testing and rating delays. (ALA, Docket Number EERE-2013-BT-TP-0050, No. 8 at p. 2) Based on these estimates, DOE believes 18 months is an appropriate lead time because it is consistent with ALA's upper bound lead time estimate including extra time for delays. DOE notes that other manufacturers' estimated lead times were as short as 6 months. In addition, varying manufacturer estimates for lead times indicates to DOE that not all manufacturers in the industry will be conducting the same activities

and vying for the resources necessary to do so simultaneously. Accordingly, while DOE's interpretation will be effective immediately, DOE will not assert civil penalty authority for violations of the applicable standards arising as a result of this guidance before [INSERT DATE 18 MONTHS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER]. After [INSERT DATE 18 MONTHS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER], DOE will begin enforcing the 190-watt standard in accordance with the interpretations announced here. In enforcing the standard, DOE will take into consideration a manufacturer's efforts to come into compliance during the 18-month period.

5. Clarification of the Statutory Definition of a Ceiling Fan.

In a test procedure rulemaking for ceiling fans, DOE also proposed to reinterpret the definition of a ceiling fan. 79 FR 62521 (Oct. 17, 2014). EPCA defines a ceiling fan as a “nonportable device that is suspended from a ceiling for circulating air via the rotation of fan blades.” 42 U.S.C. 6291(49). DOE previously interpreted the definition of a ceiling fan such that it excluded certain types of ceiling fans commonly referred to as hugger fans. 71 FR 71343 (Dec. 8, 2006). Hugger ceiling fans are typically understood to be set flush to the ceiling (e.g., mounted without a downrod). The previous interpretation exempted hugger fans from standards on the basis that they are set flush to the ceiling. DOE has reconsidered the validity of this distinction and has determined that “suspended from the ceiling” does not depend upon whether the unit is mounted with a downrod. The concept of suspension does not require any length between the object and the point of support. This interpretation more accurately reflects the statutory definition and does not draw an artificial distinction between fans that serve the same functional purpose and are both marketed as ceiling fans. Hugger fans generally are

indistinguishable from other types of ceiling fans in that they move air via rotation of fan blades, are intended to improve comfort, and are rated on their ability to move air (as measured in cubic feet per minute). Consistent with that observation, the current principal industry standard, CAN/CSA–C814–10, includes hugger fans alongside downrod fans.

DOE notes that the current market includes fans that DOE did not account for in its 2006 interpretation. The market includes a range of a multi-mount ceiling fans, i.e., fans which can be attached to the ceiling in either the hugger or the downrod configurations. The existence of these products supports DOE’s equivalent treatment of hugger and downrod fans. Such multi-mount ceiling fans are also considered “ceiling fans” under the statutory definition.

DOE also proposed that fans capable of producing large volumes of airflow meet the definition of a ceiling fan. 79 FR 62521 (Oct. 17, 2014).

In response to the Framework Document for the ceiling fan energy conservation standards rulemaking, several commenters, including the ALA, the Appliance Standards Awareness Project (ASAP), the National Consumer Law Center (NCLC), the National Resources Defense Council (NRDC), and the Northwest Energy Efficiency Alliance (NEEA) supported DOE’s proposed reinterpretation. (ALA, No. 39⁸ 4 at p. 3; ASAP–NCLC–NEEA–NRDC, No. 14⁸ at p. 4) DOE received no comments objecting to its proposed reinterpretation.

⁸ This document was submitted to the docket of DOE’s rulemaking to develop energy conservation standards for ceiling fans (Docket No. EERE-2012-BT-STD-0045).

While ALA supported DOE's proposal, ALA also commented that the effective date of this change should be at the compliance date for amended ceiling fan energy conservation standards. (ALA, No. 8⁹ at pp. 1-3) ALA claimed, as above for CFLKs with accent lighting, that DOE's proposed change would result in some previously unregulated products becoming covered products and that substantial lead time would be required to redesign, test, and label these products. ALA concluded that the reinterpretation would in effect constitute the establishment of a new standard for hugger ceiling fans. ALA asserted that EPCA often provides substantial lead time before compliance when a new standard is required and that EPCA requires that new standards not be amended for six years. ALA asserted that if the reinterpretation effective date was not timed to coincide with the compliance date of DOE's concurrent ECS rulemaking, the result would be a "staggering" effect in which different types of ceiling fans would have different compliance dates. (Id.)

In this final rule, after considering public comment, DOE reinterprets the definition of ceiling fan to include hugger fans. In addition, under this interpretation, any ceiling fan sold with the option of being mounted in either a hugger configuration or a standard configuration is included within the "ceiling fan" definition. For the reasons stated in the October 2014 ceiling fan test procedure proposed rule, DOE also finalizes its interpretation to include fans capable of producing large volumes of airflow. Under DOE's reinterpretation, DOE considers the following fans to be covered under the definition of "ceiling fan" in 10 CFR 430.2:

1. Fans suspended from the ceiling using a downrod or other means of suspension such that the fan is not mounted directly to the ceiling;

⁹ This document was submitted to the docket of DOE's rulemaking to develop test procedures for ceiling fans (Docket No. EERE-2013-BT-TP-0050).

2. Fans suspended such that they are mounted directly or close to the ceiling;
3. Fans sold with the option of being suspended with or without a downrod; and
4. Fans capable of producing large volumes of airflow.

As in the discussion on accent lighting, DOE notes that its reinterpretation does not constitute an “amended standard” for which the compliance-date provisions of 42 U.S.C. 6295(ff)(6) and 6295(m) would apply. In this final rule, DOE is not prescribing a standard; rather, DOE is reinterpreting the definition of “ceiling fan” to include hugger fans and fans capable of producing large volumes of airflow. The changes in interpretation of the ceiling fan definition discussed above result in the applicability of the design standards set forth in EPCA at 42 U.S.C. 6295(ff)(1) to these types of fans immediately. In addition, because ceiling fan light kits are defined as “equipment designed to provide light from a ceiling fan that can be integral, such that the equipment is attached to the ceiling fan prior to the time of retail sale; or attachable, such that at the time of retail sale the equipment is not physically attached to the ceiling fan, but may be included inside the ceiling fan at the time of sale or sold separately for subsequent attachment to the fan” (42 U.S.C. 6291(50)(A) and (B)), DOE further affirms that light kits attached to any of the four fan types listed above are covered ceiling fan light kits under this change in interpretation.

DOE understands the concerns raised regarding the need for additional time for redesigning, testing, certifying and labeling hugger fans and light kits attached to those fans. In the test procedure rulemaking for ceiling fans, ALA submitted comments similar to those in the present rulemaking, contending that this process could take eight to sixteen months “under

normal circumstances,” and as much as two years or more due to the simultaneous activities of the ceiling fan industry. In its upper bound estimate, ALA factored in delays due to redesign, backlog at third-party test laboratories, and/or shipping delays for fans, light kits, or components. (ALA, No. 8⁹ at pp. 1-2) At a November 2014 public meeting held in the ceiling fan test procedure rulemaking, representatives from Emerson Electric and Westinghouse Lighting stated that between 18 and 24 months would be required. (Emerson Electric, Public Meeting Transcript, No. 5⁹ at p. 31; Westinghouse Lighting, Public Meeting Transcript, No. 5⁹ at pp. 29-30)¹⁰ Additionally, in response to the ceiling fan test procedure supplemental NOPR (SNOPR) published on June 3, 2015, ALA noted that the ceiling fan reinterpretation would result in compliance burdens for CFLKs sold with hugger ceiling fans, which would become subject to CFLK standards under the ceiling fan reinterpretation. 80 FR 31487. ALA specifically noted that some of these CFLKs would require redesign to include a 190 watt power limiting device that is not currently required for such CFLKs, as well as retesting and re-rating. ALA stated that this compliance process would require between eighteen and twenty-four months of lead time for the industry. (ALA, No. 14 at pp. 3-4) Additionally, in response to the ceiling fan test procedure SNOPR from June 2015, ALA commented that there may be confusion regarding the compliance date for certain ceiling fans, as a result of the ceiling fan reinterpretation. (*Id.*) ALA expressed concern that ceiling fans that the industry has referred to previously as hugger fans but that do not meet DOE’s new definition of a hugger ceiling fan may require immediate compliance with any applicable standards.

