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[6450-01-P]

**DEPARTMENT OF ENERGY**

**10 CFR Part 431**

**[Docket No. EERE-2012-BT-DET-0033]**

**RIN 1904–AC83**

**Energy Conservation Program for Consumer Products and Certain Commercial and Industrial Equipment: Final Determination of Compressors as Covered Equipment**

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

**ACTION:** Final determination.

**SUMMARY:** The U.S. Department of Energy (DOE) is classifying certain varieties of compressors as covered equipment under Part A-1 of Title III of the Energy Policy and Conservation Act (EPCA), as amended. Accordingly, this document establishes the definition of equipment that are considered compressors.

**DATES:** This rule is effective **[INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].**

**ADDRESSES:** This rulemaking can be identified by docket number EERE-2012-BT-DET-0033 and/or Regulatory Information Numbers (RIN) 1904–AC83.

Docket: The docket, which includes Federal Register notices, public meeting attendee lists and transcripts, 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, some documents listed in the index may not be publicly available, such as those containing information that is exempt from public disclosure.

A link to the docket webpage can be found at: <https://www.regulations.gov/docket?D=EERE-2012-BT-DET-0033>. The [www.regulations.gov](http://www.regulations.gov) webpage contains simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 586-6636 or by email: [compressors@ee.doe.gov](mailto:compressors@ee.doe.gov).

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### **I. Statutory Authority**

Title III of the Energy Policy and Conservation Act of 1975, as amended (“EPCA” or, in context, “the Act”), sets forth a variety of provisions designed to improve energy efficiency. (42

U.S.C. 6291, et seq.) Part C of Title III, which for editorial reasons was re-designated as Part A-1 upon incorporation into the U.S. Code (42 U.S.C. 6311–6317), establishes the “Energy Conservation Program for Certain Industrial Equipment.” The purpose of Part A-1 is to improve the efficiency of electric motors and pumps and certain other industrial equipment in order to conserve the energy resources of the Nation. (42 U.S.C 6312(a))

EPCA provides that DOE may include a type of industrial equipment, including compressors, as covered equipment if it determines that to do so is necessary to carry out the purposes of Part A-1. (42 U.S.C. 6311(2)(B)(i) and 6312(b)). Industrial equipment, including compressors, must be of a type which:

- (1) In operation consumes, or is designed to consume, energy in operation;
- (2) to any significant extent, is distributed in commerce for industrial or commercial use;  
and
- (3) is not a “covered product” as defined in 42 U.S.C. 6291(a)(2) of EPCA, other than a component of a covered product with respect to which there is in effect a determination under 42 U.S.C. 6312(c). (42 U.S.C. 6311 (2)(A)).

DOE has determined that compressors, the definition of which DOE is adding to subpart T of 10 CFR 431 and discusses in this notice, meet the statutory requirements under 42 U.S.C. 6311(2)(B)(i) and 6312(b) and is classifying them as covered equipment.

Separately, DOE is conducting rulemakings to consider test procedures, and energy conservation standards for compressors. Pursuant to EPCA, any new or amended energy conservation standard for compressors must be designed to achieve the maximum improvement in energy efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A) and 6316(a)). Furthermore, the new or amended standard must result in a significant conservation of energy. (42 U.S.C. 6295(o)(3)(B) and 6316(a)). DOE will determine if compressors satisfy these provisions during the course of the energy conservation standards rulemaking.

## **II. Current Rulemaking Process**

On December 31, 2012, DOE issued a Proposed Determination of Coverage (2012 NOPD) proposing to determine that compressors qualify as covered equipment under part A-1 of Title III of EPCA, as amended (42 U.S.C. 6311 et seq.). DOE proposed that coverage was necessary for the purposes of Part A-1 because (1) DOE may only prescribe energy conservation standards for covered equipment; and (2) energy conservation standards for compressors would improve the efficiency of such equipment more than would be likely to occur in the absence of standards. 77 FR 76972 (Dec. 31, 2012). The 2012 NOPD tentatively determined adoption of energy conservation standards for compressors likely would satisfy the provisions of 42 U.S.C. 6311(2)(B)(i). On February 7, 2013, DOE published a notice reopening the comment period on the 2012 NOPD. 78 FR 8998.

On February 5, 2014, DOE published, in the Federal Register, a notice of public meeting and provided a framework document that addressed potential standards and test procedures rulemakings for compressors. 79 FR 6839. DOE held a public meeting to discuss the framework

document on April 1, 2014. At this meeting, DOE discussed and received comments on the framework document, which covered the analytical framework, models, and tools that DOE used to evaluate potential standards; and all other issues raised relevant to the development of energy conservation standards for the different categories of compressors. On March 18, 2014, DOE extended the comment period. 79 FR 15061.

