



Energy Efficiency Regulations for Replacement Dedicated-Purpose Pool Pump Motors

Our webinar will begin at the top of the hour.

This slide deck will be posted on our webpage after the presentation at

www.energy.ca.gov/appliances/forms/index.html#webdocs.



California Energy Commission

Replacement Dedicated-Purpose Pool Pump Motors

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May 27, 2021



Participation Guidelines

To ensure successful webinar for participants:

- Use the chat feature / raise hand feature for questions / comments:
 - **Online: Raise your hand**, host will give you the ability to speak, then caller must push unmute
 - **Cell phone: Raise your hand by pushing *9**, host will give you the ability to speak, then **caller must push *6 to mute and unmute**
- Provide your **name and affiliation** when speaking
- All **lines are muted**, to comment – **raise hand to speak**
- For clarifying questions, **type your question in the Q&A section**
- Please hold questions until the end of the webinar

Contact us for further information at appliances@energy.ca.gov



Goals of Webinar

- Understand replacement dedicated-purpose pool pump motors (RDPPPM) efficiency regulations
- Highlight effective date of regulations
- Explain testing requirements
- Identify additional resources
- Answer questions



Topic Areas

- Scope
- Definitions
- Test Method
- Performance Requirements
- Marking and Certification Requirements



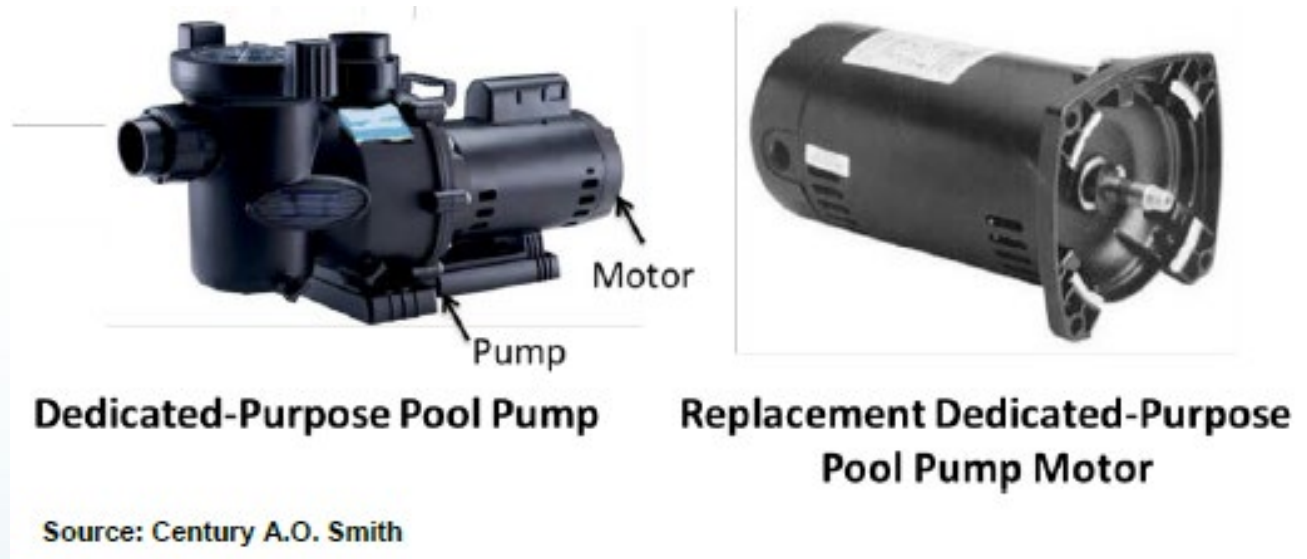
Scope





Scope

- All replacement dedicated-purpose pool pump motors (RDPPPM) less than or equal to 5 horsepower (hp)





Definitions





Definitions (Section 1602)

"Replacement dedicated-purpose pool pump motor" means an electric motor that:

- A. Is single-phase or polyphase
- B. Has a dedicated purpose pool pump motor total horsepower of less than or equal to 5 horsepower
- C. Is marketed for use as a replacement motor in self-priming pool filter pump, non-self-priming pool filter pump, or pressure cleaner booster pump applications
- D. Excludes polyphase RDPPPMs capable of operating without a drive, and is sold or offered for sale without a drive that converts single-phase power to polyphase power



Definitions (Section 1602)

“Non-self-priming pool filter pump” means a pool filter pump that is not certified under NSF/ANSI 50–2015, “Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities”, to be self-priming and is not capable of re-priming to a vertical lift of at least 5.0 feet with a true priming time less than or equal to 10.0 minutes, when tested in accordance with section 1604(g)(3)(B) of this Article, and is not a waterfall pump

“Self-priming pool filter pump” means a pool filter pump that is certified under NSF/ANSI 50–2015, to be self-priming or is capable of re-priming to a vertical lift of at least 5.0 feet with a true priming time less than or equal to 10.0 minutes, when tested with section 1604(g)(3)(B) of this Article, and is not a waterfall pump



Definitions (Section 1602)

“Pressure cleaner booster pump” means an end suction dry rotor pump designed and marketed for pressure-side pool cleaner applications, and which may be UL listed under UL 1081–2016

“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



Definitions (Section 1602)

“**Dedicated-purpose pool pump service factor**” means 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



Definitions (Section 1602)

“Freeze protection control” means a pool pump or replacement motor control that, at a certain ambient temperature, turns on the dedicated-purpose pool pump or replacement motor to circulate water for a period of time to prevent the pool and water in plumbing from freezing

"Maximum operating speed" means the rated full-load speed of a motor powered by a 60 Hertz (Hz) alternating current (AC) source. Speed is expressed in revolutions per minute (RPM)



Definitions (Section 1602)

"Variable-speed replacement dedicated-purpose pool pump motor" means a replacement dedicated-purpose pool pump motor that is capable of operating at a variety of user determined speeds, where all the speeds are separated by at most 100 revolutions per minute (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 is greater than zero. Such a motor must include a variable-speed drive and be sold or offered for sale either:

- A. With a user interface that changes the speed in response to preprogrammed user preferences and allows the user to select the duration of each speed, the operational times, or both; or
- B. Without a user interface that changes the speed in response to preprogrammed user preferences and allows the user to select the duration of each speed, the operational times, or both, but is unable to operate without the presence of such a user interface



Test Method



Test Method

Title 20 section 1604(g)(3)(B)

RDPPPM shall be tested in accordance with CSA-C747-09 (Reaffirmed 2014), “Energy Efficiency Test Methods for Small Motors” at full load and maximum operating speed

- Motor torque shall be recorded in lb-ft
- Motor speed in rotations per minute
- Input power shall be recorded in watts



Test Method

Title 20 section 1604(g)(3)(B)

Power factor shall be calculated as:

1. Single phase motors:

- $Power\ Factor(\%) = 100 \times (Input\ Power(W)) / (Voltage(V) \times Amps(A))$

2. Three phase motors:

- $Power\ Factor(\%) = 100 \times (Input\ Power(W)) / (Voltage(V) \times Amps(A) \times 1.73)$



Performance Requirements



Performance Requirements

Title 20 section 1605.3(g)(6)(A)

- RDPPPM standards can be found in the table below:

Dedicated-purpose pool pump motor 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%



Performance Requirements

Title 20 section 1605.3(g)(6)(B&C)

- RDPPPMs with a dedicated-purpose pool pump motor total horsepower greater or equal to 0.5 horsepower (hp), shall be variable-speed replacement dedicated-purpose pool pump motors
- Freeze Protections:
 1. Default dry-bulb air temperature setting shall not be greater than 40° Fahrenheit (F)
 2. Default run time setting shall be no greater than 1 hour (before the temperature is rechecked)
 3. Default motor speed shall not be more than one half of the maximum operating speed of the motor



Performance Requirements

Title 20 section 1605.3(g)(6)(D)

Replacement DPPP motor drive sold with a variable-speed RDPPPM:

- Default setting of control set at no more than 55% of maximum operating speed
- High speed override capability shall be temporary, not to exceed one 24-hour cycle before resetting to default settings



Effective Date

Test Procedure and New Standard

Items manufactured on or after July 19, 2021



Marking and Certification Requirements



Certification Requirements

Title 20 section 1606

- All models must be certified to the Modernized Appliance Efficiency Database System (MAEDbS) on or after July 19, 2021
- Failure to certify is an enforceable violation
- Fines can be levied for regulated appliances sold or offered for sale in California and not certified to MAEDbS

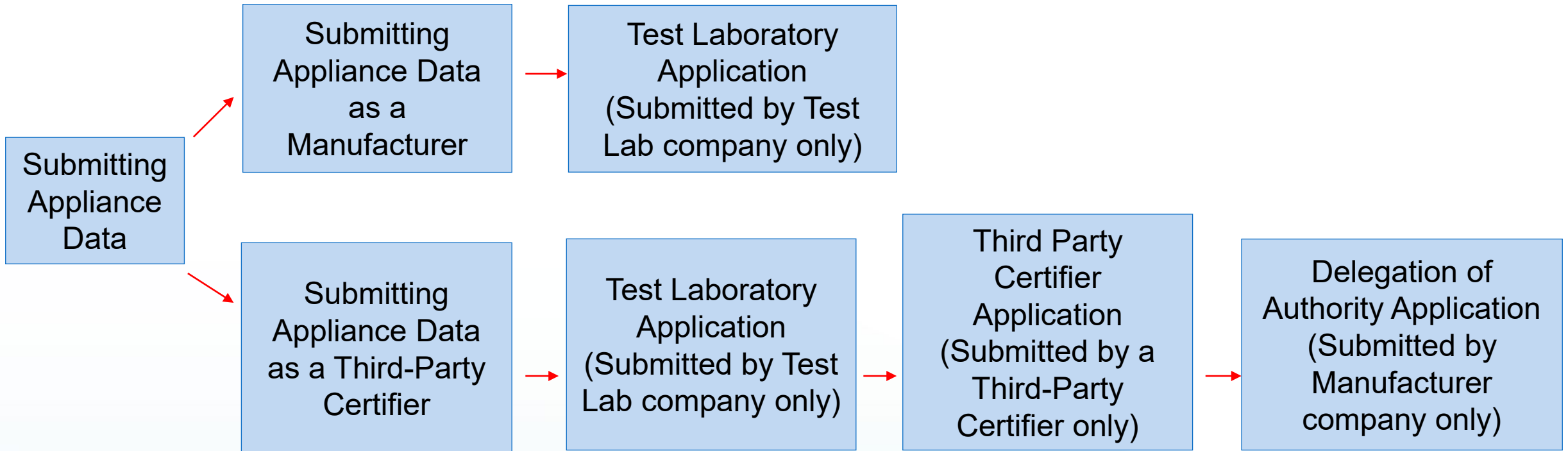


Certification Requirements

- All replacement residential pool pump motors submitted before July 19, 2021, will be archived around August 19, 2021
- All compliant replacement residential pool pump motors models can sell through, as long as they were manufactured before July 19, 2021, and certified to MAEDbS.



Data Submittal Requirements



General instructions for certifying to MAEDbS can be found at:
[MAEDbS general instructions](#)



Test Lab Application

- For information on how to submit test lab applications to MAEDbS see [general instructions](#)
- Manufacturer may act as a test lab
- Manufacturer may delegate third-party lab as test lab
- Test labs must appear in MAEDbS



Company Account Setup

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SEARCH

Create new company

Instructions

- Please fill out all the required fields marked by *
- Please select all company types that apply.

Company Information

*Company Name

*Company Website (Follow Format: <https://www.energy.ca.gov>)

Company Type

Manufacturer Test Lab 3rd Party Certifier

(Note: Selecting a company type does not grant immediate access by the California Energy Commission. A company will still need to submit an approval application before they are able to submit data. Checking a company type box allows access to applications specific to that company type.)