¹⁰ This document was submitted to the docket of DOE’s rulemaking to develop test procedures for ceiling fans (Docket No. EERE-2013-BT-TP-0050).

In its consideration of these comments, DOE recognizes that re-designing, testing and rating, and producing and shipping fan lighting products that comply with the 190-watt limit will take many months. DOE relied on estimates provided by manufacturers to determine an appropriate lead time to bring products that are compliant with this requirement to market (see section III.A.4). Based on these estimates, DOE has concluded that 18 months is an appropriate lead time because it is consistent with ALA's upper bound lead time estimate including extra time for delays. DOE notes that other manufacturers' estimated lead times as short as 6 months. In addition, varying manufacturer estimates for lead times indicates to DOE that not all manufacturers in the industry will be conducting the same activities and vying for the resources necessary to do so simultaneously.

While DOE's interpretation is effective immediately, DOE will not assert civil penalty authority for violations of the applicable standards arising as a result of this interpretation before [INSERT DATE 18 MONTHS AFTER PUBLICATION IN THE FEDERAL REGISTER]. DOE expects all hugger ceiling fans and any accompanying light kits to be certified compliant by [INSERT DATE 18 MONTHS AFTER PUBLICATION IN THE FEDERAL REGISTER], and annually thereafter. DOE will take into consideration a manufacturer's efforts to come into compliance during the 18-month period.

6. Clarifications on 190 W Limit Requirement

Current standards require that CFLKs with medium screw base sockets, or pin-based sockets for fluorescent lamps, be packaged with lamps that meet certain efficiency requirements. All other CFLKs must not be capable of operating with lamps that exceed 190 W. In the final

rule for energy conservation standards for certain CFLKs published on January 11, 2007, DOE interpreted this 190 W limitation as a requirement to incorporate an electrical device or measure that ensures the light kit is not capable of operating with a lamp or lamps that draw more than a total of 190 W. 72 FR 1270, 1271 (Jan. 11, 2007).

During the November 2014 public meeting, ALA and several of their members sought clarifications from DOE on the applicability of the 190 W limit for CFLKs with integrated SSL components. Specifically, these stakeholders suggested that CFLKs with only integrated SSL components are inherently power limiting and that consumers would be unable to modify these CFLKs in a manner that increases their operating power beyond their rated wattage. These stakeholders suggested that DOE consider clarifying that CFLKs that only have drivers and/or light sources that are not designed to be consumer replaceable with total rated wattages below 190 W be considered to be in compliance with the requirement that they not be capable of operating with lamps that total more than 190 W, as specified in 42 U.S.C. 6295(ff)(4)(C).

In the CFLK ECS NOPR, DOE proposed that CFLKs with SSL circuitry that (1) have SSL drivers and/or light sources that are not consumer replaceable, (2) do not have both an SSL driver and light source that are consumer replaceable, (3) do not include any other light source, and (4) include SSL drivers with a maximum operating wattage of no more than 190 W are considered to incorporate some electrical device or measure that ensures they do not exceed the 190 W limit.¹¹ In the CFLK ECS NOPR, DOE proposed to incorporate the clarification in that

¹¹ DOE proposed these four conditions in the preamble of the ECS NOPR. However, the proposed associated regulatory text incorrectly specified that both the SSL light source and SSL driver had to be non-consumer replaceable.

rulemaking and make it effective 30 days after the publication of the final rule amending CFLK energy conservation standards. DOE discusses the stakeholder comments received regarding this proposal in the paragraphs below.

DOE received several comments regarding the consumer replaceable requirements in its proposal in the CFLK ECS NOPR. Specifically, ALA requested that these requirements be removed and that DOE adopt the interpretation that CFLKs with integrated SSL components and SSL drivers with a maximum operating wattage of no more than 190 W and no other light source comply with EPCA's power limit requirement. (ALA, No. 115¹² at p. 4)

ALA asserted its proposed clarification was consistent with section 325(ff)(4) of EPCA¹³ because consumers will not modify such CFLKs as they do not have a desire to increase the wattage. ALA explained that due to the technology's efficiency, CFLKs with integrated SSL components are designed to operate at wattages less than 50 W for residential and commercial applications and 190 W would produce too much light. (ALA, No. 115¹² at p. 4) Fanimation and Lutron agreed consumers would not increase total wattage at or above 190 W as they would not need the associated substantial light output. (Fanimation, Public Meeting Transcript, No. 112¹² at pp. 18-20; Lutron, No. 113 at p. 2) Fanimation further concluded that the requirement of non-consumer replaceable was unnecessary. (Fanimation, Public Meeting Transcript, No. 112¹² at pp. 18-20)

¹² This document was submitted to the docket of DOE's rulemaking to develop energy conservation standards for ceiling fan light kits (Docket No. EERE-2012-BT-STD-0045).

¹³ Section 325(ff)(4) of EPCA specifies the requirements for CFLKs that do not have medium screw base sockets or pin base socket for fluorescent lamps, including that they not be capable of operating with lamps that total more than 190 watts.

ASAP agreed that the lumen output at a wattage limit of 190 W would be too high for residential applications. However, ASAP asked if such a high-lumen CFLK could be developed for commercial applications in which CFLKs are mounted higher and require greater levels of light output. (ASAP, Public Meeting Transcript, No. 112¹² at p. 16) Westinghouse responded that even LEDs used in high bay applications, whether integrated or replaceable, do not draw 190 W. Westinghouse stated that while unlikely, if 15,000 or 18,000 lumens were needed it would be in a commercial application and likely not attached to a ceiling fan. If it existed, such a high-lumen CFLK would more likely be attached to an industrial ceiling fan. (Westinghouse, Public Meeting Transcript, No. 112¹² at p. 17)

Fanimation pointed out that a non-consumer replaceable requirement would create maintenance difficulties for consumers as they would not be able to replace failed components, in particular the light source. (Fanimation, Public Meeting Transcript, No. 112¹² at pp. 18-20) ALA stated that because CFLKs with integrated SSL components are typically packaged and sold together with a ceiling fan, failure of a non-consumer replaceable SSL component in a CFLK would require the consumer to replace the entire ceiling fan/CFLK combination. Therefore, the use of consumer replaceable SSL components in CFLKs provides value by allowing the consumer to fix failed components instead of replacing the entire ceiling fan/CFLK. (ALA, No. 115¹² at p. 5) Westinghouse added that for products under warranty manufacturers do not want to replace the entire fan if just the light source fails. Westinghouse commented that ENERGY STAR has emphasized that non-consumer replaceable technologies are not preferred because consumers do not like discarding the whole CFLK and this is a topic of ongoing

discussion for manufacturers that offer CFLKs as an accessory product or participate in the ENERGY STAR program. (Westinghouse, Public Meeting Transcript, No. 112¹² at p. 24)

Even if consumers did want to increase the wattage, ALA stated there are no commercially available components that would allow them to do so without destructive disassembly/assembly. (ALA, No. 115¹² at p. 4) Westinghouse commented that they had conducted a search and found no LED drivers that could operate at or above the required wattage threshold. (Westinghouse, Public Meeting Transcript, No. 112¹² at pp. 15-16)

ASAP stated that they interpreted consumer replaceable to refer to components not requiring tools or removal of the fan from mounting. Therefore, ASAP found that the non-consumer replaceable requirement would prevent incandescent light sources from being used in CFLKs. (ASAP, Public Meeting Transcript, No. 112¹² at pp. 20-21) Fanimation responded that an incandescent light source could not be used in a CFLK with SSL technology. (Fanimation, Public Meeting Transcript, No. 112¹² at p. 23) Westinghouse clarified that consumers would either be replacing the light source and not the driver or, more likely, the light source and the driver in the form of a plug-and-play wire/nut connection. In both scenarios there would be no ANSI socket in which a consumer could screw in an incandescent lamp. Therefore, while Westinghouse did not object to the non-consumer replaceable requirement, it was not required because the circuitry and design of such CFLKs would be self-limiting. (Westinghouse, Public Meeting Transcript, No. 112¹² at pp. 22-23)