On May 5, 2016, DOE issued a notice of proposed rulemaking (NPR) to propose a definition for the term “compressor” and to propose test procedures for certain compressors (hereafter, the “test procedure NPR”). 87 FR 27220. On May 19, 2016, DOE issued a NPR to propose energy conservation standards for certain varieties of compressors (hereafter, the “energy conservation standards NPR”). 81 FR 31680. On June 20, 2016, DOE held a public meeting to discuss the test procedure and energy conservation standards NPRs and to accept comments from interested parties.

In this final rule, DOE responds to the seven comments received from interested parties in response to the 2012 NOPD. DOE notes that certain comments received in response to the 2012 NOPD discussed topics such as: technology options to improve the efficiency of compressors, scope of potential energy conservations standards, and test methods for compressors, among other comments. These comments relate to the ongoing test procedure and/or energy conservation standards rulemakings and are or will be addressed in those rulemakings, as applicable. In this document, DOE also responds to certain comments that were submitted in response to the test procedure NPR and pertain to the definition of “compressor.”

In this document, DOE addresses comments submitted by the following: the Air-Conditioning, Heating, and Refrigeration Institute (AHRI); American Council for an Energy-Efficient Economy (ACEEE); Appliance Standards Awareness Project (ASAP); Alliance to Save Energy (ASE); Atlas Copco AB (Atlas Copco); the Compressed Air & Gas Institute (CAGI); Compressed Air Systems; the Edison Electric Institute (EEI); Ingersoll Rand; Kaeser Compressors; the National Rural Electric Cooperative Association (NRECA); the Northwest Energy Efficiency Alliance (NEEA); the Northeast Energy Efficiency Partnerships (NEEP); the National Resources Defense Council (NRDC); the Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), Southern California Edison (SCE), and Southern California Gas Company (SCGC), collectively referred to as the California Investor Owned Utilities (CA IOUs); Scales Industrial Technologies; Sullair; Saylor-Beall Manufacturing Company and Sullivan-Palatek, collectively referred to as Sullivan-Palatek.

DOE will identify comments received in response to the test procedure NOPR by the commenter, the number of document as listed in the docket maintained at [www.regulations.gov](http://www.regulations.gov) (Docket No. EERE-2014-BT-TP-0054), and the page number of that document where the comment appears (for example: CAGI, No. 10 at p. 4). DOE will identify comments received in response to the energy conservation standards NOPR by the commenter, the number of document as listed in the docket maintained at [www.regulations.gov](http://www.regulations.gov) (Docket No. EERE-2013-BT-STD-0040), and the page number of that document where the comment appears. DOE will cite comments in this rule's docket (EERE-2012-BT-DET-0033) solely using the commenter name, commenter number, and page number, without a docket reference.



### III. Covered Equipment

“Compressor” is not an existing defined term under EPCA. In the 2012 NOPD, DOE tentatively determined to add compressors as a type of covered equipment and proposed a definition for “compressor.” 77 FR 76972, 76973 (Dec 31, 2012). Specifically, DOE considered the following definition and requested feedback from interested parties:

Compressor: A compressor is an electric-powered device that takes in air or gas at atmospheric pressure and delivers the air or gas at a higher pressure. Compressors typically have a specific ratio, the ratio of delivery pressure to supply pressure, greater than 1.20. Compressors are classified as positive-displacement, dynamic, or hybrid. A positive-displacement compressor increases the pressure of the intake air pressure through a compression container. A dynamic compressor increases pressure of the air it intakes by continuously imparting velocity energy into the air flow, which is then converted into pressure energy. A hybrid compressor is some combination of positive-displacement and dynamic compressors. 77 FR 76972, 76973-76974 (Dec 31, 2012).

A compressor may have some or all of the following components: piston, roller, rotor(s), impeller wheel, spiral disks, cylinder(s), lubricant, motor and transmission, controls, treatment equipment (after cooler and lubricant cooler), filter(s), and/or a lubricant/air separator. 77 FR 76972, 76974 (Dec 31, 2012).

In the 2016 test procedure NOPR, after considering comments in response to the February 5, 2014 framework document (79 FR 6839), DOE proposed revisions to this initial definition as follows: the term “compressor” means machine or apparatus that converts different

types of energy into the potential energy of gas pressure for displacement and compression of gaseous media to any higher pressure values above atmospheric pressure and has a pressure ratio greater than 1.3. 81 FR 27220, 27224 (May 5, 2016)

Several parties commented in response to the definition of “compressor” considered in the 2012 NOPD and proposed in the 2016 test procedure NOPR (and its associated public meeting). These comments are discussed by topic, in the sections that follow.

#### A. Compressors in Covered Products

In response to the 2012 NOPD, AHRI stated that DOE’s proposed definition of “compressor” may unintentionally include some products as covered equipment. Specifically AHRI was concerned that heating, ventilating, air conditioning, and refrigeration (HVACR) equipment may meet the proposed definition, and suggested that DOE include a statement to exclude them. (AHRI, No. 0002 at pp. 1-2) AHRI stated that the energy consumption of HVACR compressors is already accounted for in the efficiency ratings for regulated HVACR equipment, which means that covering those compressors under separate regulations would lead to unwarranted double regulation on HVACR products. (AHRI, No. 0002 at p. 2).

