DEPARTMENT OF ENERGY

10 CFR Part 429 and 431

[EERE-2022-BT-TP-0003]

RIN 1904-AE95

Energy Conservation Program: Test Procedure for Dedicated-Purpose Pool Pumps

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

ACTION: Notice of proposed rulemaking and announcement of public meeting.

SUMMARY: The U.S. Department of Energy ("DOE") proposes to amend the test procedures for dedicated-purpose pool pumps ("DPPPs") to incorporate by reference the latest version of the relevant industry standards, to codify DOE's current enforcement policy regarding the scope of the DPPP test procedure pertaining to DPPPs that cannot be appropriately tested by the current DOE test procedure, to align DOE's DPPP definitions with DOE's corresponding DPPP motor definitions, and to remove an obsolete DOE DPPP test procedure appendix. DOE is seeking comment from interested parties on the proposal.

DATES: DOE will accept comments, data, and information regarding this proposal no later than **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. See section V, "Public Participation," for details.

DOE will hold a public meeting via webinar on Monday, December 12, 2022, from 1:00 p.m. to 4:00 p.m. See section V, "Public Participation," for webinar registration information, participant instructions, and information about the capabilities available to webinar participants.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *www.regulations.gov*, under docket number EERE-2022-BT-TP-

0003. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2022-BT-TP-0003, by any of the following methods:

Email: *DPPP2022tp0003@ee.doe.gov*. Include the docket number EERE-2022-BT-TP-0003 in the subject line of the message.

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.

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 V of this document.

Docket: The docket for this activity, which includes *Federal Register* notices, public meeting attendee lists and transcripts (if a public meeting is held), comments, and other supporting documents/materials, is available for review at *www.regulations.gov*. All documents in the docket are listed in the *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-2022-BT-TP-0003*. The docket web page contains instructions on how to access all documents,

including public comments, in the docket. See section V for information on how to submit comments through *www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT:

Mr. Jeremy Dommu, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-2J, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-9870. E-mail: *ApplianceStandardsQuestions@ee.doe.gov.*

Mr. Nolan Brickwood, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-4498. E-mail: *nolan.brickwood@hq.doe.gov.*

For further information on how to submit a comment, review other public comments and the docket, or participate in a public meeting (if one is held), contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by e-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

SUPPLEMENTARY INFORMATION:

DOE proposes to incorporate by reference the following industry standards into 10 CFR part 431:

CSA C747-2009 (Reaffirmed 2019), "Energy efficiency test methods for small motors," CSA reaffirmed 2019, ("CSA C747-09 (R2019)").

HI 40.6-2021, "Hydraulic Institute Standard for Methods for Rotodynamic Pump Efficiency Testing", approved February 17, 2021.

NSF/ANSI/CAN 50-2020, "Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities," designated as an ANSI Standard and National Standard of Canada October 21, 2020.

Copies of CSA C747-2009 are available at *www.csagroup.org*.

Copies of HI 40.6-2021 are available at *www.pumps.org*.

Copies of NSF/ANSI/CAN 50-2020 are available at *www.ansi.org* or *www.scc.ca/en/welcome-standards-store.*

See section IV.M of this document for a further discussion of these standards.

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I. Authority and Background

A dedicated-purpose pool pump is a type of "pump." Pumps are included in the list of "covered equipment" for which DOE is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6311(1)(A)) DOE's energy conservation standards and test procedures for DPPPs are currently prescribed at title 10 of the Code of Federal Regulations ("CFR"), §431.464(b), and appendices B and C to subpart Y of part 431. The following sections discuss DOE's authority to establish test procedures for DPPPs and relevant background information regarding DOE's consideration of test procedures for this equipment.

A. Authority

The Energy Policy and Conservation Act, as amended (''EPCA''),[1] authorizes DOE to regulate the energy efficiency of several consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part C[2] of EPCA, added by Pub. Law 95–619, Title IV, section 441(a), established the Energy Conservation Program for Certain Industrial Equipment, which sets forth a variety of provisions designed to improve energy

[1] All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Pub. L. 116-260 (Dec. 27, 2020), which reflect the last statutory amendments that impact Parts A and A-1 of EPCA.
[2] For editorial reasons, upon codification in the U.S. Code, Part C was redesignated Part A–1.

efficiency. "Pumps" are listed as a type of industrial equipment covered by EPCA, although EPCA does not define the term "pump." (42 U.S.C. 6311(1)(A)) DOE has defined "pump" as equipment designed to move liquids (which may include entrained gases, free solids, and totally dissolved solids) by physical or mechanical action, includes a bare pump, and, if included by the manufacturer at the time of sale, mechanical equipment, driver, and controls. 10 CFR 431.462. DPPPs, which are the subject of this notice of proposed rulemaking ("NOPR"), meet this definition of a pump and are covered under the pump equipment type.

The energy conservation program under EPCA consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA include definitions (42 U.S.C. 6311), test procedures (42 U.S.C. 6314), labeling provisions (42 U.S.C. 6315), energy conservation standards (42 U.S.C. 6313), and the authority to require information and reports from manufacturers (42 U.S.C. 6316; 42 U.S.C. 6296).

The Federal testing requirements consist of test procedures that manufacturers of covered equipment must use as the basis for: (1) certifying to DOE that their equipment complies with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6316(a); 42 U.S.C. 6295(s)), and (2) making other representations about the efficiency of that equipment (42 U.S.C. 6314(d)). Similarly, DOE must use these test procedures to determine whether the equipment complies with relevant standards promulgated under EPCA. (42 U.S.C. 6316(a); 42 U.S.C. 6295(s))

Federal energy efficiency requirements for covered equipment established under EPCA generally supersede State laws and regulations concerning energy conservation

testing, labeling, and standards. (42 U.S.C. 6316(a) and 42 U.S.C. 6316(b); 42 U.S.C. 6297) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions of EPCA. (42 U.S.C. 6316(a); 42 U.S.C. 6297)

Under 42 U.S.C. 6314, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered equipment. EPCA requires that any test procedures prescribed or amended under this section must be reasonably designed to produce test results which reflect energy efficiency, energy use, and estimated annual operating cost of a given type of covered equipment during a representative average use cycle and requires that test procedures not be unduly burdensome to conduct. (42 U.S.C. 6314(a)(2)-(3))

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered equipment, including DPPPs, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle. (42 U.S.C. 6314(a)(1)(A))

In addition, if the Secretary determines that a test procedure amendment is warranted, the Secretary must publish the proposed test procedures in the *Federal Register* and afford interested persons an opportunity (of not less than 45 days' duration) to present oral and written data, views, and arguments on the proposed test procedures. (42 U.S.C. 6314(b)). If DOE determines that test procedure revisions are not appropriate,

DOE must publish its determination not to amend the test procedures. (42 U.S.C. 6314(a)(1)(A)(ii))

DOE is publishing this NOPR in satisfaction of the 7-year review requirement specified in EPCA. (42 U.S.C. 6314(a)(1)(A))

B. Background

DOE's existing test procedures for DPPPs appear at 10 CFR 431.464(b) and at 10 CFR 431 subpart Y, appendix B ("appendix B")[3] and appendix C ("appendix C"). Any representations made on or after July 19, 2021, with respect to the energy use or efficiency of dedicated-purpose pool pumps subject to testing pursuant to 10 CFR 431.464(b), must be made in accordance with the results of testing pursuant to appendix C. Reflecting the circumstances when the existing test procedure was promulgated, any representations made after February 5, 2018 but before July 19, 2021 with respect to the energy use or efficiency of dedicated-purpose pool pumps must have been made in accordance with the results of testing pursuant to appendix B.

DOE established the currently applicable test procedures for DPPPs in a final rule published on August 7, 2017. 82 FR 36858 ("August 2017 TP Final Rule"). DOE established the currently applicable energy conservation standards for DPPPs in a direct final rule published on January 18, 2017. 82 FR 5650 ("January 2017 ECS Direct Final Rule"). The test procedure and standards established by these final rules were based on the recommendations of the Appliance Standards and Rulemaking Federal Advisory

[3] On February 5, 2018 but before July 19, 2021, any representations made with respect to the energy use or efficiency of dedicated-purpose pool pumps subject to testing pursuant to 10 CFR 431.464(b) must be made in accordance with the results of testing pursuant to appendix B. *See* Note to appendix B to subpart Y of part 431.

Committee ("ASRAC") DPPP 2017 Working Group ("DPPP Working Group"). The test procedure and standards for DPPPs are based on the weighted energy factor ("WEF") metric.

On January 24, 2022, DOE published a request for information ("RFI") undertaking a review to determine whether amendments are warranted for the test procedures for DPPPs. 87 FR 3457 ("January 2022 TP RFI"). DOE received comments in response to the January 2022 TP RFI from the interested parties listed in Table I.1.

Table I.1 List of Commenters with Written Submissions in Response to the January 2022 TP RFI

Commenter(s)	Reference in this NOPR	Comment No. in the Docket	Commenter Type
Appliance Standards Awareness Project, American Council for an Energy-Efficient Economy, Natural Resources Defense Council, Northwest Energy Efficiency Alliance	ASAP et. al	8	Efficiency Organizations
Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison; collectively, the California Investor-Owned Utilities	CA IOUs	10	Utilities
California Energy Commission and New York State Energy Research and Development Authority	CEC and NYSERDA	9	State Agencies
Fluidra	Fluidra	7	Manufacturer
NSF International	NSF	4	Industry Association
Pool and Hot Tub Alliance	PHTA	6	Industry Association

A parenthetical reference at the end of a comment quotation or paraphrase provides the location of the item in the public record.[4] DOE notes that the docketed comments from PHTA and Fluidra include responses to both the January 2022 TP RFI as well as to an RFI related to DPPP energy conservation standards. 87 FR 3461 ("January 2022 ECS RFI"). In this NOPR, DOE addresses only the comments related to the January 2022 TP RFI as well as certain comments related to the January 2022 ECS RFI that have to do with definitions and test procedure. The remainder of comments related to the January 2022 ECS RFI will be addressed in a separate standards rulemaking.

II. Synopsis of the Notice of Proposed Rulemaking

In this NOPR, DOE proposes to update 10 CFR 431.462, 10 CFR 431.463, 10 CFR 431.464, and appendices B and C to subpart Y of 10 CFR part 431 as follows: (1) codify the scope of the DPPP test procedure consistent with DOE's current enforcement policy pertaining to DPPPs that cannot be appropriately tested by the current DOE test procedure; (2) update references to industry test standards to reflect current industry practices; (3) align DOE's DPPP definitions with DOE's corresponding DPPP motor definitions; and (4) remove the current test procedure at appendix B, which is obsolete. DOE's proposed actions are summarized in Table II.1 compared to the current test procedure as well as the reason for the proposed change. DOE notes that it is reprinting the entirety of the proposed appendix B, which is the current appendix C re-named to appendix B with amendments as proposed, with formatting changes. All substantive proposals are summarized in Table II.1.

[4] The parenthetical reference provides a reference for information located in the docket of DOE's rulemaking to develop test procedures for DPPPs. (Docket No. EERE-2022-BT-TP-0003, which is maintained at *www.regulations.gov*). The references are arranged as follows: (commenter name, comment docket ID number, page of that document).

Table II.1 Summary of Changes in Proposed Test Procedure Relative to Current Test Procedure

Current DOE Test Procedure	Proposed Test Procedure	Attribution
DOE issued an enforcement policy pertaining to certain types of DPPPs that were not considered during the development of the test procedures and currently applicable energy conservation standards for DPPPs.	Codify the enforcement policy in 10 CFR 431.464 by explicitly excluding these certain pumps from the scope of DOE's DPPP test procedure.	Improve clarity of test procedure.
References NSF/American National Standards Institute ("ANSI")/ Canadian Standards Association ("CAN") 50-2015, Hydraulic Institute ("HI") 40.6-2016	Adopts latest versions of these referenced industry standards.	Harmonize with updated industry standard.
Not all definitions relevant to DPPP in 10 CFR 431.462 are aligned with definitions specified for DPPP motors in 10 CFR 431.483.	Amends the following pump definitions in 10 CFR 431.462 to align with the corresponding DPPP motor definitions in 10 CFR 431.483: multi-speed dedicated-purpose pool pump, variable-speed dedicated-purpose pool pump, dedicated-purpose pool pump motor total horsepower, rigid-electric spa pump motor. Adds definitions for drive and maximum operating speed.	Improve clarity of test procedure.
Appendix B was required for any representations made with respect to the energy use or efficiency of DPPPs between February 5, 2018 and July 19, 2021.	Removes appendix B, which is now obsolete, and renames appendix C as appendix B.	Improve clarity of test procedure.

DOE has tentatively determined that the proposed amendments described in section III of this NOPR would not alter the measured efficiency of DPPPs or require retesting or recertification solely as a result of DOE's adoption of the proposed amendments to the test procedures, if made final. Additionally, DOE has tentatively determined that the proposed amendments, if made final, would not increase the cost of testing. Discussion of DOE's proposed actions are addressed in detail in section III of this NOPR.

III. Discussion

In the following sections, DOE proposes certain amendments to its test procedures for DPPPs. For each proposed amendment, DOE provides relevant background information, explains why the amendment merits consideration, discusses relevant public comments, and proposes a potential approach.

A. Scope of Applicability

DOE's test procedures for DPPPs apply to the following types of DPPPs that are served by single-phase or polyphase input power: (1) self-priming pool filter pumps, (2) non-self-priming pool filter pumps, (3) waterfall pumps, and (4) pressure cleaner booster pumps. 10 CFR 431.464(b)(1)(i)-(ii). These test procedures do not apply to (1) submersible pumps or (2) self-priming and non-self-priming pool filter pumps with hydraulic output power greater than or equal to 2.5 horsepower. 10 CFR 431.464(b)(1)(iii).

The scope of the DPPP test procedure as defined at 10 CFR 431.464(b)(1) is consistent with the scope recommended by the DPPP Working Group. As part of its consideration of test procedure and standards for DPPPs, the DPPP Working Group determined that very large pool filter pumps are most commonly installed in commercial applications, where the head and flow characteristics are significantly different from residential installations. Because of these differences, the DPPP Working Group concluded that a test procedure for very large pool filter pumps would have required different load points than those established for residential pool pumps. Additionally, it was determined that for very large pool filter pumps, changes in the equipment such as pipe diameter made system curve C unrepresentative of such equipment (see below for further information on system curves). (Docket No. EERE-2015-BT-STD-0008, No. 53 at p. 190-191, 197-199). The DPPP Working Group also discussed very large pool filter pumps' use of motors which are already subject to DOE standards and which are generally higher efficiency than motors of smaller pool filter pumps. (Docket No. EERE-2015-BT-STD-0008, No. 79, p. 40).

During the course of the DPPP Working Group negotiations, a hydraulic output of 2.5 hydraulic horsepower ("hhp") was discussed as the threshold value that differentiates residential pool filter pumps from the type of very large pool filter pumps most commonly installed in commercial applications. (Docket No. EERE-2015-BT-STD-0008, No. 79 at p. 33-34, p. 39, p. 41-42, p. 44-48, p. 50-53). The identification of 2.5 hhp as the threshold was based on identifying the DPPP with largest hhp in the California Energy Commission's certification database,[5] which was presumed to include pumps used only in residential applications. The DPPP Working Group also noted a lack of performance data for very large pool filter pumps, which prevented the group from negotiating standards for these pumps. Consequently, the DPPP Working Group did not recommend a test procedure for these pumps. (Docket No. EERE-2015-BT-STD-0008, No. 79 at p. 33-34, p. 39, p. 41-42, p. 44-48, p. 50-53). Consistent with the recommendations of the DPPP Working Group, DOE did not adopt a test procedure or standards for pool filter pumps with hydraulic output power greater than or equal to 2.5 hhp in the August 2017 TP Final Rule. 82 FR 36858, 36872.

