

**DEPARTMENT OF ENERGY****10 CFR Part 430**

[EERE–2014–BT–STD–0058]

RIN 1904–AF59

**Energy Conservation Program: Energy Conservation Standards for Consumer Clothes Dryers**

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

**ACTION:** Notice of proposed rulemaking.

**SUMMARY:** The Energy Policy and Conservation Act, as amended (“EPCA”), prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including consumer clothes dryers. In this notice of proposed rulemaking (“NOPR”), the U.S. Department of Energy (“DOE”) proposes amended energy conservation standards for consumer clothes dryers identical to those set forth in a direct final rule published elsewhere in this issue of the **Federal Register**. If DOE receives adverse comment and determines that such comment may provide a reasonable basis for withdrawal of the direct final rule, DOE will publish a notice of withdrawal rule and will proceed with this proposed rule.

**DATES:** DOE will accept comments, data, and information regarding this NOPR no later than July 1, 2024. Comments regarding the likely competitive impact of the proposed standard should be sent to the Department of Justice contact listed in the **ADDRESSES** section on or before April 11, 2024.

**ADDRESSES:** See section VII, “Public Participation,” for details. If DOE withdraws the direct final rule published elsewhere in this issue of the **Federal Register**, DOE will hold a public meeting to allow for additional comment on this proposed rule. DOE will publish notice of any meeting in the **Federal Register**.

Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at [www.regulations.gov](http://www.regulations.gov) under docket number EERE–2014–BT–STD–0058. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE–2014–BT–STD–0058, by any of the following methods:

(1) *Email:* [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov). Include the docket number

EERE–2014–BT–STD–0058 in the subject line of the message.

(2) *Postal Mail:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE–5B, 1000 Independence Avenue SW, Washington, DC, 20585–0121. Telephone: (202) 287–1445. If possible, please submit all items on a compact disc (“CD”), in which case it is not necessary to include printed copies.

(3) *Hand Delivery/Courier:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L’Enfant Plaza SW, 6th Floor, Washington, DC 20024. Telephone: (202) 287–1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

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

*Docket:* The docket for this activity, which includes **Federal Register** notices, comments, and other supporting documents/materials, is available for review at [www.regulations.gov](http://www.regulations.gov). All documents in the docket are listed in the [www.regulations.gov](http://www.regulations.gov) index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket web page can be found at [www.regulations.gov/docket/EERE–2014–BT–STD–0058](http://www.regulations.gov/docket/EERE–2014–BT–STD–0058). The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section VII of this document for information on how to submit comments through [www.regulations.gov](http://www.regulations.gov).

EPCA requires the Attorney General to provide DOE a written determination of whether the proposed standard is likely to lessen competition. The U.S. Department of Justice Antitrust Division invites input from market participants and other interested persons with views on the likely competitive impact of the proposed standard. Interested persons may contact the Antitrust Division at [energy.standards@usdoj.gov](mailto:energy.standards@usdoj.gov) on or before the date specified in the **DATES** section. Please indicate in the “Subject” line of your email the title and Docket Number of this proposed rulemaking.

**FOR FURTHER INFORMATION CONTACT:**

Dr. Carl Shapiro, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW, Washington,

DC 20585–0121. Telephone: (202) 287–5649. Email: [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

Mr. Matthew Schneider, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (240) 597–6265. Email: [matthew.schneider@hq.doe.gov](mailto:matthew.schneider@hq.doe.gov).

For further information on how to submit a comment, review other public comments and the docket, or participate in the public meeting, contact the Appliance and Equipment Standards Program staff at (202) 287–1445 or by email: [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

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**I. Synopsis of the Proposed Rule**

The Energy Policy and Conservation Act, Public Law 94–163, as amended (“EPCA”),<sup>1</sup> authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B of EPCA<sup>2</sup> established the Energy Conservation Program for Consumer Products Other Than Automobiles. (42 U.S.C. 6291–6309) These products include consumer clothes dryers, the subject of this proposed rulemaking.

Pursuant to EPCA, any new or amended energy conservation standard must, among other things, be designed to achieve the maximum improvement in energy efficiency that DOE determines is technologically feasible and economically justified. (42 U.S.C.

<sup>1</sup> All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116–260 (Dec. 27, 2020), which reflect the last statutory amendments that impact Parts A and A–1 of EPCA.

<sup>2</sup> For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

6295(o)(2)(A)) Furthermore, the new or amended standard must result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

In light of the above and under the authority provided by 42 U.S.C. 6295(p)(4)(i), DOE is proposing this rule establishing and amending the energy conservation standards for consumer clothes dryers and is concurrently issuing a direct final rule published elsewhere in this issue of the **Federal Register**. DOE will proceed with this notice of proposed rulemaking (“NOPR”) only if it determines it must withdraw the direct final rule pursuant to the criteria provided in 42 U.S.C. 6295(p)(4). The amended standard levels in this proposed rule and the direct final rule were proposed in a letter submitted to DOE jointly by groups representing manufacturers, energy and environmental advocates,

consumer groups, and a utility. This letter, titled “Energy Efficiency Agreement of 2023” (hereafter, the “Joint Agreement”,<sup>3</sup>) recommends specific energy conservation standards for consumer clothes dryers. DOE subsequently received letters of support for the Joint Agreement from States including New York, California, and Massachusetts<sup>4</sup> and utilities including San Diego Gas and Electric and Southern California Edison<sup>5</sup> advocating for the adoption of the recommended standards. As discussed in more detail in the accompanying direct final rule and in accordance with the provisions at 42 U.S.C. 6295(p)(4), DOE has determined that the recommendations contained in the Joint Agreement comply with the requirements of 42 U.S.C. 6295(o).

In accordance with these and other statutory provisions discussed in this

document, DOE proposes amended energy conservation standards for consumer clothes dryers. The standards are expressed in terms of the combined energy factor (“CEFD<sub>2</sub>”), measured in pounds per kilowatt-hour (“lb/kWh”), as determined in accordance with DOE’s consumer clothes dryer test procedure at title 10 of the Code of Federal Regulations (“CFR”) part 430, subpart B, appendix D2 (“appendix D2”). The CEF metric includes active mode, standby mode, and off mode energy use.

Table I.1 presents the proposed standards for consumer clothes dryers. The proposed standards are the same as those recommended by the Joint Agreement. These standards would apply to all products listed in Table I.1 and manufactured in, or imported into, the United States starting on March 1, 2028, as recommended in the Joint Agreement.

TABLE I.1—PROPOSED ENERGY CONSERVATION STANDARDS FOR CONSUMER CLOTHES DRYERS  
[Compliance starting March 1, 2028]

Product class	Minimum CEF <sub>D2</sub> (lb/kWh)
(i) Electric, Standard (4.4 cubic feet (“ft <sup>3</sup> ”) or greater capacity) .....	3.93
(ii) Electric, Compact (120 volts (“V”)) (less than 4.4 ft <sup>3</sup> capacity) .....	4.33
(iii) Vented Electric, Compact (240V) (less than 4.4 ft <sup>3</sup> capacity) .....	3.57
(iv) Vented Gas, Standard (4.4 ft <sup>3</sup> or greater capacity) .....	3.48
(v) Vented Gas, Compact (less than 4.4 ft <sup>3</sup> capacity) .....	2.02
(vi) Ventless Electric, Compact (240V) (less than 4.4 ft <sup>3</sup> capacity) .....	2.68
(vii) Ventless Electric, Combination Washer-Dryer .....	2.33

**II. Introduction**

The following section briefly discusses the statutory authority underlying this proposed rule, as well as some of the relevant historical background related to the establishment of standards for consumer clothes dryers.

**A. Authority**

EPCA authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. Title III, Part B of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles. These products include consumer clothes dryers, the subject of this document. (42 U.S.C. 6292(a)(8)) EPCA prescribed energy conservation standards for these products (42 U.S.C. 6295(g)(3)), and directed DOE to conduct future rulemakings to determine whether to amend these standards. (42 U.S.C. 6295(g)(4)) EPCA

further provides that, not later than 6 years after the issuance of any final rule establishing or amending a standard, DOE must publish either a notice of determination that standards for the product do not need to be amended, or a NOPR including new proposed energy conservation standards (proceeding to a final rule, as appropriate). (42 U.S.C. 6295(m)(1))

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

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

Subject to certain criteria and conditions, DOE is required to develop test procedures to measure the energy efficiency, energy use, or estimated annual operating cost of each covered product. (42 U.S.C. 6295(o)(3)(A) and 42 U.S.C. 6295(r)) Manufacturers of covered products must use the prescribed DOE test procedure as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA and when making representations to the public regarding

<sup>3</sup>This document is available in the docket at: [www.regulations.gov/comment/EERE-2014-BT-STD-0058-0055](http://www.regulations.gov/comment/EERE-2014-BT-STD-0058-0055).

<sup>4</sup>This document is available in the docket at: [www.regulations.gov/comment/EERE-2014-BT-STD-0058-0056](http://www.regulations.gov/comment/EERE-2014-BT-STD-0058-0056).

<sup>5</sup>This document is available in the docket at: [www.regulations.gov/comment/EERE-2014-BT-STD-0058-0057](http://www.regulations.gov/comment/EERE-2014-BT-STD-0058-0057).

the energy use or efficiency of those products. (42 U.S.C. 6293(c) and 42 U.S.C. 6295(s)) Similarly, DOE must use these test procedures to determine whether the products comply with standards adopted pursuant to EPCA. (42 U.S.C. 6295(s)) The DOE test procedures for consumer clothes dryers appear at title 10 of the Code of Federal Regulations (“CFR”) part 430, subpart B, appendix D1 and appendix D2 (“appendix D1” and “appendix D2,” respectively).