EEI commented that certain electric motors sized under 500 horsepower (which are used on certain compressors), are already subject to DOE energy conservation standards, and DOE should take this into consideration in any future energy conservation standards, in order to avoid duplicative regulation of these motors. (EEI, No. 0009 at p. 4)

This final rule establishes a definition for “compressors” and classifies them as covered equipment under EPCA; it does not establish scope for any potential energy conservation standards. As such, AHRI’s comment that compressors in HVACR systems and EEI comments regarding motors should be excluded from regulation will be addressed in the ongoing energy conservation standards rulemaking.

## B. Pressure Ratio

In response to the 2016 test procedure NOPR, Atlas Copco commented that DOE should harmonize with international precedent to aid manufacturers in exporting their products, and reduce the minimum pressure ratio from 1.3 to 1.1, as is stated in European Union (EU) Lot 31 draft standard.<sup>1</sup> (EERE-2014-BT-TP-0054, Atlas Copco, No. 0009 at p. 11).

In response to Atlas Copco, DOE reiterates that it proposed a lower-bound pressure ratio of 1.3 to align the coverage determination of compressors with the coverage determination being considered in the fans and blowers rulemaking, with the intent that DOE regulations do not leave any gaps in coverage. 81 FR 27220, 27224 (May 5, 2016). DOE further reiterates that an Appliance Standards Rulemaking Advisory Committee (ASRAC) Working Group was established to negotiate proposed energy conservation standards for fans and blowers and this group discussed and came to general agreement on a maximum fan energy limit of 25 kJ/kg, which translates approximately to a 1.3 pressure ratio, as the appropriate cutoff to distinguish between fans and compressors. (EERE-2014-BT-TP-0054, Docket No. EERE–2013–BT–STD–0006; EERE-2014-BT-TP-0054, Public Meeting, No. 84 at p. 11) and 81 FR 27220, 27224 (May

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<sup>1</sup>The EU Lot 31 draft standard is available at: <http://www.regulations.gov/contentStreamer?documentId=EERE-2013-BT-STD-0040-0031&disposition=attachment&contentType=pdf>

5, 2016). If, through the fans and blowers rulemaking, DOE establishes coverage for equipment that incorporates a maximum 1.3 pressure ratio limit, DOE would have the authority to establish test procedures and energy conservation standards for equipment with pressure ratios between 1.1 and 1.3, under the coverage of fans and blowers, rather than compressors. (see: Docket No. EERE–2013–BT–STD–0006). Alternatively, incorporating a minimum 1.1 pressure ratio into the definition of “compressor” would result in an overlap in coverage with fans and blowers, and create confusion in the market.

Additionally, incorporating a definition for “compressor” as covered equipment by itself has no material impact on manufacturers. Rather, a decision by DOE to establish test procedures and/or energy conservation standards for certain compressors could materially impact manufacturers and trade. As such, DOE’s decision to establish coverage for compressors based on a minimum pressure ratio of 1.3 has no impact on manufacturing or exporting, as claimed by Atlas Copco.

In response to the 2012 NOPD, CAGI commented that the 1.2 compression ratio proposed [sic] by DOE is too low. CAGI suggested a compression ratio of 2.5 instead. CAGI noted that what are referred to as “low-pressure blowers” can reach pressure ratios below 2.5, but are not generally viewed as compressors. CAGI also stated that a compression ratio of 1.2 may result in the inclusion of blowers for hand drying and vending machine compressors. (CAGI, No. 0003 at pp. 6-7) Both Ingersoll Rand and Kaeser Compressors supported CAGI’s recommendation to use a pressure ratio of 2.5 instead of 1.2. (Kaeser Compressors, No. 0007 at p. 1; Ingersoll Rand, No. 0004 at pp. 1-2). However, DOE notes that, in response to the 2016 test procedure NOPR, CAGI and Ingersoll Rand updated their opinions and provided support for the

definition of “compressor,” with a 1.3 minimum pressure ratio, as proposed by DOE in the test procedure NOPR. (EERE-2014-BT-TP-0054, CAGI, No. 0010 at p. 3; EERE-2014-BT-TP-0054, Ingersoll Rand, No. 0011 at p. 1; EERE-2014-BT-TP-0054, Sullair, No. 0006 at p. 1) Kaeser Compressors provided no updated comments related minimum pressure ratio, in response to the 2016 test procedure NOPR.