Regarding designs of CFLKs with integrated SSL components, Fanimation stated that a non-consumer replaceable requirement would put design restrictions on CFLKs. (Fanimation, Public Meeting Transcript, No. 112¹² at pp. 18-20) Progress Lighting pointed out that the existing requirement for a wattage limit already applies to CFLKs with consumer replaceable components and if the consumer over-lamps them they destroy the limiter making them unusable. (Progress Lighting, Public Meeting Transcript, No. 112¹² at p. 32)

In a joint comment, ASAP, the American Council for an Energy-Efficient Economy, the National Resources Defense Council, and the Northwest Energy Efficiency Alliance (“Joint Comment”) and CA IOUs generally agreed that CFLKs meeting the four conditions specified in DOE’s proposed interpretation would not exceed 190 W. The Joint Comment, however, did not agree with stating that all CFLKs with integrated SSL components should be determined to not exceed the 190 W limit requirement as this could exclude products such as CFLKs with integrated SSL components and another lighting technology. (Joint Comment, No. 117¹² at p. 2) Lutron stated it would be sufficient to state that the 190 W limit requirement is satisfied by CFLKs with either non-replaceable SSL lamps or light sources utilizing an LED driver rated less than 190 W. Lutron noted that substitution with less efficacious lamps is not possible in either case. (Lutron, No. 113¹² at p. 2) If DOE does not wish to adopt ALA’s proposal of removing the consumer replaceable conditions, ALA preferred the interpretation of the wattage limiter requirement for CFLKs with integrated SSL components that would allow at least either the SSL driver or SSL light source to be consumer replaceable as opposed to neither. (ALA, No. 115¹² at pp. 5-6)

In consideration of these comments, DOE concludes that the high efficacies of SSL technology would produce lumen output equivalent to the lumen output of a CFLK with incandescent lamps operating at 190 W but at a much lower wattage. DOE concluded that if a consumer were to increase the operating wattage of a CFLK with SSL technology to a significantly higher wattage than that of the SSL system initially sold with the CFLK, the consumer would need to change the driver. DOE concluded this is unlikely because significant increases in the rated wattage of drivers result in significant size increases in the drivers, and the physical constraints of the CFLK designs would not allow for such modification.

In this final rule, DOE is modifying its interpretation of what meets the 190 W limit requirement. DOE has determined that CFLKs with both consumer and non-consumer replaceable SSL components meet the requirement under certain conditions. The CFLKs must use only SSL technology (such as LED technology). The CFLKs must not use an SSL lamp with an ANSI standard base (such as a medium screw base LED lamp) because the consumer could easily remove and replace the lamp with one using less efficient (and typically higher wattage) lighting technology. Thus, DOE has determined that CFLKs that 1) include only SSL technology; 2) do not include an SSL lamp with an ANSI standard base, and 3) include only SSL drivers with a combined maximum operating wattage of no more than 190 W meet the 190 W limit requirement. For example, CFLKs with integrated SSL circuitry or with other SSL products, such as LED light engines, would meet the limit requirement assuming the CFLKs do not also include other non-SSL lighting technologies, do not also include lamps with ANSI standard bases, and do not include SSL drivers that, combined, can exceed 190 W.

Fanimation asked if DOE would be defining the term “consumer replaceable” in support of the proposed clarification regarding CFLKs with integrated SSL technology. (Fanimation, Public Meeting Transcript, No. 112¹² at pp. 18-20) Further, if DOE continues to reference consumer replaceable in the proposed clarification, ALA requested that DOE clarify that a “consumer replaceable” SSL component means a component that can be obtained in the consumer marketplace, installed in an existing product by a consumer with no specialized technical knowledge or specialized tools, and installed without invalidating the product warranties of the existing CFLK or other SSL components. (ALA, No. 115¹² at pp. 5-6) In response to these comments, DOE is not specifying an interpretation of CFLKs with SSL technology that meet the 190 W limit requirement that prohibits consumer replaceable components. DOE is also not defining the term “consumer replaceable” in this final rule (see section III.B.2 for further details).

ALA requested that DOE make the clarification of the wattage limiter requirement for CFLKs with integrated SSL components effective as soon as possible, either in a separate notice or in this final rule. (ALA, No. 115¹² at p. 4, 6)

DOE is issuing this interpretation of the 190 W limit requirement for CFLKs with SSL technology meeting the conditions described in this section effective with publication of the final rule in the Federal Register.

B. Amendments to Implement an Efficacy Metric for All CFLKs

In the October 2014 NOPR, DOE proposed to amend the CFLK test procedures to expand the efficacy metric to all CFLKs in support of the amended standards being considered as part of the ongoing ECS rulemaking for CFLKs. In the ECS rulemaking, DOE proposed to require that all CFLKs meet minimum efficacy requirements, as is currently required for CFLKs with medium screw base sockets and pin-based sockets for fluorescent lamps. 80 FR 48624 (August 13, 2015).

In the October 2014 NOPR, DOE proposed to amend 10 CFR 429.33 to provide sampling requirements and amend 10 CFR 430.23 to reference lamp test procedures to measure the lamp efficacy of each basic model of a lamp type packaged with a CFLK and to measure the luminaire efficacy of each basic model of CFLK with integrated SSL circuitry.¹⁴ Appendix V currently provides test procedures in support of existing energy conservation standards, which are in terms of lamp efficacy for CFLKs packaged with medium screw base lamps, system efficacy for CFLKs packaged with pin-based fluorescent lamps, and a maximum wattage requirement for CFLKs packaged with all other lamp types. In the October 2014 NOPR, DOE proposed amendments to appendix V to provide test procedures supporting existing energy conservation standards for CFLKs packaged with pin-based fluorescent lamps and proposed amending 10 CFR 430.23 to reference DOE lamp test procedures supporting existing energy conservation standards for CFLKs packaged with medium screw base lamps. Appendix V can be used to demonstrate compliance with existing standards until the time at which compliance with

¹⁴ In the October 2014 NOPR, DOE defined a CFLK with integrated SSL circuitry as a CFLK that has light sources, drivers, or intermediate circuitry, such as wiring between a replaceable driver and a replaceable light source, that are not consumer replaceable. For this final rule, DOE is also including heat sinks as part of the definition of CFLK with integrated SSL circuitry.

amended standards would be required. Appendix V1, proposed in the October 2014 NOPR, and the proposed amendments to 10 CFR 430.23 provide test procedures in support of amended energy conservation standards, which would be in terms of lamp efficacy for CFLKs packaged with all lamp types and in terms of luminaire efficacy for those with integrated SSL circuitry.

The following sections describe the change in metric for certain CFLKs and how DOE will require measuring lamp and luminaire efficacy to demonstrate compliance with any amended standards.

1. Metric

In the October 2014 NOPR, DOE proposed amendments to the CFLK test procedures that would establish a single metric (efficacy) to quantify the energy efficiency of CFLKs. To the extent technologically feasible, DOE proposed to use lamp efficacy as the measure of efficiency. DOE noted that for CFLKs with integrated solid-state lighting circuitry, it may not be technologically feasible to measure lamp efficacy and thus proposed using luminaire efficacy as the metric for these CFLKs.

ASAP et al. supported DOE's proposal to use efficacy as a metric for all CFLKs. ASAP et al. further supported DOE's proposal to use lamp efficacy for lamps packaged with CFLKs, to use luminaire efficacy for CFLKs with integrated SSL circuitry, and to use both lamp and luminaire efficacy for CFLKs that included both replaceable lamps and integrated SSL circuitry. (ASAP et al., No. 5 at p. 1)

ALA supported DOE's proposal to use efficacy as a metric for all CFLKs. ALA also supported DOE's proposal to use lamp efficacy where technically feasible, noting that this approach would minimize the testing burden for CFLK manufacturers. (ALA, No. 6 at p. 1) ALA opposed DOE's proposal to use luminaire efficacy as a metric for CFLKs with integrated SSL circuitry, however. (ALA, No. 6 at pp. 1-3) ALA claimed that using luminaire efficacy would be more burdensome than using lamp efficacy. ALA noted that a luminaire efficacy metric would require testing every variant of a luminaire cover used to make a CFLK with integrated SSL circuitry, resulting in more required testing than analogous CFLKs with replaceable lamps. ALA further claimed that using luminaire efficacy would unfairly disadvantage CFLKs with integrated SSL circuitry (particularly those with dark-colored or opaque luminaire covers) as compared to other CFLK types. This is because the luminaire efficacy testing would account for optical losses from covers included with CFLKs that have integrated SSL circuitry, while the lamp efficacy testing DOE proposed for all other CFLKs would not account for any CFLK covers.