Subsequent to the adoption of the test procedure and energy conservation standards for DPPPs, DOE became aware of several models of DPPPs that are designed and marketed for commercial applications but that do in fact have hydraulic output power less than 2.5 hhp. These pumps are also characterized as having an orifice with inner diameter of greater than 2.85 inches and a measured performance of greater than or equal to 200 gallons per minute ("gpm") at 50 feet of head, as measured in accordance with the DOE test procedure. The Office of the General Counsel issued an enforcement policy statement regarding these DPPPs ("DPPP Enforcement Policy").[6] The DPP Enforcement

[5] California Energy Commission's Modernized Appliance Efficiency Database System, available at: *cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx*
[6] *www.energy.gov/gc/articles/direct-purpose-pool-pumps-enforcement-policy*

Policy explained that these pumps were considered to be different from dedicated-purpose pool pumps considered during the DPPP Working Group negotiations, but were not explicitly exempted in the regulatory text of the August 2017 TP Final Rule and January 2017 ECS Direct Final Rule. The policy states that DOE will not enforce the testing, labeling, certification, and standards compliance requirements for DPPPs meeting all of the following three criteria: (1) the orifice on the pump body that accepts suction side plumbing connections has an inner diameter of greater than 2.85 inches; (2) the pump has a measured performance of $\geq$ 200 gpm at 50 feet of head as determined in accordance with appendix B or appendix C (as applicable) to subpart Y of part 431, section I.A.1 (when determining overall efficiency, best efficiency point, or other applicable pump energy performance information, section 40.6.5.5.1, "Test procedure"; section 40.6.6.2, "Pump efficiency"; and section 40.6.6.3, "Performance curve" must be used, as applicable); and (3) the pump is marketed exclusively for commercial applications.

In the January 2022 TP RFI, DOE requested comment on whether it should expand the scope of the DPPP test procedure to include pumps designed for commercial applications, including those subject to the DPPP Enforcement Policy and/or pool filter pumps with hydraulic output power greater than or equal to 2.5 hhp. 87 FR 3457, 3460. DOE also sought information on which test points and system curves[7] would be appropriate to measure performance of these DPPPs. *Id.* The following sections discuss comments received and DOE's consideration of pool filter pumps with hydraulic output power greater than or equal to 2.5 hhp and pumps subject to the DPPP Enforcement Policy.

[7] A system curve is a graphical representation of the relationship between flow rate and the associated head losses.

1. Pool Filter Pumps with Hydraulic Output Power ≥ 2.5 HHP

The PHTA stated that DOE should not expand the scope of the DPPP test procedure to include commercial pumps with 2.5 hhp or greater, as these pumps cover a wide range of applications and are subject to strict public health regulations. (PHTA, No. 6, pp. 13-14) The PHTA further commented that if these large pumps are pursued, the scope would need to be narrowed (*e.g.*, capped at 5 hhp or single-phase motors only). (*Id*.) Fluidra stated that the scope and range of commercial pumps above 2.5 hhp is varied and vast, and that DOE should consider limiting the scope of coverage for commercial DPPPs to single speed DPPPs that fall under DOE's DPPP Enforcement Policy. Fluidra stated that before extending the scope further, DOE would need to conduct a new analysis and develop a new test method with industry as for commercial applications, pipe sizes range from 3-to-12-inch plumbing, and only system Curves A, B, and C[8] have been commonly accepted by industry. (Fluidra, No. 7, pp. 9-10)

The PHTA also stated that DOE would need to determine a new test point to develop an appropriate system curve because the current test procedure is based on the system curve C, on which the larger DPPPs do not operate. (PHTA, No. 6, p. 14) This new test procedure would need to also determine the plumbing size, hhp categories, and appropriate curve per those categories. *Id.*

[8] A set of standardized system curves has been developed for DPPPs, designated as A, B, C, and D. Curves A, B, and C were developed by Pacific Gas and Electric based data from an exercise by ADM Associates, Inc. in 2002, *Evaluation of Year 2001 Summer Initiatives Pool Pump Program* and input from industry experts. The Australia state and territory governments and the New Zealand government operate the Energy Rating Labeling Program rely on Australian Standard (AS) 5102-2009, "Performance of household electrical appliances—Swimming pool pump—units, Parts 1 and 2" (AS 5102-2009) which utilizes system curve D.

DOE noted in the August 2017 TP Final Rule that the system curve C on which DOE's current DPPP test procedure is based[9] was initially developed to be representative of 2.5-inch plumbing. 82 FR 36858, 36879. Additionally, section 4.1.2.1.3 of ANSI/Association of Pool and Spa Professionals ("APSP")/International Code Council ("ICC")-15a-2013[10] describes curves A, B, and C as "approximately" representative of 2.0-inch, 1.5-inch, and 2.5-inch diameter pipe, respectively, as noted in the 2016 NOPR that preceded the August 2017 TP Final Rule. 81 FR 64580, 64598 (September 20, 2016) ("2016 TP NOPR").

ASAP et. al, CEC and NYSERDA, and the CA IOUs commented that DOE should develop a test procedure to cover large commercial pool pumps. These commenters each cited a study by Worth *et al*. ("Worth *et al*. study")[11] that estimated that while large public pools comprise only 2 percent of the total in-ground pools, they account for 49 percent of total pool pump energy use. (ASAP et al., No. 8, p. 1; CEC and NYSERDA, No. 9, p. 2; CA IOUs, No. 10, p. 2) The CA IOUs noted that the current scope of the DPPP products test procedure was limited to products below 2.5 hhp, and that the corresponding standards had yielded significant energy savings. (CA IOUs, No. 10, p. 2) The CA IOUs stated that the Worth *et al*. study demonstrates that the large commercial pool pump market consumes approximately the same electrical energy as pool pumps subject to DOE's DPPPs regulations. The CA IOUs also commented that the study cited an aquatic management system field study that reported at least 25 percent savings due to the use of variable speed controls compared to conventional baseline

[9] Specifically, for self-priming pool filter pumps and non-self-priming pool filter pumps, Table 1 of appendix C specifies a head equation corresponding to system curve B (i.e., $H = 0.0082 \times Q^2$).
[10] ANSI/APSP/ICC-15a-2013, "American National Standard For Residential Swimming Pool And Spa Energy Efficiency."
[11] Worth, C., T. Rosenfeld, G. Gockel, and G. Fernstrom. "A Cannonball of Opportunity: The Hidden Savings Potential from Large Public Swimming Pools." Proceedings from the 2018 ACEEE Summer Study on Energy Efficiency in Buildings.

pumps at each large commercial pump installation, indicating significant energy savings potential. (CA IOUs, No. 10, pp. 2-3) Therefore, the CA IOUs recommended that DOE develop a test procedure for pumps above 2.5 hhp. *Id.*

The PHTA stated that DOE should not include commercial DPPPs, noting that there are 258,366 commercial pools, which represents 4.67% of the United States pool market, and that many pool pumps used in smaller commercial pools such as hotels or condos are already captured by the DPPP rule. The PHTA stated it lacked data on how many pumps larger than 2.5 hhp are currently utilized, but noted that many of these larger commercial pools likely use single speed pumps and that of those three-phase pumps in use most used VFDs. PHTA further added that most commercial pool applications are engineered to ensure proper turnover rates that ensure compliance with state public health and safety regulations and national industry codes and standards. PHTA stated that it believes the challenges of expanding the scope or developing a separate test procedure far outweigh the benefits. (PHTA, No. 6, p. 14).

ASAP et. al stated that because of the differences in head and flow characteristics between commercial and residential pool applications, DOE should investigate the representative test points and system curves for DPPPs designed for commercial pool applications. Such a test procedure would give consumers access to energy efficiency information based on a standardized test method. (ASAP et al., No. 8, p. 1)

With regard to the development of a system curve for large commercial pool pumps, the CA IOUs noted that the DPPP Working Group had discussed potential low- and high-flow operating points for DPPPs with larger than 2.5 hhp. (CA IOUs, No. 10, p. 3) The CA IOUs encouraged DOE to continue this development, and expressed support

for using a constant head system curve rather than Curve C as the DPPP Working Group had recommended. To support its recommendation, the CA IOUs presented field data collected by HMW International Inc. from 47 large commercial pools in California of varying sizes and filtration flow rates.[12] The CA IOUs stated that the study showed a somewhat consistent linear trend between flow rate and power, indicating that flow rate is the primary source energy demand variation. The CA IOUs explained that this trend is attributable to the rule of thumb used by industry in which these systems are designed using an end-suction closed coupled pump with an assumed constant head pressure of 60 to 70 feet. The CA IOUs asserted that although this constant head pressure assumption is different from the 47 feet of head in the 200 to 500 gpm (2 to 7 hhp) range assumed by the DPPP Working Group[13], the use of a constant head test method approach for this equipment appears to be practical and supported by field data. The CA IOUs stated that DOE should work with industry to refine the system curve and design head assumptions based on current practices and field data in order to propose a test method for the larger commercial DPPPs. (CA IOUs, No. 10, pp. 3-4)

In this NOPR, DOE is not proposing a test procedure for DPPPs with greater than 2.5 hhp. Regarding comments to develop the appropriate system curve and test load points for DPPPs with greater than 2.5 hhp, DOE notes that the DPPP Working Group discussed potential test procedures for DPPPs with greater than 2.5 hhp, but did not come to consensus on such a test procedure. The DPPP Working Group discussed how, unlike DPPPs with less than 2.5 hhp which are typically installed in residential applications, very large pool filter pumps are more commonly installed in commercial applications with significantly different and variable head and flow characteristics than those

[12] *Ibid*, 3-8.
[13] See transcript from negotiations resulting in the January 2017 ECS Direct Final Rule: Docket No. EERE-2015-BT-STD-0008, No. 95, pp. 188-197.

applicable to residential applications. (Docket No. EERE-2015-BT-STD-0008, CA IOUs No. 53 at p. 197-200) Therefore, the DPPP Working Group determined that any test procedure for very large pool filter pumps (*i.e.*, those over 2.5 hhp) would require unique load points and system curves. (Docket No. EERE-2015-BT-STD-0008, No. 53 at p. 190-191). The DPPP Working Group considered system curves other than curve C and ultimately considered a constant head test method for larger DPPPs, as noted by the CA IOUs, with discussion regarding a potential discontinuity at 2.5 hhp.[14] The CA IOUs comment cites a study that would support a different constant head value than that discussed by the DPPP Working Group for pumps over 2.5 hhp. In addition, as discussed in section III.A.2, commenters recommended considering system curves D and E for pumps near 2.5 hhp and subject to the enforcement policy. (CA IOUs, No. 10, p. 2; CEC and NYSERDA, No. 9, p. 2) DOE notes that the use of differing system curves, including constant head curves, across different categories or sizes of DPPPs, would cause discontinuities in ratings at the hhp boundaries, which could cause confusion in the marketplace due to the inability to correctly compare products in that space. DOE also lacks access to and data regarding the distribution of pool commercial pool sizes, which would be necessary to independently verify and to develop a test procedure.

Therefore, at this time, DOE does not have sufficient field data or performance characteristics to properly develop a test procedure appropriate for DPPPs with greater than 2.5 hhp. DOE has not been made aware of or received any additional data subsequent to the DPPP Working Group process that would allow it to develop a test procedure that is representative for DPPPs with greater than 2.5 hhp. If DOE determines in a final rule not to expand the scope, DOE will continue to monitor the commercial

[14] See transcript from negotiations resulting in the January 2017 ECS Direct Final Rule: Docket No. EERE-2015-BT-STD-0008, No. 95, p. 188-197; Docket No. EERE-2015-BT-STD-0008, No. 63, p. 2. See for example, presentation from negotiations: Docket No. EERE-2015-BT-STD-0008, No. 60, p. 143-147.

pool market and regulatory environment and reassess the scope of its test procedure in the future.

In addition, DOE reviewed the Worth *et al*. study cited by ASAP et al., CEC and NYSERDA, and the CA IOUs. The report recommends developing standards to support incentives for variable speed technology retrofits on pumps used in large public pools. DOE notes, however, that the report identifies several barriers to using variable speed technology pumps in public pools, including restrictive health codes as well as a lack of best practices, control technology, and training specific to the public pool industry.[15] These barriers to installing more efficient pumps in public pools suggests that lack of a DOE test procedure and accompanying energy conservation standard for DPPPs with greater than 2.5 hhp is not a key barrier hindering the achievement of pool pump efficiency in large commercial pools. DOE is also concerned that should DOE receive data allowing DOE to develop a representative test procedure for these DPPPs, developing such test procedures and standards may create conflict with health and safety codes that are applicable to most use cases for these DPPPs. DOE welcomes comment on this issue.

For the reasons discussed in this section, in this NOPR, DOE is not proposing a test procedure specific to DPPPs with hydraulic output power greater than 2.5 hhp.

DOE requests comment on its preliminary determination not to propose a test procedure specific to DPPPs with hydraulic output power greater than 2.5 hhp. DOE also requests data that would allow it to develop such a test procedure if it was determined to

[15] Worth, C., T. Rosenfeld, G. Gockel, and G. Fernstrom. "A Cannonball of Opportunity: The Hidden Savings Potential from Large Public Swimming Pools." Proceedings from the 2018 ACEEE Summer Study on Energy Efficiency in Buildings, pp. 2-3.

be warranted, including distribution of commercial pool sizes and piping, distribution of head and flow requirements across applications in consideration of current health and safety codes, and distribution of single speed and variable speed installations.

2. Pumps Subject to DOE's DPPP Enforcement Policy

The CA IOUs commented that DOE should develop a test method for the DPPPs near 2.5 hhp that meet the criteria of the DPPP Enforcement Policy, and that this criteria could be used to identify a unique equipment class of self-priming pool pumps that requires separate testing conditions from conventional self-priming pool pumps. The CA IOUs noted that the system curve C is reportedly not appropriate for testing due to larger suction and outlet side plumbing that would lower the total dynamic head for a given flow. The CA IOUs stated the current test procedure is based on system curve C, which represents approximately 2.5-inch plumbing with total dynamic head representative of residential pools. The CA IOUs stated DOE should work with industry to determine if curve D[16] or a new curve E would be a more appropriate option for these larger DPPPs (i.e., that are near 2.5 hhp but covered by the DPPP Enforcement Policy) and validate the effectiveness of the curve including the minimum gpm value. They further stated that DOE should collect data on both residential and commercial products and work with industry to estimate a suitable minimum flow requirement for the low-speed operating point for this potential equipment class. (CA IOUs, No. 10, p. 2)

[16] An Australian standard for pool pump units, AS 5102.1:2019, "Performance of household electrical appliances - Swimming pool pump-units Measurement of energy consumption and performance," uses system curve D. Additionally Pentair has referenced curve D in comments to ENERGY STAR as reflective of the hydraulic conditions of larger pools. (Available at *www.energystar.gov/sites/default/files/specs/Pentair%20Comments.pdf)*

CEC and NYSERDA recommended that DOE amend the test procedure to ensure that pumps subject to the DPPP Enforcement Policy can be appropriately tested, and that doing so would eliminate the need for the enforcement policy. (CEC and NYSERDA, No. 9, p. 1) They noted that the DPPP Enforcement Policy was only needed because the failure to consider such DPPPs by the DPPP Working Group was an oversight, and that DOE should take the opportunity to correct this oversight by amending the test procedure to appropriately test those DPPPs. *Id.* CEC and NYSERDA further stated that, as discussed in the DPPP Working Group, curve D and E[17] can be a starting point for a potential system curve for testing these DPPPs, which are not intended to run on Curve C. (CEC and NYSERDA, No. 9, p. 1)

PHTA and Fluidra commented that DOE should codify DOE's DPPP Enforcement Policy. (PHTA, No. 6, p. 14, Fluidra, No. 7, p. 2)

As discussed in section III.A of this document, the pumps subject to the DPPP Enforcement Policy are designed for commercial pool applications and exhibit head and flow characteristics that are significantly different from residential installations. These commercial applications also include a much wider range of piping system sizes and features and this range would not allow DOE to create a system curve from DOE's existing data that would be representative of these pumps. As such, the current DOE test procedure would not produce test results that are representative for pumps with hydraulic output power less than 2.5 hhp that are designed and marketed for use in commercial pool applications.

[17] Although a "curve E" was mentioned during discussions in the DPPP Working Group, DOE is not aware of a curve E having been developed or used by the pool pump industry.