In response to the 2016 test procedure NOPR, Scales Industrial Technologies commented that the term “compressor” was historically used for equipment with pressure values above 18-25 psig, corresponding to pressure ratios of 2.2-2.7, and that equipment with pressure values below this range were referred to as “blowers.” (EERE-2014-BT-TP-0054, Scales Industrial Technologies, No. 0013, at p. 3)

In response to Kaeser Compressors and Scales Industrial Technologies, DOE acknowledges that lower pressure compressors are often termed “blowers” in industry. However, significant industry precedent exists that classifies blowers (and other lower pressure ratio machines) as sub-varieties of compressors. Specifically, in the test procedure NOPR, DOE noted that the International Organization for Standardization (ISO) Technical Report 12942:2012, “Compressors – Classification – Complementary information to ISO 5390,” (ISO/TR 12942:2012) defines “compressor” as a machine or apparatus converting different types of energy into the potential energy of gas pressure for displacement and compression of gaseous media to any higher pressure values above atmospheric pressure with pressure-increase ratios exceeding 1.1. 81 FR 27220, 27223 (May 5, 2016). Additionally, the European Union (EU) Lot

31 draft standard,<sup>2</sup> as previously discussed by Atlas Copco, also defines “compressor” using a minimum pressure ratio of 1.1.<sup>3</sup> Technically, any machine with a pressure ratio of greater than 1.0 could meet the first clause of the proposed definition for “compressor”. In other words, it can convert different types of energy into the potential energy of gas pressure for displacement and compression of gaseous media to any higher pressure values above atmospheric pressure. Given the precedent established by ISO/TR 12942:2012 and the EU Lot 31 draft standard, DOE believes that 1.1 is the minimum pressure ratio used in the industry to describe compressors. Consequently, a machine that converts different types of energy into the potential energy of gas pressure for displacement and compression of gaseous media to any higher pressure values above atmospheric pressure and has a pressure ratio of 1.3 would technically be considered a compressor by the compressor industry.

Finally, DOE notes that the CA IOUs, CAGI, Sullivan-Palatek, Ingersoll Rand, and Sullair all support the definition of “compressor” with a 1.3 minimum pressure ratio, as proposed in the test procedure NOPR. (EERE-2014-BT-TP-0054, CA IOUs, No. 0012 at p. 3; EERE-2014-BT-TP-0054, CAGI, No. 0010 at p. 3; EERE-2014-BT-TP-0054, Sullivan-Palatek, No. 0007 at p. 1; EERE-2014-BT-TP-0054, Ingersoll Rand, No. 0011 at p. 1; EERE-2014-BT-TP-0054, Sullair, No. 0006 at p. 1). For these reasons, DOE reaffirms its conclusion that a minimum pressure ratio of 1.3 is appropriate for use in the definition of “compressor.”

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<sup>2</sup> The EU Lot 31 draft standard is available at: <http://www.regulations.gov/contentStreamer?documentId=EERE-2013-BT-STD-0040-0031&disposition=attachment&contentType=pdf>

<sup>3</sup> As discussed in the previous paragraph, DOE is adopting a minimum pressure ratio of 1.3, rather than 1.1, in order to align with the fans and blowers rule.

### C. Equipment Configuration

In response to the 2012 NOPD, Ingersoll Rand made two recommendations regarding which components should be included in the definition of “compressor.” First, Ingersoll Rand suggested that “compressor” should be defined to include “onboard” controls that are integrated into the compressor package and solely for the operation of the compressor package to which they are mounted. (Ingersoll Rand, No. 0004 at p. 2).

Second, Ingersoll Rand suggested that “compressor” should be defined to include filters and treatment equipment that are integral and necessary to operate the compressor, such as oil coolers, aftercoolers, and filters, and deliver a certain quality of compressed air. (Ingersoll Rand, No. 0004 at p. 2).

In response, this final rule establishes a definition for “compressors” and classifies them as covered equipment under EPCA; it does not establish scope for any potential energy conservation standards. To that end, DOE notes that the definition of “compressor” adopted in this final rule (see section III.H), is broad and does not exclude the components recommended by Ingersoll Rand. However, DOE notes that it may limit the applicability of any test procedures and energy conservations standards it chooses to pursue in the future to address the (components/controls) identified by Ingersoll Rand.

### D. Electrical Connection Method

In response to the 2012 NOPD, CAGI commented that the definition of “compressor” should not apply to compressors that are connected through a wall outlet using a plug connection. CAGI explained that these compressors generally have intermittent usage patterns,

are small, and are not designed for continuous duty and, therefore, do not represent significant energy use. (CAGI, No. 0003 at p. 7)

DOE recognizes the benefits of focusing on compressors likely to account for significant energy use for the purposes of setting regulatory requirements. However, DOE notes that compressors can be modified to add or remove electrical plugs, without great cost or difficulty, by a party aiming to circumvent standards. Additionally, for certain compressor sizes (i.e., smaller horsepower), the presence of a plug has no bearing on end user utility, as plugs can be added or removed at a nominal cost to the end user. Therefore, many compressors with and without plugs may serve the same markets and applications and should be treated similarly.