ALA suggested alternatives to luminaire efficacy of CFLKs with integrated SSL circuitry. ALA suggested it may be possible to conduct IES LM-79-08 testing on SSL light engines after they are removed from the CFLK. ALA also proposed an alternative compliance path by which CFLKs with integrated SSL circuitry would be subject to a design standard that they not exceed 50 W rather than be subject to a luminaire efficacy-based metric and test procedure. Lastly, ALA suggested that if DOE does adopt a luminaire efficacy metric for CFLKs with integrated SSL circuitry, DOE should modify its approach so that testing is conducted without luminaire covers to eliminate the need for multiple tests associated with different covers, as well as to make test results more comparable to other CFLK types.

Regarding ALA's comments that it may be possible to make accurate and consistent light source efficacy measurements on the integrated SSL light engines in CFLKs using LM-79-08, DOE notes that the scope of LM-79-08 is limited to SSL products that do not require external circuits or heat sinks. In some CFLK designs, it may be possible for all SSL light sources, drivers, heat sinks, and intermediate circuitry to be removed as an integrated unit. This integrated unit would either meet DOE's definition of an integrated LED lamp or the definition of "Other SSL products" as defined in appendix V1. In these cases, test methods proposed in the October 2014 NOPR would allow manufactures to utilize lamp efficacy measurements rather than luminaire efficacy measures.

DOE notes that IES LM-82-12, "Characterization of LED Light Engines and LED Lamps for Electrical and Photometric Properties as a Function of Temperature," may be applicable to situations where SSL light engines are used in combination with additional heat sinks that are not removable from the CFLK. However, test procedures based on measurements of integrated SSL light engines would present challenges for testing reproducibility. Because LED modules and drivers are highly integrated into the CFLK in some CFLK designs, it may be technically infeasible to test without destructively altering the product being tested. Because the design of integrated SSL CFLKs can vary considerably, it would also be difficult to develop uniform and reproducible procedures to ensure that all relevant components from an integrated SSL CFLK are consistently included in testing. Additionally, an approach utilizing LM-82-12 may increase testing burden. LM-82-12 requires using LM-79-08 to make photometric measurements at multiple temperatures to characterize how performance of the device varies over a range of

temperatures. The stabilized temperature of an LED light engine must then be measured inside a luminaire (*e.g.*, CFLK) and compared to the LM-82-12 results to estimate the photometric performance of the LED light engine in that luminaire. Because of the temperature control requirements specified in LM-82-12 and the multiple photometric measurements per LM-79-08, LM-82-12 testing is relatively expensive. Consequently, few LED light engines have LM-82-12 test results. Given the relatively higher testing costs of LM-82-12, the likelihood that few LED light engines considered for CFLKs would already have LM-82-12 results, and the fact that additional testing to monitor LED light engine temperatures inside the CFLKs would be required, DOE has concluded that requiring LM-82-12 testing could increase testing burden over luminaire testing with LM-79-08.

DOE has also declined to adopt ALA's suggestion to utilize a 50 W design standard for CFLKs with integrated SSL circuitry, instead of requiring use of the proposed test procedure to determine compliance of these CFLKs with a luminaire efficacy-based metric. DOE's test method meets the requirements of 42 U.S.C. 6293(b)(3), which requires DOE to establish test procedures that are "designed to produce test results which measure energy-efficiency...during a representative average use cycle or period of use" that "shall not be unduly burdensome to conduct." ALA's suggestion may limit energy consumption but does not provide consumers with representative energy efficiency of the product.

As an alternative, DOE reviewed ALA's recommendation to allow CFLKs with integrated SSL circuitry to be tested without covers. The suggested approach could potentially reduce testing burden associated with certifying multiple models of CFLKs with integrated SSL circuitry that are functionally identical except for the use of different covers. DOE agrees that

measurements of CFLKs with integrated SSL circuitry without covers may be more comparable to CFLKs with consumer replaceable lamps. DOE has added a definition for “covers” to this test procedure to clarify which components can be removed before testing. Specifically, covers are defined as, “materials used to diffuse or redirect light produced by an SSL light source in CFLKs with integrated SSL circuitry.” DOE allows for the removal of consumer replaceable lenses or diffusers from CFLKs with integrated SSL circuitry prior to luminaire efficacy testing. DOE does not allow for the removal of any other components of CFLKs with integrated SSL circuitry (e.g., removable housing or electronic components, hardware utilized to secure covers, etc.) nor does DOE allow for removing covers that are not consumer replaceable (e.g., require destructive disassembly) prior to luminaire efficacy testing. DOE notes that manufacturers of CFLKs with integrated SSL circuitry that have consumer replaceable covers may measure luminaire efficacy with the cover installed if they wish.

DOE notes that utilizing an efficacy metric for all CFLK types will likely increase testing burden in some cases – particularly for CFLKs that are currently subject to the wattage limiter requirement. But the wattage limiter would no longer be needed for compliance with the proposed standards,¹⁵ and the added costs associated with testing are likely to be offset by savings associated with the removal of the wattage limiter. See section IV.B for a more detailed discussion of how increased testing costs are likely to be offset by those savings.

2. Test Procedure

¹⁵ Documents related to the ongoing energy conservation standards rulemaking for ceiling fan light kits can be found in docket ID EERE-2012-BT-STD-0045. The proposed standards can be found in the notice of proposed rulemaking, available at <http://www.regulations.gov/#!documentDetail;D=EERE-2012-BT-STD-0045-0109>.

In the October 2014 NOPR, DOE proposed to reference existing DOE test procedures and to reference industry standard test procedures only where DOE test procedures do not exist. With the exception of ALA's comment about the use of luminaire efficacy as a metric (discussed in section III.B.1), ALA and ASAP et al. both agreed with DOE's proposal to reference existing DOE test procedures and to reference current industry standard test procedures where DOE test procedures do not currently exist. Table 1 summarizes the test procedures that will be required for CFLKs based on the lighting technology that they use. As discussed in section III.B.1, CFLKs with integrated SSL circuitry that have consumer replaceable covers may be tested without covers but must otherwise be measured according to the test method in sections 2.0-9.2 of IES LM 79-08. CFLKs that utilize multiple lighting technologies will be subject to all applicable test procedures (e.g., a CFLK with both integrated SSL circuitry and consumer replaceable CFLs would be subject to luminaire efficacy testing with the CFLs removed, measured according to IES LM-79-08, and the CFLs would be subject to lamp efficacy test procedures, measured according to appendix W).

For a CFLK that utilizes only consumer replaceable lamps, manufacturers must measure the lamp efficacy of and certify each basic model of lamp packaged with the CFLK. For any CFLK with only integrated SSL circuitry, manufacturers must measure the luminaire efficacy of and certify the CFLK. For any CFLK that includes both consumer replaceable lamps and integrated SSL circuitry, manufacturers must measure the lamp efficacy of and certify each basic model of lamp packaged with the CFLK and must measure the luminaire efficacy and certify the CFLK with all consumer replaceable lamps removed.

In the NOPR, DOE proposed a definition for the term “consumer replaceable.” However, DOE has determined this term is self-explanatory and a definition is not required. Therefore, in this final rule, DOE is not adopting a definition for “consumer replaceable.”