DOE must follow specific statutory criteria for prescribing new or amended standards for covered products, including consumer clothes dryers. Any new or amended standard for a covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary of Energy (“Secretary”) determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) Furthermore, DOE may not adopt any standard that would not result in the significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

Moreover, DOE may not prescribe a standard if DOE determines by rule that the standard is not technologically feasible or economically justified. (42 U.S.C. 6295(o)(3)(B)) In deciding whether a proposed standard is economically justified, DOE must determine whether the benefits of the standard exceed its burdens. (42 U.S.C. 6295(o)(2)(B)(i)) DOE must make this determination after receiving comments on the proposed standard, and by considering, to the greatest extent practicable, the following seven statutory factors:

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

(2) The savings in operating costs throughout the estimated average life of the covered products in the type (or class) compared to any increase in the price, initial charges, or maintenance expenses for the covered products that are likely to result from the standard;

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

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

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

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

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

Further, EPCA, as codified, establishes a rebuttable presumption that a standard is economically justified if the Secretary finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure. (42 U.S.C. 6295(o)(2)(B)(iii))

EPCA, as codified, also contains what is known as an “anti-backsliding” provision, which prevents the Secretary from prescribing any amended standard that either increases the maximum allowable energy use or decreases the minimum required energy efficiency of a covered product. (42 U.S.C. 6295(o)(1)) Also, the Secretary may not prescribe an amended or new standard if interested persons have established by a preponderance of the evidence that the standard is likely to result in the unavailability in the United States in any covered product type (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the United States. (42 U.S.C. 6295(o)(4))

EPCA specifies requirements when promulgating an energy conservation standard for a covered product that has two or more subcategories. A rule prescribing an energy conservation standard for a type (or class) of product must specify a different standard level for a type or class of product that has the same function or intended use if DOE determines that products within such group: (A) consume a different kind of energy from that consumed by other covered products within such type (or class); or (B) have a capacity or other performance-related feature which other products within such type (or class) do not have and such feature justifies a higher or lower standard. (42 U.S.C. 6295(q)(1)) In determining whether a performance-related feature justifies a different standard for a group of products, DOE considers such factors as the utility to the consumer of such a feature and other factors DOE deems appropriate. *Id.* Any rule prescribing such a standard must include an explanation of the basis on which such higher or lower level was established. (42 U.S.C. 6295(q)(2))

Additionally, pursuant to the amendments contained in the Energy Independence and Security Act of 2007 (“EISA 2007”), Public Law 110–140,

final rules for new or amended energy conservation standards promulgated after July 1, 2010, are required to address standby mode and off mode energy use. (42 U.S.C. 6295(gg)(3)) Specifically, when DOE adopts a standard for a covered product after that date, it must, if justified by the criteria for adoption of standards under EPCA (42 U.S.C. 6295(o)), incorporate standby mode and off mode energy use into a single standard, or, if that is not feasible, adopt a separate standard for such energy use for that product. (42 U.S.C. 6295(gg)(3)(A)–(B)) DOE’s current test procedures for consumer clothes dryers address standby mode and off mode energy use, as do the standards proposed in this NOPR.

Finally, EISA 2007 amended EPCA, in relevant part, to grant DOE authority to directly issue a final rule (*i.e.*, a “direct final rule”) establishing an energy or water conservation standard upon receipt of a statement submitted jointly by interested persons that are fairly representative of relevant points of view (including representatives of manufacturers of covered products, States, and efficiency advocates), as determined by the Secretary, that contains recommendations with respect to an energy or water conservation standard. (42 U.S.C. 6295(p)(4)) Pursuant to 42 U.S.C. 6295(p)(4), the Secretary must also determine whether a jointly-submitted recommendation for an energy or water conservation standard satisfies 42 U.S.C. 6295(o) or 42 U.S.C. 6313(a)(6)(B), as applicable.

A NOPR that proposes an identical energy efficiency standard must be published simultaneously with the direct final rule, and DOE must provide a public comment period of at least 110 days on this proposal. (42 U.S.C. 6295(p)(4)(A)–(B)) Based on the comments received during this period, the direct final rule will either become effective, or DOE will withdraw it not later than 120 days after its issuance if (1) one or more adverse comments is received, and (2) DOE determines that those comments, when viewed in light of the rulemaking record related to the direct final rule, may provide a reasonable basis for withdrawal of the direct final rule under 42 U.S.C. 6295(o). (42 U.S.C. 6295(p)(4)(C)) Receipt of an alternative joint recommendation may also trigger a DOE withdrawal of the direct final rule in the same manner. (*Id.*) After withdrawing a direct final rule, DOE must proceed with the NOPR published simultaneously with the direct final rule and publish in the **Federal Register** the reasons why the direct final rule was withdrawn. (*Id.*)

DOE has previously explained its interpretation of its direct final rule authority. In a final rule amending the Department’s “Procedures, Interpretations and Policies for Consideration of New or Revised Energy Conservation Standards for Consumer Products” at 10 CFR part 430, subpart C, appendix A, DOE noted that it may issue standards recommended by interested persons that are fairly representative of relative points of view as a direct final rule when the recommended standards are in accordance with 42 U.S.C. 6295(o) or 42 U.S.C. 6313(a)(6)(B), as applicable. 86 FR 70892, 70912 (Dec. 13, 2021). But the direct final rule provision in EPCA, under which this proposed rule is issued, does not impose additional requirements applicable to other standards rulemakings, which is consistent with the unique circumstances of rules issued through

consensus agreements under DOE’s direct final rule authority. *Id.* DOE’s discretion remains bounded by its statutory mandate to adopt a standard that results in the maximum improvement in energy efficiency that is technologically feasible and economically justified—a requirement found in 42 U.S.C. 6295(o). *Id.* As such, *DOE’s review and analysis of the Joint Agreement is limited to whether the recommended standards satisfy the criteria in 42 U.S.C. 6295(o).*

*B. Background*

1. Current Standards

In a direct final rule published on April 21, 2011, (“April 2011 Direct Final Rule”) DOE prescribed the current energy conservation standards for consumer clothes dryers manufactured on and after January 1, 2015. 76 FR 22454.<sup>6</sup> The current energy conservation standards, as amended in the 2011

Direct Final Rule, are in accordance with the appendix D1 test procedure as discussed in section II.B.2 of this document. They are based on combined energy factor (“CEF”)—a metric that incorporates energy use in active mode, standby mode, and off mode.

The current standards are defined in terms of a minimum allowable CEF, as measured according to appendix D1. Even though DOE maintained the same energy efficiency descriptor for both appendix D1 and appendix D2, DOE notes that the CEF values are not equivalent because of the extensive differences in test methods.<sup>7</sup> To avoid potential confusion that would result from using the same efficiency descriptor for both test procedures as it relates to the standards discussed in this document, DOE is including a “D1” or “D2” subscript when referring to the appendix D1 CEF and appendix D2 CEF, respectively (“CEFD<sub>1</sub>” and “CEFD<sub>2</sub>”).

TABLE II.1 FEDERAL ENERGY EFFICIENCY STANDARDS FOR CONSUMER CLOTHES DRYERS AS MEASURED UNDER APPENDIX D1

Product class	CEFD <sub>1</sub> lb/kWh)
(i) Vented Electric, Standard (4.4 ft <sup>3</sup> or greater capacity) .....	3.73
(ii) Vented Electric, Compact (120V) (less than 4.4 ft <sup>3</sup> capacity) .....	3.61
(iii) Vented Electric, Compact (240V) (less than 4.4 ft <sup>3</sup> capacity) .....	3.27
(iv) Vented Gas .....	3.30
(v) Ventless Electric, Compact (240V) (less than 4.4 ft <sup>3</sup> capacity) .....	2.55
(vi) Ventless Electric, Combination Washer-Dryer .....	2.08

2. Current Test Procedure

On October 8, 2021, DOE published a final rule for the test procedure rulemaking (86 FR 56608) (the “October 2021 TP Final Rule”), in which it amended appendix D1 and appendix D2, both entitled “Uniform Test Method for Measuring the Energy Consumption of Clothes Dryers,” to provide additional detail in response to questions from manufacturers and test laboratories, including additional detail regarding the testing of “connected” models, dryness level selection, and the procedures for maintaining the required heat input rate for gas consumer clothes dryers; additional detail for the test procedures for performing inactive and off mode power measurements; specifications for the final moisture content (“FMC”) required for testing automatic termination control dryers; specification of a narrower scale resolution for the weighing scale used to

determine moisture content of test loads; and specification that the test load must be weighed within 5 minutes after a test cycle has terminated. In addition, as part of the October 2021 TP Final Rule, DOE amended the test procedures to update the estimated number of annual use cycles for consumer clothes dryers; provide further direction for additional provisions within the test procedures; specify rounding requirements for all reported values; apply consistent use of nomenclature and correct typographical errors; remove obsolete sections of the test procedures, including appendix D; and update the reference to the applicable industry test procedure to the version certified by the American National Standards Institute (“ANSI”). 86 FR 56608, 56610.

DOE’s current energy conservation standards for consumer clothes dryers are expressed in terms of CEF<sub>D1</sub>. (See 10 CFR 430.32(h)(3).) Appendix D1 tests

timed drying cycles, and accounts for clothes dryers with automatic termination controls by applying a higher field use factor to units that have this feature. Appendix D2 tests “normal” automatic termination cycles and more accurately measure the effects of automatic cycle termination.

EPCA authorizes DOE to design test procedures that measure energy efficiency, energy use, water use, or estimated annual operating cost of a covered product during a representative average use cycle or period of use. (42 U.S.C. 6293(b)(3)) The appendix D2 test procedure, which is required for use to demonstrate compliance with the amended energy conservation standards established in this direct final rule, measures the energy consumption of a representative use cycle that dries a load of laundry from an initial moisture content of 57.5 percent to an FMC of less than 2 percent. 86 FR 56624–56625. For timer clothes dryers, the test load is

<sup>6</sup> DOE published a confirmation of effective date and compliance date for the direct final rule on August 24, 2011. 76 FR 52854.

<sup>7</sup> While the current standards are based on CEF as determined in accordance with appendix D1,

manufacturers are permitted to use the appendix D2 test procedure to comply with the current standards, as long as they use a single appendix for all representations. Beginning on the compliance date of the amended standards established by this

final rule, manufacturers will be required to use appendix D2 to comply with the amended standards.

dried until the FMC is between 1 and 2.5 percent of the bone-dry weight of the test load. The measured energy consumption is then normalized to determine the energy consumption required to dry the test load to 2-percent FMC, with a field use factor applied to account for the over-drying energy consumption. For automatic termination control clothes dryers, appendix D2 specifies that a “normal” program be selected for the test cycle, and for clothes dryers that do not have a “normal” program, the cycle recommended by the manufacturer for drying cotton or linen shall be selected. If the drying temperature and drying level settings can be chosen independently of the program, they shall be set at the maximum drying temperature setting, and at a “normal” or “medium” dryness level setting. The test is considered valid if the FMC of the test load is 2 percent or less after the completion of the test cycle. If the FMC is greater than 2 percent, the test is considered invalid and a new run shall be conducted using the highest dryness level setting.

The current 2-percent FMC requirement using the DOE test cloth was adopted as representative of approximately 5-percent FMC for “real-world” clothing, based on data submitted in a joint petition for rulemaking.<sup>8</sup> DOE determined in the final rule published on August 14, 2013, that established the appendix D2 test procedure that the specified 2-percent FMC using the DOE test load was representative of consumer expectations for dryness of clothing in field use. 78 FR 49608, 49620–49622, 49610–49611. DOE did not amend the FMC requirements in the October 2021 TP Final Rule. 86 FR 56626.