Finally, DOE prefers to use attributes more native to a compressor (e.g., pressure ratios) to delineate, where needed, which compressors may fall within the coverage determination. As a result, DOE is declining CAGI's recommendation to remove from the coverage determination those compressors that are connected through a wall outlet using a plug connection.

#### E. Non-electric Compressors

In response to the 2012 NOPD, EEI commented that DOE should use a definition that applies to non-electric in addition to electric compressors, arguing that limiting the definition to electric compressors would be inconsistent with DOE's other recent actions for similar products, and equipment such as pumps and fans, and would be inconsistent with the intent of EPCA. (EEI, No. 0009, at p. 2) NRECA also commented that any compressor definition should be fuel-neutral. (NRECA, No. 0008, at p. 2) EEI also noted that DOE provided no rationale supporting



the exclusion of non-electric compressors, and that there are significant numbers of fossil fuel-driven compressors operating in the United States. (EEI, No. 0009, at p. 5)

Further, in response to the 2012 NOPD, EEI stated that excluding non-electric compressors carries the potential to distort markets – presumably by incentivizing end users to substitute unregulated compressors. (EEI, No. 0009, at p. 7) NRECA also commented that an electric-only compressor definition could encourage fuel-switching to non-electric compressors and not result in economic or energy savings. (NRECA, No. 0008, at p. 2)

In response to EEI’s and NRECA’s argument not to limit the definition of “compressor” to electric compressors, DOE notes that it is adopting a fuel-neutral definition of “compressor.”

#### F. Variety of Equipment Covered

In response to the 2016 test procedure NOPR, Compressed Air Systems commented that the term “compressor” may unintentionally include other equipment, such as refrigerators, air conditioners, bellows, hand air pumps, or turbochargers, and suggested a more narrow definition of the term that would encompass just the products intended for regulation. (EERE-2014-BT-TP-0054, Compressed Air Systems, No. 0008 at p. 1).

In response, DOE notes that the definition of “compressor,” as proposed in the test procedure NOPR, does not specifically include or exclude compressors installed as components of other covered products or equipment such as refrigerators and air conditioners. Nonetheless, it may apply to subcomponents of such equipment. Further, if equipment commonly referred to as bellows, hand air pumps, or turbochargers meets the definition of “compressor,” as proposed in

the test procedure NOPR and adopted in this document, such equipment would fall within the coverage determination for compressors. However, DOE will determine appropriate scope(s) of applicability for future test procedure and energy conservation standards rulemakings based on the particular circumstances of the market.

#### G. Federal Preemption

In response to DOE's May 19, 2016 energy conservation standards NOPR (81 FR 31680), the CA IOUs, ASAP, ACEEE, NEEA, NRDC, NEEP, and ASE commented that if there are no energy conservation standards for reciprocating compressors, then reciprocating compressors should not be covered equipment in order to allow states to pursue standards. (EERE-2013-BT-STD-0040, CA IOUs, No. 0059 at pp. 2-3; EERE-2013-BT-STD-0040, CA IOUs, Public Meeting Transcript, No. 0044 at p. 153; EERE-2013-BT-STD-0040, ASAP, ACEEE, NEEA, NRDC, NEEP, ASE, No. 0060 at pp. 2-3)

In this final rule, DOE is establishing a broad definition for "compressors," it is not establishing a definition for specific categories of compressors. DOE will define specific categories of compressors and the scope of applicability of test procedures and energy conservation standards in their respective rules. In turn, DOE is classifying compressors as covered equipment under EPCA because the agency concludes that commercial and industrial compressors qualify as covered equipment under part A-1 of Title III of EPCA, as amended. (42 U.S.C. 6311 *et seq.*). Once DOE has classified equipment as covered, any State regulation concerning the energy use or energy efficiency of the covered product is preempted by Federal coverage. (42 U.S.C. 6297(b), 6316(a)).

## H. Conclusion

Ultimately, for the reasons discussed in this section and established in the test procedure NOPR, DOE is adopting the following definitions for “compressor.” This definition includes one minor modification in nomenclature,<sup>4</sup> as compared to the definition proposed in the test procedure NOPR.

Compressor means a machine or apparatus that converts different types of energy into the potential energy of gas pressure for displacement and compression of gaseous media to any higher pressure values above atmospheric pressure and has a pressure ratio at full-load operating pressure greater than 1.3.

DOE will develop specific methods to test for and calculate pressure ratio at full-load operating pressure as a part of a separate test procedure rulemaking process.<sup>5</sup>

## **IV. Evaluation of Compressors as a Covered Equipment**

The following sections describe DOE's evaluation of whether compressors fulfill the criteria for being added as covered equipment pursuant to 42 U.S.C. 6311(2) and 42 U.S.C. 6312. Compressors are listed as a type of industrial equipment at 42 U.S.C. 6311(2)(B)(i). The following discussion addresses DOE's consideration of the three requirements of 42 U.S.C. 6311(2)(A) and 42 U.S.C. 6312.