Table 1: Test Procedures for CFLKs based on Lighting Technology

Lighting Technology	Lamp or Luminaire Efficacy Measured	Referenced Test Procedure
Compact fluorescent lamps (CFLs)	Lamp Efficacy	Appendix W to Subpart B of 10 CFR 430
General service fluorescent lamps (GSFLs)	Lamp Efficacy	Appendix R to Subpart B of 10 CFR 430
Incandescent lamps	Lamp Efficacy	Appendix R to Subpart B of 10 CFR 430
Other (non-CFL and non-GSFL) fluorescent lamps	Lamp Efficacy	IES LM-9-09, sections 4-7
Integrated LED lamps	Lamp Efficacy	To be determined.*
All Other SSL products	Lamp Efficacy	IES LM-79-08, sections 2-9.2
CFLKs with integrated SSL circuitry	Luminaire Efficacy	IES LM-79-08, sections 2-9.2

* There is currently an open rulemaking to establish test procedures for integrated LED lamps. DOE is reserving certain paragraphs in the CFLK test procedure to reference any final test procedure for integrated LED lamps.

C. Standby Mode and Off Mode

DOE believes that CFLKs do not consume power in off mode, and that only CFLKs offering the functionality of a wireless remote control may consume power in standby mode. Because the standby sensor and controller nearly always provide functionality shared between the ceiling fan and the CFLK, DOE proposed in the October 2014 NOPR to account for the energy consumption in standby mode under the ceiling fan efficiency metric rather than under the CFLK efficiency metric. ALA, the only stakeholder to comment on the proposal, agreed with DOE’s approach to account for standby power usage in the ceiling fan test procedure rather

than in the CFLK test procedure. (ALA, No. 6 at p. 6) Therefore, DOE maintains this approach in this final rule.

D. Effective Date and Compliance Date for Amended Test Procedure

The effective date for this final rule is 30 days after publication in the Federal Register. Representations of energy efficiency or consumption must be based on the amended test procedure in appendix V as of 180 days after publication of the test procedure final rule in the Federal Register. Representations of energy efficiency or consumption must be based on appendix V1 not later than the compliance date of any amended standards from the ongoing ECS rulemaking for CFLKs. Manufacturers are permitted to make representations based on testing in accordance with appendix V1 prior to the compliance date of such standards, if such representations demonstrate compliance with any amended energy conservation standards. Manufacturers must make any representations with respect to energy use or efficiency in accordance with whichever version is selected for testing.

DOE's updated guidance for CFLKs with accent lighting and reinterpretation of the ceiling fan definition is effective immediately. However, DOE will not assert civil penalty authority for violations of the applicable standards arising as a result of the interpretive changes before [INSERT DATE 18 MONTHS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER].

DOE's interpretation of the 190 watt limiter requirement prescribed in the standards set forth in 10 CFR 430.32(s)(4) is also effective immediately.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

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

B. Review under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 et seq., as amended by the Small Business Regulatory Enforcement Fairness Act of 1996) requires preparation of an initial regulatory flexibility analysis (IFRA) for any rule that by law must be proposed for public comment and a final regulatory flexibility analysis (FRFA) for any such rule that an agency adopts as a final rule, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. A regulatory flexibility analysis examines the impact of the rule on small entities and considers alternative ways of reducing negative effects. Also, as required by Executive Order 13272, “Proper Consideration of Small Entities in Agency Rulemaking,” 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003 to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel’s website at: <http://energy.gov/gc/office-general-counsel>.

DOE reviewed this final rule under the provisions of the Regulatory Flexibility Act and the policies and procedures published on February 19, 2003. The final rule prescribes the test procedure amendments that would be used to determine compliance with energy conservation standards for CFLKs.

DOE analyzed the burden to small manufacturers in both the context of the modifications to the existing CFLK test procedures made in appendix V and associated CFR sections, as well as in the context of the test procedures to implement an efficacy metric for all covered CFLKs in appendix V1 and amended associated CFR sections. With respect to amendments to existing CFLK test procedures, DOE determined that these changes will not have a material impact on small U.S. manufacturers because the changes will not alter the test procedures themselves, but rather, how they are referenced. With respect to test procedures to implement an efficacy metric for all covered CFLKs, however, DOE found that because the amendments will require efficiency performance testing of certain CFLKs that had not required testing previously, all manufacturers, including a substantial number of small manufacturers, may experience a financial burden associated with new testing requirements. While most CFLK manufacturers will likely be able to utilize lamp testing already conducted by lamp manufacturers for certification of most CFLKs, based on the similar assessment DOE made at the time of the NOPR, DOE prepared an IRFA for this rulemaking, which was included in the October 2014 NOPR and a copy was also transmitted to the Chief Counsel for Advocacy of the Small Business Administration for review. DOE did not receive any comments specifically on the IRFA from stakeholders or from the SBA. Stakeholder comments received on the economic impacts of the proposed rule have been addressed elsewhere in the preamble. The FRFA set forth below, which

describes the potential impacts on small businesses associated with CFLK testing requirements, incorporates the IRFA while updating the analysis for consistency with the shipments estimates in the ongoing CFLK and ceiling fan energy conservation standard rulemakings.

1. Need for and objectives of the rule.

A statement of the need for and objectives of the rule is stated elsewhere in the preamble and not repeated here.

2. Significant issues raised by public comment and any changes made in the proposed rule.

Comments on the economic impacts of the proposed rule and DOE's responses to those comments are provided elsewhere in the preamble and not repeated here. As noted above, DOE updated its analysis for this rule consistent with the shipments estimates in the ongoing CFLK and ceiling fan energy conservation standard rulemakings. DOE modified the proposed rule based on stakeholder comments related to economic impacts. Specifically, as discussed in detail in the preamble, DOE clarified that the 190 W limit requirement is met by CFLKs that 1) include only SSL technology; 2) do not include an SSL lamp with an ANSI standard base, and 3) include only SSL drivers with a combined maximum operating wattage of no more than 190 W. DOE also specified that CFLKs with integrated SSL circuitry could be tested without removable optical covers. These changes are expected to reduce the overall economic impact of the rule.

3. Response to any comments filed by the SBA.

The Chief Counsel for Advocacy of the SBA did not provide any comments on this rule.

4. Estimate of small entities to which the rule will apply.

The Small Business Administration (SBA) has set a size threshold for manufacturers, which defines those entities classified as “small businesses” for the purposes of the statute. DOE used the SBA’s small business size standards to determine whether any small entities would be subject to the requirements of the rule. *See* 13 CFR part 121. The size standards are listed by North American Industry Classification System (NAICS) code and industry description and are available at http://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf. CFLK manufacturing is classified under NAICS code 335210,¹⁶ “Small Electrical Appliance Manufacturing.” SBA sets a threshold of 750 employees or less for an entity to be considered a small business for this category. This threshold includes all employees in a business’ parent company and any other subsidiaries.

To identify small CFLK manufacturers, DOE used feedback from manufacturer interviews and results from an industry characterization analysis, which consists of the market and technology assessment, manufacturer interviews, and publicly available information. DOE then reviewed these data to determine whether the entities met the SBA’s definition of a “small business manufacturer” of CFLKs and screened out companies that do not offer products subject to this rulemaking, do not meet the definition of a “small business,” or are foreign-owned and operated. Based on this review, and using data on the companies for which DOE was able to

¹⁶ Although NAICS 335121, “Residential Electric Lighting Fixture Manufacturing,” which has a small business threshold of 500 employees, could also apply to CFLK manufacturers, DOE chose a NAICS code that applied to both ceiling fans and light kits because CFLK manufacturers are generally also ceiling fan manufacturers. DOE notes that the use of NAICS code 335210 in this analysis results in more manufacturers being considered small businesses than an analysis based on NAICS code 335121 would have.

obtain information on the numbers of employees, DOE identified 27 small business CFLK manufacturers¹⁷ in the U.S.

5. Description and estimate of compliance costs.

DOE has determined that total CFLK testing costs for small business manufacturers of CFLKs may increase based on changes to the size of the market of covered ceiling fan light kits as a result of clarifications to the statutory definition of a ceiling fan. As a result of the reinterpretation of the definition of ceiling fans to include hugger ceiling fans, products that provide light from hugger fans meet the EPCA definition of CFLKs (42 U.S.C. 6291(50)) and, therefore, are subject to CFLK standards. This reinterpretation effectively increases the size of the CFLK market by approximately 50 percent. Manufacturers of hugger fans may use different CFLK models on their hugger fans than on their other ceiling fans, increasing the number of CFLK models that will require testing. The impact of the hugger fan reinterpretation on ceiling fan light kit testing costs is accounted for in this rule by factoring in a 50 percent increase in shipments due to the inclusion of CFLKs attached to hugger fans. Conversely, DOE's clarification that ceiling fans that produce large volumes of airflow meet the statutory definition of a ceiling fan is not expected to have an impact of the size of the CFLK market, because ceiling fan light kits are almost never sold with ceiling fans of that type. DOE's clarification on the use of accent lighting may lead to an increase in testing burden in some cases but DOE believes only a small fraction of the CFLK market will be impacted based on reviewing product offerings from manufacturer literature.

