

DOCKETED

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Replacement Dedicated-Purpose Pool Pump Motors (RDPPPMs)

Energy Commission Public Hearing

April 7, 2020

Developed by Energy Solutions
on behalf of the California IOUs



DOE Standards and Need for Energy Commission Regulation

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

Source: 10 CFR 431.465

Complementary replacement motor standards are needed in California to ensure:

- Nationally regulated pool pumps with variable/multi-speed motors
- are not replaced with...***
- Less efficient and/or un-regulated replacement motors in California

Energy Commission Proposal: Summary

- ✓ Unchanged from 2018 November Energy Commission Staff proposal
- ✓ Applies to all applications (e.g., residential, non-residential)
- ✓ Simple to understand, easy to ensure compliance and enforcement

Table ES-1: Proposed Standards for Replacement DPPP Motors

Total Motor Capacity	Prescriptive Requirements	Motor Phase	Minimum Motor Efficiency
Motor hp < 0.5 hp	None	Any	66%
0.5 hp ≤ Motor hp < 1.0 hp	Variable Speed	Any	72%
1.0 hp ≤ Motor hp ≤ 5.0 hp	Variable Speed	Any	80%

Source: [*Energy Commission Final Staff Report*](#)

Energy Commission Proposal: Cost-Effective

Cost-effective savings in all applications

- Residential lifecycle benefits: \$70 to \$1,752
- Commercial lifecycle benefits: \$5,870 to \$10,974

Table 7-3: Consumer Options to Replace a Failed less than 1 THP Pool Pump Motor



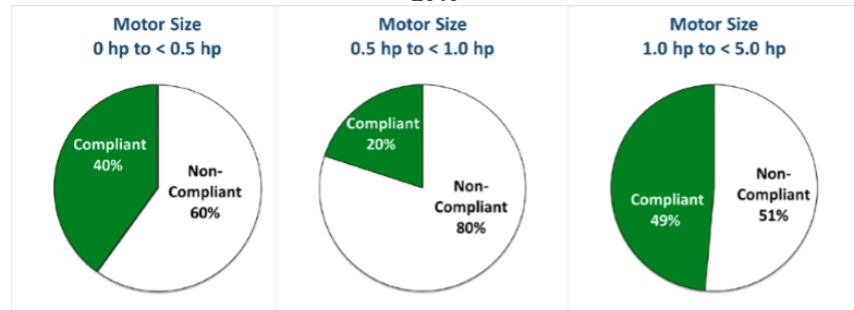
Baseline Options	Single Speed Pool Pump	Variable Speed Pool Pump	Single Speed Replacement Pool Pump Motor	Variable Speed Replacement Pool Pump Motor
Retail Price	\$320	\$700	\$192*	\$481*
Lifetime Energy Cost	\$2,596	\$686	\$2,596	\$686
Total Lifetime Cost	\$2,916	\$1,387	\$2,788	\$1,167

Source: [Energy Commission Final Staff Report](#)

Energy Commission Proposal: Technically Feasible

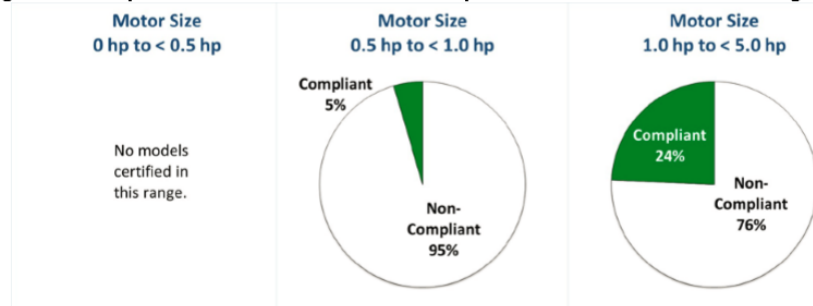
RDPPPMs exist on the market with variable-speed and motor efficiencies at the proposed standard levels.