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<sup>4</sup> The definition is unchanged, except that “pressure ratio at full-load operating pressure” has replaced the term “pressure ratio.” DOE will develop specific methods to determine pressure ratio at full-load operating pressure of a compressor as a part of a separate test procedure rulemaking process.

<sup>5</sup> Information regarding the ongoing test procedure rulemaking is available at:  
[https://www1.eere.energy.gov/buildings/appliance\\_standards/standards.aspx?productid=63](https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=63)

### A. Energy Consumption in Operation

In the 2012 NOPD, DOE cited data from the 2002 United States Industrial Electric Motor Systems Market Opportunities Assessment, which estimated total annual industrial compressor energy use (from Manufacturing SIC codes 20-39) at 91,050 million kWh per year.<sup>6</sup> DOE noted that, because industrial activity in 2012 is greater than it was in 2002, it was likely that annual compressor energy use was higher than this figure. 77 FR 76972, 76974 (Dec 31, 2012).

In response to DOE's NOPD conclusions, EEI commented that data referenced in the proposed determination of coverage was neither accurate nor current. EEI noted that although DOE asserted industrial activity in 2012 exceeded that of 2002, the amount of industrial electricity consumed and number of industrial customers in 2011 were lower than in 2003 and 2004, respectively. (EEI, No. 0009 at pp. 2-3).

In its energy conservation standards NOPR, DOE revised the sources used to characterize the compressor market, DOE revised both initial shipments, (discussed section IV.B) and industrial and commercial growth indicators. DOE projected future growth using Energy Information Administration's (EIA's) Annual Energy Outlook (AEO) Macroeconomic projections for the Value of Manufacturing Shipments, and Commercial Floor Space for industrial and commercial sectors, respectively.<sup>7</sup> Based on the energy savings results discussed

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<sup>6</sup> U.S. DOE Office of Industrial Technologies. United States Industrial Electric Motor Systems Market Opportunities Assessment. December 2002.

<sup>7</sup> U.S. DOE – Energy Information Administration (2015), Annual Energy Outlook 2015, DOE/EIA-0383 (Available at: [http://www.eia.gov/forecasts/archive/aeo15/pdf/0383\(2015\).pdf](http://www.eia.gov/forecasts/archive/aeo15/pdf/0383(2015).pdf))

in section IV.D, DOE reaffirms its conclusion that compressors consume a significant amount of energy in the industrial and commercial sectors.

#### B. Distribution in Commerce

In the 2012 NOPD, DOE tentatively concluded that compressors are distributed in commerce for both the industrial and commercial sectors. Specifically, DOE estimated that 1.3 million motors are shipped annually to drive compressors in the U.S. commercial and industrial sectors, based on the 2011 International Energy Agency (IEA) Survey. DOE also assumed that only a small fraction of these motors are used as a motor only replacement in compressor systems (based on additional 2004 U.S. Census data); consequently, DOE estimated that nearly 1.3 million compressors were distributed in commerce annually for industrial or commercial use. 77 FR 76972, 76974 (Dec 31, 2012).

In response to DOE's NOPD conclusions, Ingersoll Rand commented that the estimate of annual compressor shipments provided by DOE is grossly inflated. (Ingersoll Rand, No. 0004 at p. 2) CAGI commented that DOE's estimates most likely incorporate compressors going into consumer applications, and if only commercial and industrial applications were counted, the number would be significantly lower. (CAGI, No. 0003 at p. 7) EEI recommended that DOE elaborate on how it derived the 1.3 million compressor shipment estimate, if DOE is to use it in in any future energy conservation standards analyses. (EEI, No. 0009 at p. 3)

In response to comments from Ingersoll Rand, CAGI, and EEI, DOE sought, and received, shipments data for rotary screw compressors from a number of manufacturer stakeholders and subject matter experts, which DOE published in its energy conservation

standards NOPR. However, DOE was able to find only limited shipments data for reciprocating compressors, so DOE continued to use the data from the U.S. Census Bureau.<sup>8</sup> DOE estimated in its energy conservation standards NOPR shipments analysis that 31 thousand rotary screw and 538 thousand reciprocating compressors were shipped to commercial and industrial sectors in 2013. (EERE-2013-BT-STD-0040-0037) Based on these revised shipments estimates, DOE reaffirms its conclusion that compressors are distributed in commerce to commercial and industrial sectors.

#### C. Prior Inclusion as a Covered Product

Compressors are not currently included as covered products under Title 10 of the Code of Federal Regulations, part 430 (10 CFR part 430).

#### D. Coverage Necessary to Carry Out Purposes of Part A-1 of the Energy Policy and Conservation Act

The purpose of part A-1 of EPCA is to improve the energy efficiency of electric motors, pumps and certain other industrial equipment to conserve the energy resources of the Nation. (42 U.S.C. 6312 (a)). In the 2012 NOPD, DOE proposed that coverage of compressors was necessary to carry out the purposes of part A-1 of EPCA because coverage will promote the conservation of energy resources. DOE concluded that efficiency standards that may result from coverage would help to capture some portion of the potential for improving the efficiency of compressors. 77 FR 76972, 76974 (Dec 31, 2012).

