



Path Forward for the Joint Stakeholder Recommendations for Standards for Dedicated-Purpose Pool Pump Motors



Hybrid Slide Deck from historical docs previously sent to DOE with updates, 4/27/20

Outline

- Introduction to pools in the U.S. and pool pumps and motors
- Pool pump energy use and benefits of variable-speed technology
- 2017 DPPP rule and replacement motor loophole
- What would happen if we don't close the loophole
- What's happened since the 2017 DPPP rule
- Our Recommended Action/Why Labeling Approach Works
- Conclusion/Request

Pools in the U.S.

>5 million in-ground pools



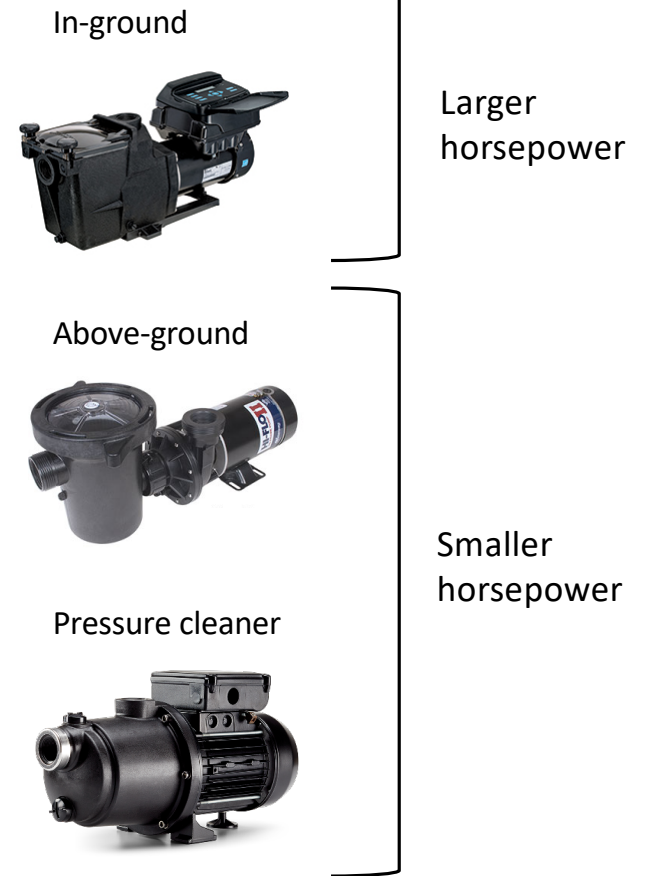
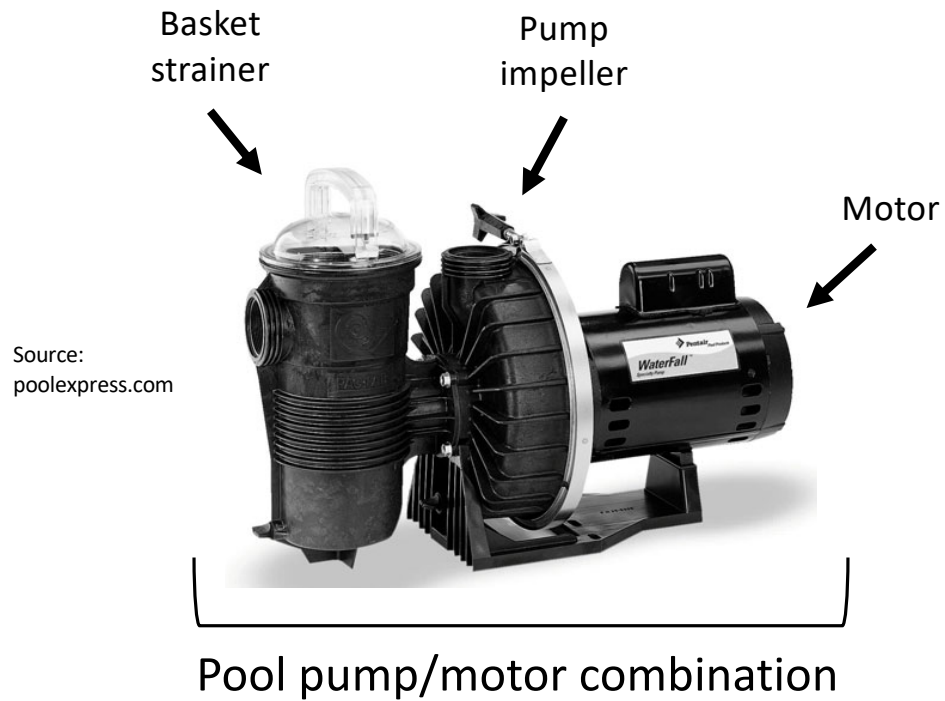
Source: SwimmingPool.com