DOE has conducted the rulemaking analysis for this proposed rule based on CEF<sub>D2</sub> because compliance with the amended energy conservation standards established in the direct final rule published elsewhere in this issue of the **Federal Register** must be determined

<sup>8</sup> The petition was submitted by AHAM, Whirlpool Corporation, General Electric Company, Electrolux, LG Electronics, Inc., BSH, Alliance Laundry Systems, Viking Range, Sub-Zero Wolf, Friedrich A/C, U-Line, Samsung, Sharp Electronics, Miele, Heat Controller, AGA Marvel, Brown Stove, Haier, Fagor America, Airwell Group, Arcelik, Fisher & Paykel, Scotsman Ice, Indesit, Kuppersbusch, Kelon, and DeLonghi, American Council for an Energy Efficient Economy, Appliance Standards Awareness Project, Natural Resources Defense Council, Alliance to Save Energy, Alliance for Water Efficiency, Northwest Power and Conservation Council, and Northeast Energy Efficiency Partnerships, Consumer Federation of America and the National Consumer Law Center. See Docket No. EERE–2011–BT–TP–0054, No. 3.

based on the use of appendix D2. DOE discusses additional details in section IV.C.1 of the accompanying direct final rule about how it developed the engineering baseline, in terms of CEF<sub>D2</sub>, from the current consumer clothes dryer standards that are in terms of CEF<sub>D1</sub>.

### 3. The Joint Agreement

On September 25, 2023, DOE received a joint statement (*i.e.*, the Joint Agreement) recommending standards for consumer clothes dryers, that was submitted by groups representing manufacturers, energy and environmental advocates, consumer groups, and a utility.<sup>9</sup> In addition to the recommended standards for consumer clothes dryers, the Joint Agreement also included separate recommendations for several other covered products.<sup>10</sup> And, while acknowledging that DOE may implement these recommendations in separate rulemakings, the Joint Agreement also stated that the recommendations were recommended as a complete package and each recommendation is contingent upon the other parts being implemented. DOE understands this to mean that the Joint Agreement is contingent upon DOE initiating rulemaking processes to adopt all of the recommended standards in the agreement. That is distinguished from an agreement where issuance of an amended energy conservation standard for a covered product is contingent on issuance of amended energy conservation standards for the other covered products. If the Joint Agreement were so construed, it would conflict with the anti-backsliding provision in 42 U.S.C. 6295(o)(1), because it would

<sup>9</sup> The signatories to the Joint Agreement include AHAM, American Council for an Energy-Efficient Economy, Alliance for Water Efficiency, Appliance Standards Awareness Project, Consumer Federation of America, Consumer Reports, Earthjustice, National Consumer Law Center, Natural Resources Defense Council, Northwest Energy Efficiency Alliance, and Pacific Gas and Electric Company. Members of AHAM’s Major Appliance Division that make the affected products include: Alliance Laundry Systems, LLC; Asko Appliances AB; Beko US Inc.; Brown Stove Works, Inc.; BSH Home Appliances Corporation; Danby Products, Ltd.; Electrolux Home Products, Inc.; Elicamex S.A. de C.V.; Faber; Fofite America; GE Appliances; L’Atelier Paris Haute Design LLC; LG Electronics; Liebherr USA, Co.; Midea America Corp.; Miele, Inc.; Panasonic Appliances Refrigeration Systems (PAPRSA) Corporation of America; Perlick Corporation; Samsung Electronics America Inc.; Sharp Electronics Corporation; Smeg S.p.A.; Sub-Zero Group, Inc.; The Middleby Corporation; U-Line Corporation; Viking Range, LLC; and Whirlpool Corporation.

<sup>10</sup> The Joint Agreement contained recommendations for six covered products: refrigerators, refrigerator-freezers, and freezers; residential clothes washers; consumer clothes dryers; dishwashers; consumer conventional cooking products; and miscellaneous refrigeration products.

imply the possibility that, if DOE were unable to issue an amended standard for a certain product, it would have to withdraw a previously issued standard for one of the other products. The anti-backsliding provision, however, prevents DOE from withdrawing or amending an energy conservation standard to be less stringent. As a result, DOE will be proceeding with individual rulemakings that will evaluate each of the recommended standards separately under the applicable statutory criteria.

A court decision issued after DOE received the Joint Agreement is also relevant to today’s rule. On March 17, 2022, various States filed a petition seeking review of a final rule revoking two final rules that established product classes for residential dishwashers with a cycle time for the normal cycle of 60 minutes or less, top-loading residential clothes washers (“RCWs”) and certain classes of consumer clothes dryers with a cycle time of less than 30 minutes, and front-loading RCWs with a cycle time of less than 45 minutes (collectively, “short cycle product classes”). The petitioners argued that the final rule revoking the short cycle product classes violated EPCA and was arbitrary and capricious. On January 8, 2024, the United States Court of Appeals for the Fifth Circuit granted the petition for review and remanded the matter to DOE for further proceedings consistent with the Fifth Circuit’s opinion. See *Louisiana v. United States Department of Energy*, 90 F.4th 461 (5th Cir. 2024).

On February 14, 2024, following the Fifth Circuit’s decision in *Louisiana v. United States Department of Energy*, DOE received a second joint statement from this same group of stakeholders in which the signatories reaffirmed the Joint Agreement, stating that the recommended standards represent the maximum levels of efficiency that are technologically feasible and economically justified.<sup>11</sup> In the letter, the signatories clarified that “short-cycle” product classes for RCWs, consumer clothes dryers, and dishwashers did not exist at the time that the signatories submitted their recommendations and it is their understanding that these classes also do not exist at the current time. Accordingly, the parties clarified that the Joint Agreement did not address short-cycle product classes. The signatories also stated that they did not anticipate that the recommended energy conservation standards in the Joint Agreement will negatively affect

<sup>11</sup> This document is available in the docket at: [www.regulations.gov/comment/EERE-2014-BT-STD-0058-0058](http://www.regulations.gov/comment/EERE-2014-BT-STD-0058-0058).

features or performance, including cycle time, for consumer clothes dryers. In a recently issued request for information (“RFI”),<sup>12</sup> DOE is commencing a rulemaking process on remand from the Fifth Circuit (the “Remand Proceeding”) by soliciting further information, relevant to the issues identified by the Fifth Circuit,

regarding any short cycle product classes. In that Remand Proceeding, DOE will conduct the analysis required by 42 U.S.C. 6295(q)(1)(B) to determine whether any short-cycle products have a “capacity or other performance-related feature [that] . . . justifies a higher or lower standard from that which applies (or will apply) to other products. . . .”

The Joint Agreement recommends amended standard levels for consumer clothes dryers as presented in Table II.2. (Joint Agreement, No. 55 at p. 9) Details of the Joint Agreement recommendations for other products are provided in the Joint Agreement posted in the docket.<sup>13</sup>

TABLE II.2—RECOMMENDED AMENDED ENERGY CONSERVATION STANDARDS FOR CONSUMER CLOTHES DRYERS

Product class	Minimum energy efficiency ratio (lb/kWh)	Compliance date
Electric, Standard (4.4 cubic feet (“ft <sup>3</sup> ”) or greater capacity) .....	3.93	March 1, 2028.
Electric, Compact (120 volts (“V”)) (less than 4.4 ft <sup>3</sup> capacity) .....	4.33	
Vented Electric, Compact (240V) (less than 4.4 ft <sup>3</sup> capacity) .....	3.57	
Vented Gas, Standard (4.4 ft <sup>3</sup> or greater capacity) .....	3.48	
Vented Gas, Compact (less than 4.4 ft <sup>3</sup> capacity) .....	2.02	
Ventless Electric, Compact (240V) (less than 4.4 ft <sup>3</sup> capacity) .....	2.68	
Ventless Electric, Combination Washer-Dryer .....	2.33	

DOE has evaluated the Joint Agreement and believes that it meets the EPCA requirements for issuance of a direct final rule. As a result, DOE published a direct final rule establishing energy conservation standards for consumer clothes dryers elsewhere in this issue of the **Federal Register**. If DOE receives adverse comments that may provide a reasonable basis for withdrawal and withdraws the direct final rule, DOE will consider those comments and any other comments received in determining how to proceed with this proposed rule. For further background information on these proposed standards and the supporting analyses, please see the direct final rule published elsewhere in this issue of the **Federal Register**. That document and the accompanying technical support document (“TSD”) contain an in-depth discussion of the analyses conducted in evaluating the Joint Agreement, the methodologies DOE used in conducting those analyses, and the analytical results.

When the Joint Agreement was submitted, DOE was conducting a rulemaking to consider amending the standards for consumer clothes dryers. As part of that process, DOE published a NOPR and announced a public webinar to respond to initial comments on August 23, 2022 (“August 2022 NOPR”) seeking comment on its proposed amended standards to inform its decision consistent with its obligations under EPCA and the Administrative Procedures Act (“APA”). 87 FR 51734. DOE

subsequently held a public webinar on September 13, 2022, to discuss and receive comments on the August 2022 NOPR TSD. The August 2022 NOPR TSD is available at: [www.regulations.gov/document/EERE-2014-BT-STD-0058-0034](http://www.regulations.gov/document/EERE-2014-BT-STD-0058-0034).

**III. Proposed Standards**

When considering new or amended energy conservation standards, the standards that DOE adopts for any type (or class) of covered product must be designed to achieve the maximum improvement in energy efficiency that the Secretary determines is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) In determining whether a standard is economically justified, the Secretary must determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable, considering the seven statutory factors discussed previously. (42 U.S.C. 6295(o)(2)(B)(i)) The new or amended standard must also result in significant conservation of energy. (42 U.S.C. 6295(o)(3)(B))

DOE considered the impacts of amended standards for consumer clothes dryers at each trial standard level (“TSL”), beginning with the maximum technologically feasible (“max-tech”) level, to determine whether that level was economically justified. Where the max-tech level was not justified, DOE then considered the next most efficient level and undertook the same evaluation until it reached the highest efficiency level that is both

technologically feasible and economically justified and saves a significant amount of energy. DOE refers to this process as the “walk-down” analysis.

To aid the reader as DOE discusses the benefits and/or burdens of each TSL, tables in this section present a summary of the results of DOE’s quantitative analysis for each TSL. In addition to the quantitative results presented in the tables, DOE also considers other burdens and benefits that affect economic justification. These include the impacts on identifiable subgroups of consumers who may be disproportionately affected by a national standard and impacts on employment.

DOE also notes that the economics literature provides a wide-ranging discussion of how consumers trade off upfront costs and energy savings in the absence of government intervention. Much of this literature attempts to explain why consumers appear to undervalue energy efficiency improvements. There is evidence that consumers undervalue future energy savings as a result of (1) a lack of information; (2) a lack of sufficient salience of the long-term or aggregate benefits; (3) a lack of sufficient savings to warrant delaying or altering purchases; (4) excessive focus on the short term, in the form of inconsistent weighting of future energy cost savings relative to available returns on other investments; (5) computational or other difficulties associated with the evaluation of relevant tradeoffs; and (6) a divergence in incentives (for example,

<sup>12</sup> See *Appliance Standards Rulemakings and Notices (energy.gov)*.

<sup>13</sup> The Joint Agreement available in the docket at [www.regulations.gov/document?D=EERE-2014--BT-STD-0058-0055](http://www.regulations.gov/document?D=EERE-2014--BT-STD-0058-0055).

between renters and owners, or builders and purchasers). Having less than perfect foresight and a high degree of uncertainty about the future, consumers may trade off these types of investments at a higher than expected rate between current consumption and uncertain future energy cost savings.