¹⁷ The term "manufacturers" is used in this section to include companies that act as importers or labelers of CFLKs.

Based on the analysis described in the remainder of this section, DOE expects the new test procedures to implement an efficacy metric for all covered CFLKs to increase direct testing costs to small CFLK manufacturers. Because compliance with the proposed standards¹⁵ would satisfy the 190 watt limitation without the need for a wattage limiter, however, DOE expects that the savings from eliminating the wattage limiters for all CFLKs other than those with medium screw base sockets and pin-based sockets for fluorescent lamps will likely more than offset these costs. DOE's analysis shows that, in sum, typical small manufacturers are likely to benefit financially from the proposed changes to the test procedures, as detailed below.

DOE requires testing each basic model of a product to establish compliance with energy conservation standards. Products included in a single basic model must have essentially identical electrical, physical, and functional characteristics that affect energy efficiency. Because the efficiency of CFLKs with integrated SSL circuitry is based on luminaire efficacy, variation in light kit designs will likely impact efficiency and result in a greater number of basic models for these types of CFLKs. As noted in section III.B.1, CFLK manufacturers may test CFLKs with integrated SSL circuitry without covers, in part to reduce testing burden. This allows CFLKs with integrated SSL circuitry that are identical except for the use of different covers to be classified as the same basic model. For CFLKs with consumer replaceable lamps, efficiency is based on lamp efficacy and will likely not be impacted by the design of the light kit, and thus the number of basic models may be limited for these types of CFLKs. Because these CFLKs require lamp testing, changes in luminaire optics, like lens choice, will not affect the measured efficacy, and therefore would not require a new basic model. For these CFLKs, manufacturers will be

able to limit the testing burden by using the same lamp model for many CFLK models and/or by obtaining appropriate lamp test results from their lamp supplier(s).

In the sections below, DOE provides an assessment test burden due to the change in test procedures. To provide a framework for DOE's analysis, Table 2 summarizes the market share of different CFLK types and describes how they would be affected by the changes in testing requirements. The assessment reflects the size and composition of a CFLK market which includes CFLKs attached to hugger fans and therefore accounts for the testing costs associated with such CFLKs. The market share projections in Table 2 are for the expected compliance year of the ongoing ECS rulemaking for CFLKs (2019) as estimated in the CFLK ECS NOPR. 80 FR 48624 (August 13, 2015). These market shares reflect DOE's reinterpretation of the definition of ceiling fan to include hugger fans.

Table 2: Projections of CFLK Market Shares in 2019

CFLK Type*	Percent of market in 2019	Current testing requirement	Future testing requirement	New testing costs?	Savings from removal of wattage limiter under proposal?
CFLKs with medium screw base sockets	89%	100% lamp efficacy	100% lamp efficacy	No	No
All Other CFLKs	11%	None	34% lamp efficacy	Potentially**	Yes
			66% luminaire efficacy	Yes	Yes

* CFLKs with pin-based sockets are not included in this analysis because their market share is insignificant, at less than 1 percent.

** While most lamps with sockets other than medium screw base sockets will be subject to new DOE testing requirements, many of these lamps are already being testing by lamp manufacturers. In these cases, there would be no additional testing costs as CFLK manufacturers will be able to use lamp manufacturers' test reports.

As shown in Table 2, the new test procedures do not affect testing burden for CFLKs with medium screw base sockets, because no new testing requirements are required for these CFLKs. DOE assumes that 66 percent of CFLKs with socket types other than medium screw base will transition to CFLKs with integrated SSL circuitry (requiring luminaire efficacy measurements) by 2019, while the remaining 34 percent will transition to CFLKs requiring lamp efficacy measurements.¹⁸

The degree to which testing costs are offset by savings from the elimination of the wattage limiter depends significantly on the number of CFLKs produced per basic model. That is, testing costs are fixed per basic model, but the costs associated with the wattage limiter increase in direct proportion with the total number of CFLKs subject to the requirement. DOE estimates that small manufacturers typically produce about 5,900 CFLKs per basic model per year, and that they are likely to see a net financial benefit from the proposed changes provided that they produce more than approximately 1,000 CFLK units per basic model.

In summary, DOE notes that the estimated savings of the new test procedures greatly exceed the estimated costs to small manufacturers. While these estimates are based on a number of projections and assumptions that have inherent uncertainties, given the degree to which projected savings exceed projected costs, DOE concludes that the new test procedures, which

¹⁸ For the NOPR analysis, DOE used the Bass diffusion curve developed in the Energy Savings Potential of Solid-State Lighting in General Illumination Applications (2012) report for general service lamps (GSLs) to estimate the market share apportioned to LEDs. DOE assumed the adoption of LEDs in the CFLK market would trail behind adoption of LED technology in the GSL market by 3.5 years. In the NOPR analysis, DOE's LED incursion curve for CFLKs results in a market share of 14% for all LED CFLKs in 2019. DOE assumed, based on lack of available information to suggest otherwise, that half of the LED CFLKs in 2019 (i.e., 7% of the entire CFLK market, or 66% of the 11% of CFLKs that do not have medium screw base sockets) would have integrated SSL circuitry.

implement an efficacy metric for all covered CFLKs, will not increase compliance costs for small manufacturers of CFLKs.

6. Description of the steps taken to minimize significant economic impact on small entities.

DOE considered alternatives to the test procedures for CFLKs with integrated SSL circuitry to determine if it was feasible to measure lamp efficacy rather than luminaire efficacy. Specifically, DOE explored the possibility of testing the consumer replaceable SSL light sources and drivers for CFLKs with integrated SSL circuitry rather than testing the entire CFLK. DOE explored the possibility of adopting LM-82-12 for CFLKs with integrated SSL circuitry. Such a method would potentially reduce testing costs (particularly if the same LED module and driver were used in multiple basic models of CFLKs) and would yield test procedures more analogous to the test procedures proposed for all other CFLK types. DOE has concluded that this approach is not technically feasible, however, because: (1) DOE cannot be certain that test results of the LED module and driver would accurately represent the performance of the system when it was installed in the CFLK because the CFLK could provide heat sinking to the LED module in a manner that affected performance; and (2) it is not clear that it would be possible to test for compliance without destructively altering the product being tested because in some CFLK designs, LED modules and drivers are highly integrated into the CFLK. Furthermore, DOE was not able to determine if such an approach would increase or decrease testing burden.

DOE also considered alternatives to the new test procedures for measuring lamp efficacy. Specifically, DOE considered maintaining the current design standard that requires wattage limiters for certain types of CFLKs. As discussed previously, DOE concluded that the new test

procedures would not increase compliance costs and are in fact more likely to decrease compliance cost because of the cost savings from eliminating wattage limiter costs.

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of CFLKs must certify to DOE that their products comply with any applicable energy conservation standards. To certify compliance, manufacturers must first obtain test data for their products according to the DOE test procedures, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including CFLKs. See generally 10 CFR part 429. The collection-of-information requirement for certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910-1400. Public reporting burden for the certification is estimated to average 30 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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

D. Review Under the National Environmental Policy Act of 1969

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

E. Review Under Executive Order 13132

Executive Order 13132, "Federalism," 64 FR 43255 (August 4, 1999) imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this final rule and has determined that it would not have a

substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

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

review and determined that, to the extent permitted by law, the final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. No. 104-4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of \$100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed “significant intergovernmental mandate,” and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at <http://energy.gov/gc/office-general-counsel>. DOE examined this final rule according to UMRA and its statement of policy and determined these requirements do not apply because the rule contains neither an intergovernmental mandate nor a mandate that may result in the expenditure of \$100 million or more in any year.