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<sup>8</sup> U.S. Department of Commerce, Census Bureau, Manufacturing and Construction Division, Series MA333P(10)-1, Stationary Air Compressors, Reciprocating, Single and Double Acting (333912110T), 2011

In response to DOE's conclusion that efficiency standards that may result from coverage of compressors would help to capture some portion of the potential for improving the efficiency of compressors, CAGI commented that compressor designs are mature and compressor manufacturers have already incorporated the most efficient motor designs and technologies available in the market. CAGI believes that including compressors as covered equipment would inhibit investment in research and development because of the hurdles involved in approving new designs for the market. (CAGI, No. 0003 at p. 8) CAGI also argued that, due to variation in field applications that lead to changes in overall efficiency, regulation of compressor packages is an ineffective way to capture significant energy savings. CAGI suggested that, therefore, DOE exclude commercial and industrial compressors under Part A-1 of Title III of EPCA. (CAGI, No. 0003 at pp. 4-5)

Kaeser Compressors commented that since manufacturers already publish test data at various load levels and that data is verified by a third-party and since annual energy costs are dependent on the dynamics of an individual system, Kaeser does not believe that including compressors alone as covered equipment would be beneficial to carrying out the purposes of Part A-1 of EPCA. (Kaeser Compressors, No. 0007 at pp. 3)

DOE published consumer saving for lubricated rotary screw, lubricant-free rotary screw, and reciprocating compressors in its energy conservation standard NOPR TSD.<sup>9</sup> These equipment account for over 90 percent of compressors in the commercial and industrial sectors

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<sup>9</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy Office (2015), NOPR Technical Support Document (TSD): Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Air Compressors (Available at: <https://www.regulations.gov/document?D=EERE-2013-BT-STD-0040-0037>)

and are used in a wide variety of applications. While DOE did not propose an increase in efficiency above the baseline for lubricant-free rotary screw, or, new standards for reciprocating compressors, DOE's analysis found that there was energy, and consumer savings for these equipment at most efficiency levels. Further, DOE published national energy saving estimates for lubricated rotary screw compressors in its energy conservation standard NOPR. DOE estimated, at the proposed level, significant national energy savings of 0.18 quads.

These estimated saving presented in the energy conservation standard TSD and NOPR are an indication that coverage will result in conservation of energy resources. While DOE proposed new energy conservation standards for a sub-set of compressor designs currently available in commerce, broadening of the energy conservations standards beyond lubricated rotary screw compressors will likely increase the amount of energy savings.

Based on the preceding discussion, DOE reaffirms its conclusion that incorporating compressors as covered equipment is necessary to carry out the purposes of Part A-1 of EPCA, and that efficiency standards that may result from coverage would improve the efficiency of compressors and help to capture some portion of the potential for energy savings from this improved efficiency. Based on the information in sections IV.A, IV.B, and IV.C of this notice, DOE determines that commercial and industrial compressors qualify as covered equipment under part A-1 of Title III of EPCA, as amended (42 U.S.C. 6311 et seq.).

## **V. Procedural Issues and Regulatory Review**

DOE has reviewed this final determination of coverage for compressors under the following executive orders and acts.



#### A. Review Under Executive Order 12866

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

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

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996) requires preparation of a regulatory flexibility analysis 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. A regulatory flexibility analysis examines the impact of the rule on small entities and considers alternative ways of reducing negative effects. Also, as required by 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 impact of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990 (Feb. 19, 2003). DOE makes its procedures and policies available on the Office of the General Counsel’s website at <http://energy.gov/gc/office-general-counsel>

DOE reviewed this final determination under the provisions of the Regulatory Flexibility Act and the policies and procedures published on February 19, 2003. This final determination

sets no test procedures or standards; it only positively determines that compressors meet the criteria for classification as covered equipment and that future standards may be warranted to regulate their energy use. Economic impacts on small entities would be considered in the context of such rulemakings. On the basis of the foregoing, DOE certifies that the determination has no significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared a regulatory flexibility analysis for this final determination. DOE will transmit this 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).

#### C. Review Under the Paperwork Reduction Act of 1995

This final determination, which concludes that compressors meet the criteria for a covered product for which the Secretary may prescribe an energy conservation standard pursuant to 42 U.S.C. 6295(o) and (p), imposes no new information or record-keeping requirements. Accordingly, the OMB clearance is not required under the Paperwork Reduction Act. (44 U.S.C. 3501 et seq.)

