



# **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](http://www.energy.ca.gov/appliances/forms/index.html#webdocs).



# California Energy Commission

Replacement Dedicated-Purpose Pool Pump Motors

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- 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
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# Goals of Webinar

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- 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

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- 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

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## 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

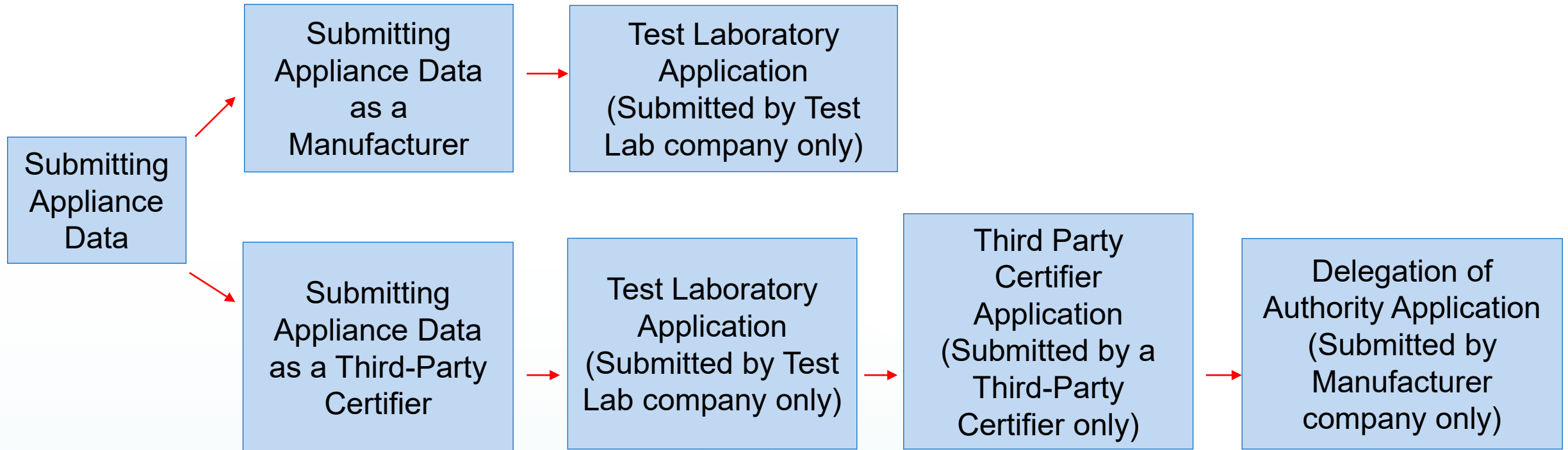


# Certification Requirements

- 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
- If delegating to third-party, manufacturer must file a third-party test lab delegation agreement with CEC
- Test labs must appear in MAEDbS



# **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?



# **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

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

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