>3 million above-ground pools



Source: royalswimmingpools.com

Pool pumps and motors



Sources: Hayward, Waterway, Pentair

Pool pump energy use and benefits of variable-speed technology

- Typical pool pumps can use as much as **6,000 kWh/year**
 - **\$780** in electricity costs (at \$0.13/kWh)
- Variable-speed motors can provide very large energy savings as well as other benefits

Filtration =
low speed
pumping



Source: INYOPOOLS.com

Cleaning/mixing =
high speed
pumping



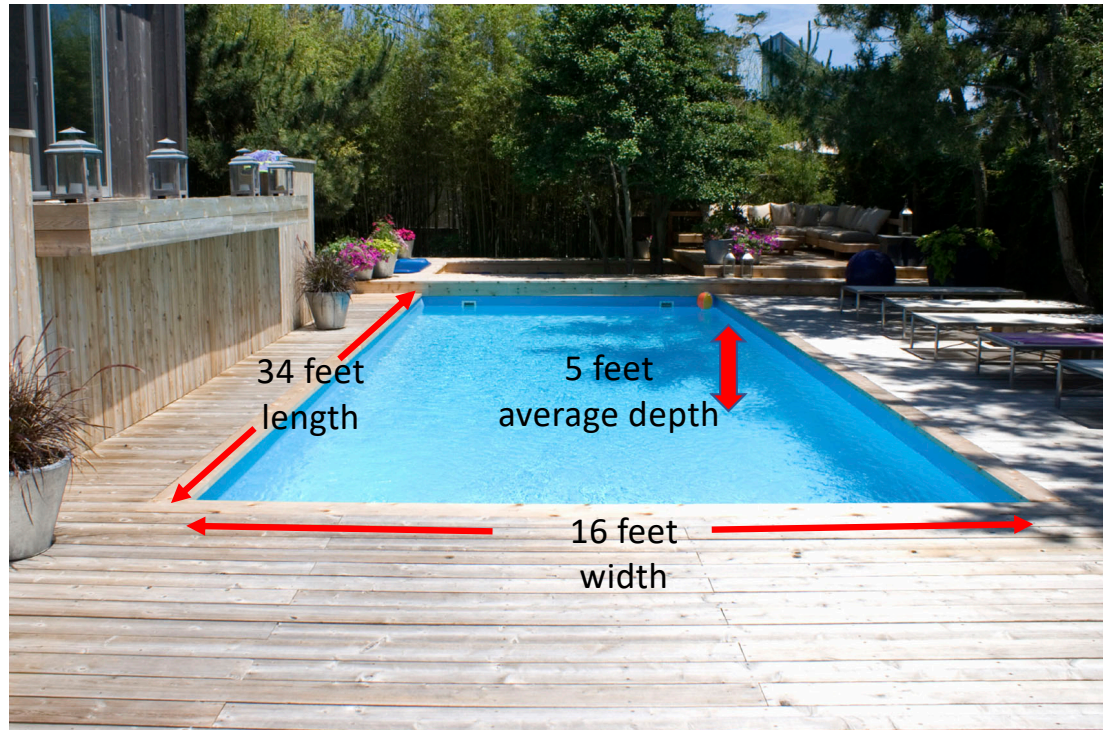
Source: Hayward

A typical 20,000-gallon inground pool may look like this:

Rectangular Pool Volume

$L \times W \times D \times 7.5 = \text{Gallons}$

$34\text{ft} \times 16\text{ft} \times 5\text{ft} \times 7.5 = 20,400 \text{ Gallons}$



2017 DPPP Rule Published by DOE

- For most in-ground pools, the DPPP standards reflect variable-speed technology
- For in-ground pools, about 30% of pool pumps sold today have variable-speed motors
- Market barriers impede variable-speed motors from gaining greater market share such as lack of information to consumers.

Replacement motor loophole

- The 2017 DPPP rule did not address replacement motors, creating a loophole with dire consequences for US manufacturers.



Source: Hayward

Regulated pump/motor
combinations

VS.



Source: Regal Beloit

Unregulated
replacement motors

What would happen if we don't close this loophole?