#### D. Review Under the National Environmental Policy Act of 1969

In this document, DOE positively determines that compressors meet the criteria for classification as covered equipment and that future standards may be warranted to regulate their energy use. Should DOE pursue that option, the relevant environmental impacts would be explored as part of that rulemaking. As a result, DOE has determined that this action falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this action establishes a class of equipment (compressors) for which energy

conservation standards would be appropriate. However, this action does not establish energy conservation standards, and, therefore, does not result in any environmental impacts. Thus, this action is covered by Categorical Exclusion A6 “Procedural rulemakings” under 10 CFR part 1021, subpart D. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

#### E. Review Under Executive Order 13132

Executive Order (E.O.) 13132, “Federalism” 64 FR 43255 (Aug. 10, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to assess carefully the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in developing regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process that it will follow in developing such regulations. 65 FR 13735 (March 14, 2000). DOE has examined this final determination and concludes that it does not preempt State law or have substantial direct effects on the States, on the relationship between the Federal government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the product that is the subject of this final determination. States can petition DOE for exemption from such preemption to the extent permitted, and based on criteria, set forth in EPCA. (42 U.S.C. 6297) No further action is required by E.O. 13132.

#### F. Review Under Executive Order 12988

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

#### G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Public Law 104-4, codified at 2 U.S.C. 1501 *et seq.*) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and tribal governments and the private sector. For regulatory actions likely to result in a rule that may cause expenditures by State, local, and Tribal governments, in the aggregate, or by the private sector of \$100 million or more in any 1 year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a

written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a) and (b)). UMRA requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and tribal governments on a proposed “significant intergovernmental mandate.” UMRA also requires an agency plan for giving notice and opportunity for timely input to small governments that may be potentially affected before establishing any requirement that might significantly or uniquely affect them. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820 (Mar. 18, 1997). (This policy also is available at <http://energy.gov/gc/office-general-counsel>). DOE reviewed this final determination pursuant to these existing authorities and its policy statement and determined that the rule contains neither an intergovernmental mandate nor a mandate that may result in the expenditure of \$100 million or more in any year, so the UMRA requirements do not apply.

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

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

#### I. Review Under Executive Order 12630

Pursuant to E.O. 12630, “Governmental Actions and Interference with Constitutionally Protected Property Rights” 53 FR 8859 (Mar. 15, 1988), DOE determined that this final

determination does not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act of 2001

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

K. Review Under Executive Order 13211

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

DOE has concluded that this regulatory action establishing certain definitions and determining that compressors meet the criteria for a covered product for which the Secretary may prescribe an energy conservation standard pursuant to 42 U.S.C. 6295(o) and (p) does not have a significant adverse effect on the supply, distribution, or use of energy. This action is also not a significant regulatory action for purposes of E.O. 12866, and the OIRA Administrator has not designated this final determination as a significant energy action under E.O. 12866 or any successor order. Therefore, this final determination is not a significant energy action. Accordingly, DOE has not prepared a Statement of Energy Effects.

#### L. Review Under the Information Quality Bulletin for Peer Review

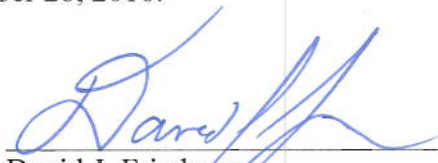
On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (OSTP), issued its Final Information Quality Bulletin for Peer Review (the Bulletin). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal government, including influential scientific information related to agency regulatory actions. The purpose of the Bulletin is to enhance the quality and credibility of the Government's scientific information. DOE has determined that the analyses conducted for the regulatory action discussed in this document do not constitute "influential scientific information," which the Bulletin defines as "scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions." 70 FR 2667 (Jan. 14, 2005). The analyses were subject to pre-dissemination review prior to issuance of this rulemaking.

DOE will determine the appropriate level of review that would apply to any future rulemaking to establish energy conservation standards for compressors.

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

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

Issued in Washington, D.C., on October 28, 2016.



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David J. Friedman  
Acting Assistant Secretary  
Energy Efficiency and Renewable Energy



For the reasons stated in the preamble, DOE amends part 431 of chapter II of Title 10, Code of Federal Regulations as set forth below:

## **PART 431 – ENERGY EFFICIENCY PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT**

1. The authority citation for part 431 continues to read as follows:

**Authority:** 42 U.S.C. 6291-6317; 28 U.S.C. 2461 note.

2. Add subpart T to part 431 to read as follows:

### **SUBPART T – Compressors**

Sec.

431.341 Purpose and scope.

431.342 Definitions concerning compressors.

### **SUBPART T – Compressors**

#### **§431.341 Purpose and scope.**

This subpart contains definitions, materials incorporated by reference, test procedures, and energy conservation requirements for compressors, pursuant to Part A-1 of Title III of the Energy Policy and Conservation Act, as amended, 42 U.S.C. 6311–6317.

#### **§431.342 Definitions concerning compressors.**

Compressor means a machine or apparatus that converts different types of energy into the potential energy of gas pressure for displacement and compression of gaseous media to any

higher pressure values above atmospheric pressure and has a pressure ratio at full-load operating pressure greater than 1.3.