In this NOPR, DOE is not establishing test procedures specific to the pumps subject to the DPPP Enforcement Policy for the same reasons described in section III.A.1 of this NOPR regarding DOE's determination not to establish test procedures for DPPPs with hydraulic output power greater than 2.5 hhp—namely: (1) because any test procedure for pumps with hydraulic output power less than 2.5 hhp that are designed and marketed for use in commercial pool applications would require unique load points and system curves, and DOE does not have sufficient data or any further information than it did at the time of the August 2017 TP Final Rule to develop a test procedure appropriate for such pumps and to consider the implications of discontinuities at the capacity boundaries, and (2) that DOE has tentatively determined that any benefits of such a test procedure would be outweighed by potential complications with health and sanitation codes.

In addition, since the test procedure would not produce results that are representative for pumps covered by DOE's DPPP Enforcement Policy, DOE is proposing to amend the test procedure scope language at 10 CFR 431.464(b)(1)(iii) to make explicit that DPPPs meeting the three criteria specified in DOE's DPPP Enforcement Policy are excluded from the scope of the test procedure, with one modification to the second criterion. The second criterion specifies that the pump have a measured performance of $\geq$ 200 gpm at 50 feet of head as determined in accordance with appendix B or C (as applicable) to subpart Y of 10 CFR part 431, section I.A.1 (When determining overall efficiency, best efficiency point, or other applicable pump energy performance information, section 40.6.5.5.1, "Test procedure"; section 40.6.6.2, "Pump efficiency"; and section 40.6.6.3, "Performance curve" must be used, as applicable.). Because DOE has tentatively determined that the DPPP test procedure is not applicable to these DPPPs, DOE is proposing to remove the reference to the DPPP test procedure

appendix and instead specify that the measured gpm performance at 50 feet of head be determined in accordance with section 40.6.5.5.1, "Test procedure" and section 40.6.6.3, "Performance curve" of HI 40.6-2021." This is not a substantive change because the revision would more explicitly reference the applicable sections of the industry standard rather than referencing the DPPP test procedure that includes those references.

Further, DOE is proposing to establish additional product-specific enforcement provisions for DPPPs at 10 CFR 429.134(i)(2) that would specify how DOE would determine whether a given pump satisfies the criteria of having a measured performance of $\geq$ 200 gpm at 50 feet of head. Specifically, DOE is proposing to specify that DOE would use section 40.6.5.5.1, "Test procedure" and section 40.6.6.3, "Performance curve" of HI 40.6-2021, to determine the flow rate or gpm of the DPPP model at 50 feet of head, and will use the mean of the measurement (either the measured flow rate for a single unit sample or the average of the measured flow rates for a multiple unit sample) to determine the applicable standard, if any. As discussed, these DPPPs are distinguished by having an orifice with inner diameter of greater than 2.85 inches; a measured performance of $\geq$ 200 gpm at 50 feet of head as determined in accordance with appendix C, and are marketed exclusively for commercial applications.

DOE requests comment on its preliminary determination not to propose a test procedure specific to DPPPs currently subject to the DPPP Enforcement Policy. DOE also requests data related to the applications these DPPPs serve including pool size, piping size, and minimum head and flow requirements. DOE also requests any data and information related to development of a curve E, as well data indicating how such a curve was determined (or could be determined) to be representative of this set of pumps. DOE

further requests comment on its proposal to amend the Scope section of the test procedure to explicitly exclude such pumps from the scope of the test procedure.

3. Certain Self-Priming Pumps and Waterfall Pumps

DOE also received comments in response to the January 2022 TP RFI regarding the application of DOE's DPPP Enforcement Policy with respect to certain self-priming pumps and waterfall pumps.

Referencing a Pentair presentation submitted to the CEC, the CA IOUs stated that some self-priming DPPPs used in residential applications meet the enforcement policy criteria when a vanishing edge water feature is present. The CA IOUs commented that DOE should revisit the criteria specifying "marketed exclusively for commercial applications" to ensure that residential DPPPs are not also adversely impacted by the DOE test procedure rating conditions. (CA IOUs, No. 10, p. 2) DOE acknowledges that one of the pumps shown in that presentation could be subject to DOE's DPPP Enforcement Policy based on performance curve alone. However, DOE believes it would be excluded from the enforcement policy based on orifice size and marketing, indicating that curve C may be more representative for this pump than for pumps subject to the enforcement policy, and that this particular pump was likely among those intended to be subject to standards. As such, DOE is not proposing any changes to the provisions of the enforcement policy as they are proposed to be applied to the scope of the test procedure, discussed in section III.A.2.

The PHTA commented that DOE should consider defining "commercial waterfall pumps" because not all such pumps meet the DPPP Enforcement Policy criteria that specifies performance of ≥ 200 gpm at 50 feet of head. The PHTA commented that DOE

should create two separate categories for "waterfall pump" to address different sizes and ensure that those intended for commercial applications are addressed differently. (PHTA, No. 6, p. 3, 14) Fluidra also commented that the commercial application of waterfall pumps should be included in the scope of DOE's DPPP Enforcement Policy. Fluidra commented that DOE should define "commercial waterfall pumps" to meet the definition of "waterfall pump" at 10 CFR 431.462 and also meet criteria 1 and 3 of the DOE's DPPP Enforcement Policy: (1) the orifice on the pump body that accepts suction side plumbing connections has an inner diameter of greater than 2.85 inches and (3) the pump is marketed exclusively for commercial applications. (Fluidra, No. 7, p. 2)

DOE notes that the definition of waterfall pump at 10 CFR 431.462 is limited to pool filter pumps with a certified maximum head less than or equal to 30.0 feet, and a maximum speed less than or equal to 1,800 rpm. Any pump with a certified maximum head less than or equal to 30.0 feet would not be capable of meeting the second criteria of the DPPP Enforcement Policy, which specifies a certain flow rate level at 50 feet of head. Therefore, a DPPP meeting the waterfall pump definition would never be included in the scope of the DOE DPPP Enforcement Policy, including as DOE proposes to codify the DPPP Enforcement Policy in this NOPR. Fluidra's proposal indicates that orifice diameter (criteria 1) and marketing (criteria 3) should be sufficient to distinguish commercial waterfall pumps from other waterfall pumps and that commercial waterfall pumps should be included in the DPPP Enforcement Policy. (Fluidra, No. 7, p. 2) DOE has tentatively determined that these conditions are not sufficient to warrant different treatment. In particular, both marketing and orifice size can be changed – for example, an adapter could be used to apply a pump with a larger orifice to a smaller pipe diameter. Furthermore, although curve C was selected as the most representative system curve for the DOE test procedure, not all DPPPs subject to the test procedure will be applied to 2.5

inch pumping. It was the combination of significantly different hydraulic conditions (in the form of the pump curve) as well as presumably different piping sizes and marketing, that was used to identify DPPPs that were hydraulically different from those considered by the DPPP Working Group and to establish the enforcement policy criteria.

For the reasons discussed, DOE has no technical basis with which to propose excluding certain waterfall pumps from the test procedure scope based solely on orifice size and marketing. Therefore, DOE has tentatively determined not to propose a separate definition for commercial waterfall pumps and to maintain the single definition at 10 CFR 431.462.

DOE further notes that no certification requirements or energy conservation standards currently apply to DPPPs meeting the current definition of waterfall pump at 10 CFR 431.462. 10 CFR 429.59; 10 CFR 431.465. When DOE selected Trial Standard Level 3 as the energy conservation standard for DPPPs, this standard did not establish a standard level for waterfall pumps. 82 FR 5650, 5663, 5715, 5735. As such, waterfall pumps as defined are subject only to the test procedure should a manufacturer choose to make representations.

B. Updates to Industry Standards

The test conditions, methods, and measurements described in appendix C reference certain sections of several industry standards, as described further throughout this section. Several of the referenced industry test standards have been updated by industry since DOE established its test procedures. The currently referenced 2014

version[18] of HI 40.6 ("HI 40.6-2014") has been updated to a 2021 version[19] ("HI 40.6-2021"); the currently referenced 2015 version[20] of NSF/ANSI 50 ("NSF/ANSI 50-2015") has been updated to a 2019 version[21] ("NSF/ANSI/CAN 50-2019"), followed by a 2020 version[22] ("NSF/ANSI/CAN 50-2020"); and the currently referenced 2014 version[23] of CSA C747-2009 ("CSA C747-2014") has been updated to a 2019 version[24] ("CSA C747-2019"). In the January 2022 TP RFI, DOE requested comment on the updated standards HI 40.6-2021 and NSF/ANSI/CAN 50-2019[25] and whether they should be incorporated by reference for the DPPP test procedure. 82 FR 3457, 3460-3461.

The PHTA stated that its members are in overall support of using the latest editions of most standards but need more time to review the latest edition of HI 40.6 to assess its impact. Regarding updating to the 2020 version of NSF/ANSI/CAN 50, PHTA stated that DOE should use this version, and Fluidra stated that use of this version is acceptable if there are no changes to the test method. (Fluidra, No. 7, p. 10; PHTA, No. 6, p. 14-15)

The PHTA and Fluidra stated that if updates to the latest editions of industry standards require re-testing, those updates would pose a significant burden to

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[18] Hydraulic Institute, *Hydraulic Institute Standard for Methods for Rotodynamic Pump Efficiency Testing,* Approved 2014.
[19] Hydraulic Institute, *Hydraulic Institute Standard for Methods for Rotodynamic Pump Efficiency Testing*, Approved February 17, 2021.
[20] NSF International, American National Standards Institute, *Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities*, Approved January 26, 2015.
[21] NSF International, American National Standards Institute, Canadian Standards Association, *Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities*, Approved 2019.
[22] NSF International, American National Standards Institute, Canadian Standards Association, *Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities*, Approved October 21, 2020.
[23] Canadian Standards Association, *Energy efficiency test methods for small* motors, Approved August 2016.
[24] Canadian Standards Association, *Energy efficiency test methods for small motors*, Approved 2019.
[25] As discussed later in this section, the 2020 version of NSF/ANSI/CAN 50 was released subsequent to the analysis conducted in support of the January 2022 TP RFI.

manufacturers. (PHTA, No. 6, p. 14-15; Fluidra, No. 7, p. 10) The PHTA stated that members would not want to invest in such a re-testing effort for existing pumps on the market, and that they presumed that any revised DPPP rule would require only new pumps to be tested to the latest editions of industry standards. (PHTA, No. 6, p. 14-15)

NSF commented that it supports retaining and updating NSF/ANSI/CAN 50 for DOE's DPPP test procedure. NSF stated that the section of NSF/ANSI/CAN 50 that is referenced in DOE's DPPP test procedure has only changed from being labeled C3 to N-3.3 and that the performance requirements in the section remain the same. (NSF, No. 4, pp. 1-2)

Appendix C states that the WEF of DPPPs must be determined in accordance with HI 40.6-2014 (with the exception of certain sections of the industry standard). Appendix C references HI 40.6-2014 with regards to equipment, test conditions and tolerances, and data collection and stabilization. DOE's review of the 2021 version of HI 40.6 indicates that updates are mainly limited to nomenclature and definitions,[26] non-substantive changes to section titles, and the inclusion of a new appendix for the testing of circulator pumps. DOE does not need to reference the new appendix for the DOE DPPP test procedure. Regarding the HI 40.6 sections referenced in appendix C of the DOE test procedure, the title of section 40.6.4, "Considerations when determining the efficiency of a pump" has been changed to "Considerations when determining the efficiency of certain pumps." Section A.7 of HI 40.6, "Testing at temperatures exceeding 30 °C (86 °F)", which the DOE test procedure currently directs not be used, has been removed. Further, in the test procedure NOPR for commercial and industrial pumps published on April 11, 2022, DOE tentatively determined that with respect to the provisions of HI 40.6-2014, the

[26] ANSI/HI 14.1-14.2 "Rotodynamic Pumps for Nomenclature and Definitions".

corresponding provisions of HI 40.6-2021 are substantively the same and that adopting such provisions would not change the current test procedure. 87 FR 21268, 21285. Based on these considerations, DOE has tentatively determined the updates in HI 40.6-2021 are non-substantive and will neither affect testing nor result in different test outcomes for the measured values of DPPPs. DOE proposes to incorporate by reference HI 40.6-2021 and update the DPPP test procedure by replacing references to HI 40.6-2014 with HI 40.6-2021. Since HI 40.6-2014 would no longer be referenced if DOE were to finalize the test procedure as proposed, DOE also proposes to remove the incorporation by reference of HI 40.6-2014 by way of replacing it with HI 40.6-2021 at 10 CFR 431.463(d)(4).

Product-specific enforcement provisions at 10 CFR 429.134(i)(2)(iv)(A) also reference appendix A and section 40.6.3.2.2 of HI 40.6-2014. For similar reasons as stated in the above paragraph, DOE proposes to replace these references to HI 40.6-2014 with references to HI 40.6-2021.

Section F of appendix C references section C.3 of appendix C of NSF/ANSI 50-2015 with regards to determining the self-priming capability of a pump, which is necessary to determine if a DPPP meets DOE's definition of a self-priming or non-self-priming pump. In the January 2022 TP RFI, DOE noted that section N-3.3 of NSF/ANSI/CAN 50-2019 is the same as section C.3 of NSF/ANSI 50-2015. 87 FR 3457, 3460-3461. Subsequent to the time of analysis of the January 2022 TP RFI, a 2020 version of the standard was released. DOE reviewed the 2020 version and has determined that, like the 2019 version, section C.3 of NSF/ANSI 50-2015 is the same as section N3-3 of NSF/ANSI/CAN 50-2020. DOE's review of the content of these sections indicates no changes. DOE has tentatively determined that updates to the latest version will neither affect testing nor result in different test outcomes for the measured values of

DPPPs. Therefore, DOE proposes to incorporate by reference NSF/ANSI/CAN 50-2020 and update the DPPP test procedure by replacing references to C.3 of NSF/ANSI 50-2015 with N-3.3 of NSF/ANSI/CAN 50-2020. DOE also proposes to remove the incorporation by reference of NSF/ANSI 50-2015 by way of replacing it with NSF/ANSI 50-2020 at 10 CFR 431.463(g)(1).

DOE did not request for comment on updating to CSA C747-2019 because it is simply a reaffirmed version of CSA C747-2014. Therefore, there are no changes to this test standards, and DOE proposes to incorporate by reference CSA C747-2019.

As discussed, the proposed updates to industry test standard references do not involve substantive changes to the test setup and methodology or impact measured values. DOE has tentatively determined that incorporation by reference of the latest versions will align DOE test procedures with the latest industry standards.

DOE requests comments on the proposal to incorporate by reference HI 40.6-2021, NSF/ANSI/CAN 50-2020, and CSA C747-2019 for appendix C.

C. Definitions

Definitions relevant to DOE's DPPP test procedure are specified at 10 CFR 431.462. In the January 2022 TP RFI, DOE requested comment on the definitions of DPPPs and DPPP varieties and whether any of the terms should be amended. In particular, DOE requested comment on whether the terms are sufficient to identify which equipment is subject to the test procedure and whether any test procedure amendments are required to ensure that all such equipment can be appropriately tested in accordance with the test procedure. 87 FR 3457, 3459.

The PHTA commented that no changes were needed to most of the existing definitions, with some exceptions. (PHTA, No. 6, p. 2)

The following sections discuss DOE's proposals to align certain DPPP definitions with definitions for DPPP motors, definitions pertaining to integral filters, and definitions pertaining to pool pump timers.

1. Aligning DPPP and DPPP Motor Definitions

On August 14, 2018, DOE received a petition submitted by a variety of entities (collectively, the "Joint Petitioners")[27] requesting that DOE issue a direct final rule to establish prescriptive standards and a labeling requirement for DPPP motors ("2018 DPPP Motor Petition").[28] Appendix A of the 2018 DPPP Motor Petition included various recommended definitions pertaining to the proposal. In response to the January 2022 TP RFI, the PHTA stated that DOE should review the misalignment of definitions in the 2018 DPPP Motor Petition and DOE's test procedure final rule for DPPP motors that went into effect September 27, 2021. (PHTA, No. 6, p. 2-3, 12)

Specifically, the PHTA stated that the variable-speed and multi-speed definitions from the 2018 DPPP Motor Petition should be included in any update to current DPPP rules, and that DOE should refer to UL 1004-10 to capture those definitions. (PHTA, No.