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

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

I. Review Under Executive Order 12630

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

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

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

K. Review Under Executive Order 13211

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

This regulatory action to amend the test procedure for measuring the energy efficiency of CFLKs is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

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

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C.

788; FEAA) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (FTC) concerning the impact of the commercial or industry standards on competition.

The final rule incorporates testing methods contained in the following commercial standards: IES LM-66-2014, “IES Approved Method Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps” and IES LM-79-2008, “IES Approved Method Electrical and Photometric Measurements of Solid-State Lighting Products.” The Department has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 32(b) of the FEAA, (i.e., that they were developed in a manner that fully provides for public participation, comment, and review). DOE has consulted with both the Attorney General and the Chairman of the FTC about the impact on competition of using the methods contained in these standards and has received no comments objecting to their use.

M. Congressional Notification

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

V. Approval of the Office of the Secretary

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

List of Subjects

10 CFR Part 429

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

10 CFR Part 430

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

Issued in Washington, DC, on December 15, 2015.



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

For the reasons stated in the preamble, DOE amends parts 429 and 430 of Chapter II of Title 10, Code of Federal Regulations as set forth below:

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

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

Authority: 42 U.S.C. 6291-6317.

2. Section 429.33 is amended by revising paragraph (a) and adding paragraph (c) to read as follows:

§429.33 Ceiling fan light kits.

(a) *Determination of represented value.* Manufacturers must determine represented values, which includes certified ratings, for each basic model of ceiling fan light kit in accordance with following sampling provisions.

(1) The requirements of §429.11 are applicable to ceiling fan light kits, and

(2) For each basic model of ceiling fan light kit, the following sample size requirements are applicable to demonstrate compliance with the January 1, 2007 energy conservation standards:

(i) For ceiling fan light kits with medium screw base sockets that are packaged with compact fluorescent lamps, determine the represented values of each basic model of lamp packaged with the ceiling fan light kit in accordance with §429.35.

(ii) [Reserved].

(iii) For ceiling fan light kits with pin-based sockets that are packaged with fluorescent lamps, determine the represented values of each basic model of lamp packaged with the ceiling fan light kit in accordance with the sampling requirements in §429.35.

(iv) For ceiling fan light kits with medium screw base sockets that are packaged with incandescent lamps, determine the represented values of each basic model of lamp packaged with the ceiling fan light kit in accordance with §429.27.

(v) For ceiling fan light kits with sockets or packaged with lamps other than those described in paragraphs (a)(2)(i), (ii), (iii), or (iv) of this section, each unit must comply with the applicable design standard in §430.32(s)(4).

(3) For ceiling fan light kits required to comply with amended energy conservation standards, if established:

(i) Determine the represented values of each basic model of lamp packaged with each basic model of ceiling fan light kit, in accordance with the specified section:

(A) For compact fluorescent lamps, §429.35;

(B) For general service fluorescent lamps, §429.27;

(C) For incandescent lamps, §429.27;

(D) [Reserved].

(E) For other fluorescent lamps (not compact fluorescent lamps or general service fluorescent lamps), §429.35; and

(F) [Reserved].

(ii) Determine the represented value of each basic model of integrated SSL circuitry that is incorporated into each basic model of ceiling fan light kit by randomly selecting a sample of sufficient size and testing to ensure that any represented value of the energy efficiency of the integrated SSL circuitry basic model is less than or equal to the lower of:

(A) The mean of the sample, where:

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

and, \bar{x} is the sample mean; n is the number of samples; and x_i is the i^{th} sample; Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{0.95} \left(\frac{s}{\sqrt{n}} \right)$$

And \bar{x} is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from appendix A to subpart B).

* * * *

(c) Rounding requirements. Any represented value of initial lamp efficacy of CFLKs as described in paragraph (a)(3)(i)(E); system efficacy of CFLKs as described in paragraph (a)(2)(iii); luminaire efficacy of CFLKs as described in paragraph (a)(3)(ii) must be expressed in lumens per watt and rounded to the nearest tenth of a lumen per watt.

* * * *

PART 430--ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS.

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

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

4. Section 430.3 is amended by:

- a. Removing paragraph (m)(2);
- b. Redesignating paragraphs (m)(3), (m)(4) and (m)(5) as (m)(2), (m)(3) and (m)(4)

respectively;

- c. Removing from paragraph (o)(2) “appendix R” and adding in its place, “, appendices R, V, and V1”;
- d. Adding new paragraphs (o)(8) and (o)(9);
- e. Removing paragraph (v)(1);
- f. Redesignating paragraph (v)(2) as (v)(1) and reserving paragraph (v)(2).

The additions read as follows:

§ 430.3 Materials incorporated by reference.

* * * * *

(o) * * *

(8) IES LM-66-14, (“IES LM-66-14”), IES Approved Method for the Electrical and Photometric Measurements of Single-Based Fluorescent Lamps, approved December 30, 2014; IBR approved for appendix V to subpart B.

(9) IES LM-79-08, (“IES LM-79-08”), IES Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products, approved December 31, 2007; IBR approved for appendix V1 to subpart B.

* * * * *

5. Section 430.23 is amended by revising paragraph (x) to read as follows:

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

* * * * *

(x) Ceiling fan light kits. (1) For each ceiling fan light kit that is required to comply with the energy conservation standards as of January 1, 2007:

(i) For a ceiling fan light kit with medium screw base sockets that is packaged with compact fluorescent lamps, measure lamp efficacy, lumen maintenance at 1,000 hours, lumen maintenance at 40 percent of lifetime, rapid cycle stress test, and time to failure in accordance with paragraph (y) of this section.

(ii) [Reserved].

- (iii) For a ceiling fan light kit with pin-based sockets that is packaged with fluorescent lamps, measure system efficacy in accordance with section 4 of appendix V of this subpart.
- (iv) For a ceiling fan light kit with medium screw base sockets that is packaged with incandescent lamps, measure lamp efficacy in accordance with paragraph (r) of this section.

(2) For each ceiling fan light kit that is required to comply with amended energy conservation standards, if established:

- (i) For a ceiling fan light kit packaged with compact fluorescent lamps, measure lamp efficacy, lumen maintenance at 1,000 hours, lumen maintenance at 40 percent of lifetime, rapid cycle stress test, and time to failure in accordance with paragraph (y) of this section for each lamp basic model.
- (ii) For a ceiling fan light kit packaged with general service fluorescent lamps, measure lamp efficacy in accordance with paragraph (r) of this section for each lamp basic model.
- (iii) For a ceiling fan light kit packaged with incandescent lamps, measure lamp efficacy in accordance with paragraph (r) of this section for each lamp basic model.
- (iv) [Reserved].
- (v) For a ceiling fan light kit packaged with other fluorescent lamps (not compact fluorescent lamps or general service fluorescent lamps), packaged with other SSL products (not integrated LED lamps) or with integrated SSL circuitry, measure

efficacy in accordance with section 3 of appendix V1 of this subpart for each lamp basic model or integrated SSL basic model.

* * * * *

6. Appendix V to subpart B of part 430 is revised to read as follows:

Appendix V to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Ceiling Fan Light Kits with Pin-Based Sockets for Fluorescent Lamps

Prior to **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, manufacturers must make any representations with respect to the energy use or efficiency of ceiling fan light kits with pin-based sockets for fluorescent lamps in accordance with the results of testing pursuant to this Appendix V or the procedures in Appendix V as it appeared at 10 CFR part 430, subpart B, Appendix V, in the 10 CFR parts 200 to 499 edition revised as of January 1, 2015. On or after **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, manufacturers must make any representations with respect to energy use or efficiency of ceiling fan light kits with pin-based sockets for fluorescent lamps in accordance with the results of testing pursuant to this appendix to demonstrate compliance with the energy conservation standards at 10 CFR 430.32(s)(3).

Alternatively, manufacturers may make representations based on testing in accordance with appendix V1, provided that such representations demonstrate compliance with the amended

energy conservation standards. Manufacturers must make all representations with respect to energy use or efficiency in accordance with whichever version is selected for testing.

1. Scope: This appendix contains test requirements to measure the energy performance of ceiling fan light kits (CFLKs) with pin-based sockets that are packaged with fluorescent lamps.

