

## **Comments Submitted to the Environmental Protection Agency**

In establishing the guidelines for 4.7 Peak Period Avoidance operations for pool pumps it is essential to keep in mind that the overall goal of any load reduction program needs to consider pool quality and health. Any curtailment must not degrade pool cleanliness, chemistry, or overall pool system performance, or the program will be rejected by pool owners.

Consider the operation of an air conditioning system. Such systems operate under closed-loop control. As such, if one curtails energy demand by raising the thermostat by a few degrees, the overall effect on “comfort” is understood, and is bounded. On the other hand, if one simply turns off the power to the air conditioner for an hour, the amount of temperature change in the air conditioned space is not known in advance, and is not necessarily bounded.

The proposed pool pump curtailment process resembles the latter case. The “health” of the pool is not typically under any form of closed-loop control. As such, simply requiring that pumps be turned off, or run at their lowest settings, for a fixed period of time, will have an unknown effect on the overall condition of the pool. This is particularly the case given that the high energy usage hours, which are the ones during which curtailment is most likely to occur, are also the ones that exhibit the environmental factors that most quickly degrade pool water quality, and the fact that the rate at which a pool degrades under such conditions is non-linear in time.

As such, the proposed standard should include sufficient flexibility for compliant systems to still operate sufficiently to maintain appropriate quality. Failing this, the standard may actually have a negative effect on overall power consumption. As an example, if a pump is forced to remain off for the entire 6-hour period specified, “recovering” from this may require significantly more pump operation during the remainder of the day.

Given these realities, we feel that the 4.7 Peak Period Avoidance guideline allowing limited operations during the 12 Noon to 6PM period affords a solid balance between utility curtailment goals and the consumer needs for pool health. That said this goal is not possible to implement without further pool energy management and automation.

### **4.7 Peak Period Avoidance**

A) As shipped, the CPPS shall limit operation within a 6-hour, 12 Noon to 6 PM period, in accordance with Table 2.

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**Table 2: Peak Period Operation Requirements**

Pump Type	Allowable Operation
Single-speed Pump	Pump may operate in any sequence for up to 1/3 of the avoidance period duration (e.g. up to 2-hours for a 6-hour avoidance period)
Multi-speed Pump	Pumping shall be limited to the lowest available speed
Variable-speed Pump / Variable-flow Pump	The Pool Pump shall remain in Standby Mode or operate at less than or equal to 1/3 of full-Motor Speed/Rate of Flow