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[27] The petitioners included the following: The Association of Pool & Spa Professionals, Alliance to Save Energy, American Council for an Energy-Efficient Economy, Appliance Standards Awareness Project, Arizona Public Service, California Energy Commission, California Investor Owned Utilities, Consumer Federation of America, Florida Consumer Action Network, Hayward Industries, National Electrical Manufacturers Association, Natural Resources Defense Council, Nidec Motor Corporation, Northwest Power and Conservation Council, Pentair Water Pool and Spa, Regal Beloit Corporation, Speck Pumps, Texas ROSE (Ratepayers' Organization to Save Energy), Waterway Plastics, WEG Commercial Motors, and Zodiac Pool Systems.

[28] The 2018 DPPP Motor Petition is available at *www.regulations.gov/document/EERE-2017-BT-STD-0048-0014.*

6, p. 12) Fluidra commented that the 2018 DPPP Motor Petition, with all the included definitions for DPPP motors, should be adopted. (Fluidra, No. 7, p. 9)

On July 29, 2021, DOE published a final rule establishing a test procedure for DPPP motors. 86 FR 40765 ("September 2021 DPPP Motors Final Rule"). In that rule, DOE specified that the applicable definitions for DPPP motors are in Section 2 "Glossary" of UL 1004-10:2020[29] and codified this specification in 10 CFR 431.483, "Definitions." 86 FR 40765, 40769. In the September 2021 DPPP Motors Final Rule, DOE described that in the NOPR for that test procedure rulemaking, it had presented the main differences in definitions specified in UL 1004-10:2019[30] and those recommended in the 2018 DPPP Motor Petition and, further, had asked for comment on its proposal to incorporate UL 1004-10:2019. 86 FR 40765, 40769. In response, the CA IOUs, National Electrical Manufacturers Association ("NEMA") and PHTA during the comment period expressed agreement with incorporating UL 1004-10:2020. (Docket No. EERE-2017-BT-STD-0048, No. 64, p. 2; Docket No. EERE-2017-BT-STD-0048, No. 57, p. 3). DOE in the September 2021 DPPP Motors Final Rule then incorporated UL 1004-10:2020, having ascertained that this latest version made only minor editorial updates and made no changes compared to the 2019 version. 86 FR 40765, 40770.

For this NOPR, DOE reviewed and compared the definitions in Section 2 "Glossary" of UL 1004-10:2020 for DPPP motors, as referenced in 10 CFR 431.483, with the definitions in 10 CFR 431.462 that pertain to DPPPs in order to identify any differences that may create conflict or confusion. UL 1004-10:2020 defines the following terms: (1) dedicated-purpose pool pump (DPPP) motor; (2) integral cartridge-filter pool pump motor, (3) integral sand-filter pool pump motor, (4) storable electric spa

[29] UL Standards. *Pool Pump Motors,* Published February 28, 2020.
[30] UL Standards. *Pool Pump Motors,* Published July 1, 2019.

pump motor, (5) rigid-electric spa pump motor, (6) waterfall pump motor, (7) two-speed dedicated-purpose pool pump motor, (8) multi-speed dedicated-purpose pool pump motor, and (9) variable-speed control dedicated-purpose pool pump motor. DOE similarly defines each of these terms in 10 CFR 431.462, but as "pumps" without the word "motor."

The definition of dedicated-purpose pool pump motor in UL 1004-10:2020 specifies that it is an electric motor that is single-phase or poly-phase and is designed and/or marketed for use in dedicated-purpose pool pump applications. The definition of dedicated-purpose pool pump in 10 CFR 431.462 specifies different types of pumps that together comprise the broader definition of DPPP, but does not provide any specifications regarding motor components or intended applications.[31] Hence, the definition of dedicated-purpose pool pump in 10 CFR 431.462 does not conflict with the definition of dedicated-purpose pool pump motor definition in UL 1004-10:2020. Therefore, DOE has tentatively determined that the definition of dedicated-purpose pool pump in 10 CFR 431.462 does not need to be amended.

The definitions of integral cartridge-filter pool pump motor, integral sand-filter pool pump motor, and storable electric spa pump motor in UL 1004-10:2020 state that the motor is a component of the corresponding DPPP type as defined in 10 CFR 431.462. The definitions for these DPPP types in 10 CFR 431.462 do not provide any specifications regarding motor components. Hence, the definitions of integral cartridge-

[31] Dedicated-purpose pool pump is defined as comprising self-priming pool filter pumps, non-self-priming pool filter pumps, waterfall pumps, pressure cleaner booster pumps, integral sand-filter pool pumps, integral-cartridge filter pool pumps, storable electric spa pumps, and rigid electric spa pumps.

filter pool pump,[32] integral sand-filter pool pump,[33] and storable electric spa pump[34] in 10 CFR 431.462 do not conflict with the definitions of integral cartridge-filter pool pump motor, integral sand-filter pool pump motor, and storable electric spa pump motor in UL 1004-10:2020. Therefore, DOE has tentatively determined that these definitions in 10 CFR 431.462 do not need to be amended.

The definition of rigid electric spa pump motor in UL 1004-10:2020 states that the motor does not have a C-flange or square flange mounting and that it is labeled, designed, and marketed for use only in rigid electric spas as defined in 10 CFR 431.462, Subpart Y, Pumps. The definition of rigid electric spa pump in 10 CFR 431.462 specifies a different set of mounting requirements and does not include the requirement regarding end-use application.[35] DOE has tentatively determined that these differences could create conflict or confusion and that the UL 1004-10:2020 definition of rigid electric spa pump motor may cause confusion in that it may be interpreted as referring to a definition of "rigid electric spa" in 10 CFR 431.462, which does not currently exist. Hence, to align the definition of rigid electric spa pump in 10 CFR 431.462 with the definition of rigid electric spa pump motor in UL 1004-10:2020, DOE is proposing to amend the definition of rigid electric spa pump to specify that a rigid electric spa pump has a motor that does not have a C-flange or square flange mounting, and that is labeled, and designed and marketed for use only in rigid electric spas, in addition to the other criteria currently

[32] Integral cartridge-filter pool pump is defined as a pump that requires a removable cartridge filter, installed on the suction side of the pump, for operation; and the cartridge filter cannot be bypassed.
[33] Integral sand-filter pool pump is defined as a pump distributed in commerce with a sand filter that cannot be bypassed.
[34] Storable electric spa pump is defined as a pump that is distributed in commerce with one or more of the following: (1) an integral heater; and (2) an integral air pump.
[35] Rigid electric spa pump is defined as an end suction pump that does not contain an integrated basket strainer or require a basket strainer for operation as stated in manufacturer literature provided with the pump and that meets the following three criteria: (1) is assembled with four through bolts that hold the motor rear endplate, rear bearing, rotor, front bearing, front endplate, and the bare pump together as an integral unit; (2) is constructed with buttress threads at the inlet and discharge of the bare pump; and (3) uses a casing or volute and connections constructed of a non-metallic material.

specified with the existing definition of rigid electric spa pump. DOE has not identified any pump motors with C-flange or square flange mounting that are marketed exclusively for spa pumps. As such, DOE has tentatively determined that this change in definition would not change the scope of pumps captured by the definition.

DOE requests comment on its proposed revision to the definition of rigid electric spa pump, particularly with regard to whether the language regarding C-flange or square flange mounting would change the scope of pumps captured by the definition.

The definition of waterfall pump motor in UL 1004-10:2020 states that the motor must have a maximum speed less than or equal to 1,800 revolutions per minute ("RPM") and is designed and marketed for waterfall pump applications and labeled for use only with waterfall pumps. The definition of waterfall pump in 10 CFR 431.462 also specifies a maximum speed less than or equal to 1,800 RPM and additionally states that the certified maximum head must be less than or equal to 30.0 feet.[36] The specification of the maximum head in the definition of waterfall pump is not related to the motor component and therefore does not conflict or cause confusion with the definition of waterfall pump motor in UL 1004-10:2020. Therefore, DOE has tentatively determined the definition of waterfall pump in 10 CFR 431.462 does not need to be amended.

The definition of two-speed dedicated-purpose pool pump motor in UL 1004-10:2020 specifies that the pump motor is to be "provided" with a pool pump control or if without one, the pump cannot operate, among other criteria. The definition of two-speed

[36] Waterfall pump is defined as a pool filter pump with a certified maximum head less than or equal to 30.0 feet, and a maximum speed less than or equal to 1,800 rpm.

dedicated-purpose pool pump in 10 CFR 431.462 specifies that the pump is to be "distributed in commerce" with a pool pump control or if without one, the pump cannot operate, among other criteria.[37] DOE understands that the phrases "distributed in commerce" and "provided" may be intended to convey the same meaning; however, the phrase "distributed in commerce" provides greater precision that better aligns with DOE's broader regulatory definitions and statutory language in EPCA. Therefore, DOE has tentatively determined to maintain the wording "distributed in commerce" and make no amendments to the definition of two-speed dedicated-purpose pool pump in 10 CFR 431.462.

The definition of multi-speed dedicated-purpose pool pump motor in UL 1004-10:2002 contains notable differences compared to the definition of multi-speed dedicated-purpose pool pump at 10 CFR 431.462.[38] Table III.1 summarizes the differences between these definitions.

[37] Two-speed dedicated-purpose pool pump is defined as a dedicated-purpose pool pump that is capable of operating at only two different pre-determined operating speeds, where the low operating speed is less than or equal to half of the maximum operating speed and greater than zero, and must be distributed in commerce either: (1) with a pool pump control (*e.g.*, variable speed drive and user interface or switch) that is capable of changing the speed in response to user preferences; or (2) without a pool pump control that has the capability to change speed in response to user preferences, but is unable to operate without the presence of such a pool pump control.

[38] Multi-speed dedicated-purpose pool pump is defined as a dedicated-purpose pool pump that is capable of operating at more than two discrete, pre-determined operating speeds separated by speed increments greater than 100 rpm, where the lowest speed is less than or equal to half of the maximum operating speed and greater than zero, and must be distributed in commerce with an on-board pool pump control (*i.e.*, variable speed drive and user interface or programmable switch) that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times.

Table III.1 Comparison of Multi-Speed DPPP and Multi-Speed DPPP Motor Definitions

Multi-Speed DPPP Motor Definition in UL 1004-10:2020	Multi-Speed DPPP Definition at 10 CFR 431.462
Allows for the motor to be provided without an on-board pool pump motor control that meets certain defined criteria, but includes a condition that the motor is "unable to operate without the presence of" such an on-board pool pump control.	Does not allow for the pump to be provided without an on-board pool pump motor control that meets certain defined criteria.
Uses the phrase "provided" with respect to the on-board pool pump control.	Uses the phrase "distributed in commerce" with respect to the on-board pool pump control.
Specifies that a multi-speed DPPP motor is not a variable-speed DPPP motor.	Does not specify any exclusion of variable-speed DPPP.

To align the multi-speed dedicated-purpose pool pump definition at 10 CFR 431.62 with the multi-speed dedicated-purpose pool pump motor definition in UL 1004-10:2020, DOE is proposing to amend the definition of multi-speed dedicated-purpose pool pump at 10 CFR 431.62 as follows: (1) explicitly allow for the pump to be distributed in commerce without an onboard pool pump control that meets the currently defined criteria, but include a condition that the pump is unable to operate without such an on-board pool pump motor control; and (2) explicitly specify that a multi-speed dedicated-purpose pool pump is not a variable-speed dedicated purpose pool pump. DOE has tentatively determined that these additions would further clarify the definition but would not be substantive changes (*i.e.*, would not change the scope of products currently on the market that meet this definition). DOE is also proposing to maintain the phrase "distributed in commerce" since "distributed in commerce" is more precise and better aligns with DOE's broader regulatory definitions and statutory language in EPCA than the phrase "provided".

Similarly, the definition of variable-speed dedicated-purpose pool pump motor in UL 1004-10:2002 contains notable differences compared to the definition of variable-

speed dedicated-purpose pool pump at 10 CFR 431.462.[39] Table III.2 summarizes the differences between these definitions.

Table III.2 Variable-Speed DPPP and DPPP Motor Definitions

Variable-Speed DPPP Motor Definition in UL 1004-10:2020	Variable-Speed DPPP Definition at 10 CFR 431.462
Specifies the capability of operating at "four or more discrete user- or pre-determined operating speeds."	Specifies the capability of operating at "a variety of user-determined speeds."
Does not contain any specifications regarding the separation of speeds.	Requires that all the speeds are separated by at most 100 rpm increments over the operating range.
Requires that one of the operating speeds is the maximum operating speed and at least: (1) One of the operating speeds is 75% to 85% of the maximum operating speed; (2) One of the operating speeds is 45% to 55% of the maximum operating speed; and (3) One of the operating speeds is less than or equal to 40% of the maximum operating speed and greater than zero.	Requires that the lowest operating speed is less than or equal to one-third of the maximum operating speed and greater than zero.
Uses the phrase "provided" with respect to the user interface.	Uses the phrase "distributed in commerce" with respect to the user interface.
Requires that the motor without a variable speed drive, and with or without a user interface, must be unable to operate without the presence of a variable speed drive.	No such specification regarding motor without variable speed drive.
Requires that any high-speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings or resuming normal operating according to pre-programmed user preferences.	No such specification regarding high-speed override capability.
Includes the following requirements regarding the daily run time schedule: (1) any factory default setting for daily run time shall not include more hours at an operating speed above 55% of maximum operating speed than the hours at or below 55% of maximum operating speed; (2) If a motor is not provided with a factory default setting for daily run time schedule, the default operating speed after any priming cycle as defined in 10 CFR, Part 431 Subpart Y, (if applicable) shall be no greater than 55% of the maximum operating speed.	No such requirements regarding daily run time schedule.

[39] Variable-speed dedicated-purpose pool pump is defined as a dedicated-purpose pool pump that is capable of operating at a variety of user-determined speeds, where all the speeds are separated by at most 100 rpm increments over the operating range and the lowest operating speed is less than or equal to one-third of the maximum operating speed and greater than zero. Such a pump must include a variable speed drive and be distributed in commerce either: (1) with a user interface that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times; or (2) without a user interface that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times, but is unable to operate without the presence of a user interface.

To align the variable-speed dedicated-purpose pool pump definition at 10 CFR 431.62 with the variable-speed dedicated-purpose pool pump motor definition in UL 1004-10:2020, DOE is proposing to amend the definition of variable-speed dedicated-purpose pool pump at 10 CFR 431.62 as follows: (1) require the pump to be capable of operating at 4 or more speeds instead of "a variety of" speeds; (2) remove the specification that the speeds be no more than 100 RPM increments apart; (3) replace the specification that the lowest speed be one-third of the maximum operating speed with the speed requirements specified in the UL 1004-10:2020 definition; (4) maintain the phrase "distributed in commerce" rather than "provided", for the reasons previously described; (5) specify that with or without a user interface, the pump cannot operate without the variable speed drive; (6) add specifications regarding high-speed override capability consistent with the specifications provided in the UL 1004-10:2020 definition; and (7) add specifications regarding daily run time schedule consistent with the specifications provided in the UL 1004-10:2020 definition.

These amendments to the definition of variable-speed dedicate-purpose pool pump could change whether a DPPP is classified as being multi-speed or variable speed. However, because the DPPP test procedure for multi-speed and variable-speed dedicated-purpose pool pumps is the same, DOE has tentatively determined this would not result in any changes to measured values. In summary, DOE is proposing to amend the definition of variable-speed dedicated-purpose pool pump at 10 CFR 431.62 to align with the definition of variable-speed dedicated-purpose pool pump motor in UL 1004-10. This amendment would ensure that both the motor and the pump itself are categorized as variable-speed based on the same set of criteria.

DOE requests comments on whether any DPPPs currently on the market that meet the existing definition of variable-speed dedicated-purpose pool pump but that would not meet the proposed amended definition. DOE requests comment on whether the proposed amendments would change how any specific DPPP models are currently tested, and if so, how. In particular, DOE also requests comment on the necessity of including specifications related to high-speed override capability and daily run time schedule in the variable-speed dedicated-purpose pool pump definition.

