

**DOCKETED**

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# Replacement Pool Pump Motors

CEC Staff Workshop

Developed by Energy Solutions  
on behalf of the California IOUs

November 28, 2018



# IOU Involvement in Pool Energy Efficiency

2001- PG&E voluntary program for time clocks and 2-speed motors

2004- IOUs propose CASE study for residential filtration pool pumps motors

2006- Prescriptive pool pump motor requirements banning split-phase or capacitor start - induction run type

2008- Two-Speed, Multi-Speed, Variable-Speed requirement for residential filtration pump motors over 1 THP

2010- Title 24 Pool efficiency requirements take effect

2012- Current CEC rulemaking begins

2013- Energy Star certification for pumps Energy Factor >3.8

2015/2016- Participated in DOE Working Group for pumps

2017- DOE Dedicated-purpose pool pump motor direct final rule

2018- Joint Stakeholder Proposal submitted to DOE for motors

# IOU Involvement in Current Rulemaking

July 29, 2013- Submitted Codes and Standards Enhancement (CASE) Report on Pool Pump Motors

Jan 15, 2014- CEC holds workshop, seeks input

March 3, 2014- CEC issues formal data request

May 23, 2014- IOUs docket response to data request

July/August, 2014- IOUs engaged with APSP-15 Committee

Sept 30, 2014- IOUs docket revised data request response

Oct 9, 2014- IOUs convened Industry Roundtable w/ CEC

February 18, 2016- Staff Workshop

July 13, 2016- Staff Workshop

August 3, 2017- Staff Workshop (MWEF)

# Current Title 20 Pool Pump Motor Standards

## Motor Efficiency

Pool pump motors manufactured on or after January 1, 2006, may not be split-phase or capacitor start - induction run type.

## Two-, Multi-, or Variable-Speed Capability.

1. **Residential Pool Pump Motors.** Residential pool pump motors with a pool pump motor capacity of 1 HP or greater which are manufactured on or after January 1, 2010, shall have the capability of operating at two or more speeds with a low speed having a rotation rate that is no more than one-half of the motor's maximum rotation rate. The pump motor must be operated with a pump control that shall have the capability of operating the pump at least at two speeds.
2. **Pump Controls.** Pool pump motor controls manufactured on or after January 1, 2008, that are sold for use with a two- or more speed pump shall have the capability of operating the pool pump at least at two speeds. The control's default circulation speed setting shall be no more than one-half of the motor's maximum rotation rate. Any high speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings.

# DOE Standards for Dedicated-purpose Pool Pump Motors in 2021

Equipment class		Minimum allowable WEF score [kgal/kWh]	Minimum allowable WEF score [kgal/kWh]
Dedicated-purpose pool pump variety	hhp Applicability	Motor phase	
Self-priming pool filter pumps	0.711 hp ≤ hhp < 2.5 hp	Single	$WEF = -2.30 * \ln(hhp) + 6.59.$
Self-priming pool filter pumps	hhp < 0.711 hp	Single	$WEF = 5.55, \text{ for } hhp \leq 0.13 \text{ hp}$ $-1.30 * \ln(hhp) + 2.90, \text{ for } hhp > 0.13 \text{ hp}.$
Non-self-priming pool filter pumps	hhp < 2.5 hp	Any	$WEF = 4.60, \text{ for } hhp \leq 0.13 \text{ hp}$ $-0.85 * \ln(hhp) + 2.87, \text{ for } hhp > 0.13 \text{ hp}.$
Pressure cleaner booster pumps	Any	Any	$WEF = 0.42.$



Non-Self-Priming Pool Pump Motors



Booster Pump Motors



Standard Size Self-Priming Pool Pump Motors



Small Self-Priming Pool Pump Motors

# Need for Replacement Motor Standard

Complementary replacement motor standards are needed nationally and in California to ensure that:



*are not replaced  
with...*



- Nationally regulated pool pumps with variable/multi-speed motors

- Unregulated, inefficient single-speed replacement motors nationally
- Less efficient and/or unregulated replacement motors in California

# Joint Stakeholder Proposal to DOE

On August 14, 2018, the stakeholder working group docketed a Joint Stakeholder Proposal to DOE to address the replacement motor loophole

On September 11, 2018, DOE published the proposal for public comment

On October 26, 2018, the IOUs and numerous other stakeholders encouraged DOE to pursue a direct final rule for pool pump motors

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  
Waterway Plastics  
WEG  
Zodiac Pool Systems



# IOUs Support Action on Replacement Pool Pump Motors

California is the largest pool market in the country with roughly 20% of the pools nationwide\*

Updated replacement pool pump motor standards are necessary to ensure continued energy savings from DOE dedicated-purpose pool pump rule

IOUs support the direction of the CEC staff proposal and look forward to working with CEC, advocates, and manufacturers to address this opportunity



\*<http://www.apsp.org/Portals/0/2016%20Website%20Changes/2015%20Industry%20Stats/2015%20Industry%20Stats.pdf>