- There will be an inconsistency in the market between regulated pumps and unregulated replacement motors
- Lower sales of regulated pumps would undercut manufacturer investments and put American manufacturing jobs at risk
- Consumers may unknowingly purchase inefficient, wasteful products that increase their electric bills and don't provide the same features and functionality



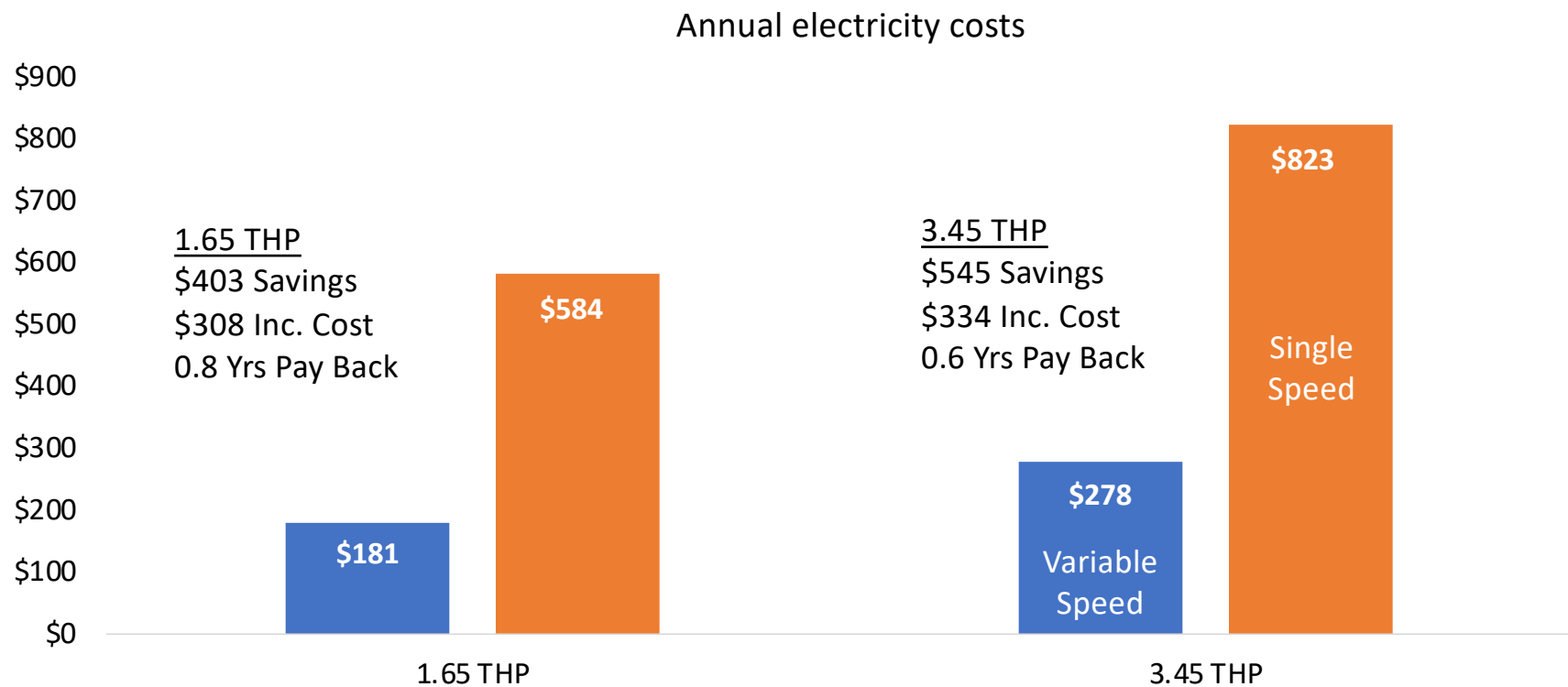
Magnitude of the replacement motor loophole

Scenario	Current	2021 (compliance date of pool pump standard)
Motor replacement	40%	60%
New pump/motor combination purchased	60%	40%

Source: DOE Technical Support Document for Dedicated-Purpose Pool Pumps Direct Final Rule.