In DOE’s current regulatory analysis, potential changes in the benefits and costs of a regulation due to changes in consumer purchase decisions are included in two ways. First, if consumers forego the purchase of a product in the standards case, this decreases sales for product manufacturers, and the impact on manufacturers attributed to lost revenue is included in the manufacturer impact analysis (“MIA”). Second, DOE accounts for energy savings attributable only to products actually used by consumers in the standards case; if a standard decreases the number of

products purchased by consumers, this decreases the potential energy savings from an energy conservation standard. DOE provides estimates of shipments and changes in the volume of product purchases in chapter 9 of the direct final rule TSD<sup>14</sup> available in the docket for this rulemaking. However, DOE’s current analysis does not explicitly control for heterogeneity in consumer preferences, preferences across subcategories of products or specific features, or consumer price sensitivity variation according to household income.<sup>15</sup>

*A. Benefits and Burdens of TSLs Considered for Consumer Clothes Dryers Standards*

Table III.1 and Table III.2 summarize the quantitative impacts estimated for each TSL for consumer clothes dryers. The national impacts are measured over the lifetime of consumer clothes dryers purchased in the 30-year period that

begins in the anticipated year of compliance with amended standards (2027–2056).<sup>16</sup> The energy savings, emissions reductions, and value of emissions reductions refer to full-fuel-cycle (“FFC”) results. The efficiency levels contained in each TSL are described in section V.A of the direct final rule published elsewhere in this issue of the **Federal Register**. DOE is presenting monetized benefits of greenhouse gas (“GHG”) emissions reductions in accordance with the applicable Executive Orders and DOE would reach the same conclusion presented in this notice in the absence of the social cost of greenhouse gases, including the Interim Estimates presented by the Interagency Working Group. The efficiency levels contained in each TSL are described in section V.A of the direct final rule published elsewhere in this issue of the **Federal Register**.

TABLE III.1—SUMMARY OF ANALYTICAL RESULTS FOR CONSUMER CLOTHES DRYER TSLs: NATIONAL IMPACTS

Category	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5	TSL 6
<b>Cumulative FFC National Energy Savings</b>						
Quads .....	0.57	1.58	2.66	3.52	9.70	9.76
<b>Cumulative FFC Emissions Reduction</b>						
CO <sub>2</sub> (million metric tons) .....	12.4	34.1	57.1	73.5	188.6	189.6
CH <sub>4</sub> (thousand tons) .....	114.8	311.4	527.6	661.6	1,646	1,654
N <sub>2</sub> O (thousand tons) .....	0.1	0.3	0.5	0.6	1.7	1.7
NO <sub>x</sub> (thousand tons) .....	25.4	69.0	116.5	146.7	364.1	366.0
SO <sub>2</sub> (thousand tons) .....	3.0	8.4	13.9	19.0	53.3	53.6
Hg (tons) .....	0.02	0.1	0.1	0.1	0.4	0.4
<b>Present Value of Benefits and Costs (3% discount rate, billion 2022\$)</b>						
Consumer Operating Cost Savings .....	4.3	12.7	21.1	28.8	77.4	77.8
Climate Benefits * .....	0.7	2.0	3.3	4.3	10.8	10.9
Health Benefits ** .....	1.4	3.8	6.3	8.2	20.8	20.9
Total Benefits † .....	6.4	18.5	30.7	41.3	108.9	109.5
Consumer Incremental Product Costs ‡ ...	0.2	0.4	1.0	8.9	46.2	47.3
Consumer Net Benefits .....	4.1	12.3	20.1	19.9	31.2	30.5
Total Net Benefits .....	6.2	18.2	29.7	32.4	62.8	62.2
<b>Present Value of Benefits and Costs (7% discount rate, billion 2022\$)</b>						
Consumer Operating Cost Savings .....	2.0	6.1	9.8	13.7	35.2	35.4
Climate Benefits * .....	0.7	2.0	3.3	4.3	10.8	10.9
Health Benefits ** .....	0.6	1.7	2.6	3.6	8.7	8.7
Total Benefits † .....	3.4	9.8	15.8	21.6	54.7	55.0
Consumer Incremental Product Costs ‡ ...	0.1	0.2	0.6	5.3	26.2	26.8
Consumer Net Benefits .....	1.9	5.9	9.2	8.4	9.0	8.6

<sup>14</sup> The TSD is available in the docket for this rulemaking at [www.regulations.gov/docket/EERE-2014-BT-STD-0058/document](http://www.regulations.gov/docket/EERE-2014-BT-STD-0058/document).

<sup>15</sup> P.C. Reiss and M.W. White. Household Electricity Demand, Revisited. *Review of Economic Studies*. 2005. 72(3): pp. 853–883. doi: 10.1111/0034-6527.00354.

<sup>16</sup> The analysis period for TSL 3 (the Recommended TSL) is 2028–2057.

TABLE III.1—SUMMARY OF ANALYTICAL RESULTS FOR CONSUMER CLOTHES DRYER TSLs: NATIONAL IMPACTS—Continued

Category	TSL 1	TSL 2	TSL 3	TSL 4	TSL 5	TSL 6
Total Net Benefits .....	3.3	9.6	15.2	16.3	28.5	28.2

**Note:** This table presents the costs and benefits associated with consumer clothes dryers shipped during the period 2027–2056 for all TSLs except TSL 3 (the Recommended TSL) and 2028–2057 for TSL 3. These results include consumer, climate, and health benefits that accrue after 2056 from the products shipped during the period 2027–2056 for all TSLs except TSL 3 and 2057 from the products shipped during the period 2028–2057 for TSL 3.

\* Climate benefits are calculated using four different estimates of the four different estimates of the social cost of carbon (SC–CO<sub>2</sub>), methane (SC–CH<sub>4</sub>), and nitrous oxide (SC–N<sub>2</sub>O) (model average at 2.5-percent, 3-percent, and 5-percent discount rates; 95th percentile at 3-percent discount rate). Together, these represent the global SC–GHG. For presentational purposes of this table, the climate benefits associated with the average SC–GHG at a 3-percent discount rate are shown; however, DOE emphasizes the importance and value of considering the benefits calculated using all four sets of SC–GHG estimates. To monetize the benefits of reducing GHG emissions, this analysis uses the interim estimates presented in the *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates Under Executive Order 13990* published in February 2021 by the Interagency Working Group (“IWG”) on the Social Cost of Greenhouse Gases. See [www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocumentSocialCostofCarbonMethaneNitrousOxide.pdf](http://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocumentSocialCostofCarbonMethaneNitrousOxide.pdf).

\*\* Health benefits are calculated using benefit-per-ton values for NO<sub>x</sub> and SO<sub>2</sub>. DOE is currently only monetizing (for NO<sub>x</sub> and SO<sub>2</sub>) PM<sub>2.5</sub> precursor health benefits and (for NO<sub>x</sub>) ozone precursor health benefits, but will continue to assess the ability to monetize other effects such as health benefits from reductions in direct PM<sub>2.5</sub> emissions. The health benefits are presented at real discount rates of 3 and 7 percent. For more details, see section IV.L of the direct final rule published elsewhere in this issue of the FEDERAL REGISTER.

† Total and net benefits include consumer, climate, and health benefits. For presentation purposes, total and net benefits for both the 3-percent and 7-percent cases are presented using the average SC–GHG with 3-percent discount rate.

‡ Costs include incremental equipment costs as well as installation costs.

TABLE III.2—SUMMARY OF ANALYTICAL RESULTS FOR CONSUMER CLOTHES DRYER TSLs: MANUFACTURER AND CONSUMER IMPACTS

Category	TSL 1*	TSL 2*	TSL 3*	TSL 4*	TSL 5*	TSL 6*
<b>Manufacturer Impacts</b>						
Industry NPV (million 2022\$) (No-new-standards case INPV = 2,115.4)	2,080.3 to 2,084.3	2,061.1 to 2,069.5	1,971.2 to 1,995.8	1,501.9 to 1,724.8	679.9 to 1,800.8	604.3 to 1,753.5
Industry NPV (% change) .....	(1.7) to (1.5) .....	(2.6) to (2.2) .....	(6.8) to (5.7) .....	(29.0) to (18.5) .....	(67.9) to (14.9) ..	(71.4) to (17.1)
<b>Consumer Average LCC Savings (2022\$)</b>						
Electric, Standard .....	\$150 .....	\$170 .....	\$252 .....	\$101 .....	\$41 .....	\$41
Electric, Compact (120 V) .....	\$53 .....	\$83 .....	\$66 .....	\$66 .....	\$66 .....	(\$209)
Vented Electric, Compact (240 V) .....	\$38 .....	\$89 .....	\$90 .....	\$90 .....	\$22 .....	(\$230)
Vented Gas, Standard .....	\$48 .....	\$112 .....	\$102 .....	\$102 .....	\$13 .....	\$13
Ventless Electric, Compact (240 V) .....	\$0 .....	\$99 .....	\$99 .....	\$99 .....	\$99 .....	(\$102)
Ventless Electric, Combination Washer-Dryer .....	\$0 .....	\$10 .....	\$11 .....	\$10 .....	\$10 .....	(\$531)
Shipment-Weighted Average † .....	\$131 .....	\$159 .....	\$224 .....	\$100 .....	\$36 .....	\$29
<b>Consumer Simple PBP (years)</b>						
Electric, Standard .....	0.5 .....	0.5 .....	0.6 .....	2.1 .....	5.8 .....	5.8
Electric, Compact (120 V) .....	1.5 .....	1.5 .....	2.2 .....	2.2 .....	2.2 .....	18.1
Vented Electric, Compact (240 V) .....	2.1 .....	1.5 .....	2.0 .....	2.0 .....	6.6 .....	20.4
Vented Gas, Standard .....	2.5 .....	1.3 .....	1.9 .....	1.9 .....	5.0 .....	5.0
Ventless Electric, Compact (240 V) .....	0.0 .....	0.4 .....	0.4 .....	0.4 .....	0.4 .....	11.4
Ventless Electric, Combination Washer-Dryer .....	0.0 .....	0.0 .....	0.0 .....	0.0 .....	0.0 .....	46.3
Shipment-Weighted Average † .....	0.9 .....	0.6 .....	0.8 .....	2.1 .....	5.6 .....	6.1
<b>Percent of Consumers that Experience a Net Cost</b>						
Electric, Standard .....	1.2% .....	0.9% .....	0.9% .....	48.0% .....	63.1% .....	63.1%
Electric, Compact (120 V) .....	4.8% .....	5.1% .....	21.4% .....	21.7% .....	21.7% .....	90.9%
Vented Electric, Compact (240 V) .....	5.7% .....	4.6% .....	12.4% .....	12.6% .....	60.7% .....	92.8%
Vented Gas, Standard .....	2.7% .....	1.7% .....	7.1% .....	7.0% .....	68.7% .....	68.7%
Ventless Electric, Compact (240 V) .....	0.0% .....	0.0% .....	0.0% .....	0.0% .....	0.0% .....	58.6%
Ventless Electric, Combination Washer-Dryer .....	0.0% .....	0.0% .....	0.0% .....	0.0% .....	0.0% .....	95.0%
Shipment-Weighted Average † .....	1.5% .....	1.0% .....	2.0% .....	40.4% .....	63.3% .....	64.5%

Parentheses indicate negative (-) values.