"Manufacturer" means any person engaged in the original production or assembly of an appliance or any person that assumes the complete legal responsibility for the original production or assembly of an appliance, which includes, but is not limited to, the responsibility normally held by the manufacturer for product liability, warranty, and compliance with State and federal law. "Manufacturer" also means a private brand packager or reassembler.

By checking this box I hereby certify that I am NOT a test lab or third party that is setting up an account for a manufacturer

Company Information →

Company Type →



Company Account Setup

Categories →

Address →

Categories Manufactured, Certified or Tested

<input type="checkbox"/> None	<input type="checkbox"/> Computers	<input type="checkbox"/> Heating Products	<input type="checkbox"/> Non-Central AC & HP Products	<input type="checkbox"/> Refrigeration Products
<input type="checkbox"/> Search Only	<input type="checkbox"/> Cooking and Washing Products	<input type="checkbox"/> Lighting Products	<input type="checkbox"/> Plumbing Products	<input type="checkbox"/> Transformer Products
<input type="checkbox"/> Central Air Conditioners	<input type="checkbox"/> Electronics	<input type="checkbox"/> Motor Products	<input type="checkbox"/> Pool Products	<input type="checkbox"/> Water Heater Products
<input type="checkbox"/> Central Heat Pumps	<input type="checkbox"/> Fans and Dehumidifiers			

Address

*Country
USA ▼

*Address Line 1 Address Line 2

*City *USA State ▼ Foreign State/Province *ZIP/Postal Code

[Create User](#)



Test Lab Application

Company Information →

Appliance type and test method selection →

California Appliance Efficiency Program 2020 Test Laboratory Application Submit Cancel

Company Information

*Test Laboratory Name Search

Address 1 Address 2

City State ZIP/Postal Code Country

Company Website (URL)

*Contact First Name *Contact Last Name Search

Phone Number Fax Email Address

Appliance Type and Test Method Selection

<input type="checkbox"/>	Appliance Type	Test Method
No records found		

Add



CERTIFICATION REQUIRES SIGNING A BINDING DECLARATION ON BEHALF OF YOUR COMPANY

Declaration

- I declare under penalty of perjury of the laws of the State of California, that: All the information in this statement is true, complete, accurate, and in compliance with all applicable provisions of Sections 1601-1609 of Title 20 of the California Code of Regulations; and I am authorized to make this declaration, and to file this application, on behalf of (Test Lab Not Selected)
- It agrees to and does interpret and apply the applicable test method set forth in Section 1604 precisely as written;
- It has, and keeps properly calibrated and maintained, all equipment, material, and facilities necessary to apply the applicable test method precisely as written;
- It agrees to and does maintain copies of all test reports, and provided any such report to the Executive Director on request, for all basic models that are still in commercial production; and
- It agrees to and does allow the Executive Director to witness any test of such an appliance on request, up to once per calendar year for each basic model.
- It has conducted tests using the applicable test method(s) specified on the first page of this application within the previous 12 months;
- It agrees to, and will follow, all applicable provisions of the California Energy Commission's Appliance Regulations (Section 1601-1609 of Title 20 of the California Code of Regulations), in carrying out all testing pursuant to this application.

NOTICE: Test lab approvals are valid until December 31st of each year and then expire. Test labs must apply annually for approval to the California Energy Commission. Test lab applications for the next certification year become available on November 1st each year.

*Name

*Title

*Date





Certification Requirements

Title 20 section 1606

To comply with information found in the California Code of Regulations, Title 20, Section 1606 table X, submit information certifying:

1. RDPPPM is a variable-speed replacement dedicated-purpose pool pump motor
2. Dedicated-purpose pool pump motor total horsepower (hp)
3. Nominal efficiency at full-load and maximum operating speed (%)
4. Motor speed at full-load and maximum operating speed (rpm)
5. Motor torque at full-load and maximum operating speed (lb-ft)
6. Input power at full-load and maximum operating speed (watts)
7. Power factor at full-load and maximum operating speed (%)



Certification Requirements

Title 20 section 1606

Continued:

8. Motor phase
9. Sold with motor drive
10. Meets requirements of 1605.3(g)(6)(D) (when “Sold with motor drive” = True)
11. Freeze protection controls is shipped enabled

When “Freeze protection controls are shipped enabled”:

12. Default dry bulb air temperature setting (°F)
13. Default motor speed (rpm)
14. Default run time (minutes)
15. Is the default motor speed more than 1/2 of maximum available speed?



