

Replacement Dedicated-Purpose Pool Pump Motors: New Requirements

In April 2020, the California Energy Commission adopted new regulations for replacement dedicated-purpose pool pump motors (RDPPPM). All RDPPPM manufactured on or after July 19, 2021, are required to comply with the performance, testing and marking requirements listed in Sections 1601-1609 of [California's Appliance Efficiency Regulations \(Title 20\)](#).

Purpose Of New Regulations

The U.S. Department of Energy (DOE) DPPP standards, effective July 19, 2021, do not include requirements for RDPPPM. As a result, the California Energy Commission adopted RDPPPM standards to ensure further energy savings, health benefits and climate benefits for Californians. According to the [California Energy Commission Staff Report Final Analysis of Efficiency Standards for RDPPPM](#), the regulation will save 451 GWh/yr - the equivalent of the annual energy use of 38,489 homes - and the total statewide net benefits will be \$452 million over the course of 10 years.



Relevant Code Sections

[California Appliance Efficiency Regulations, Title 20](#)

- [Section 1601\(g\)](#) – Scope
- [Section 1602\(g\)](#) – Definitions
- [Section 1605.3\(g\)](#) – State Standards for Non-Federally Regulated Appliances
- [Section 1606](#) – Filing by Manufacturers; Listings of Appliances in Database
- [Section 1607\(b\)](#) and [\(d\)\(2\)](#) – Marking of Appliances

What is Covered?

Title 20 standards regulate RDPPPM of less than or equal to 5 dedicated-purpose pool pump motor (DPPPM) total horsepower which are intended for driving self-priming pool pumps, non-self-priming pool pumps and pressure cleaner booster pumps. This includes pool pump motor drives integral to a variable-speed RDPPPM.

New Definitions

Replacement Dedicated-purpose Pool Pump Motors (RDPPPM): RDPPPM may be single phase or polyphase (i.e., 3 phase), have a DPPPM total horsepower of less than or equal to 5 horsepower and are marketed for use as a replacement motor in self-priming pool filter pumps, non-self-priming pool filter pumps or pressure cleaner booster pump applications. This does **not** cover polyphase RDPPPM that are:

- 1) Capable of operating without a drive AND
- 2) Sold or offered for sale without a drive that converts single-phase input power to polyphase output power

Dedicated-purpose Pool Pump Motor (DPPPM) Total Horsepower: The product of DPPPM nominal horsepower and DPPPM service factor.

DPPPM Nominal Horsepower: The product of the measured full load speed and torque, which the motor is capable of operating at continuously without exceeding nameplate ambient temperature and insulation class temperature. Measured full load speed and torque must be determined in accordance with the test procedure in U.S. DOE 10 CFR 431.464(b) and sampling plan in 10 CFR 429.59.

DPPPM Service Factor: A multiplier applied to the rated horsepower of a pump motor to indicate the percent above nameplate horsepower at which the motor can operate continuously without exceeding its allowable insulation class temperature limit, when other design parameters such as rated voltage, frequency and ambient temperature are within limits. The service factor must be 1.0 for residential applications, per U.S. DOE 10 CFR 431 Subpart Y, Appendix B, E.3.3.



New Requirements

All RDPPPM manufactured on or after July 19, 2021 must:

- Meet the nominal efficiency at full load and maximum operating speed in Table G-4 of Title 20, Section 1605.3 (included below)
- Be variable speed if RDPPPM total horsepower is 0.5 hp or more
- Meet U.S. DOE freeze protection requirements in 10 CFR 431.465 for products which are equipped with freeze protection
 - All DPPPM and RDPPPM units with freeze protection controls must be shipped with freeze protection controls disabled or with the U.S. DOE defaults specified in 10 CFR 431.465(h)

RDPPPM Total Horsepower	Motor Phase	Nominal Efficiency at Full Load and Maximum Operating Speed
Motor hp < 0.5 hp	Any	66%
0.5 hp ≤ Motor hp < 1.0 hp	Any	72%
1.0 hp ≤ Motor hp ≤ 5.0 hp	Any	80%

Title 20, §1605.3 Table G-4: Standards for Replacement Dedicated-Purpose Pool Pump Motors Manufactured on or After July 19, 2021

All variable-speed RDPPPM must:

- Have a default speed setting ≤ 55% of maximum operating speed of the motor AND
- Ensure high speed over-rides are temporary, lasting no more than 24 hours and returning the motor to the default setting

Marking Requirements

- Each RDPPPM manufactured on or after July 19, 2021, must be permanently and legibly marked with the DPPPM total horsepower and the nominal efficiency at full load and maximum operating speed, per Title 20, Section 1607(d)(16)
- Standard marking requirements in Title 20, Section 1607(b) also apply: manufacturer's name, brand name or trademark, model number and date of manufacture (including year and month or smaller (e.g., week) increment)

Frequently Asked Questions

What is the difference between the new (effective July 19, 2021) U.S. DOE DPPP regulation and the Title 20 RDPPPM regulation?