\* Weighted by shares of each product class in total projected shipments in 2027 for all TSLs except TSL 3 and in 2028 for TSL 3.

DOE first considered TSL 6, which represents the max-tech efficiency level and includes the design parameters of the most efficient products available on the market or in working prototypes for all product classes. The max-tech design options include heat pump technology

for electric consumer clothes dryers and inlet air preheat technology for gas consumer clothes dryers. DOE’s shipments analysis estimates approximately 1 percent of annual consumer clothes dryer shipments currently meet this level. TSL 6 would

save an estimated 9.76 quadrillion British thermal units (“quads”) of energy, an amount DOE considers significant. Under TSL 6, the net present value (“NPV”) of consumer benefit would be \$8.6 billion using a discount



rate of 7 percent, and \$30.5 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 6 would be 189.6 million tons (“Mt”) of CO<sub>2</sub>, 53.6 thousand tons of SO<sub>2</sub>, 366.0 thousand tons of NO<sub>x</sub>, 0.4 ton of Hg, 1,654 thousand tons of CH<sub>4</sub>, and 1.7 thousand tons of N<sub>2</sub>O. The estimated monetary value of the climate benefits from reduced GHG emissions (associated with the average SC–GHG at a 3-percent discount rate) at TSL 6 would be \$10.9 billion. The estimated monetary value of the health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions at TSL 6 would be \$8.7 billion using a 7-percent discount rate and \$20.9 billion using a 3-percent discount rate.

Using a 7-percent discount rate for consumer benefits and costs, health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions, and the 3-percent discount rate case for climate benefits from reduced GHG emissions, the estimated total NPV at TSL 6 would be \$28.2 billion. Using a 3-percent discount rate for all benefits and costs, the estimated total NPV at TSL 6 would be \$62.2 billion. The estimated total NPV is provided for additional information; however, DOE primarily relies upon the NPV of consumer benefits when determining whether a standard level is economically justified.

At TSL 6, the average life-cycle cost (“LCC”) impact on affected consumers would be a savings of \$41 for electric standard, –\$209 for electric compact (120V), –\$230 for vented electric compact (240V), \$13 for vented gas standard, –\$102 for ventless electric compact (240V), and –\$531 for ventless electric combination washer-dryer. The simple payback period (“PBP”) would be 6 years for electric standard, 18 years for electric compact (120V), 20 years for vented electric compact (240V), 5 years for vented gas standard, 11 years for ventless electric compact (240V), and 46 years for ventless electric combination washer-dryer. The fraction of consumers experiencing a net LCC cost would be 63 percent for electric standard, 91 percent for electric compact (120V), 93 percent for vented electric compact (240V), 69 percent for vented gas standard, 59 percent for ventless electric compact (240V), and 95 percent for ventless electric combination washer-dryer. Overall, across the product classes, the majority of consumers would experience a net LCC cost, especially for senior households. DOE estimated that more 72 percent of senior-only households would experience a net LCC cost at TSL 6.

At TSL 6, the projected change in industry net present value (“INPV”) ranges from a decrease of \$1,511.1

million to a decrease of \$361.9 million, corresponding to decreases of 71.4 percent and 17.1 percent, respectively. The loss in INPV is largely driven by industry conversion costs as manufacturers work to redesign their portfolios of model offerings and retrofit entire factories to comply with amended standards at this level. Industry conversion costs could reach \$1,516.9 million at this TSL.

Conversion costs at TSL 6 are significant as nearly all existing consumer clothes dryer models would need to be redesigned to meet the max-tech efficiencies. Approximately 1 percent of industry shipments currently meet TSL 6. For the electric clothes dryer product classes, manufacturers would need to implement heat pump technology to meet max-tech levels. Out of the 19 original equipment manufacturers (“OEMs”) that manufacture electric consumer clothes dryers, nine OEMs offer heat pump models for the U.S. market. The remaining 10 OEMs do not offer any models for the domestic market that utilize heat pump technology. A standard that could only be met using heat pump technology would require a total renovation of existing production facilities and would require most manufacturers to design completely new clothes dryer platforms, as they would not be able to maintain the resistive heating designs that currently dominate the U.S. electric clothes dryer market. In interviews, several manufacturers expressed concern about a potential shortage of products given the required scale of investment, redesign efforts, and 3-year compliance timeline.

For gas consumer clothes dryers, manufacturers would need to implement inlet air preheat technology along with other design options to meet the efficiency levels required by TSL 6. Thus far, consumer clothes dryers with this technology and performance have not been observed in consumer clothes dryers available on the consumer market. Consumer clothes dryers with inlet air preheat designs have been observed only in laboratory settings. In interviews, some manufacturers raised concerns about implementing a relatively untested technology for the consumer market. There is very little industry experience with inlet air preheat designs. Several manufacturers speculated that implementing inlet air preheat technology would require a major overhaul of existing production facilities and a significant amount of engineering time.

At this level, DOE estimates an 11-percent drop in shipments in the year the standard would take effect

compared to the no-new-standards case, as price-sensitive consumers may forgo purchasing a new clothes dryer or rely on alternatives such as repair or purchasing a used dryer due to the increased upfront cost of baseline models.

The Secretary tentatively concludes that at TSL 6 for consumer clothes dryers, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the economic burden on many consumers, especially senior-only households, as well as the impacts on manufacturers, including the potential for large conversion costs and reduction in INPV.

TSL 6, representing the most efficient heat pump technology on the market, would provide significant energy savings potential, as discussed. Despite the current and potential future benefits of heat pump technology, the analysis at TSL 6 indicates that a significant fraction of consumers of electric and vented gas standard clothes dryers, including low-income and senior-only households, would experience a net cost given the current relatively high incremental cost of electric and vented gas standard clothes dryers at the max-tech efficiency level. This is particularly pronounced for electric standard clothes dryers, where the incremental production cost at the max-tech efficiency level is comparable to the manufacturer production cost for the baseline efficiency level. Consumers with existing electric standard clothes dryers below EL 4 (about 55 percent) and consumers with existing vented gas standard clothes dryers below EL 3 (about 50 percent) would be more likely to experience a net cost at TSL 6, given the relatively modest decrease in operating costs compared to the high incremental installed costs. Few products currently meet the efficiency levels required by TSL 6. DOE estimates that approximately 1 percent of current shipments meet the max-tech efficiencies. At max-tech, limited industry experience by certain manufacturers with the high-efficiency design options, the large conversion costs to update facilities and product designs, and expected drop in industry shipments would result in a reduction of INPV and a potential shortage of products given the required scale of investment, redesign efforts, and time constraints. Consequently, the Secretary has tentatively concluded that TSL 6 is not economically justified.

DOE then considered TSL 5, which represents the maximum energy savings with positive NPV. TSL 5 corresponds

to the max-tech level (EL 7), which represents heat pump technology, for the electric standard product class, and the efficiency levels corresponding to modulating (2-stage) heating technology in the electric compact (120V) and inlet air preheat technology in the vented electric compact (240V) product classes considered in this analysis. For the vented gas standard product class, TSL 5 corresponds to the max-tech level (EL 4), which represents inlet air preheat technology. TSL 5 would save an estimated 9.70 quads of energy, an amount DOE considers significant. Under TSL 5, the NPV of consumer benefit would be \$9.0 billion using a discount rate of 7 percent, and \$31.2 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 5 would be 188.6 Mt of CO<sub>2</sub>, 53.3 thousand tons of SO<sub>2</sub>, 364.1 thousand tons of NO<sub>x</sub>, 0.4 ton of Hg, 1,646 thousand tons of CH<sub>4</sub>, and 1.7 thousand tons of N<sub>2</sub>O. The estimated monetary value of the climate benefits from reduced GHG emissions (associated with the average SC-GHG at a 3-percent discount rate) at TSL 5 would be \$10.8 billion. The estimated monetary value of the health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions at TSL 5 would be \$ 8.7 billion using a 7-percent discount rate and \$20.8 billion using a 3-percent discount rate.

Using a 7-percent discount rate for consumer benefits and costs, health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions, and the 3-percent discount rate case for climate benefits from reduced GHG emissions, the estimated total NPV at TSL 5 would be \$28.5 billion. Using a 3-percent discount rate for all benefits and costs, the estimated total NPV at TSL 5 would be \$62.8 billion. The estimated total NPV is provided for additional information, however DOE primarily relies upon the NPV of consumer benefits when determining whether a standard level is economically justified.

At TSL 5, the average LCC impact on affected consumers would be a savings of \$41 for electric standard, \$66 for electric compact (120V), \$22 for vented electric compact (240V), \$13 for vented gas standard, \$99 for ventless electric compact (240V), and \$10 for ventless electric combination washer-dryer. The simple PBP would be 6 years for electric standard, 2 years for electric compact (120V), 7 years for vented electric compact (240V), 5 years for vented gas standard, 0.4 years for ventless electric compact (240V), and zero years for ventless electric combination washer-dryer. The fraction of consumers experiencing a net LCC cost would be

63 percent for electric standard, 22 percent for electric compact (120V), 61 percent for vented electric compact (240V), 69 percent for vented gas standard, and zero percent for ventless electric compact (240V) and ventless electric combination washer-dryer. Overall, across the product classes, approximately 63 percent of consumers would experience a net LCC cost, especially for senior-only households. DOE estimated that more than 71 percent of senior-only households would experience a net LCC cost at TSL 5.

At TSL 5, the projected change in INPV ranges from a decrease of \$1,435.5 million to a decrease of \$314.6 million, corresponding to decreases of 67.9 percent and 14.9 percent, respectively. Industry conversion costs could reach \$1,436.9 million at this TSL.

DOE's shipments analysis estimates approximately 2 percent of annual shipments currently meet this level. At TSL 5, the efficiency levels and analyzed design options for electric standard and vented gas standard dryers (which together account for approximately 98 percent of industry shipments) are the same as at max-tech. Thus, requiring heat pump technology for electric standard dryers and inlet air preheat for vented gas standard dryers would result in similar conversion costs, reduction in INPV, and drop in shipments as TSL 6.

At this level, DOE estimates an 11-percent drop in shipments in the year the standard would take effect compared to the no-new-standards case, as price-sensitive consumers may forgo purchasing a new clothes dryer or rely on alternatives such as repair or purchasing a used dryer due to the increased upfront cost of baseline models.