Additionally, the terms "designed and marketed"[40] and "dedicated-purpose pool pump motor total horsepower"[41] are defined in both UL 1004-10:2020 and 10 CFR 431.462. The term "designed and marketed" is defined and used in the definition of pressure cleaner booster pump in 10 CFR 431.462, which is not defined in UL 1004-10:2020. Hence, DOE has tentatively determined that there is no conflict that requires amendment of the definition for designed and marketed. The definition of dedicated-purpose pool pump motor total horsepower in UL 1004-10:2020 specifies that total horsepower be "calculated in accordance with the method provided in Section E.3.4 of appendix C of 10 CFR part 431, Subpart Y, Pumps." This instruction is consistent with the requirements of the current DOE test procedure.[42] Therefore, to provide further consistency between UL 1004-10:2020 and DOE's test procedure, DOE proposes to

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[40] "Designed and marketed" means that the equipment is designed to fulfill the indicated application and, when distributed in commerce, is designated and marketed for that application, with the designation on the packaging and any publicly available documents (*e.g.*, product literature, catalogs, and packaging labels). 10 CFR 431.462.

[41] Dedicated-purpose pool pump motor total horsepower means the product of the dedicated-purpose pool pump nominal motor horsepower and the dedicated-purpose pool pump service factor of a motor used on a dedicated-purpose pool pump based on the maximum continuous duty motor power output rating allowable for the motor's nameplate ambient rating and insulation class. (Dedicated-purpose pool pump motor total horsepower is also referred to in the industry as service factor horsepower or motor capacity.) 10 CFR 431.462.

[42] Section E.3.4 of appendix C specifies determining the dedicated-purpose pool pump motor total horsepower according to section E.3.4.1 of appendix C for dedicated-purpose pool pumps with single-phase AC motors or DC motors and section E.3.4.2 of appendix C for dedicated-purpose pool pumps with polyphase AC motors.

specify in the definition of dedicated-purpose pool pump motor total horsepower in 10 CFR 431.462 that total horsepower is calculated in accordance with the method provided in section E.3.4 of DOE's DPPP test procedure.

UL 1004-10:2020 also defines the terms "drive"[43] and "maximum operating speed".[44] In 10 CFR 431.462, the term "drive" is used as part of the term "variable speed drive," but is not defined separately. Similarly, the term "maximum operating speed" is used within the definitions of two-speed dedicated-purpose pool pump, variable-speed dedicated-purpose pool pump, and multi-speed dedicated-purpose pool pump in 10 CFR 431.462, but is not separately defined. To improve the comprehensiveness of the definitions in 10 CFR 431.462 and to further align with UL 1004-10:2020, DOE is proposing to add definitions for the terms "drive" and "maximum operating speed" consistent with how these terms are defined in UL 1004-10:2020.

UL 1004-10:2020 also defines the following terms that are not defined at 10 CFR 431.462: "capacitor-start," "induction-run," "designed and/or marketed," "factory default setting," and "split phase." These terms are not used in the DPPP test procedure. Therefore, DOE has tentatively determined that there is no need to include them at 10 CFR 431.462 for DPPPs.

DOE requests comment on its proposed amendments to definitions in 10 CFR 431.462 for rigid electric spa pumps, multi-speed dedicated-purpose pool pump, variable-speed dedicated-purpose pool pump, and dedicated-purpose pool pump motor total horsepower. DOE requests comment on its proposal to add definitions in 10 CFR

[43] Drive is defined in UL 1004-10:2020 as a power converter, such as a variable-speed drive or phase-converter.
[44] Maximum operating speed is defined in UL 1004-10:2020 as the rated full-load speed of a motor powered by a 60 Hz alternating current (AC) source.

431.462 for drive and maximum operating speed. DOE requests comment whether the proposed amendments would change how DPPP models are currently tested, and if so, how.

2. Integral Filters

DOE defines two types of DPPPs, integral cartridge-filter pool pump[45] and integral sand-filter pool pump,[46] as pool pumps for which the filter cannot be bypassed. 10 CFR 431.462. These two definitions depend on the defined term "integral"[47] and also on the currently undefined term "bypassed." The definitions of these pump varieties do not explicitly provide whether removing the filtration media constitutes bypassing the filter. In the January 2022 TP RFI, DOE requested comment on whether it should define the term "bypass" and whether it should provide additional detail for the definition of the term "integral." 87 FR 3457, 3459.

The PHTA commented that the term "integral" was specified for pumps in which the filtration apparatus cannot be bypassed so that only the motor efficiency can be isolated for testing. (PHTA, No. 6, p. 13) The PHTA added that based on industry experience, use of the term "bypass" in the definition of integral is easy to understand and labs do not have an issue in determining whether a motor can be bypassed from the filtration medium for testing. (PHTA, No. 6, p. 13)

Considering this comment from PHTA, DOE has tentatively determined that the definitions of integral, integral cartridge-filter pool pump, and integral sand-filter pool

[45] Integral cartridge-filter pool pump means a pump that requires a removable cartridge filter, installed on the suction side of the pump, for operation; and the cartridge filter cannot be bypassed.
[46] Integral sand-filter pool pump means a pump distributed in commerce with a sand filter that cannot be bypassed.
[47] Integral means a part of the device that cannot be removed without compromising the device's function or destroying the physical integrity of the unit. 10 CFR 431.462.

pump are sufficient in identifying whether a pool pump constitutes an integral cartridge-filter pool pump or integral sand-filter pool pump, and that defining the term "bypassed" or any other associated terminology is not necessary.

DOE requests comments on its tentative determination that amendments to the definitions of integral, integral cartridge-filter pool pump, and integral sand-filter pool pump are not necessary, and that a new definition for the term "bypassed" is not necessary.

3. Pool Pump Timers

The energy conservation standards for integral cartridge-filter pool pumps and integral sand-filter pool pumps at 10 CFR 431.465 require that each pump that is manufactured starting on July 19, 2021 must be distributed in commerce with a pool pump timer that is either integral to the pump or a separate component shipped with the pump. 10 CFR 431.465(g). The term ''pool pump timer'' is defined as a pool pump control that automatically turns off a DPPP after a run-time of no longer than 10 hours. 10 CFR 431.462.

In the January 2022 TP RFI, DOE requested comment on whether it should provide additional detail in the definitions of pool pump timers and integral filter housings regarding the requirements of the pool pump timer. 87 FR 3457, 3459. The PHTA commented that the definition of "pool pump timer" could be further clarified to specify that it only applies to integral cartridge filter pumps and integral sand filter pumps. (PHTA, No. 6, p. 12)

The term "pool pump timer," aside from being defined in 10 CFR 431.462, is referenced by DOE only at 10 CFR 431.465(g). As described, the design requirements specified at 10 CFR 431.465(g) pertain only to integral cartridge filter pool pumps and integral sand filter pool pumps. Although the term is only used by DOE in reference to integral cartridge filter pool pumps and integral sand filter pool pumps, DOE has tentatively concluded that it is not necessary to limit the definition of pool pump timer to only these two types of DPPPs. Therefore, DOE has tentatively determined that further clarification of the definition of pool pump timer is not needed

D. Test Method for Pressure Cleaner Booster Pumps

The current DOE test procedure requires testing pressure cleaner booster pumps at one load point specified for a flow of 10.0 gpm, a head of greater than or equal to 60 feet, and the lowest speed capable of meeting the specified flow and head values. (See Table 1 of appendix C.)

The CA IOUs commented in response to the January 2022 TP RFI that DOE should specify a low-flow and high-flow operating test point for the pressure cleaner booster pumps to account for installations where the pump is easily able to overcome the head pressure to support the pressure cleaner. The CA IOUs commented that this method would enable DOE to consider more representative field operation of these products when estimating national impact savings. The CA IOUs further commented that a study it previously presented to DOE[48] had reported that pressure cleaner booster pumps require 8 or less gpm between 32 to 51 feet of head, meaning DOE's test point at 60 feet of head would be higher than needed for some installations. The CA IOUs stated that

[48] *www.regulations.gov/document/EERE-2015-BT-STD-0008-0061*

pressure cleaners use a relief/bypass valve to reduce the cleaner wheel operating speed to the desired conditions (*i.e.,* 30 RPM) and, therefore, the additional energy to the unit is not providing consumer amenity. The CA IOUs also provided an example of an instrumented pool that has a measured total system head of 13 feet at a filtration flow rate of 31.7 gpm and noted that the DOE test procedure assumes pressure cleaner booster pump head requirements will not be below 60 feet. (CA IOUs, No. 10, p. 4-5)

DOE notes that the DPPP Working Group when providing their 2015 recommendations for the DPPPs test procedure had recommended a single, fixed load point of 90 feet of head at maximum speed for pressure cleaner booster pumps because any given pressure-side pool cleaner application is typically a single, fixed load point. (Docket No. EERE-2015-BT-STD-0008, No. 51, Recommendations #6); 81 FR 64580, 64611. This test point was proposed as sufficiently representative of typical cleaner booster pump operation and achievable by the models available at that time, but the DPPP Working Group noted field conditions were variable and operating conditions would depend on application of the pump. 81 FR 64580, 64611. In discussions with the DPPP Working Group, the CA IOUs had also presented data supporting the potential for variable-speed pressure cleaner booster pumps to reduce speed and provide the requisite flow rate and cleaner operating speed at lower head values. (Docket No. EERE-2015-BT-STD-0008, CA IOUs, No. 69); 81 FR 64580, 64611-64612. To better capture the potential for variable performance of pressure cleaner booster pumps, including variable speed pressure cleaner booster pumps, the DPPP Working Group revised its original recommendation for testing at a fixed head of 90 feet, instead suggesting in their June 2016 recommendations testing at a single load point of 10 gpm at the minimum speed that results in a head value at or above 60 feet, which was identified as the minimum optimum pool design. (Docket No. 2015-BT-STD-0008, No. 82, Recommendation #8 at

p. 4-5) DOE agreed with this recommendation but proposed in the 2016 TP NOPR to more precisely specify the load point as a flow rate of 10.0 gpm and a head value at or above 60.0 feet. 81 FR 64580, 64612. In the August 2017 TP Final Rule, DOE stated that the DPPP Working Group had noted that the suction-side pressure cleaner apparatus typically recommends a specific flow rate that allows the equipment to operate correctly and had accordingly selected 10 gpm. 82 FR 36858, 36885-36886. Further, once that flow and head value are achieved, the pressure cleaner booster pumps will operate at only that one load point. *Id*.

The CA IOUs have not presented significant information that was not considered by the DPPP Working Group, other than a measurement from a single instrumented pool, that indicates that some pools may have a head below 60 feet. The current test point of 10 gpm at 60 feet or above was selected after considering the CA IOUs' study, which measured variable speed pump operation at 54 feet of head in a pool which was noted to have the optimum 1.5 inch piping and minimum hose length.[49] In discussing that study, the CA IOUs also reported that the curves for the pressure cleaners (of which there were only three) showed a requirement of 8 or less gpm between 32 to 51 feet of head but ignore the pipe in between.[50] DOE has not identified or been provided with any new technical justification for allowing testing of pressure cleaner booster pumps below 60 feet of head, or for determining that 10 gpm is not a reasonable minimum flow rate. The current test method allows for potential variable-speed pressure cleaner booster pumps to operate at lower speed and lower head value than a single speed pump while still providing the necessary 10 gpm. Therefore, DOE has tentatively determined not to amend the test method for pressure cleaner booster pumps. DOE also notes that it is

[49] Docket No. EERE-2015-BT-STD-0008, No. 100, p. 187-188.
[50] *Id*.

typical for an energy use analysis to account for a variety of installations other than that which the test procedure identifies as representative; as such, the DOE test procedure both allows differentiation in WEF for variable speed pressure cleaner booster pumps and does not limit any potential related energy conservation standards analysis.

DOE requests comments on its tentative determination not to amend the test method for pressure cleaner booster pumps, and specifically any additional field data indicating appropriate head and flow values for testing these pumps.

E. Removing Appendix B

As discussed, DOE's energy conservation standards are based on the WEF metric. However, as discussed in the 2017 rulemaking, the DPPP Working Group noted the importance of the energy factor ("EF") metric in making product selections for specific applications or making energy saving calculations in support of utility programs. 82 FR 36858, 36895. To prevent confusion by allowing EF as an optional alternative metric, DOE established both appendix B, which specified test procedures for determining both EF and WEF, and appendix C which specified test procedures only for determining WEF. DOE required manufacturers to make representations with respect to energy use or efficiency of DPPPs based on appendix B between February 5, 2018 and July 19, 2021. DOE also specified that any optional representations of EF must be accompanied by a representation of WEF. 82 FR 36858, 36896. DOE then required that any representations made on or after July 19, 2021 with respect to the energy use or efficiency of dedicated-purpose pool pumps subject to testing pursuant to 10 CFR 431.464(b) be made in accordance with the results of testing pursuant to appendix C, which specifies test procedures only for the WEF metric. *Id.*

As a result of the time limit applicable to appendix B, representations of EF are no longer relevant to DPPPs. Therefore, DOE proposes to remove appendix B as obsolete and to rename the current appendix C as appendix B. As such, updates proposed in this NOPR that apply to the current appendix C would be implemented as new appendix B.

F. Reporting

Manufacturers, including importers, must use product-specific certification templates to certify compliance to DOE. For DPPPs, the certification template reflects the general certification requirements specified at 10 CFR 429.12 and the product-specific requirements specified at 10 CFR 429.59. DOE is not proposing to amend the product-specific certification requirements for these products.

G. Test Procedure Costs and Harmonization

1. Test Procedure Costs and Impact

In this NOPR, DOE proposes to amend the existing test procedure for DPPPs by (1) codifying DOE's current enforcement policy pertaining to DPPPs that cannot be appropriately tested by the DOE test procedure; (2) updating references to industry test standards to reflect current industry practices; (3) aligning DOE's DPPP definitions with DOE's corresponding DPPP motor definitions; and (4) removing the current test procedure at appendix B, which is obsolete. DOE has tentatively determined that these proposed amendments would not impact testing costs.

DOE is proposing to update the currently referenced 2014 version of HI 40.6-2014 to the 2021 version and the currently referenced 2015 version of NSF/ANSI 50 to

the 2020 version. As discussed in section III.B of this NOPR, DOE has determined that updates to the latest versions of these industry standards will not change measured values.

DOE is proposing to remove the current appendix B, which provides instruction on calculating EF, a metric that is not required by DOE standards or certification (see section I.A of this NOPR). Hence, this change will not have any impact on measured values of WEF, the currently required metric.

Finally, DOE is proposing to align the DOE's DPPP definitions with DOE's DPPP motor definition (see section III.C.1 of this NOPR). As discussed, DOE has tentatively concluded that these proposed amendments to definitions will not impact how manufacturers are currently testing DPPPs.

In summary, DOE has tentatively determined that the proposed amendments would not impact the representations of DPPPs energy efficiency or energy use. DOE has tentatively determined that manufacturers would be able to rely on data generated under the current test procedure, should the proposed amendments be finalized. As such, DOE does not expect retesting of DPPPs would be required solely as a result of DOE's adoption of the proposed amendments to the test procedure.

DOE requests comment on the impact and associated costs of the proposed amendments in this NOPR.

2. Harmonization with Industry Standards

DOE's established practice is to adopt relevant industry standards as DOE test procedures unless such methodology would be unduly burdensome to conduct or would

not produce test results that reflect the energy efficiency, energy use, water use (as specified in EPCA), or estimated operating costs of that product during a representative average use cycle. 10 CFR 431.4; Section 8(c) of appendix A of 10 CFR part 430 subpart C. In cases where the industry standard does not meet EPCA statutory criteria for test procedures, DOE will make modifications through the rulemaking process to these standards as the DOE test procedure.