2. Definitions

2.1. Input power means the measured total power used by all lamp(s) and ballast(s) of the CFLK during operation, expressed in watts (W) and measured using the lamp and ballast packaged with the CFLK.

2.2. Lamp ballast platform means a pairing of one ballast with one or more lamps that can operate simultaneously on that ballast. Each unique combination of manufacturer, basic model numbers of the ballast and lamp(s), and the quantity of lamps that operate on the ballast, corresponds to a unique platform.

2.3. Lamp lumens means a measurement of lumen output or luminous flux measured using the lamps and ballasts shipped with the CFLK, expressed in lumens.

2.4. System efficacy means the ratio of measured lamp lumens to measured input power, expressed in lumens per watt, and is determined for each unique lamp ballast platform packaged with the CFLK.

3. Test Apparatus and General Instructions:

The test apparatus and instructions for testing pin-based fluorescent lamps packaged with ceiling fan light kits that have pin-based sockets must conform to the following requirements:

Any lamp satisfying this description:	must be tested on the lamp ballast platform packaged with the CFLK in accordance with the requirements of:
Compact fluorescent lamp	sections 4-6 of IES LM-66-14 (incorporated by reference, see § 430.3)
Any other fluorescent lamp	sections 4-7 of IES LM-9-09 (incorporated by reference, see § 430.3)

4. Test Measurement and Calculations:

Measure system efficacy as follows and express the result in lumens per watt:

Lamp Type	Method
Compact fluorescent lamp	Measure system efficacy according to section 6 of IES LM-66-14 (incorporated by reference; see §430.3). Use of a goniophotometer is not permitted.
Any other fluorescent lamp	Measure system efficacy according to section 7 of IES LM-9-09 (incorporated by reference; see §430.3). Use of a goniophotometer is not permitted.

7. Appendix V1 is added to subpart B of part 430 to read as follows:

Appendix V1 to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Ceiling Fan Light Kits packaged with Other Fluorescent Lamps (not Compact Fluorescent Lamps or General Service Fluorescent Lamps), packaged with Other SSL Lamps (not Integrated LED Lamps), or with Integrated SSL Circuitry

Note: Any representations about the energy use or efficiency of any ceiling fan light kit packaged with fluorescent lamps other than compact fluorescent lamps or general service fluorescent lamps, packaged with SSL products other than integrated LED lamps, or with integrated SSL circuitry made on or after the compliance date of any amended energy

conservation standards must be based on testing pursuant to this appendix. Manufacturers may make representations based on testing in accordance with this appendix prior to the compliance date of any amended energy conservation standards, provided that such representations demonstrate compliance with the amended energy conservation standards.

1. Scope: This appendix establishes the test requirements to measure the energy efficiency of all ceiling fan light kits (CFLKs) packaged with fluorescent lamps other than compact fluorescent lamps or general service fluorescent lamps, packaged with SSL products other than integrated LED lamps, or with integrated SSL circuitry.

2. Definitions

- 2.1. CFLK with integrated SSL circuitry means a CFLK that has SSL light sources, drivers, heat sinks, or intermediate circuitry (such as wiring between a replaceable driver and a replaceable light source) that are not consumer replaceable.
- 2.2. Covers means materials used to diffuse or redirect light produced by an SSL light source in CFLKs with integrated SSL circuitry.
- 2.3. Other (non-CFL and non-GSFL) fluorescent lamp means a low-pressure mercury electric-discharge lamp in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light, including but not limited to circline fluorescent lamps, and excluding any compact fluorescent lamp and any general service fluorescent lamp.
- 2.4. Other SSL products means an integrated unit consisting of a light source, driver, heat sink, and intermediate circuitry that uses SSL technology (such as light-

emitting diodes or organic light-emitting diodes) and is consumer replaceable in a CFLK. The term does not include LED lamps with ANSI-standard bases.

Examples of other SSL products include OLED lamps, LED lamps with non-ANSI-standard bases, such as Zhaga interfaces, and LED light engines.

- 2.5. Solid-State Lighting (SSL) means technology where light is emitted from a solid object – a block of semiconductor – rather than from a filament or plasma, as in the case of incandescent and fluorescent lighting. This includes inorganic light-emitting diodes (LEDs) and organic light-emitting diodes (OLEDs).

3. Test Conditions and Measurements

For any CFLK that utilizes consumer replaceable lamps, measure the lamp efficacy of each basic model of lamp packaged with the CFLK. For any CFLK only with integrated SSL circuitry, measure the luminaire efficacy of the CFLK. For any CFLK that includes both consumer replaceable lamps and integrated SSL circuitry, measure both the lamp efficacy of each basic model of lamp packaged with the CFLK and the luminaire efficacy of the CFLK with all consumer replaceable lamps removed. Take measurements at full light output. Do not use a goniophotometer. For each test, use the test procedures in the table below. CFLKs with integrated SSL circuitry and consumer replaceable covers may be measured with their covers removed but must otherwise be measured according to the table below.

Lighting Technology	Lamp or Luminaire Efficacy Measured	Referenced Test Procedure
Other (non-CFL and non-GSFL) fluorescent lamps	Lamp Efficacy	IES LM-9-09, sections 4-7.*

Other SSL products	Lamp Efficacy	IES LM-79-08, sections 2-9.2*
CFLKs with integrated SSL circuitry	Luminaire Efficacy	IES LM-79-08, sections 2-9.2

* (incorporated by reference, see §430.3)

8. Section 430.32 is amended by revising paragraphs (s)(2), (3), and (4) to read as follows:

§ 430.32 Energy and water conservation standards and their compliance dates.

* * * *

(s) * *

(2) Ceiling fan light kits manufactured on or after January 1, 2007 with medium screw base sockets must be packaged with medium screw base lamps to fill all sockets. These medium screw base lamps must -

(i) Be compact fluorescent lamps that meet or exceed the following requirements or be as described in paragraph (2)(ii) of this section:

Factor	Requirements
Rated Wattage (Watts) & Configuration ¹	Minimum Initial Lamp Efficacy (lumens per watt) ²
<i>Bare Lamp:</i>	
Lamp Power <15	45.0
Lamp Power ≥15	60.0
<i>Covered Lamp (no reflector):</i>	
Lamp Power <15	40.0
15≤Lamp Power <19	48.0
19≤Lamp Power <25	50.0
Lamp Power ≥25	55.0
<i>With Reflector:</i>	

Lamp Power <20	33.0
Lamp Power \geq 20	40.0
Lumen Maintenance at 1,000 hours	$\geq 90.0\%$
Lumen Maintenance at 40 Percent of Lifetime	$\geq 80.0\%$
Rapid Cycle Stress Test	Each lamp must be cycled once for every 2 hours of lifetime. At least 5 lamps must meet or exceed the minimum number of cycles.
Lifetime	$\geq 6,000$ hours for the sample of lamps.

¹Use rated wattage to determine the appropriate minimum efficacy requirements in this table.

² Calculate efficacy using measured wattage, rather than rated wattage, and measured lumens to determine product compliance. Wattage and lumen values indicated on products or packaging may not be used in calculation.

(ii) Be light sources other than compact fluorescent lamps that have lumens per watt performance at least equivalent to comparably configured compact fluorescent lamps meeting the energy conservation standards in paragraph (2)(i) of this section.

(3) Ceiling fan light kits manufactured on or after January 1, 2007 with pin-based sockets for fluorescent lamps must use an electronic ballast and be packaged with lamps to fill all sockets.

These lamp ballast platforms must meet the following requirements:

Factor	Requirement
System Efficacy Per Lamp Ballast Platform in Lumens Per Watt (lm/w)	≥ 50 lm/w for all lamps below 30 total listed lamp watts. ≥ 60 lm/w for all lamps that are ≤ 24 inches and ≥ 30 total listed lamp watts. ≥ 70 lm/w for all lamps that are > 24 inches and ≥ 30 total listed lamp watts.

(4) Ceiling fan light kits manufactured on or after January 1, 2009 with socket types other than those covered in paragraphs (2) or (3) of this section, including candelabra screw base sockets,

shall be packaged with lamps to fill all sockets and shall not be capable of operating with lamps that total more than 190 watts.

* * * * *