The Secretary tentatively concludes that at TSL 5 for consumer clothes dryers, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the economic burden on many consumers, especially senior-only households, as well as the impacts on manufacturers, including the significant conversion costs and large potential reduction in INPV. A significant fraction of electric standard clothes dryer consumers, including low-income and senior-only households, would experience a net cost. This is due to the high incremental cost of electric standard clothes dryers at the max-tech efficiency level. Consumers with existing electric standard clothes dryers below EL 4 would be more likely to experience a

net cost at TSL 5, given the relatively modest decrease in operating costs compared to the high incremental installed costs. DOE estimates that approximately 2 percent of shipments currently meet the efficiencies required by this TSL. At TSL 5, the limited industry experience by certain manufacturers with the high-efficiency design options, the large conversion costs to update facilities and product designs, and expected drop in industry shipments would result in a reduction of INPV and a potential shortage of products given the required scale of investment, redesign efforts, and time constraints. Consequently, the Secretary has tentatively concluded that TSL 5 is not economically justified.

DOE then considered TSL 4, which represents the maximum national energy savings with simple PBP less than 4 years for each product class. TSL 4 corresponds to the EL that represents inlet air preheat technology for the electric standard product class considered in this analysis. For the electric compact (120V) and vented electric compact (240V) product classes, TSL 4 corresponds to EL 4, which represents modulating (2-stage) heating technology. For the vented gas standard product class, TSL 4 corresponds to EL 3, which also represents modulating (2-stage) heating technology. TSL 4 would save an estimated 3.52 quads of energy, an amount DOE considers significant. Under TSL 4, the NPV of consumer benefit would be \$8.4 billion using a discount rate of 7 percent, and \$19.9 billion using a discount rate of 3 percent.

The cumulative emissions reductions at TSL 4 would be 73.5 Mt of CO<sub>2</sub>, 19.0 thousand tons of SO<sub>2</sub>, 146.7 thousand tons of NO<sub>x</sub>, 0.1 ton of Hg, 661.6 thousand tons of CH<sub>4</sub>, and 0.6 thousand tons of N<sub>2</sub>O. The estimated monetary value of the climate benefits from reduced GHG emissions (associated with the average SC-GHG at a 3-percent discount rate) at TSL 4 would be \$4.3 billion. The estimated monetary value of the health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions at TSL 4 would be \$3.6 billion using a 7-percent discount rate and \$8.2 million using a 3-percent discount rate.

Using a 7-percent discount rate for consumer benefits and costs, health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions, and the 3-percent discount rate case for climate benefits from reduced GHG emissions, the estimated total NPV at TSL 4 would be \$16.3 billion. Using a 3-percent discount rate for all benefits and costs, the estimated total NPV at TSL 4 would be \$32.4 billion. The estimated total NPV is

provided for additional information; however, DOE primarily relies upon the NPV of consumer benefits when determining whether a standard level is economically justified.

At TSL 4, the average LCC impact on affected consumers would be a savings of \$101 for electric standard, \$66 for electric compact (120V), \$90 for vented electric compact (240V), \$102 for vented gas standard, \$99 for ventless electric compact, and \$10 for ventless electric combination washer-dryer. The simple PBP would be 2 years for electric standard, 2 years for electric compact (120V), 2 years for vented electric compact (240V), 2 years for vented gas standard, 0.4 years for ventless electric compact (240V), and zero years for ventless electric combination washer-dryer. The fraction of consumers experiencing a net LCC cost would be 48 percent for electric standard, 22 percent for electric compact (120V), 13 percent for vented electric compact (240V), 7 percent for vented gas standard, and zero percent for ventless electric compact (240V) and ventless electric combination washer-dryer. Overall, across the product classes, approximately 40 percent of consumers would experience a net LCC cost, especially for senior households. DOE estimated that about 45 percent of senior-only households would experience a net LCC cost at TSL 4.

At TSL 4, the projected change in INPV ranges from a decrease of \$613.5 million to a decrease of \$390.6 million, corresponding to decreases of 29.0 percent and 18.5 percent, respectively. Industry conversion costs could reach \$667.5 million at this TSL.

At TSL 4, the majority of consumer clothes dryer models would need to be redesigned to meet the efficiency levels required. DOE's shipments analysis estimates approximately 15 percent of current shipments meet this level. For electric standard dryers, the design options include implementing inlet air preheat and other features. As previously noted, electric standard dryers account for approximately 81 percent of total shipments. At the current time, there is very little industry experience with inlet air preheat designs. Currently, DOE is not aware of any consumer clothes dryers on the market utilizing this design option. DOE's shipments analysis estimates that approximately 7 percent of electric standard shipments currently meet the efficiency required by TSL 4.

Implementing inlet air preheat for electric standard dryers would represent a major overhaul of existing product lines and manufacturing facilities. This change would necessitate significant

investments in new equipment and tooling. Product conversion costs would be necessary for designing, prototyping, and testing new or updated platforms.

For vented gas standard clothes dryers, the analyzed design option at TSL 4 includes modulating (2-stage) heat technology, among other design options. Out of the nine OEMs that manufacture vented gas standard clothes dryers, eight offer products that meet the efficiencies required at TSL 4. DOE does not believe that there are any substantive barriers to modulating (2-stage) heating technology. Capital conversion costs would be necessary as manufacturers increase tooling for 2-stage heating systems. Product conversion costs would be necessary for cost-optimizing and testing new designs for a market with potential amended standards.

At this level, DOE does not expect a notable drop in shipments in the year the standard takes effect.

The Secretary tentatively concludes that at TSL 4 for consumer clothes dryers, the benefits of energy savings, positive NPV of consumer benefits, emission reductions, and the estimated monetary value of the emissions reductions would be outweighed by the economic burden on many consumers, especially senior-only households, as well as the impacts on manufacturers, including the conversion costs and profit margin impacts that could result in a large reduction in INPV. A significant fraction of electric standard clothes dryer consumers, including senior-only households, would experience a net cost. This is due to the high incremental cost of electric standard clothes dryers at the inlet air preheat technology efficiency level. Consumers with existing electric standard clothes dryers below EL 4 would be more likely to experience a net cost at TSL 4, given the relatively modest decrease in operating costs compared to the high incremental installed costs. For electric standard dryers, DOE estimates that approximately 7 percent of shipments currently meet the efficiency level required by this TSL. At TSL 4, the limited industry experience of electric standard dryer manufacturers with inlet air preheat technology and the large conversion costs to update facilities and product designs, would result in a large reduction of INPV. Consequently, the Secretary has tentatively concluded that TSL 4 is not economically justified.

DOE then considered TSL 3, which corresponds to the TSL recommended in the Joint Agreement (the "Recommended TSL") and, which also represents a set of intermediate

efficiency levels between those designated in TSL 2 and TSL 4 and corresponds to the current ENERGY STAR efficiency levels for the electric standard and vented gas standard product classes, which represent approximately 98 percent of the market. The Recommended TSL corresponds to the EL that represents modulating (2-stage) heating technology for the electric standard and electric compact (120V) product classes. For the vented gas standard product class, the Recommended TSL corresponds to EL 3, which also represents modulating (2-stage) heating technology. For the vented gas compact product class, the Recommended TSL corresponds to baseline CEF<sub>D2</sub>. For the electric compact (240V) product classes, the Recommended TSL corresponds to EL 2 for vented consumer clothes dryers, which represents a model with an optimized heating system and EL 1 for ventless consumer clothes dryers, which represents a baseline model with a more advanced automatic termination control system. For the ventless electric combination washer-dryer product class, the Recommended TSL corresponds to EL 1, which represents a baseline model with high-speed spin technology. The Recommended TSL would save an estimated 2.66 quads of energy, an amount DOE considers significant. Under the Recommended TSL, the NPV of consumer benefit would be \$9.23 billion using a discount rate of 7 percent, and \$20.08 billion using a discount rate of 3 percent.

The cumulative emissions reductions at the Recommended TSL would be 57.1 Mt of CO<sub>2</sub>, 13.9 thousand tons of SO<sub>2</sub>, 116.5 thousand tons of NO<sub>x</sub>, 0.1 ton of Hg, 527.6 thousand tons of CH<sub>4</sub>, and 0.5 thousand tons of N<sub>2</sub>O. The estimated monetary value of the climate benefits from reduced GHG emissions (associated with the average SC-GHG at a 3-percent discount rate) at TSL 3 would be \$3.3 billion. The estimated monetary value of the health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions at TSL 3 would be \$2.6 billion using a 7-percent discount rate and \$6.3 billion using a 3-percent discount rate.

Using a 7-percent discount rate for consumer benefits and costs, health benefits from reduced SO<sub>2</sub> and NO<sub>x</sub> emissions, and the 3-percent discount rate case for climate benefits from reduced GHG emissions, the estimated total NPV at the Recommended TSL would be \$15.2 billion. Using a 3-percent discount rate for all benefits and costs, the estimated total NPV at the Recommended TSL would be \$29.7 billion. The estimated total NPV is provided for additional information;

however, DOE primarily relies upon the NPV of consumer benefits when determining whether a standard level is economically justified.

At the Recommended TSL, the average LCC impact on affected consumers would be a savings of \$252 for electric standard, \$66 for electric compact (120V), \$90 for vented electric compact (240V), \$102 for vented gas standard, \$99 for ventless electric compact, and \$11 for ventless electric combination washer-dryer. The simple PBP would be 1 year for the largest product class (electric standard), 2 years for electric compact (120V), 2 years for vented electric compact (240V), 2 years for vented gas standard, 0.4 years for ventless electric compact (240V), and zero years for ventless electric combination washer-dryer. The fraction of consumers experiencing a net LCC cost would be 1 percent for electric standard, 21 percent for electric compact (120V), 12 percent for vented electric compact (240V), 7 percent for vented gas standard, and zero percent for ventless electric compact (240V) and ventless electric combination washer-dryer. Overall, across the product classes, approximately 2 percent of consumers, including low-income and senior-only households, would experience a net LCC cost.

At the Recommended TSL, the projected change in INPV ranges from a decrease of \$144.2 million to a decrease of \$119.7 million, corresponding to decreases of 6.8 percent and 5.7 percent, respectively. Industry conversion costs could reach \$180.7 million at this TSL.

DOE expects that some existing consumer clothes dryer models would need to be redesigned to meet the Recommended TSL efficiencies, but there are a wide range of available models for vented electric standard dryers due to participation in the ENERGY STAR program. DOE's shipments analysis estimates approximately 48 percent of annual shipments currently meet this level. For electric standard, electric compact (120V), vented electric compact (240V), and vented gas standard clothes dryers, which account for approximately 99 percent of total annual shipments, the design options include implementing electronic controls, optimized heating systems, more advanced automatic termination controls, and modulating (2-stage) heat. Of the 19 electric dryer OEMs, 14 offer products at or above the efficiencies required for the electric dryer product classes at the Recommended TSL. Out of the nine OEMs that manufacture vented gas standard clothes dryers, eight offer products that meet the efficiencies

required at the Recommended TSL. Capital conversion costs may be necessary as manufacturers increase tooling for 2-stage heating systems. Manufacturers may choose to further cost-optimize and test new designs as a result of the standards, but DOE believes some of this has already occurred in response to ENERGY STAR. DOE does not expect any drop in shipments in the year the standard takes effect.