The test procedures for DPPPs at 10 CFR 431.464(b) and appendix C to subpart Y of part 431 incorporates by reference HI 40.6-2014, which specifies the test conditions and methods for testing the efficiency of pumps, and NSF/ANSI 50-2015, which specifies how to determine the self-priming capability of a pump—information needed to ensure the appropriate test procedure is used for DPPP self-priming and non-self-priming pumps. DOE is proposing to update HI 40.6-2014 to its latest 2021 version and NSF/ANSI 50-2015 to its latest 2020 NSF/ANSI/CAN 50 version. The industry standards DOE proposes to incorporate by reference via amendments described in this proposed rule are discussed in further detail in section IV.M.

DOE requests comments on the benefits and burdens of the proposed updates and additions to industry standards referenced in the test procedure for DPPPs.

H. Compliance Date

EPCA prescribes that if DOE amends a test procedure, all representations of energy efficiency and energy use, including those made on marketing materials and product labels, must be made in accordance with that amended test procedure, beginning 180 days after publication of such a test procedure final rule in the *Federal Register*. (42 U.S.C. 6314(d)(1)) If DOE were to publish an amended test procedure, EPCA provides

an allowance for individual manufacturers to petition DOE for an extension of the 180-day period if the manufacturer may experience undue hardship in meeting the deadline. (42 U.S.C. 6314(d)(2)) To receive such an extension, petitions must be filed with DOE no later than 60 days before the end of the 180-day period and must detail how the manufacturer will experience undue hardship. (*Id.*)

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Executive Order ("E.O.")12866, "Regulatory Planning and Review," as supplemented and reaffirmed by E.O. 13563, "Improving Regulation and Regulatory Review," 76 FR 3821 (Jan. 21, 2011), requires agencies, to the extent permitted by law, to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public. DOE emphasizes as well that E.O. 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In

its guidance, the Office of Information and Regulatory Affairs ("OIRA") in the Office of Management and Budget ("OMB") has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, this proposed regulatory action is consistent with these principles.

Section 6(a) of E.O. 12866 also requires agencies to submit "significant regulatory actions" to OIRA for review. OIRA has determined that this proposed regulatory action does not constitute a "significant regulatory action" under section 3(f) of E.O. 12866. Accordingly, this action was not submitted to OIRA for review under E.O. 12866.

B. 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") 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 Executive Order 13272, "Proper Consideration of Small Entities in Agency Rulemaking," 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website: *www.energy.gov/gc/office-general-counsel*.

DOE notes that the Regulatory Flexibility Act requires analysis of, in particular, "small entities" that might be affected by the rule. For the DPPP manufacturing industry,

the Small Business Administration ("SBA") has set a size threshold, which defines those entities classified as "small businesses" for the purpose of the statute. DOE used the SBA's size standards to determine whether any small entities would be required to comply with the rule. The size standards are codified at 13 CFR part 121. The 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*.

DPPP manufacturers are classified under NAICS 333914, "Measuring, Dispensing, and Other Pumping Equipment Manufacturing." The SBA sets a threshold of 750 employees or less for an entity to be considered as a small business for this category. To determine the number of DPPP manufacturers that are small businesses and might be differentially affected by the rule, DOE reviewed these data to determine whether the entities met the SBA's definition of a small business manufacturer of DPPPs and then screened out companies that do not offer equipment covered by this rulemaking, do not meet the definition of a "small business," are foreign-owned and operated, or are owned by another company.

DOE conducted a focused inquiry into small business manufacturers of the DPPPs covered by this rulemaking. DOE used available public information to identify potential small manufacturers. DOE accessed the Compliance Certification Database,[51] California Energy Commission's certification database,[52] and ENERGY STAR's product database[53] to create a list of companies that import or otherwise manufacture the DPPPs

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[51] U.S. Department of Energy Compliance Certification Database, available at: *www.regulations.doe.gov/certification-data*

[52] California Energy Commission's Modernized Appliance Efficiency Database System, available at: *cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx*

[53] ENERGY STAR's product database, available at: *www.energystar.gov/products/pool_pumps*

covered by this proposal. DOE identified a total of 32 companies that manufacturer or sell DPPPs covered by this proposal in the United States. Of these companies, 15 are original equipment manufacturers ("OEMs") that manufacturer these covered products; the other 17 companies are re-branders or private labelers that are not OEMs and out-source the production of the DPPPs they sell to other manufacturers. Of the 15 OEMs, 3 meet SBA's definition of a small business.

As discussed in section III.G.1 of this NOPR, DOE tentatively determined that the proposed amendments would not impact representations of DPPP energy efficiency or energy use and that DPPP manufacturers would be able to rely on data generated under the current test procedure, should the proposed amendments be finalized. Based on this initial determination, DOE tentatively determines that no DPPP manufacturers, including those that meet SBA's definition of a small business, would incur any additional costs due solely to this proposed test procedure, if finalized. Therefore, DOE initially concludes that the impacts of the proposed test procedure amendments proposed in this NOPR would not have a "significant economic impact on a substantial number of small entities," and that the preparation of an IRFA is not warranted. 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).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of DPPPs must certify to DOE that their products comply with any applicable energy conservation standards. To certify compliance, manufacturers must first obtain test data for their products according to the DOE test procedures, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and

commercial equipment, including DPPPs. (*See generally* 10 CFR part 429.) The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act ("PRA"). This requirement has been approved by OMB under OMB control number 1910-1400. Public reporting burden for the certification is estimated to average 35 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

DOE is not proposing to amend the certification or reporting requirements for DPPP in this NOPR.

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

D. Review Under the National Environmental Policy Act of 1969

In this NOPR, DOE proposes test procedure amendments that it expects will be used to develop and implement future energy conservation standards for DPPPs. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, DOE has determined that adopting test procedures for measuring energy efficiency of consumer products and industrial equipment is consistent with activities identified in 10 CFR part

1021, appendix A to subpart D, A5 and A6. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E. Review Under Executive Order 13132

Executive Order 13132, "Federalism," 64 FR 43255 (Aug. 4, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have federalism implications. The Executive order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this proposed rule and has determined that it would not have a substantial, direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

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

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 ("UMRA") requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. 104-4, sec. 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the

expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at *energy.gov/gc/office-general-counsel*. DOE examined this proposed rule according to UMRA and its statement of policy 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 these requirements do not apply.

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

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

I. Review Under Executive Order 12630

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

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

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note), provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). Pursuant to OMB Memorandum M-19-15, Improving Implementation of the Information Quality Act (April 24, 2019), DOE published updated guidelines which are available at *www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IQA%20Guidelines%20Dec%202019.pdf*. DOE has reviewed this proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB a Statement of Energy Effects for any proposed significant energy action. A "significant energy action" is defined as any action

by an agency that promulgated or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

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

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

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; "FEAA") Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission ("FTC") concerning the impact of the commercial or industry standards on competition.

The proposed modifications to the test procedure for DPPPs would incorporate testing methods contained in certain sections of the following commercial standards: (1) HI 40.6-2021, "Hydraulic Institute Standard for Methods for Rotodynamic Pump Efficiency Testing" and (2) NSF/ANSI/CAN 50 - 2020, "Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities."

DOE has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 32(b) of the FEAA (*i.e.*, whether it was developed in a manner that fully provides for public participation, comment, and review). DOE will consult with both the Attorney General and the Chairman of the FTC concerning the impact of these test procedures on competition prior to prescribing a final rule.

M. Description of Materials Incorporated by Reference

HI 40.6-2021 is an industry-accepted test standard that provides test conditions and methods for measuring the efficiency of pumps. The test procedure proposed in this NOPR references various sections of HI 40.6-2021 that address test conditions and methods. This test standard is reasonably available from the Hydraulic Institute (*www.pumps.org*).

NSF/ANSI/CAN 50-2020 is an industry-accepted test standard that provides test methods for determining self-priming capabilities of pumps. The test procedure proposed in this NOPR references various sections of HI 40.6-2021 that address test conditions and methods. This test standard is reasonably available from the NSF Bookstore (www.techstreet.com/nsf), ANSI (*www.ansi.org*) or the Standards Council of Canada (*www.scc.ca/en/welcome-standards-store*).

CSA C747-2019 is an industry-accepted test standard that provides test methods for measuring the efficiency of small motors. The test procedure proposed in this NOPR references various sections of CSA C747-2019 that address test conditions and methods. This test standard is reasonably available from ANSI (*www.ansi.org*) or CSA Group (*www.csagroup.org*).

The following standards were previously approved for incorporation by reference in the locations where they appear in the regulatory text: IEEE 114-2010, and IEEE 113-1985. The following standard was previously approved for incorporation by reference in a location which is being redesignated: HI 41.5-2022.

V. Public Participation

A. Participation in the Webinar

The time and date of the webinar meeting are listed in the **DATES** section at the beginning of this document. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published on DOE's website: *www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=67*. Participants are responsible for ensuring their systems are compatible with the webinar software.

B. Procedure for Submitting Prepared General Statements for Distribution

Any person who has an interest in the topics addressed in this proposed rule, or who is representative of a group or class of persons that has an interest in these issues, may request an opportunity to make an oral presentation at the webinar. Such persons

may submit to *ApplianceStandardsQuestions@ee.doe.gov*. Persons who wish to speak should include with their request a computer file in WordPerfect, Microsoft Word, PDF, or text (ASCII) file format that briefly describes the nature of their interest in this proposed rulemaking and the topics they wish to discuss. Such persons should also provide a daytime telephone number where they can be reached.

DOE requests persons selected to make an oral presentation to submit an advance copy of their statements at least two weeks before the webinar. At its discretion, DOE may permit persons who cannot supply an advance copy of their statement to participate, if those persons have made advance alternative arrangements with the Building Technologies Office. As necessary, requests to give an oral presentation should ask for such alternative arrangements.

C. Conduct of the Webinar

DOE will designate a DOE official to preside at the webinar/public meeting and may also use a professional facilitator to aid discussion. The meeting will not be a judicial or evidentiary-type public hearing, but DOE will conduct it in accordance with section 336 of EPCA (42 U.S.C. 6306). A court reporter will be present to record the proceedings and prepare a transcript. DOE reserves the right to schedule the order of presentations and to establish the procedures governing the conduct of the webinar. There shall not be discussion of proprietary information, costs or prices, market share, or other commercial matters regulated by U.S. anti-trust laws. After the webinar and until the end of the comment period, interested parties may submit further comments on the proceedings and any aspect of the rulemaking.

The webinar will be conducted in an informal, conference style. DOE will present a general overview of the topics addressed in this proposed rulemaking, allow time for prepared general statements by participants, and encourage all interested parties to share their views on issues affecting this proposed rulemaking. Each participant will be allowed to make a general statement (within time limits determined by DOE) before the discussion of specific topics. DOE will allow, as time permits, other participants to comment briefly on any general statements.

At the end of all prepared statements on a topic, DOE will permit participants to clarify their statements briefly. Participants should be prepared to answer questions by DOE and by other participants concerning these issues. DOE representatives may also ask questions of participants concerning other matters relevant to this rulemaking. The official conducting the webinar/public meeting will accept additional comments or questions from those attending, as time permits. The presiding official will announce any further procedural rules or modification of the above procedures that may be needed for the proper conduct of the webinar.

A transcript of the webinar will be included in the docket, which can be viewed as described in the *Docket* section at the beginning of this proposed rule. In addition, any person may buy a copy of the transcript from the transcribing reporter.

D. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule before or after the public meeting, but no later than the date provided in the **DATES**

section at the beginning of this proposed rule.[54] 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.

Submitting comments via www.regulations.gov. The *www.regulations.gov* webpage 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

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[54] DOE has historically provided a 75-day comment period for test procedure NOPRs pursuant to the North American Free Trade Agreement, U.S.-Canada-Mexico ("NAFTA"), Dec. 17, 1992, 32 I.L.M. 289 (1993); the North American Free Trade Agreement Implementation Act, Pub. L. 103-182, 107 Stat. 2057 (1993) (codified as amended at 10 U.S.C.A. 2576) (1993) ("NAFTA Implementation Act"); and Executive Order 12889, "Implementation of the North American Free Trade Agreement," 58 FR 69681 (Dec. 30, 1993). However, on July 1, 2020, the Agreement between the United States of America, the United Mexican States, and the United Canadian States ("USMCA"), Nov. 30, 2018, 134 Stat. 11 (*i.e.*, the successor to NAFTA), went into effect, and Congress's action in replacing NAFTA through the USMCA Implementation Act, 19 U.S.C. 4501 *et seq*. (2020), implies the repeal of E.O. 12889 and its 75-day comment period requirement for technical regulations. Thus, the controlling laws are EPCA and the USMCA Implementation Act. Consistent with EPCA's public comment period requirements for consumer products, the USMCA only requires a minimum comment period of 60 days. Consequently, DOE now provides a 60-day public comment period for test procedure NOPRs.

only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *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* 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* 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* 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.* 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 on 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, 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).

E. Issues on Which DOE Seeks Comment

Although DOE welcomes comments on any aspect of this proposal, DOE is particularly interested in receiving comments and views of interested parties concerning the following issues:

(1) DOE requests comment on its preliminary determination not to propose a test procedure specific to DPPPs with hydraulic output power greater than

2.5 hhp. DOE also requests data that would allow it to develop such a test procedure if it was determined to be warranted, including distribution of commercial pool sizes and piping, distribution of head and flow requirements across applications in consideration of current health and safety codes, and distribution of single speed and variable speed installations.

(2) DOE requests comment on its preliminary determination not to propose a test procedure specific to DPPPs currently subject to the DPPP Enforcement Policy. DOE also requests data related to the applications these DPPPs serve including pool size, piping size, and minimum head and flow requirements. DOE also requests any data and information related to development of a curve E, as well data indicating how such a curve was determined (or could be determined) to be representative of this set of pumps. DOE further requests comment on its proposal to amend the Scope section of the test procedure to explicitly exclude such pumps from the scope of the test procedure.

(3) DOE requests comments on the proposal to incorporate by reference HI 40.6-2021, NSF/ANSI/CAN 50-2020, and CSA C747-2019 for appendix C.

(4) DOE requests comment on its proposed revision to the definition of rigid electric spa pump, particularly with regard to whether the language regarding C-flange or square flange mounting would change the scope of pumps captured by the definition.

(5) DOE requests comments on whether any DPPPs currently on the market that meet the existing definition of variable-speed dedicated-purpose pool pump but that would not meet the proposed amended definition. DOE requests comment on whether the proposed amendments would change how any

specific DPPP models are currently tested, and if so, how. In particular, DOE also requests comment on the necessity of including specifications related to high-speed override capability and daily run time schedule in the variable-speed dedicated-purpose pool pump definition.

(6) DOE requests comment on its proposed amendments to definitions in 10 CFR 431.462 for rigid electric spa pumps, multi-speed dedicated-purpose pool pump, variable-speed dedicated-purpose pool pump, and dedicated-purpose pool pump motor total horsepower. DOE requests comment on its proposal to add definitions in 10 CFR 431.462 for drive and maximum operating speed. DOE requests comment whether the proposed amendments would change how DPPP models are currently tested, and if so, how.

(7) DOE requests comments on its tentative determination that amendments to the definitions of integral, integral cartridge-filter pool pump, and integral sand-filter pool pump are not necessary, and that a new definition for the term “bypassed” is not necessary.

(8) DOE requests comments on its tentative determination not to amend the test method for pressure cleaner booster pumps, and specifically any additional field data indicating appropriate head and flow values for testing these pumps.

(9) DOE requests comment on the impact and associated costs of the proposed amendments in this NOPR.

(10) DOE requests comments on the benefits and burdens of the proposed updates and additions to industry standards referenced in the test procedure for DPPPs.

Additionally, DOE welcomes comments on other issues relevant to the conduct of this rulemaking that may not specifically be identified in this document.

VI. Approval of the Office of the Secretary

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

List of Subjects

10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Incorporation by reference, Reporting and recordkeeping requirements.

10 CFR Part 431

Administrative practice and procedure, Confidential business information, Energy conservation test procedures, Incorporation by reference, and Reporting and recordkeeping requirements.

Signing Authority

This document of the Department of Energy was signed on October 28, 2022, by Francisco Alejandro Moreno, Acting 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 November 2, 2022.

