

## DOCKETED

<b>Docket Number:</b>	15-AAER-02
<b>Project Title:</b>	Pool Pumps and Spa Labeling
<b>TN #:</b>	221015
<b>Document Title:</b>	California Investor Owned Utilities Comments Response to 2nd Revised Draft Regulations for Pool Pump Motors and Spas
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	California Investor Owned Utilities
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	9/1/2017 3:07:31 PM
<b>Docketed Date:</b>	9/1/2017

*Comment Received From: California Investor Owned Utilities*

*Submitted On: 9/1/2017*

*Docket Number: 15-AAER-02*

**Response to 2nd Revised Draft Regulations for Pool Pump Motors and Spas**

*Additional submitted attachment is included below.*

# Pool Pump Motors & Portable Electric Spas

Codes and Standards Enhancement (CASE) Initiative  
Title 20 Standards Development

Comments regarding second revised draft regulations:  
**Pool pump motors & portable electric spas**

Docket # 15-AAER-02

Prepared for:

September 1, 2017



PACIFIC GAS & ELECTRIC  
COMPANY



SOUTHERN CALIFORNIA  
EDISON



SAN DIEGO GAS AND  
ELECTRIC



SOUTHERN CALIFORNIA  
GAS COMPANY

Prepared by:

CHAD WORTH, ENERGY SOLUTIONS

This report was prepared by the California Statewide Utility Codes and Standards Program and funded by the California utility customers under the auspices of the California Public Utilities Commission.

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## 1. Purpose

The Codes and Standards Enhancement (CASE) initiative presents recommendations to support California Energy Commission's (Energy Commission) efforts to update California's Appliance Efficiency Regulations (Title 20) to include new requirements or to upgrade existing requirements for various technologies. The four California Investor Owned Utilities (IOUs) – Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric (SDG&E), Southern California Edison (SCE), and SoCalGas® – sponsored this effort (herein referred to as the CA IOUs). The program goal is to prepare and submit proposals that will result in cost-effective enhancements to improve the energy and water efficiency of various products sold in California.

## 2. Background

The CA IOUs have been involved with pool and spa energy efficiency for over 15 years, developing and implementing pool-efficiency rebate programs, building codes, and appliance standards. In 2004, the CA IOUs proposed and supported the adoption of the first-in-the-nation appliance standards for pool pump motors in California. These initial requirements included prescriptive design standards banning split-phase and capacitor start-induction run motor construction types, which took effect in 2006. These initial standards also set a requirement that, starting in 2008, all residential pool filtration pump motors greater than one total horsepower (THP) be able to operate at two or more speeds. Also included in these standards was a test-and-list requirement for pool pumps to report “Energy Factor, a metric developed by the CA IOUs and presently used by ENERGY STAR®. In 2006, the Energy Commission adopted a first-in-the-nation standby energy consumption standard for portable electric spas as proposed by the CA IOUs. In 2008, the CA IOUs were also successful in advocating for building code language that required energy-efficient equipment, plumbing, and design on all newly constructed pools in California through Part 6 of Title 24. Years later, some or all of these standards have been adopted in Arizona, Washington, Florida, Oregon, and Connecticut.

In 2012, the Energy Commission initiated a pre-rulemaking to replace the prescriptive motor construction standard with a performance design standard and to adopt a label for portable electric spas. The CA IOUs have been involved in each step of the process, including the submission of a CASE Report to update both the pool pump motor and portable electric spa test procedures, standards, and labeling and reporting requirements.<sup>1</sup> In September 2015, the United States Department of Energy (U.S. DOE) initiated a formal working group to negotiate standards for dedicated-purpose pool pumps (DPPPs). The Energy Commission and CA IOUs participated as members of the working group, which led to a final term sheet of recommendations to U.S. DOE on July 29, 2016. U.S. DOE subsequently released a Direct Final Rule on January 18, 2017, which was finalized via publication in the Federal Register on May 26, 2017. These new DPPP standards will apply to self-priming pool pumps, non-self-priming pool pumps, pressure cleaner booster pumps, and integral pool pumps, and will take effect nationally on July 19, 2021. These do not apply to replacement motors for DPPPs.