Consumer impact of replacement motor loophole

When a variable-speed motor is replaced with a single-speed motor

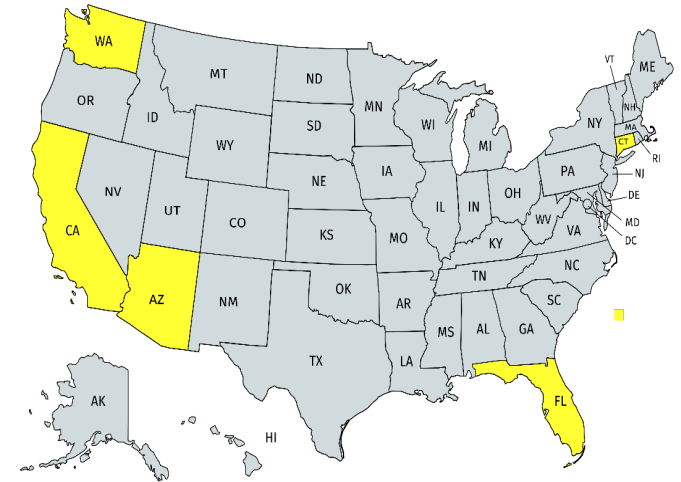


Source: DOE Technical Support Document for Dedicated-Purpose Pool Pumps Direct Final Rule.

Notes: Electricity cost savings assume an average residential electricity price of \$0.13/kWh

No DOE action = patchwork of state standards

- Patchwork approach is not good for consumers or manufacturers
- CEC Pool Pump Motor Rule to take effect 7/19/21
 - A single Covers 0.5 THP and Above – Impacts Low Income Consumers
 - **Does not align with DOE Proposed Pump Motor Rule**
 - As with the pump regulations (until DPPP rule), other states will follow CEC action if a federal standard does not exist
- One national standard is much preferred
 - Reduces burdens on manufacturers avoiding unnecessary costs to the consumer
 - Provides a platform for DOE enforcement
 - Ensures that all consumers benefit, regardless of where they live
 - Prevents unsafe non-compliant DPPP motor imports
 - Protects US jobs



Created with mapchart.net

Timeline since DPPP was published

- January 18, 2017: publication of DPPP rule
- May 2017: APSP reached out to DOE to raise concern about the replacement motor loophole, and multiple stakeholders commented to DOE on the DFR supporting a complementary motor standard
- May 26, 2017: Publication of confirmation of effective date and compliance date
 - “DOE plans to hold a public meeting in the near future with the interested parties to gather data and information that could lead to the consideration of energy conservation standards for replacement pool pump motors”

Timeline Cont.

- August 10, 2017: DOE public meeting
- December 2017-June 2018: Negotiations between pool pump and motor manufacturers and energy efficiency advocates
- July 24, 2018: Stakeholder meeting with DOE
- August 14, 2018: Submission of Joint Petition
- October 26, 2018: 31 comments received in response to DOE Notice of Request for DFR; 30 in support of the petition with one response not relevant to the petition.

Timeline Cont.

- December 12, 2018: industry meeting with DOE, first discussion of alternative labeling approach to joint stakeholder petition
- February 5, 2019: industry meeting with DOE, product showcase of various pump motors, continued discussion on labeling approach
- March 7, 2019: industry meeting with DOE Assistant Secretary Simmons
- September 23, 2019: NEMA & PHTA meeting with DOE to update on CEC action, and reiterate our desire for a federal regulation that aligns with the timing of the existing DPPP regulation.
- February 5, 2020: industry meeting with DOE to inquire on status, provide additional information, highlight product development time

Recommendation for pool pump motor standard

- Standards

- Align pool pump motor standards with the pool pump standards
- Require larger motors to provide the choice of a variety of speeds
- For smaller motors, align the motor types with those in the pool pumps rule

- Labeling

- Include similar labeling requirements as the pool pumps rule to avoid confusion in the market and support national enforcement standards

- Compliance date

- Align compliance date with the pool pumps compliance date (July 19, 2021) to avoid manufacturers having to convert product lines twice, reducing their cost

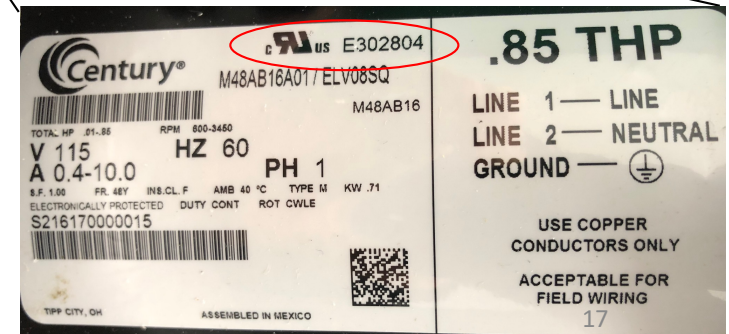
UL 1004-10 Label

- Requirements in UL 1004-10 are identical to Joint Stakeholder Proposal from Aug. 14, 2018
- Developed to identify compliant DPPP Motors with a Label
- Identifies criteria for DPPP motors
 - All DPPP motors shall not be Split-Phase and Capacitor Start Induction Run
 - DPPP motors ≥ 1.15 THP shall be Variable Speed Control
- Requires the following Markings
 - THP
 - Speeds (Single, Dual, Multi or Variable)
 - NRTL (3rd party) mark of compliance