Treena V. Garrett
Federal Register Liaison Officer,
U.S. Department of Energy

For the reasons stated in the preamble, DOE is proposing to amend parts 429 and 431 of Chapter II of Title 10, Code of Federal Regulations as set forth below:

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

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

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

* * * * *

2. Amend §429.4 by revising paragraph (d)(1) to read as follows:

§429.4 Materials incorporated by reference.

* * * * *

(d) * * *

(1) HI 40.6-2021, *Hydraulic Institute Standard for Methods for Rotodynamic Pump Efficiency Testing*, approved February 17, 2021; IBR approved for §429.134.

* * * * *

3. Amend §429.134 by:

a. Removing in paragraph (i)(2)(iv)(A)(1), the text "HI 40.6-2014-B", wherever it appears, and adding, in its place, the text, "HI 40.6-2021";

b. Removing in paragraph (i)(2)(iv)(A)(2), the text "HI 40.6-2014-B", wherever it appears, and adding, in its place, the text, "HI 40.6-2021"; and

c. Adding paragraph (i)(2)(v).

The addition reads as follows:

§429.134 Product-specific enforcement provisions.

* * * * *

(i) * * *

(2) * * *

(v) To verify the flow rate of a DPPP model at 50 feet of head, the flow rate in gallons per minute (gpm) at 50 feet of head will be determined pursuant to Section 40.6.5.5.1, "Test procedure" and Section 40.6.6.3, "Performance curve" of HI 40.6-2021 (incorporated by reference, see §429.4). In cases where the flow rate of 50 feet of head cannot be directly determined due to the entirety of the performance curve (out to the model's maximum flow rate of greater than or equal to 200 gpm) exceeding 50 feet of head, DOE will determine that the DPPP model has a flow rate of greater than or equal to 200 gpm at 50 feet of head. DOE will use the mean of the determined flow rate at 50 feet of head (either the determined flow rate for a single unit sample or the average of the determined flow rates for a multiple unit sample) to determine the applicable standard level, if any, for purposes of compliance.

* * * * *

PART 431 -- ENERGY EFFICIENCY PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT

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

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

5. Amend §431.462 by:

a. Revising the definition for "Dedicated-purpose pool pump motor total horsepower";

b. Adding in alphabetical order the definition for "Drive," and "Maximum operating speed"; and

c. Revising the definitions for "Multi-speed dedicated-purpose pool pump," "Rigid electric spa pump," and "Variable-speed dedicated-purpose pool pump."

The revisions and additions read as follows:

§431.462 Definitions.

* * * * *

Dedicated-purpose pool pump motor total horsepower means the product of the dedicated-purpose pool pump nominal motor horsepower and the dedicated-purpose pool pump service factor of a motor used on a dedicated-purpose pool pump based on the maximum continuous duty motor power output rating allowable for the motor's nameplate ambient rating and insulation class and calculated in accordance with the method provided in section E.3.4 of appendix B to subpart Y of this part. (Dedicated-purpose pool pump motor total horsepower is also referred to in the industry as service factor horsepower or motor capacity.)

* * * * *

Drive is a power converter, such as a variable-speed drive or phase-converter.

* * * * *

Maximum operating speed is the rated full-load speed of a motor powered by a 60 Hz alternating current (AC) source.

* * * * *

Multi-speed dedicated-purpose pool pump means a dedicated-purpose pool pump that is not a variable-speed dedicated-purpose pool pump as defined in this section and that is capable of operating at more than two discrete, pre-determined operating speeds separated by speed increments greater than 100 rpm, where the lowest speed is less than or equal to half of the maximum operating speed and greater than zero, and must be distributed in commerce either:

(1) With an on-board pool pump control (*i.e.,* variable speed drive and user interface or programmable switch) that changes the speed in response to pre-programmed user

preferences and allows the user to select the duration of each speed and/or the on/off times; or

(2) Without an onboard pool pump control (*i.e.,* variable speed drive and user interface or programmable switch) that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times, but is unable to operate without the presence of such pool pump control.

* * * * *

Rigid electric spa pump means an end suction pump that has a motor that does not have a C-flange or square flange mounting, and that is labeled, and designed and marketed for use only in rigid electric spas and does not contain an integrated basket strainer or require a basket strainer for operation as stated in manufacturer literature provided with the pump, and that meets the following three criteria:

(1) Is assembled with four through bolts that hold the motor rear endplate, rear bearing, rotor, front bearing, front endplate, and the bare pump together as an integral unit;

(2) Is constructed with buttress threads at the inlet and discharge of the bare pump; and

(3) Uses a casing or volute and connections constructed of a non-metallic material.

* * * * *

Variable-speed dedicated-purpose pool pump means a dedicated-purpose pool pump that:

(1) Is capable of operating at four or more discrete user- or pre-determined operating speeds, where one of the operating speeds is the maximum operating speed and at least:

(a) One of the operating speeds is 75% to 85% of the maximum operating speed;

(b) One of the operating speeds is 45% to 55% of the maximum operating speed; and

(c) One of the operating speeds is less than or equal to 40% of the maximum operating speed and greater than zero.

(2) Includes a variable speed drive and is distributed in commerce either:

(a) With a user interface that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times;

(b) Without a user interface that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times, but is unable to operate without the presence of a user interface; or

(3) With or without user interface, provided that the motor is unable to operate without the presence of a variable speed drive, and

(3) Also meets the following requirements:

(a) Any high-speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings or resuming normal operation according to pre-programmed user preferences; and

(b) Daily run time schedule:

(i) Any factory default setting for daily run time schedule shall not include more hours at an operating speed above 55% of maximum operating speed than the hours at or below 55% of the maximum operating speed;

(ii) If a motor is not provided with a factory default setting for daily run time schedule, the default operating speed after any priming cycle (if applicable) shall be no greater than 55% of the maximum operating speed.

* * * * *

6. Amend §431.463 by:

a. Revising paragraph (b)(1);

b. Removing paragraph (d)(4);

c. Redesignating paragraphs (d)(5) and (6) as (d)(4) and (5), respectively;

d. Revising newly redesignated paragraph (d)(4);

e. In newly redesignated paragraph (d)(5), removing the text “appendix D” and adding in its place the text “appendix C”; and

f. Revising paragraph (g)(1).

The revisions read as follows:

§431.463 Materials incorporated by reference.

* * * * *

(b) * * *

(1) CSA C747-2009 (Reaffirmed 2019), (“CSA C747-09 (R2019)”), “Energy efficiency test methods for small motors,” CSA reaffirmed 2019, IBR approved for appendix B to this subpart.

* * * * *

(d) * * *

(4) HI 40.6-2021, *Hydraulic Institute Standard for Methods for Rotodynamic Pump Efficiency Testing*, approved February 17, 2021; IBR approved for 431.464 and appendices B and C to this subpart.

* * * * *

(g) * * *

(1) NSF/ANSI/CAN 50-2020, “Equipment and Chemicals for Swimming Pools, Spas, Hot Tubs, and Other Recreational Water Facilities,” ANSI-approved October 21, 2020; IBR approved for § 431.462 and appendix B to this subpart.

* * * * *

§431.462 [Amended]

7. In §431.462, amend the definitions for “Non-self-priming pool filter pump” and “Self-priming pool filter pump” by removing the text “NSF/ANSI 50-2015” and adding, in its place, the text “NSF/ANSI/CAN 50-2020”.

8. Amend §431.464 by revising paragraphs (b)(1)(iii), (b)(2), and (c)(2) to read as follows:

§431.464 Test procedure for the measurement of energy efficiency, energy consumption, and other performance factors of pumps.

* * * * *

(b) * * *

(1) * * *

(iii) ***

(A) Submersible pumps;

(B) Self-priming and non-self-priming pool filter pumps with hydraulic output power greater than or equal to 2.5 horsepower; and

(C) Dedicated purpose pools pumps that meet all of the following three criteria:

(*1*) The orifice on the pump body that accepts suction side plumbing connections has an inner diameter of greater than 2.85 inches;

(*2*) The pump has a measured performance of ≥ 200 gallons per minute (gpm) at 50 feet of head as determined in accordance with section 40.6.5.5.1, "Test procedure" and section 40.6.6.3, "Performance curve" of HI 40.6-2021 (incorporated by reference, see §431.463); and

(*3*) The pump is marketed exclusively for commercial applications.

(2) *Testing and calculations.* Determine the weighted energy factor (WEF) using the test procedure set forth in appendix B of this subpart.

(c) * * *

(2) *Testing and calculations.* Determine the circulator energy index (CEI) using the test procedure set forth in appendix C of this subpart Y.

Appendix B to Subpart Y of Part 431 [Removed]

9. Appendix B to subpart Y of part 431 is removed.

Appendix C to Subpart Y of Part 431 [Redesignated as Appendix B]

10. Appendix C to Subpart Y of Part 431 is redesignated as "Appendix B to Subpart Y of Part 431" and revised to read as follows:

Appendix B to Subpart Y of Part 431 - Uniform Test Method for the Measurement of Energy Efficiency of Dedicated-Purpose Pool Pumps

Note: Beginning [*Date 180 days after date of publication in the Federal Register*], any representations made with respect to the energy use or efficiency of dedicated-purpose pool pumps subject to testing pursuant to 10 CFR 431.464(b)(2) must be made in accordance with the results of testing pursuant to this appendix.

1.0 *Incorporation by Reference*.

DOE incorporated by reference in §431.463, the entire standard for: CSA C747-09 (R2019), HI 40.6-2021, IEEE 114-2010, IEEE 113-1985, and NSF/ANSI/CAN 50-2020; however, only enumerated provisions of CSA C747-09 (R2019), HI 40.6-2021, IEEE 114-2010, IEEE 113-1985, and NSF/ANSI/CAN 50-2020 are applicable to this appendix, as follows:

1.1 CSA C747-09 (R2019)

(a) Section 5 "General test requirements", and Section 6 "Test Method" as referenced in sections 6.3.2.1.2 and 6.3.2.2.2 of this appendix.

(b) [Reserved]

1.2 *HI 40.6-2021*

(a) Section 40.6.2 "Terms and definitions, as referenced in section 2.1 of this appendix.

Section 40.6.3 “Pump efficiency testing”, as referenced in sections 4.1, 5.1, and 7.1.4 of this appendix, including .

(i) Table 40.6.3.2.2 “Permissible amplitude of fluctuation as a percentage of mean values of quantity being measured at any test point” as referenced in sections 5.1 and 7.1.4 of this appendix.

(ii) Table 40.6.3.2.3 “Maximum permissible measurement device uncertainty” as referenced in section 3.1 of this appendix.

(b) Section 40.6.4 “Considerations when determining the efficiency of certain pumps”,. as referenced in sections 2.1 and 4.1 of this appendix.

(c) Section 40.6.5.4 “Test arrangements” as referenced in sections 2.1 and 4.1 of this appendix.

(d)Section 40.6.5.5 “Test conditions” as referenced in sections 2.1, 4.1, and 5.2 of this appendix (e) Section 40.6.6.2 “Pump efficiency” and Section 40.6.6.3 “Performance curve” as referenced in section 2.1 of this appendix.

(f) Appendix A, “Test arrangements (normative)” as referenced in section 4.1 of this appendix.

(g) Appendix C, “Measurement equipment (normative)” as referenced in section 3.1 of this appendix..

(h) Appendix D, “Suitable time periods for calibration of test instruments (normative)”, including Table D.1, "Default instrument recalibration periods" as referenced in section 3.2 of this appendix.

(i) A.3.1.3.1 “Correction for height difference” as referenced in section 7.1.2.1 of this appendix.

1.3 IEEE 114-2010

(a) Section 3.2 “Test with load”, Section 4 “Testing facilities”, Section 5.2 “Mechanical measurements”, Section 5.3 “Temperature measurements”, and Section 6 “Tests” as referenced in section 6.3.2.1.1 of this appendix.

(b)[Reserved]

1.4 IEEE 113-1985

(a) Section 3.1 “Instrument Selection Factors”, Section 3.4 “Power Measurement”, Section 3.5 “Power Sources”, Section 4.1.2 “Ambient Air”, Section 4.1.4 “Direction of Rotation”, Section 5.4.1 “Reference Conditions”, and Section 5.4.3.2 “Dynomometer or Torquemeter Method” as referenced in section 6.3.2.2.1 of this appendix.

(b)

1.5 NSF/ANSI/CAN 50-2020

(a) Section N-3.3, “Self-priming capability” as referenced in sections 7.1, 7.1.1, 7.1.4, and 7.1.5 of this appendix.

(b) [Reserved]

2.0 *General*

2.1 Test Method. To determine the weighted energy factor (WEF) for dedicated-purpose pool pumps, perform “wire-to-water” testing in accordance with HI 40.6-2021, except section 40.6.4.1, “Vertically suspended pumps”; section 40.6.4.2, “Submersible pumps”;;

section 40.6.5.5, “Test conditions”; section 40.6.5.5.2, “Speed of rotation during test”; section 40.6.6.2, “Pump efficiency”; and section 40.6.6.3, “Performance curve”; with the modifications and additions as noted throughout the provisions below. Do not use the test points specified in section 40.6.5.5.1, “Test procedure” of HI 40.6-2021 and instead use those test points specified in section 5.3 of this appendix for the applicable dedicated-purpose pool pump variety and speed configuration. When determining overall efficiency, best efficiency point, or other applicable pump energy performance information, section 40.6.5.5.1, “Test procedure”; section 40.6.6.2, “Pump efficiency”; and section 40.6.6.3, “Performance curve” must be used, as applicable. For the purposes of applying this appendix, the term “volume per unit time,” as defined in Section 40.6.2, “Terms and definitions,” of HI 40.6-2021 shall be deemed to be synonymous with the term “flow rate” used throughout that standard and this appendix.

2.2 Calculations and Rounding. All terms and quantities refer to values determined in accordance with the procedures set forth in this appendix for the rated pump. Perform all calculations using raw measured values without rounding. Round WEF, maximum head, vertical lift, and true priming time values to the tenths place (*i.e.,* 0.1) and rated hydraulic horsepower to the thousandths place (*i.e.,* 0.001). Round all other reported values to the hundredths place unless otherwise specified.

3.0 *Measurement Equipment*

3.1 For the purposes of measuring flow rate, speed of rotation, temperature, and pump power output, the equipment specified in HI 40.6-2021 Appendix C necessary to measure head, speed of rotation, flow rate, and temperature must be used and must comply with the stated accuracy requirements in HI 40.6-2021 Table 40.6.3.2.3, except as specified in sections 3.1.1 and 3.1.2 of this appendix. When more than one instrument is used to

measure a given parameter, the combined accuracy, calculated as the root sum of squares of individual instrument accuracies, must meet the specified accuracy requirements.

3.1.1 Electrical measurement equipment for determining the driver power input to the motor or controls must be capable of measuring true root mean squared (RMS) current, true RMS voltage, and real power up to the 40th harmonic of fundamental supply source frequency, and have a combined accuracy of ±2.0 percent of the measured value at the fundamental supply source frequency.

3.1.2 Instruments for measuring distance (*e.g.,* height above the reference plane or water level) must be accurate to and have a resolution of at least ±0.1 inch.

3.2 Calibration. Calibration requirements for instrumentation are specified in Appendix D of HI 40.6-2021. Historical calibration data may be used to justify time periods up to three times longer than those specified in Table D.1 of HI 40.6-2021 provided the supporting historical data shows maintenance of calibration of the given instrument up to the selected extended calibration interval on at least two unique occasions, based on the interval specified in HI 40.6-2021.

4.0 *Test Conditions and Tolerances*

4.1 Pump Specifications. Conduct testing at full impeller diameter in accordance with the test conditions, stabilization requirements, and specifications of HI 40.6-2021 section 40.6.3, “Pump efficiency testing”; section 40.6.4, “Considerations when determining the efficiency of certain pumps”; section 40.6.5.4 (including appendix A of HI 40.6-2021), “Test arrangements”; and section 40.6.5.5, “Test conditions”.

4.2 Power Supply Requirements. The following conditions also apply to the mains power supplied to the DPPP motor or controls, if any:

(a) Maintain the voltage within ±5 percent of the rated value of the motor,

(b) Maintain the frequency within ±1 percent of the rated value of the motor,

(c) Maintain the voltage unbalance of the power supply within ±3 percent of the value with which the motor was rated, and

(c) Maintain total harmonic distortion below 12 percent throughout the test.

