



NATURAL RESOURCES DEFENSE COUNCIL

July 29, 2013

California Energy Commission
1516 Ninth Street, Mail Station 4
Sacramento, CA 95814-5512

Via e-mail: docket@energy.ca.gov

California Energy Commission

DOCKETED
12-AAER-2F

TN 71736

JUL 29 2013

RE: Residential Pool Pumps & Motors – **Docket #12-AAER-2F**

On behalf of the Natural Resources Defense Council and our more than 250,000 members and online activists in California, we respectfully submit this response to the Commission's Invitation to Submit Proposals dated June 13, 2013.

Enclosed is NRDC's proposal under Docket #12-AAER-2F for Residential Pool Pumps & Motors.

We appreciate the opportunity to present our proposals. Please let me know if you have any questions.

Respectfully submitted,

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Proposal for Standards Residential Pool Pumps and Motors Docket No. 12-AAER-2F

Appliance Efficiency Standards and Measures

for California Energy Commission's Invitation to Submit Proposals

Submitted By:

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July 29, 2013



On behalf of the Natural Resources Defense Council (NRDC) and our more than 250,000 members and online activists in California, we respectfully submit this response to the Commission's Invitation to Submit Proposals dated June 13, 2013.

NRDC has reviewed the Investor Owned Utilities (IOUs) standards proposal for residential pool pump motors and residential pool heaters and is in agreement with their analysis, savings estimates and proposal. Rather than repeat much of their content, NRDC highlights below key considerations regarding the IOU-proposal.

According to the IOUs' estimates, there were 1.9 million residential and 50,000 commercial pools in California as of 2012. Pools use energy both in their heating systems and in filtration and pumping systems. A 2008 study prepared by Ecos Consulting¹ for NRDC estimated that 70-80 percent of electricity used by pools in the US was in pumps and motors. The IOUs estimate that statewide energy consumption of pool pumps and motors is 6,000 gigawatt-hours (GWh) per year, with a peak demand of 1,200 megawatts (MW). Yet significant opportunity exists to reduce this electricity use cost effectively through the use of higher efficiency motors, multiple and variable speed motors, and reducing the total dynamic head (TDH) in pool pumping systems.

Residential Pool Pump Motors

The IOUs proposal would replace the current prescriptive regulation for pool pump motors with performance regulations that would be expanded to apply to all single-phase dedicated pool pump motors under 5 HP. The standards would require 70 percent full-load efficiency for single- and dual-speed motors and 80 percent full-load efficiency for variable speed motors. They would also include part-load efficiency requirements for dual- and variable-speed motors of 55 and 70 percent, respectively. The IOUs proposal also includes several other changes to the existing pool pump and motor regulations including recommending changing the prescriptive pool pump requirement to a minimum performance requirement

¹ Now Ecova.

of a 3.8 energy factor (EF), and revising and clarifying language regarding testing, listing, and reporting requirements for pool pumps, motors, controllers and LED pool lights.

The efficiency levels proposed by the CEC are already available on the market today and if implemented by the CEC would achieve 630 GWh of energy use reduction and 120 MW demand reduction after the full stock turnover in 10 years – approximately a 10 percent savings from current pool pump energy use. On a per pump basis, the proposed standards would result in a net present value of \$500 for consumers. Once fully implemented, the regulations would save Californians over \$1 billion in net cost savings. The standards would also reduce emissions by 270,000 MT CO₂ equivalent annually once in full effect.

Residential Pool Heaters

Pool heaters use energy both directly to heat the pool water and indirectly by increasing the amount of energy used by the pool pump to maintain a given flow rate. The IOU proposal would achieve energy savings by addressing the second of these two energy uses. A pool heater is generally plumbed in line with the pool pump and filtration system. The pool water must therefore circulate through the heater at all times which introduces additional friction into the system (known as total dynamic head (TDH)) which the pool pump motor must work to overcome. This is true both when the pool heater is running and when it is off. Because the power consumption of the pool pump motor is proportional to the cube of the motor's speed, this leads to significant wasted energy use. Currently the TDH introduced by pool heaters is unregulated.

The IOU proposal would require pool heaters to have a total dynamic head of no more than 4 feet at flows of 10, 20, 30, 40, 50, and 60 GPM when the pool heater is off. This proposed standard can be met utilizing relatively simple and inexpensive technology options, such as a simple control scheme and bypass relief valve that would route the water around the heater when the heater is not running. The IOUs proposal would provide net cost savings to the consumer of \$240 per unit and total net cost savings of \$110 million after the entire stock turns over. The proposed standard level would also reduce electricity use by 28 GWh and peak demand by 5 MW in the first year. Once the full stock turns over after 6 years, energy savings would be 170 GWh per year, with peak demand reductions of 32 MW. This energy use reduction would result in 74,000 MT of CO₂ equivalent emissions reductions per year after full stock turn over.

NRDC urges the CEC to adopt the IOU proposals for pool pumps and motors and pool heaters. The proposals put forth by the IOUs are cost-effective for consumers and combined would save 800 GWh/year of electricity once fully implemented and reduce peak demand by 152 MW, reducing emissions by 344,000 MT CO₂ equivalent annually.