The DPPP regulation applies to pool equipment that is sold as a unit including a pump. RDPPPM is only applicable to motors that are sold as replacement equipment intended for specific pool pump applications. On July 19, 2021, DPPP become federally regulated products and the Title 20 RDPPPM regulation becomes effective. For more on the U.S. DOE DPPP regulations, see the [Energy Code Ace fact sheet](#) on the topic.

Does this RDPPPM regulation apply to commercial facilities?

Yes, if the facility is installing a product that meets the RDPPPM definition, the regulation applies, as it is not application specific. Note that a commercial (or other) facility that installs a RDPPPM only operable via 3-phase power would be installing a product out of RDPPPM scope. Motors over 5 DPPP total horsepower are also exempt from the RDPPPM regulation.

What about RDPPPM where the variable speed drive unit is not integral to the motor (i.e., connected in the field)?

The RDPPPM definition only applies to variable speed drive (VSD) equipment that is an integral part of a RDPPPM. Standalone VSD units (e.g., variable frequency drives and inverter drives) which are available for sale not connected to a RDPPPM are out of scope of the regulation.

What if a RDPPPM motor drive is factory reset?

The default operating speed requirements in Title 20 must remain after a factory reset. If this reset results in a higher default operating speed than required in the regulation, this action could be considered a persistent high-speed override.



How to Comply with Title 20

Compliance entails:

- Designing, marking and labeling products according to the regulations
- Testing regulated products using the required test methods
- Certifying the product to the [California Energy Commission's Modernized Appliance Efficiency Database System \(MAEDbS\)](#)

AND

- Verifying that the product is compliant prior to selling or offering for sale

Even if a RDPPPM meets all performance, testing and marking requirements outlined in Title 20, it is illegal to sell a regulated product in California if the model is not certified to the California Energy Commission and listed in the MAEDbS.

Everyone in the sales chain – including manufacturers, distributors, retailers, contractors, importers and installers – is responsible for ensuring regulated products are listed in the MAEDbS.



The screenshot shows the California Energy Commission's MAEDbS search interface. At the top, there is a navigation bar with the CA.GOV logo and the text 'CALIFORNIA ENERGY COMMISSION'. Below this is a 'Quick Search' section with a search bar and several filters. The search bar contains the text 'Model Number' and 'Appliance Type'. The filters include 'Company', 'Brand', and 'Appliance Status'. Below the search bar, there are two dropdown menus: 'Select Category' with 'Pool Products' selected, and 'Select Appliance Type' with 'Residential Pool Pumps' selected. There are 'Search' and 'Clear' buttons at the bottom right of the search area.

For More Information

Primary Documents

- Title 20 Appliance Efficiency Regulations
energycodeace.com/content/reference-ace-t20-tool
- Code of Federal Regulations (CFR): Title 10, Energy, Subpart Y (Pumps)
ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=7672fe9b9023da11cc463a5260087d97&mc=true&n=pt10.3.431&r=PART&ty=HTML#sp10.3.431.y

California Energy Commission Information & Services

- Appliances Hotline: (888) 838-1467 or outside California (916) 651-7100
- Questions may also be emailed to Appliances@energy.ca.gov
- California Appliance Efficiency Standards Site
energy.ca.gov/rules-and-regulations/appliance-efficiency-regulations-title-20
- Modernized Appliance Efficiency Database (MAEDbS)
cacertappliances.energy.ca.gov/Login.aspx
- California Energy Commission Final Staff Report: Final Analysis of Efficiency Standards for Replacement Dedicated-Purpose Pool Pump Motors
efiling.energy.ca.gov/GetDocument.aspx?tn=232151&DocumentContentId=64054

Additional Resources

- Energy Code Ace
EnergyCodeAce.com
 - An online “one-stop-shop” providing no-cost tools, training and resources to help appliance and building industry professionals decode and comply with Title 24, Part 6 and Title 20. The site is administered by California’s investor-owned utilities.

Of special interest:

- Fact Sheets
energycodeace.com/content/resources-fact-sheets/
 - Title 20 Certification Overview, Process and FAQs
 - Residential Dedicated-Purpose Pool Pumps
- Title 20 On-Demand Video Training
energycodeace.com/content/title-20-training/
 - Residential Pool Pumps
energycodeace.com/content/training-ace/courseId=44517

Register with the site and select an industry role for your profile in order to receive messages about all our no-cost offerings and Title 20 news! You can also email us at Title20@energycodeace.com.



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