4/27/20



Example of Current Label



DOE Label Proposal

- The alternative labeling rule for DPPPMs would have the following third-party verification requirement:

A manufacturer shall use UL1004-10 certification program, that DOE has classified as nationally recognized, to measure the total horsepower of a basic model of a dedicated-purpose pool pump motor and certify the variable speed capability of a dedicated-purpose pool pump motor over 1.15 total horsepower, and issue a certification marking for the dedicated-purpose pool pump motor.

Consumer benefits of Proposal

Motor horsepower (THP)	Baseline motor (single-speed)			Motor compliant with Joint Proposal (variable-speed)		
	Installed cost (\$)	Annual electricity use (kWh/year)	Annual electricity cost (\$/year)	Installed cost (\$)	Annual electricity use (kWh/year)	Annual electricity cost (\$/year)
1.65	\$280	4,495	\$584	\$588	1,390	\$181
3.45	\$413	6,328	\$823	\$747	2,137	\$278

Source: DOE Technical Support Document for Dedicated-Purpose Pool Pumps Direct Final Rule.

Note: Annual electricity costs assume an average residential electricity price of \$0.13/kWh.

Motor horsepower (THP)	Incremental installed cost (\$)	Annual electricity savings (kWh/year)	Annual electricity cost savings (\$/year)	Simple payback period (years)	Lifetime electricity cost savings (\$)
1.65	\$308	3,105	\$403	0.8	\$2,821
3.45	\$334	4,191	\$545	0.6	\$3,815

Source: DOE Technical Support Document for Dedicated-Purpose Pool Pumps Direct Final Rule.

Notes: Electricity cost savings assume an average residential electricity price of \$0.13/kWh. Lifetime electricity cost savings are undiscounted and assume an average lifetime of 7 years.

Costs of Labeling Proposal

- No real costs associated with the original proposal nor the alternative labeling approach, these costs were already accounted for in the DPPP rulemaking.
 - One exception:
 - a negligible incremental cost to motor manufacturers in obtaining the UL 1004-10 label and
 - a minor cost to pump manufacturers to validate alternate motors and have them listed with appropriate agencies.

Threshold Requirements

- The savings from the proposed DPPP Motor labeling rule would be 50% more than the 3.8 Quads savings found from the DPPP rule.
- This means an additional 1.9 Quads will be saved by the proposed DPPP Motor labeling rule above the savings established in the DPPP rule.

Energy Savings Calculation Methodology: The DPPP rule estimated saving 3.8 Quads from 40% of variable-speed pumps. A DPPPM rule will result in the mix shifting back to current scenario. Resulting additional energy savings pickup from 20% increase in variable speed pumps and 40% variable speed replacement motors i.e. total of 60%, which is 1.5 more than the DPPP rule alone. Hence the resulting savings from the proposed DPPPM rule is estimated at 3.8×1.5 or 5.7 Quads.

Labeling will assist consumers

- Successful consumer labeling programs:
 - Federal procurement officers were directed to specify NEMA Premium by EO in 2005.
 - In 2010 EISA included NEMA Premium levels and sales neared 80% of the market.
 - Energy star variable speed pool pump motor sku availability grew from less than 20 in 2013 to over 120 today as a result of consumer awareness provided by the Energy Star label.
- Conclusion:
 - A consumer label more than doubled market penetration of premium product in three years. However, the combination of a label with a DOE regulation accelerated the product use much faster.

Conclusion

- Our proposal to the Department is to adopt proven methods it has used for motors in the past and apply these methods to the replacement pool pump motor.
- There is no extra cost to this proposal, industry does this already and adding a label is not a burden.
- Rather, it is a sufficient way to eliminate the loophole that currently exists, and why we pursued, as it accomplishes the goal.
- **July 19, 2021 compliance date is critical** to align with DPPP rule and supersede recent CEC action to eliminate patchwork approach.
- Collaboration over the last 30 plus months with all interested parties

Takeaways & Request

- If loophole remains:
 - It will hurt US jobs
 - Consumers will be stuck with inefficient, imported motors
 - Consumer electric bills will increase by hundreds of dollars each year
- Time is of the essence for industry:
 - Product development stalled
 - State DPPP Motors regulatory actions in process

We respectfully request that OIRA & DOE put this proposed rule on the most expedited track possible, with a compliance date of July 19, 2021.