For all TSLs considered in this NOPR—except for the Recommended TSL—DOE is bound by the 3-year lead time requirements in EPCA when determining compliance dates (*i.e.*, compliance with amended standards required in 2027). For the Recommended TSL, DOE's analysis utilized the March 1, 2028, compliance date specified in the Joint Agreement as it was an integral part of the multi-product joint recommendation. A 2028 compliance year would provide manufacturers additional flexibility to spread capital requirements, engineering resources, and conversion activities over a longer period of time depending on the individual needs of each manufacturer.

At the Recommended TSL, DOE's data demonstrate no negative impact on consumer utility for consumer clothes dryers. In addition, the second joint statement from the same group of stakeholders that submitted the Joint Agreement states that DOE's test data show, and industry experience agrees, that the recommended standard level for consumer clothes dryers will not result in significant differences in cycle time and will adequately dry clothes.<sup>17</sup> Based on the information available, DOE concludes that no lessening of product utility or performance would occur at the Recommended TSL.

After considering the analysis and weighing the benefits and burdens, the Secretary has tentatively concluded that a standard set at the Recommended TSL for consumer clothes dryers would result in the maximum improvement in energy efficiency that is technologically feasible and economically justified and also result in the significant conservation of energy. At this TSL, the average LCC savings for all consumer clothes dryer product classes would be positive. An estimated weighted average of 2 percent of consumer clothes dryer consumers would experience a net cost. The FFC national energy savings would be significant and the NPV of consumer benefits would be positive using both a 3-percent and 7-percent discount rate.

Notably, the benefits to consumers would vastly outweigh the cost to manufacturers. At the Recommended TSL, the NPV of consumer benefits, even measured at the more conservative discount rate of 7 percent, would be over 64 times higher than the maximum estimated manufacturers' loss in INPV. The positive LCC savings—a different way of quantifying consumer benefits—reinforces this conclusion. The standard levels at the Recommended TSL are economically justified even without weighing the estimated monetary value of emissions reductions. When those emissions reductions are included—representing \$3.3 billion in climate benefits (associated with the average SC-GHG at a 3-percent discount rate), and \$6.3 billion (using a 3-percent discount rate) or \$2.6 billion (using a 7-percent discount rate) in health benefits—the rationale becomes stronger still.

As stated, DOE conducts the walk-down analysis to determine the TSL that represents the maximum improvement in energy efficiency that is technologically feasible and economically justified as required under EPCA. The walk-down is not a comparative analysis, as a comparative analysis would result in the maximization of net benefits instead of energy savings that are technologically feasible and economically justified, which would be contrary to the statute. 86 FR 70892, 70908. Although DOE has not conducted a comparative analysis to select the proposed amended energy conservation standards, DOE notes that as compared to TSL 6, TSL 5, and TSL 4, the Recommended TSL would have higher average LCC savings, smaller percentages of consumers experiencing a net cost, a lower maximum decrease in INPV, and lower manufacturer conversion costs.

Although DOE considered amended standard levels for consumer clothes dryers by grouping the efficiency levels for each product class into TSLs, DOE evaluates all analyzed efficiency levels in its analysis. Accordingly, the Secretary has tentatively concluded that the Recommended TSL would offer the maximum improvement in efficiency that is technologically feasible and economically justified and would result in the significant conservation of energy. For electric standard and vented gas standard consumer clothes dryers, which account for approximately 98 percent of U.S. shipments, requiring efficiency levels above the levels required by the Recommended TSL would result in a large percentage of consumers experiencing a net LCC cost, in addition to significant manufacturer

<sup>17</sup> This document is available in the docket at: [www.regulations.gov/comment/EERE-2014-BT-STD-0058-0058](http://www.regulations.gov/comment/EERE-2014-BT-STD-0058-0058).

impacts and reductions in INPV. Additionally, for consumer clothes dryers, most manufacturers offer products that can meet the Recommended TSL across both electric and gas consumer clothes dryers. In addition, the Recommended TSL corresponds to the current ENERGY STAR levels for electric standard and vented gas standard clothes dryers, which have significant market share and manufacturer support due to their promotion over the past couple of years as a voluntary energy efficiency program. The adoption of standards, if finalized, at this TSL may encourage ENERGY STAR to further consider more efficient levels for dryers in the year leadings up to the compliance of date of the standard, which would in turn likely spur additional market introductions of consumer clothes dryers with heat pump technology, foster maturation of the technology and downward price trends, and further support differentiation within the dryer market for energy efficient products. For electric and vented gas standard consumer clothes dryers, the Recommended TSL is comprised of EL 4 and EL 3, respectively, resulting in higher LCC savings, a significant reduction in the number of consumers experiencing a net cost, a lower

maximum decrease in INPV, and lower conversion costs to the point where DOE has tentatively concluded they are economically justified, as discussed for the Recommended TSL in the preceding paragraphs.

Therefore, based on the previous considerations, DOE proposes the energy conservation standards for consumer clothes dryers at the Recommended TSL.

While DOE considered each potential TSL under the criteria laid out in 42 U.S.C. 6295(o) as discussed in the preceding paragraphs, the Recommended TSL for consumer clothes dryers proposed in this NOPR is part of a multi-product Joint Agreement covering six rulemakings (residential clothes washers; consumer clothes dryers; consumer conventional cooking products; dishwashers; refrigerators, refrigerator-freezers, and freezers; and miscellaneous refrigeration products). The signatories indicate that the Joint Agreement for the six rulemakings should be considered as a joint statement of recommended standards, to be adopted in its entirety. As discussed in section V.B.2.e of the direct final rule published elsewhere in this issue of the **Federal Register**, many consumer clothes dryer OEMs also manufacture residential clothes washers; consumer

conventional cooking products; dishwashers; refrigerators, refrigerator-freezers, and freezers; and miscellaneous refrigeration products. Therefore, there are potential integrated benefits to the Joint Agreement. Rather than requiring compliance with five amended standards in a single year (2027),<sup>18</sup> the negotiated multi-product Joint Agreement staggers the compliance dates for the five amended standards over a 4-year period (2027–2030). DOE understands that the compliance dates recommended in the Joint Agreement would help reduce cumulative regulatory burden by allowing greater flexibility in the allocation of resources to comply with multiple concurrent amended standards and by aligning compliance dates for products that are typically designed or sold as matched pairs (*i.e.*, clothes washers and clothes dryers). The Joint Agreement also provides additional years of regulatory certainty for manufacturers and their suppliers while still achieving the maximum improvement in energy efficiency that is technologically feasible and economically justified.

The proposed amended energy conservation standards for consumer clothes dryers, which are expressed as CEF<sub>D2</sub>, are shown in Table III.3.

TABLE III.3—PROPOSED AMENDED ENERGY CONSERVATION STANDARDS FOR CONSUMER CLOTHES DRYERS

Product class	CEFD2 (lb/kWh)
(i) Electric, Standard (4.4 ft3 or greater capacity) .....	3.93
(ii) Electric, Compact (120V) (less than 4.4 ft3 capacity) .....	4.33
(iii) Vented Electric, Compact (240V) (less than 4.4 ft3 capacity) .....	3.57
(iv) Vented Gas, Standard (4.4 ft3 or greater capacity) .....	3.48
(v) Vented Gas, Compact (less than 4.4 ft3 capacity) .....	2.02
(vi) Ventless Electric, Compact (240V) (less than 4.4 ft3 capacity) .....	2.68
(vii) Ventless Electric, Combination Washer-Dryer .....	2.33

*B. Annualized Benefits and Costs of the Proposed Standards*

The benefits and costs of the proposed standards can also be expressed in terms of annualized values. The annualized net benefit is (1) the annualized national economic value (expressed in 2022\$) of the benefits from operating products that meet the proposed standards (consisting primarily of operating cost savings from using less energy, minus increases in product purchase costs, and (2) the annualized monetary value of the climate and health benefits from emission reductions.

Table II.4 shows the annualized values for consumer clothes dryers under the Recommended TSL, expressed in 2022\$. The results under the primary estimate are as follows.

Using a 7-percent discount rate for consumer benefits and costs and NO<sub>x</sub> and SO<sub>2</sub> reductions, and the 3-percent discount rate case for GHG social costs, the estimated cost of the proposed standards for consumer clothes dryers would be \$60.0 million per year in increased equipment installed costs, while the estimated annual benefits would be \$971.4 million from reduced equipment operating costs, \$185.5 million in GHG reductions, and \$259.9

million from reduced NO<sub>x</sub> and SO<sub>2</sub> emissions. In this case, the net benefit would amount to \$1,357 million per year.

Using a 3-percent discount rate for all benefits and costs, the estimated cost of the proposed standards for consumer clothes dryers would be \$57.2 million per year in increased equipment costs, while the estimated annual benefits would be \$1,177 million in reduced operating costs, \$185.5 million from GHG reductions, and \$349.4 million from reduced NO<sub>x</sub> and SO<sub>2</sub> emissions. In this case, the net benefit would amount to \$1,654 million per year.

<sup>18</sup> The analyses for residential clothes washers (88 FR 13520); consumer clothes dryers (87 FR 51734); consumer conventional cooking products (88 FR

6818); dishwashers (88 FR 32514); and refrigerators, refrigerator-freezers, and freezers (88 FR 12452) utilized a 2027 compliance year for analysis at the

proposed rule stage. Miscellaneous refrigeration products (88 FR 12452) utilized a 2029 compliance year for the NOPR analysis.

TABLE II.4—ANNUALIZED BENEFITS AND COSTS OF PROPOSED STANDARDS FOR CONSUMER CLOTHES DRYERS

	Million 2022\$/year		
	Primary estimate	Low-net-benefits estimate	High-net-benefits estimate
<b>3% discount rate</b>			
Consumer Operating Cost Savings .....	1,177	1,103	1,230
Climate Benefits * .....	185.5	178.9	187.8
Health Benefits ** .....	349.4	337.2	353.7
Total Benefits † .....	1,712	1,619	1,771
Consumer Incremental Product Costs ‡ .....	57.2	58.9	54.4
Net Benefits .....	1,654	1,560	1,717
Change in Producer Cashflow (INPV‡) .....	(12)–(10)	(12)–(10)	(12)–(10)
<b>7% discount rate</b>			
Consumer Operating Cost Savings .....	971.4	915.5	1,014
Climate Benefits * .....	185.5	178.9	187.8
Health Benefits ** .....	259.9	251.5	262.8
Total Benefits † .....	1,417	1,346	1,464
Consumer Incremental Product Costs ‡ .....	60.0	61.2	57.7
Net Benefits .....	1,357	1,285	1,407
Change in Producer Cashflow (INPV**) .....	(12)–(10)	(12)–(10)	(12)–(10)

**Note:** This table presents the costs and benefits associated with consumer clothes dryers shipped during the period 2028–2057. These results include benefits to consumers which accrue after 2057 from the products shipped during the period 2028–2057. The Primary, Low-Net-Benefits, and High-Net-Benefits estimates utilize projections of energy prices from the AEO2023 Reference case, Low Economic Growth case, and High Economic Growth case, respectively. In addition, incremental equipment costs reflect a medium decline rate in the Primary Estimate, a constant rate in the Low-Net-Benefits Estimate, and a high decline rate in the High-Net-Benefits Estimate. The methods used to derive projected price trends are explained in sections IV.F.1 and IV.H.3 of the direct final rule published elsewhere in this issue of the **Federal Register**. Note that the Benefits and Costs may not sum to the Net Benefits due to rounding.