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<sup>1</sup> [http://www.energy.ca.gov/appliances/2013rulemaking/documents/proposals/12-AAER-2F\\_Residential\\_Pool\\_Pumps\\_and\\_Replacement\\_Motors/California\\_IOUs\\_Response\\_to\\_the\\_Invitation\\_to\\_Submit\\_Proposals\\_for\\_Pool\\_and\\_Spas\\_2013-07-29\\_TN-71756.pdf](http://www.energy.ca.gov/appliances/2013rulemaking/documents/proposals/12-AAER-2F_Residential_Pool_Pumps_and_Replacement_Motors/California_IOUs_Response_to_the_Invitation_to_Submit_Proposals_for_Pool_and_Spas_2013-07-29_TN-71756.pdf)

Considering the finalized U.S. DOE standards for DPPP, on July 12, 2017, the Energy Commission released a second revised staff report to cover replacement motors for DPPP using a newly created motor weighted energy factor (MWEF) metric to align with U.S. DOE equipment classes. The staff report included an updated proposal on portable electric spas. On August 4, 2017, the CA IOUs attended the Energy Commission public staff workshop and presented on several items in the staff report. On August 10, 2017, U.S. DOE similarly held a public meeting to discuss issues related to the efficiency of DPPP motors. These items and recommendations for improvement are discussed in greater detail in the comments below.

### 3. Summary of CA IOU Support of Second Revised Staff Report

The CA IOUs are broadly supportive of the Energy Commission revised staff report for pool pump motors and portable electric spas. The CA IOUs would especially like to commend the Energy Commission's innovative approach to developing the MWEF, which uses an assumption of hydraulic efficiency to establish similar ratings for replacement pool pump motors. The proposed standards are cost-effective and achievable, and will lead to significant energy savings throughout California, at roughly 801 gigawatt hours per year after stock turnover.

For pool pump motors, the Energy Commission's revised staff report will:

1. Shift motor standards from a prescriptive standard to a performance standard;
2. Align replacement motor standards with the U.S. DOE Final Rule using the new MWEF metric;
3. Extend the standard to cover all pool pump motors up to 5 THP; and
4. Clarify and simplify the test procedure and reporting requirements.

To improve the pool pump motor staff report, the CA IOUs recommend that the Energy Commission:

- Align freeze protection standards with U.S. DOE freeze protection standards; and
- Add clarity to how “power ends” (a motor + impeller) are defined to ensure they are covered by the standard and avoid any loopholes in the standard.

For portable electric spas, the Energy Commission revised staff report will:

1. Clarify the definition of portable electric spas to include inflatable, exercise, and combination spas;
2. Update the portable electric spa standby energy consumption standard; and
3. Require a consumer-facing energy label on all portable electric spas.

The CA IOUs commend the Energy Commission staff for their thoughtful and thorough proposal, and offer the following comments and specific recommendations to improve the second revised staff report for pool pump motors. The CA IOUs do not have any further recommendations to improve the portable electric spas staff report.

## 4. Specific Recommendations on Pool Pump Motors

### 4.1 Modify definition of replacement motors to include “power ends”

At the August 4, 2017, public staff workshop, comments were made about a unique pool pump product referred to as a “power end” that doesn’t fit the traditional definition of a DPPP or a stand-alone motor. A power end is a motor coupled with an impeller, pump seal, and diffuser, but lacking a strainer basket and larger pump housing. It is likely the shipments of these products are relatively low (though we are unaware of any data sources that can help confirm), and the CA IOUs encourage the Energy Commission to explore defining these products so that they are subject to Title 20 standards and do not become a loophole to avoid the standard. The CA IOUs should note that the current Title 20 standards apply to all pool pump motors (including power ends). However, once the U.S. DOE DPPP rule takes effect, there is greater uncertainty how these products will be classified nationally and at the Energy Commission. The CA IOUs encourage the Energy Commission to clarify that power ends are subject to current Title 20 standards. Furthermore, the CA IOUs look forward to working with the Energy Commission and U.S. DOE to ensure power ends do not become a loophole when the U.S. DOE DPPP standards take effect.



**Figure 1: Hayward Tristar "power end"**

Source: <http://www.hayward-pool.com/shop/en/pools/power-end-5hp--tristar-pump-spx3250z1pe>

### 4.2 Align Title 20 and U.S. DOE freeze protection standards

During the U.S. DOE DPPP negotiations, the CA IOUs argued for some basic standards for freeze protection to ensure that significant amounts of energy were not wasted due to overly conservative freeze protection settings. Freeze protection turns on DPPPs at a given temperature for a certain duration to ensure that ice does not accumulate in the pump or the plumbing of the pool, which leads to damage. After much discussion, a compromise agreement was formed that would allow DPPPs to be shipped with the freeze protection disabled, or would allow DPPPs to be shipped with certain default settings for temperature set points, run times, and motor speed. The U.S. DOE prescriptive freeze protection requirements are below. The CA IOUs encourage the Energy Commission to adopt these same freeze protection requirements for replacement motors.

*The pump must be shipped with freeze protection disabled or with the following default, user-adjustable settings:*

- *The default dry-bulb air temperature setting is no greater than 40 °F;*
- *The default run time setting shall be no greater than 1 hour (before the temperature is rechecked); and*
- *The default motor speed shall not be more than 1/2 of the maximum available speed.*