Figure 8-2: Residential Pool Pump and Motor Combinations in CEC Database – August 2019



Source: CEC Appliance Database, August 23, 2019

Figure 8-3: Replacement Residential Pool Pump Motors in CEC Database – August 2019

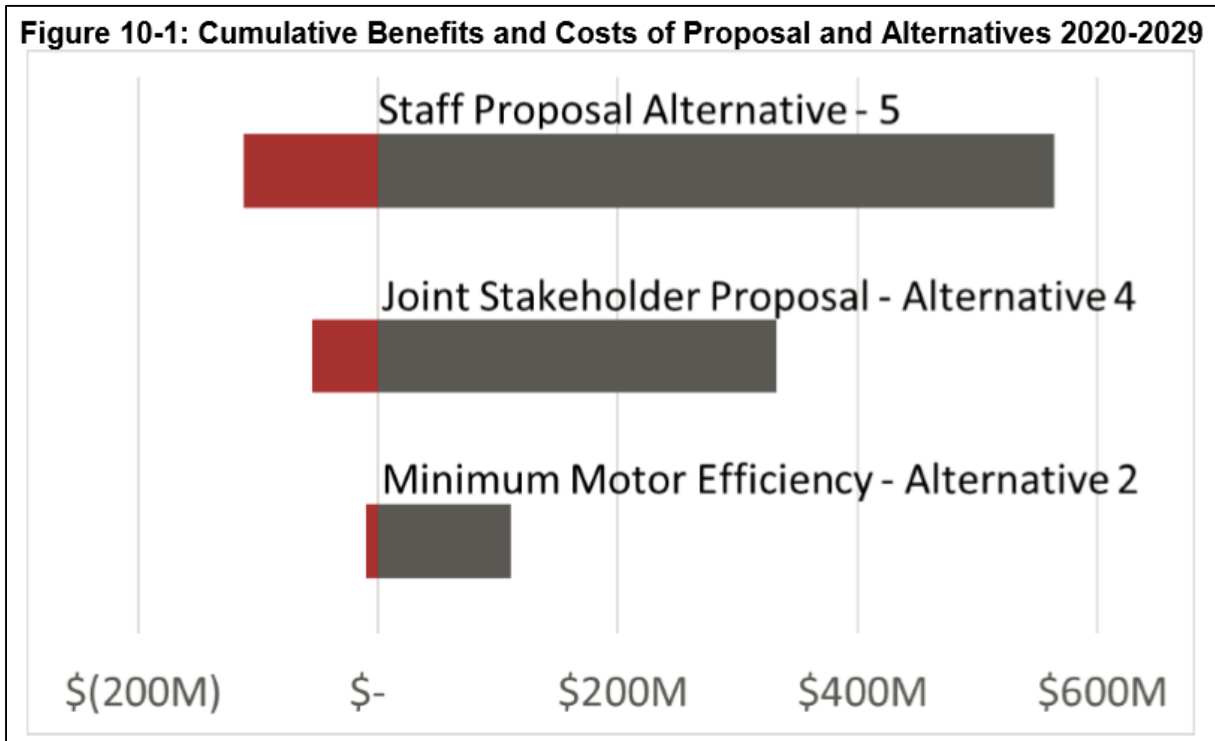


Source: CEC Appliance Database, August 23, 2019

Source: [Energy Commission Final Staff Report](#)

Energy Commission Proposal: Statewide Benefits

Energy Commission proposal will **save Californian's \$82 million/year** after stock turnover.



Source: [Energy Commission Final Staff Report](#)

IOUs Support Action on Replacement Pool Pump Motors in California

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

Updated replacement pool pump motor standards are necessary by July 19, 2021, to ensure continued energy savings from DOE dedicated-purpose pool pump rule.

Statewide CASE Team **supports Energy Commission proposal.**

- Closes the “application” loophole
- Cost-effective
- Technically feasible
- Significant statewide benefits
- Aligns with DOE DPPP effective date of July 19, 2021



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

Appendix

CA 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 pump 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 total horsepower (THP)

2010: Title 24, Part 6 pool efficiency requirements take effect

2012: Current Energy Commission 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

January 15, 2014: Energy Commission holds workshop, seeks input

March 3, 2014: Energy Commission issues formal data request

May 23, 2014: IOUs docket response to data request

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

September 30, 2014: IOUs docket revised data request response

October 9, 2014: IOUs convened Industry Roundtable with Energy Commission

February 18, 2016: Energy Commission Staff Workshop

July 13, 2016: Energy Commission Staff Workshop

August 3, 2017: Energy Commission Staff Workshop

November 28, 2018: Energy Commission Staff Workshop

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.