\* Climate benefits are calculated using four different estimates of the global SC–GHG (see section IV.L of the direct final rule published elsewhere in this issue of the **Federal Register**). For presentational purposes of this table, the climate benefits associated with the average SC–GHG at a 3 percent discount rate are shown, but DOE does not have a single central SC–GHG point estimate, and it emphasizes the importance and value of considering the benefits calculated using all four sets of SC–GHG estimates. To monetize the benefits of reducing GHG emissions, this analysis uses the interim estimates presented in the *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates Under Executive Order 13990* published in February 2021 by the IWG.

\*\* Health benefits are calculated using benefit-per-ton values for NO<sub>x</sub> and SO<sub>2</sub>. DOE is currently only monetizing (for SO<sub>2</sub> and NO<sub>x</sub>) PM<sub>2.5</sub> precursor health benefits and (for NO<sub>x</sub>) ozone precursor health benefits, but will continue to assess the ability to monetize other effects such as health benefits from reductions in direct PM<sub>2.5</sub> emissions. See section IV.L of the direct final rule published elsewhere in this issue of the **Federal Register** for more details.

† Total benefits for both the 3-percent and 7-percent cases are presented using the average SC–GHG with 3-percent discount rate, but DOE does not have a single central SC–GHG point estimate.

‡ Costs include incremental equipment costs as well as installation costs.

‡‡ Operating Cost Savings are calculated based on the life cycle costs analysis and national impact analysis. See sections IV.F and IV.H of the direct final rule published elsewhere in this issue of the **Federal Register**. DOE's NIA includes all impacts (both costs and benefits) along the distribution chain beginning with the increased costs to the manufacturer to manufacture the product and ending with the increase in price experienced by the consumer. DOE also separately conducts a detailed analysis on the impacts on manufacturers (the MIA). See section IV.J of the direct final rule published elsewhere in this issue of the **Federal Register** and chapter 12 of the direct final rule TSD. In the detailed MIA, DOE models manufacturers' pricing decisions based on assumptions regarding investments, conversion costs, cashflow, and margins. The MIA produces a range of impacts, which is the rule's expected impact on the INPV. The change in INPV is the present value of all changes in industry cash flow, including changes in production costs, capital expenditures, and manufacturer profit margins. The annualized change in INPV is calculated using the industry weighted average cost of capital value of 7.5 percent that is estimated in the manufacturer impact analysis (see chapter 12 of the direct final rule TSD for a complete description of the industry weighted average cost of capital). For consumer clothes dryers, those values are –\$12 million to –\$10 million. DOE accounts for that range of likely impacts in analyzing whether a TSL is economically justified. See section V.C of the direct final rule published elsewhere in this issue of the **Federal Register**. DOE is presenting the range of impacts to the INPV under two manufacturer markup scenarios: the Preservation of Gross Margin scenario, which is the manufacturer markup scenario used in the calculation of Consumer Operating Cost Savings in this table, and the Preservation of Operating Profit scenario, where DOE assumed manufacturers would not be able to increase per-unit operating profit in proportion to increases in manufacturer production costs. DOE includes the range of estimated annualized change in INPV in the above table, drawing on the MIA explained further in chapter 12 of the direct final rule TSD, to provide additional context for assessing the estimated impacts of this proposed rule to society, including potential changes in production and consumption, which is consistent with OMB's Circular A–4 and E.O. 12866. If DOE were to include the INPV into the annualized net benefit calculation for this proposed rule, the annualized net benefits would range from \$1,642 million to \$1,644 million at 3-percent discount rate and would range from \$1,345 million to \$1,347 million at 7-percent discount rate. Parentheses ( ) indicate negative values.

## IV. Public Participation

### A. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule until the date provided in the **DATES** section at the beginning of this proposed rule. Interested parties may submit comments, data, and other information using any of the methods described in

the **ADDRESSES** section at the beginning of this document. Comments relating to the direct final rule published elsewhere in this issue of the **Federal Register**, should be submitted as instructed therein.

Submitting comments via [www.regulations.gov](http://www.regulations.gov). The [www.regulations.gov](http://www.regulations.gov) web page will

require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed

properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

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

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

DOE processes submissions made through [www.regulations.gov](http://www.regulations.gov) before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that [www.regulations.gov](http://www.regulations.gov) provides after you have successfully uploaded your comment.

*Submitting comments via email, hand delivery/courier, or postal mail.*

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

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via postal mail or hand delivery/courier, please provide all items on a

CD, if feasible, in which case it is not necessary to submit printed copies. No telefacsimiles (“faxes”) will be accepted.

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

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

*Confidential Business Information.* Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: one copy of the document marked “confidential” including all the information believed to be confidential, and one copy of the document marked “non-confidential” with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

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

#### B. Public Meeting

As stated previously, if DOE withdraws the direct final rule published elsewhere in this issue of the **Federal Register** pursuant to 42 U.S.C. 6295(p)(4)(C), DOE will hold a public meeting to allow for additional comment on this proposed rule. DOE will publish notice of any meeting in the **Federal Register**.

#### V. Procedural Issues and Regulatory Review

The regulatory reviews conducted for this proposed rule are identical to those conducted for the direct final rule published elsewhere in this issue of the **Federal Register**. Please see the direct final rule for further details.

#### A. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis (“IRFA”) and a final regulatory flexibility analysis (“FRFA”) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by E.O. 13272, “Proper Consideration of Small Entities in Agency Rulemaking,” 67 FR 53461 (Aug. 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 rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel’s website ([www.energy.gov/gc/office-general-counsel](http://www.energy.gov/gc/office-general-counsel)). DOE has not prepared an IRFA for the products that are the subject of this proposed rulemaking.

DOE reviewed this proposed rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. DOE certifies that the proposed rule, if adopted, would not have significant economic impact on a substantial number of small entities. The factual basis of this certification is set forth in the following paragraphs.

For manufacturers of consumer clothes dryers, the Small Business Administration (“SBA”) has set a size threshold, 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 [www.sba.gov/document/support--table-size-standards](http://www.sba.gov/document/support--table-size-standards). Manufacturing of consumer clothes dryers is classified under NAICS 335220, “Major Household Appliance Manufacturing.” The SBA sets a threshold of 1,500 employees or fewer for an entity to be considered as a small business for this category.

To estimate the number of companies that could be small business manufacturers of consumer clothes dryers, DOE conducted a market survey using public information and subscription-based company reports to identify potential small business

manufacturers. DOE reviewed its Compliance Certification Database,<sup>19</sup> California Energy Commission’s Modernized Appliance Efficiency Database System,<sup>20</sup> the ENERGY STAR Product Finder dataset,<sup>21</sup> individual company websites, import/export logs, and product specifications to create a list of companies that manufacture, produce, import, or private label the products covered by this rulemaking. DOE relied on public information and market research tools (e.g., reports from Dun and Bradstreet<sup>22</sup>) to determine company structure, location, headcount, and annual revenue. DOE screened out companies that do not manufacture the products covered by this proposed rulemaking, do not meet the SBA’s definition of a “small business,” or are foreign-owned and operated. DOE also asked stakeholders and industry representatives if they were aware of any small manufacturers during manufacturer interviews and through requests for comment.

DOE identified 19 OEMs of consumer clothes dryers. Of these 19 OEMs, DOE determined none of them qualify as a domestic “small business manufacturer” of consumer clothes dryers. Given the lack of small domestic OEMs with a direct compliance burden, DOE concludes that this proposed rule would not have “a significant impact on a substantial number of small entities.”

DOE will transmit the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

**VI. Approval of the Office of the Secretary**

The Secretary of Energy has approved publication of this notice of proposed rulemaking.

**List of Subjects in 10 CFR Part 430**

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

**Signing Authority**

This document of the Department of Energy was signed on February 29, 2024, by Jeffrey Marootian, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of

the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on March 1, 2024.

**Treena V. Garrett,**

*Federal Register Liaison Officer, U.S. Department of Energy.*

For the reasons set forth in the preamble, DOE proposes to amend part 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, as set forth below:

**PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS**

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

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

■ 2. Amend § 430.32 by adding paragraph (h)(4) to read as follows:

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

\* \* \* \* \*

(h) \* \* \*

(4) Clothes dryers manufactured on or after March 1, 2028, shall have a combined energy factor, determined in accordance with appendix D2 of this subpart, no less than:

Product class	CEFD <sub>2</sub> (lb/kWh)
(i) Electric, Standard (4.4 ft3 or greater capacity) *	3.93
(ii) Electric, Compact (120V) (less than 4.4 ft3 capacity)	4.33
(iii) Vented Electric, Compact (240V) (less than 4.4 ft3 capacity)	3.57
(iv) Vented Gas, Standard (4.4 ft3 or greater capacity)**	3.48
(v) Vented Gas, Compact (less than 4.4 ft3 capacity)	2.02
(vi) Ventless Electric, Compact (240V) (less than 4.4 ft3 capacity)	2.68
(vii) Ventless Electric, Combination Washer-Dryer	2.33

\* The energy conservation standards in this product class do not apply to Vented Electric, Standard clothes dryers with a cycle time of less than 30 minutes, when tested according to appendix D2 in subpart B of this part.

\*\* The energy conservation standards in this product class do not apply to Vented Gas, Standard clothes dryers with a cycle time of less than 30 minutes, when tested according to appendix D2 in subpart B of this part.

\* \* \* \* \*

[FR Doc. 2024–04766 Filed 3–11–24; 8:45 am]

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<sup>19</sup> U.S. Department of Energy’s Compliance Certification Database is available at [regulations.doe.gov/certification-data](https://regulations.doe.gov/certification-data) (last accessed April 28, 2023).

<sup>20</sup> California Energy Commission’s Modernized Appliance Efficiency Database System is available

at [cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx](https://cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx) (last accessed April 28, 2023).

<sup>21</sup> ENERGY STAR Product Finder is available at [www.energystar.gov/productfinder](https://www.energystar.gov/productfinder) (last accessed April 28, 2023).

<sup>22</sup> The Dun & Bradstreet subscription login is available at [app.dnbhoovers.com](https://app.dnbhoovers.com) (last accessed June 8, 2023).