Data Submittal Requirements

The screenshot shows the Microsoft Excel interface with the ribbon set to 'Home'. The font is 'Calibri' size 11. The spreadsheet grid shows columns A through U and rows 1 through 3. The data in the grid is as follows:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	
1	Action	Manufacturer	Brand	ModelNumber	RegulatoryStatus	VariableSpeedReplacementDPPPM	DPPPMTotalHorsepower_hp	NominalEfficiencyFullLoadMaxOperatingSpeed_percent	MotorSpeedAtFullLoadAndMaxOperatingSpeed_rpm	MotorTorqueAtFullLoadAndMaxOperatingSpeed_lb_ft	InputPowerAtFullLoadAndMaxOperatingSpeed_watts	PowerFactorAtFullLoadAndMaxOperatingSpeed_percent	MotorPhase	SoldWithMotorDrive	MeetsRequirementsOf16053g6D	FreezeProtectionControlsShippedEnabled	DefaultDryBulbAirTemperatureSetting_degreeF	DefaultMotorSpeed_rpm	DefaultRunTime_minutes	DefaultMotorSpeedMoreThan_1_2_OfMaxAvailableSpeed		
2																						
3																						



Data Submittal Requirements

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Replacement Dedicated-Purpose Pool Pump Motors (manufactured on or after July 19, 2021) Save Cancel

Instructions

- Key in appliance data according to associated fields in the import template provided in the instructions for this specific appliance type. If the appliance brand name does not appear in the dropdown, enter it in the free entry field, this will be added to the system after CEC staff processing.
- Model data must first be processed by CEC prior to any submissions to change or delete previously submitted model data.
- Street codes are not accepted.

*Action
Please Select

*Model Number

Manufacturer Add Date

Brand New Brand

*Regulatory Status

Reference Number Variable-Speed Replacement Dedicated-Purpose Pool Pump Motor

Dedicated-Purpose Pool Pump Motor Total Horsepower_Hp Nominal Efficiency At Full-Load And Maximum Operating Speed_Percent

Motor Speed At Full-Load And Maximum Operating Speed_Rpm Motor Torque At Full-Load And Maximum Operating Speed_Lb-Ft

Input Power At Full-Load And Maximum Operating Speed_Watts Power Factor At Full-Load And Maximum Operating Speed_Percent

Motor Phase Sold With Motor Drive

Meets Requirements Of 1605.3(G)(6)(D) (When "Sold With Motor Drive" = True) Freeze Protection Controls Is Shipped Enabled

Default Dry Bulb Air Temperature Setting_Degree F Default Motor Speed_Rpm

Default Run Time_Minutes Is The Default Motor Speed More Than 1/2 Of The Maximum Available Speed?



Marking Requirements

Title 20 section 1607(b)(2)

The following information shall be permanently, legibly, and conspicuously displayed on an accessible place on each unit:

1. Manufacturer's name or brand name or trademark
2. Model number
3. Date of manufacture



Marking Requirements

Title 20 section 1607(d)(16)

Each RDPPPM manufactured on or after July 19, 2021, shall be marked, permanently, and legibly with the following:

1. Dedicated-purpose pool pump motor total horsepower
2. Nominal efficiency at full load and maximum operating speed



Resources

Title 20 Compliance Assistance Hotline
Toll free inside California **(888) 838-1467**
From outside of California **(916) 651-7100**
appliances@energy.ca.gov

Title 20 Compliance Assistance List Serve
[Efficiency division list serve](#)

Webinar documents
[Appliances outreach and education webinars](#)

General Instructions for Submitting Appliance Data
[MAEDbS general instructions for submitting appliance data](#)



Questions?