4.3 Test Conditions. Testing must be carried out with water that is between 50 and 107 °F with less than or equal to 15 nephelometric turbidity units (NTU).

4.4 Tolerances. For waterfall pumps, multi-speed self-priming and non-self-priming pool filter pumps, and variable-speed self-priming and non-self-priming pool filter pumps all measured load points must be within ±2.5 percent of the specified head value and comply with any specified flow values or thresholds. For all other dedicated-purpose pool pumps, all measured load points must be within the greater of ±2.5 percent of the specified flow rate values or ±0.5 gpm and comply with any specified head values or thresholds.

5.0 *Data Collection and Stabilization*

5.1 Damping Devices. Use of damping devices, as described in Section 40.6.3.2.2 of HI 40.6-2021 , are only permitted to integrate up to the data collection interval used during testing.

5.2 Stabilization. Record data at any tested load point only under stabilized conditions, as defined in HI 40.6-2021 section 40.6.5.5.1 , where a minimum of two measurements are used to determine stabilization.

5.3 Test Points. Measure the flow rate in gpm, pump total head in ft, the driver power input in W, and the speed of rotation in rpm at each load point specified in table 1 of this appendix for each DPPP variety and speed configuration:

Table 1 - Load Points (i) and Weights (w_i) for Each DPPP Variety and Speed Configuration

DPPP varieties	Speed configuration(s)	Number of load points (n)	Load point (i)	Test points		
				Flow rate (Q) (GPM)	Head (H) (ft)	Speed (rpm)
Self-Priming Pool Filter Pumps And Non-Self-Priming Pool Filter Pumps	Single-speed dedicated-purpose pool pumps and all self-priming and non-self-priming pool filter pumps not meeting the definition of two-*, multi-, or variable-speed dedicated-purpose pool pump	1	High	Q_{high} (gpm) = $Q_{max\_speed@C}$ **	$H = 0.0082 \times Q_{high}^2$	Maximum speed.
	Two-speed dedicated-purpose pool pumps *	2	Low	Q_{low} (gpm) = Flow rate associated with specified head and speed that is not below: • 31.1 gpm if rated hydraulic horsepower is >0.75 or • 24.7 gpm if rated hydraulic horsepower is ≤0.75	$H = 0.0082 \times Q_{low}^2$	Lowest speed capable of meeting the specified flow and head values, if any. ***
			High	Q_{high} (gpm) = $Q_{max\_speed@C}$ **	$H = 0.0082 \times Q_{low}^2$	Maximum speed.
	Multi-speed and variable-speed dedicated-purpose pool pumps	2	Low	Q_{low} (gpm) = • If rated hydraulic horsepower is >0.75, then Q_{low} ≥31.1 gpm • If rated	$H = 0.0082 \times Q_{low}^2$	Lowest speed capable of meeting the specified flow and head values.

DPPP varieties	Speed configuration(s)	Number of load points (n)	Load point (i)	Test points		
				Flow rate (Q) (GPM)	Head (H) (ft)	Speed (rpm)
				hydraulic horsepower is ≤0.75, then Q_{low} ≥24.7 gpm		
			High	Q_{high} (gpm) ≥0.8 × $Q_{max\_speed@C}$ **	H = 0.0082 × Q_{high}^2	Lowest speed capable of meeting the specified flow and head values.
Waterfall Pumps	Single-speed dedicated-purpose pool pumps	1	High	Q_{low} (gpm) = Flow corresponding to specified head	17.0 ft	Maximum speed.
Pressure Cleaner Booster Pumps	Any	1	High	10.0 gpm	≥60.0 ft	Lowest speed capable of meeting the specified flow and head values.

* In order to apply the test points for two-speed self-priming and non-self-priming pool filter pumps, self-priming pool filter pumps that are greater than or equal to 0.711 rated hydraulic horsepower that are two-speed dedicated-purpose pool pumps must also be distributed in commerce either:

(a) With a pool pump control (variable speed drive and user interface or switch) that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times or

(b) Without a pool pump control that has such capability, but without which the pump is unable to operate. Two-speed self-priming pool filter pumps greater than or equal to 0.711 rated hydraulic horsepower that do not meet these requirements must be tested

using the load point for single-speed self-priming or non-self-priming pool filter pumps, as appropriate.

** $Q_{max\_speed@C}$ = Flow at max speed on curve C (gpm).

*** If a two-speed pump has a low speed that results in a flow rate below the specified values, the low speed of that pump shall not be tested.

6.0 *Calculations*

6.1 Determination of Weighted Energy Factor. Determine the WEF as a ratio of the measured flow and driver power input to the dedicated-purpose pool pump in accordance with the following equation:

$$WEF = \frac{\sum_{i=1}^{n}\left(w_i \times \frac{Q_i}{1000} \times 60\right)}{\sum_{i=1}^{n}\left(w_i \times \frac{P_i}{1000}\right)}$$

Where:

WEF = Weighted Energy Factor in kgal/kWh;

W_i = weighting factor at each load point *i*, as specified in section 6.2 of this appendix;

Q_i = flow at each load point *i*, in gpm;

P_i = driver power input to the motor (or controls, if present) at each load point *i*, in watts;

i = load point(s), defined uniquely for each DPPP variety and speed configuration as specified in section 5.3 of this appendix; and

n = number of load point(s), defined uniquely for each DPPP variety and speed configuration as specified in section 5.3 of this appendix.

6.2 Weights. When determining WEF, apply the weights specified in table 2 of this appendix for the applicable load points, DPPP varieties, and speed configurations:

Table 2 - Load Point Weights (w_i)

DPPP varieties	Speed configuration(s)	Load point(s) *i*	
		Low flow	High flow
Self-Priming Pool Filter Pumps and Non-Self-Priming Pool Filter Pumps	Single-speed dedicated-purpose pool pumps and all self-priming and non-self-priming pool filter pumps not meeting the definition of two-*, multi-, or variable-speed dedicated-purpose pool pump		1.0
	Two-speed dedicated-purpose pool pumps *	0.80	0.20
	Multi-speed and variable-speed dedicated-purpose pool pumps	0.80	0.20
Waterfall Pumps	Single-speed dedicated-purpose pool pumps		1.0
Pressure Cleaner Booster Pump	Any		1.0

* In order to apply the test points for two-speed self-priming and non-self-priming pool filter pumps, self-priming pool filter pumps that are greater than or equal to 0.711 rated hydraulic horsepower that are two-speed dedicated-purpose pool pumps must also be distributed in commerce either:

(a) With a pool pump control (variable speed drive and user interface or switch) that changes the speed in response to pre-programmed user preferences and allows the user to select the duration of each speed and/or the on/off times or

(b) Without a pool pump control that has such capability, but without which the pump is unable to operate. Two-speed self-priming pool filter pumps greater than or equal to 0.711 rated hydraulic horsepower that do not meet these requirements must be tested using the load point for single-speed self-priming or non-self-priming pool filter pumps, as appropriate.

6.3 Determination of Horsepower and True Power Factor Metrics

6.3.1 Determine the pump power output at any load point *i* using the following equation:

$$P_{u,i} = \frac{Q_i \times H_i \times SG}{3960}$$

Where:

$P_{u,i}$ = the measured pump power output at load point *i* of the tested pump, in hp;

Q_i = the measured flow rate at load point *i* of the tested pump, in gpm;

H_i = pump total head at load point *i* of the tested pump, in ft; and

SG = the specific gravity of water at specified test conditions, which is equivalent to 1.00.

6.3.1.1 Determine the rated hydraulic horsepower as the pump power output measured on the reference curve at maximum rotating speed and full impeller diameter for the rated pump.

6.3.2 For dedicated-purpose pool pumps with single-phase AC motors or DC motors, determine the dedicated-purpose pool pump nominal motor horsepower as the

product of the measured full load speed and torque, adjusted to the appropriate units, as shown in the following equation:

$$P_{nm} = \frac{(T \times n)}{5252}$$

Where:

P_{nm} = the dedicated-purpose pool pump nominal total horsepower at full load, in hp;

T = output torque at full load, in lb-ft; and

n = the motor speed at full load, in rpm.

Full-load speed and torque shall be determined based on the maximum continuous duty motor power output rating allowable for the motor's nameplate ambient rating and insulation class.

6.3.2.1 For single-phase AC motors, determine the measured speed and torque at full load according to either section 6.3.2.1.1 or 6.3.2.1.2 of this appendix.

6.3.2.1.1 Use IEEE 114-2010, according to section 1.3 of this appendix, or

6.3.2.1.2 Use the applicable procedures of CSA C747-09 (R2019), according to section 1.1 of this appendix; except in section 6.4(b) the conversion factor shall be 5252, only measurements at full load are required in section 6.5, and section 6.6 shall be disregarded.

6.3.2.2 For DC motors, determine the measured speed and torque at full load according to either section 6.3.2.2.1 or 6.3.2.2.2 of this appendix.

6.3.2.2.1 Use the procedures of IEEE 113-1985, according to section 1.4 of this appendix, or

6.3.2.2.2 Use the applicable procedures of CSA C747-09 (R2019) , according to section 1.1 of this appendix; except in section 6.4(b) the conversion factor shall be 5252, only measurements at full load are required in section 6.5, and section 6.6 shall be disregarded (incorporated by reference, see § 431.463).

6.3.3 For dedicated-purpose pool pumps with single-phase AC motors or DC motors, the dedicated-purpose pool pump service factor is equal to 1.0.

6.3.4 Determine the dedicated-purpose pool pump motor total horsepower according to section 6.3.4.1 of this appendix for dedicated-purpose pool pumps with single-phase AC motors or DC motors and section 6.3.4.2 of this appendix for dedicated-purpose pool pumps with polyphase AC motors.

6.3.4.1 For dedicated-purpose pool pumps with single-phase AC motors or DC motors, determine the dedicated-purpose pool pump motor total horsepower as the product of the dedicated-purpose pool pump nominal motor horsepower, determined in accordance with section 6.3.2 of this appendix, and the dedicated-purpose pool pump service factor, determined in accordance with section 6.3.3 of this appendix.

6.3.4.2 For dedicated-purpose pool pumps with polyphase AC induction motors, determine the dedicated-purpose pool pump motor total horsepower as the product of the rated nominal motor horsepower and the rated service factor of the motor.

6.3.5 Determine the true power factor at each applicable load point specified in Table 1 of this appendix for each DPPP variety and speed configuration as a ratio of driver power input to the motor (or controls, if present) (P_i), in watts, divided by the product

of the voltage in volts and the current in amps at each load point *i*, as shown in the following equation:

$$PF_i = \frac{P_i}{V_i \times I_i}$$

Where:

$\boldsymbol{PF_i}$ = true power factor at each load point *i*, dimensionless;

$\boldsymbol{P_i}$ = driver power input to the motor (or controls, if present) at each load point *i*, in watts;

$\boldsymbol{V_i}$ = voltage at each load point *i*, in volts;

$\boldsymbol{I_i}$ = current at each load point *i*, in amps; and

$\boldsymbol{i}$ = load point(s), defined uniquely for each DPPP variety and speed configuration as specified in section 5.3 of this appendix.

6.4 Determination of Maximum Head. Determine the maximum head for self-priming pool filter pumps, non-self-priming pool filter pumps, and waterfall pumps by measuring the head at maximum speed and the minimum flow rate at which the pump is designed to operate continuously or safely, where the minimum flow rate is assumed to be zero unless stated otherwise in the manufacturer literature.

7.0 *Determination of Self-Priming Capability*

7.1 Test Method. Determine the vertical lift and true priming time of non-self-priming pool filter pumps and self-priming pool filter pumps that are not already certified as self-priming under NSF/ANSI/CAN 50-2020 by testing such pumps pursuant to section N.3-3

of appendix Normative Annex 3 of NSF/ANSI/CAN 50-2020, except for the modifications and exceptions listed in the following sections 7.1.1 through 7.1.5 of this appendix:

7.1.1 Where section N-3.3.2, “Apparatus,” and section N-3.3.4, “Self-priming capability test method,” of NSF/ANSI/CAN 50-2020 state that the “suction line must be essentially as shown in Normative Annex 3, figure 3;” the phrase “essentially as shown in Normative Annex 3, figure 3” means:

(a) The centerline of the pump impeller shaft is situated a vertical distance equivalent to the specified vertical lift (VL), calculated in accordance with section 7.1.1.1. of this appendix, above the water level of a water tank of sufficient volume as to maintain a constant water surface level for the duration of the test;

(b) The pump draws water from the water tank with a riser pipe that extends below the water level a distance of at least 3 times the riser pipe diameter (*i.e.,* 3 pipe diameters);

(c) The suction inlet of the pump is at least 5 pipe diameters from any obstructions, 90° bends, valves, or fittings; and

(d) The riser pipe is of the same pipe diameter as the pump suction inlet.

7. 1.1.1 The vertical lift (VL) must be normalized to 5.0 feet at an atmospheric pressure of 14.7 psia and a water density of 62.4 lb/ft^3 in accordance with the following equation:

$$VL = 5.0ft \times \left(\frac{62.4\,{}^{lb}/_{ft^3}}{\rho_{test}} \right) \times \left(\frac{P_{abs,test}}{14.7psia} \right)$$

Where:

VL = vertical lift of the test apparatus from the waterline to the centerline of the pump impeller shaft, in ft;

ρ_{test} = density of test fluid, in lb/ft^3; and

$P_{abs,test}$ = absolute barometric pressure of test apparatus location at centerline of pump impeller shaft, in psia.

7.1.2 The equipment accuracy requirements specified in section 3, "Measurement Equipment," of this appendix also apply to this section 7, as applicable.

7.1.2.1 All measurements of head (gauge pressure), flow, and water temperature must be taken at the pump suction inlet and all head measurements must be normalized back to the centerline of the pump impeller shaft in accordance with section A.3.1.3.1 of HI 40.6-2021.

7.1.3 All tests must be conducted with clear water that meets the requirements adopted in section 4.3 of this appendix.

7.1.4 In section N-3.3.4, "Self-priming capability test method," of NSF/ANSI/CAN 50-2020 , "the elapsed time to steady discharge gauge reading or full discharge flow" is determined when the changes in head and flow, respectively, are within the tolerance values specified in table 40.6.3.2.2, "Permissible amplitude of fluctuation as a percentage of mean value of quantity being measured at any test point," of HI 40.6-

2021. The measured priming time (MPT) is determined as the point in time when the stabilized load point is first achieved, not when stabilization is determined. In addition, the true priming time (TPT) is equivalent to the MPT.

7.1.5 The maximum true priming time for each test run must not exceed 10.0 minutes. Disregard section N-3.3.5 of NSF/ANSI/CAN 50-2020.

8. *Optional Testing and Calculations*

8.1 Replacement Dedicated-Purpose Pool Pump Motors. To determine the WEF for replacement DPPP motors, test each replacement DPPP motor paired with each dedicated-purpose pool pump bare pump for which the replacement DPPP motor is advertised to be paired, as stated in the manufacturer's literature for that replacement DPPP motor model, according to the testing and calculations described in sections 2, 3, 4, 5, and 6 of this appendix. Alternatively, each replacement DPPP motor may be tested with the most consumptive dedicated-purpose pool pump bare pump for which it is advertised to be paired, as stated in the manufacturer's literature for that replacement DPPP motor model. If a replacement DPPP motor is not advertised to be paired with any specific dedicated-purpose pool pump bare pumps, test with the most consumptive dedicated-purpose pool pump bare pump available.

Appendix D to Subpart Y of Part 431 [Redesignated as Appendix C]

11. Appendix D to Subpart Y of Part 431 is redesignated as Appendix C to Subpart Y of Part 431 and amended by:

a. In the introductory note, removing the words, “Note 1 to appendix D” and adding, in their place, the words “Note 1 to appendix C”; and

b. In section 2.1, in the heading of Table 1, removing the words, “Table 1 to Appendix D to Subpart Y of Part 431” and adding, in their place, the words “Table 1 to Appendix C to Subpart Y of Part 431.”

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