

DOCKETED

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California Energy Commission

Draft Portable Electric Spa Standards

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Presentation Agenda

- Workshop Purpose
- Scope
- Staff Proposal
- Technical Feasibility
- Cost Effectiveness
- Statewide Energy Savings
- Environmental Benefits
- Discussion Topics



Workshop Purpose

- Changes from previous staff proposal
 - Leave portable electric spa definition as is
 - Define exercise spas, combination spas, and standby mode
 - Modify the proposed labeling requirement
- Unchanged items from previous staff proposal
 - Adopt the ANSI/APSP/ICC-14 (2014) test method with the exception of the separate exercise spa standard
 - Achieve energy savings by increasing the standby power consumption standard



Workshop Purpose

- The revised staff report contains the proposal details
http://docketpublic.energy.ca.gov/PublicDocuments/15-AAER-02/TN211842_20160616T124038_Revised_Analysis_of_Efficiency_Standards_for_Pool_Pumps_and_Mot.pdf
- Staff seeks public comments on the revised proposal



Scope



Standard Hard Shell



Flexible/Inflatable Shell



Swim/Exercise/Combination

“Portable electric spa” means a factory-built electric spa or hot tub, supplied with equipment for heating and circulating water.

Sources: www.all-seasons-spa-stove.com, intexcorp.com, h2xswimspa.com



Definitions

Proposed Additional Definitions:

- “Exercise spa” (also known as a “swim spa”) means a portable electric spa designed to produce a water flow intended for water therapy or recreational physical activity, including, but not limited to, swimming in place.
- “Combination spa” (also known as a “combo spa”) means an exercise spa with multiple reservoirs of water capable of heating each body of water.
- “Standby mode” means that only the default settings as shipped by the manufacturer are enabled, except water temperature, which may be adjusted to meet the test conditions. No manual operations are enabled (as defined in ANSI/APSP/ICC-14 2014).



Test Method

Proposed Test Method:

- ANSI/APSP/ICC-14 (2014) with the exception of the separate standby power consumption for exercise spas



Standby Power Standard

- Current maximum standard: For all portable electric spas manufactured on or after January 1, 2006, and before **January 1, 2018**:

$$5 \times (\text{Volume}^{2/3})$$

- Proposed maximum standard: For all portable electric spas, including swim spas, manufactured on or after **January 1, 2018**:
 - Within ANSI/APSP/ICC-14 (2014)

$$\boxed{[3.75 \times (\text{Volume}^{2/3})] + 40}$$

Updated for energy savings

Relief for smaller volume spas



Revised Label Requirement

- Model the label requirement after the label found in ANSI/APSP/ICC-14 (2014)
- The spa shall be marked by the manufacturer with the label per ANSI/APSP/ICC-14 (2014)
- The manufacturer shall identify the spa cover test model number during certification

Portable Electric Exercise Spa ENERGY GUIDE	
Manufacturer: xxx Model: xxx Capacity (# of people): xx	Volume 1675 USG
Standby Power* 426 Watts	
426 Watts	

Portable Electric Combo Spa ENERGY GUIDE		
Manufacturer: xxx Model: xxx Capacity (# of people): xx	Exercise Spa Portion	Spa Portion
Volume	1450 USG	280 USG
Standby Power*	481 Watts	176 Watts
657 Watts		

ANSI/APSP/ICC-14 (2014)

Portable Electric Spa ENERGY GUIDE

Manufacturer: xxx Model: xxx Capacity (# of people): xx	Volume 300 USG
Standby Power*	192 Watts

176 Watts

Average Standby Power Range of Portable Electric Spas with a similar volume range

Maximum standby power allowed for this size spa under California Title 20, and ANSI/APSP/ICC-14 2014: 208 Watts
 Total annual power consumption in standby mode*: 1542 kWh
 Annual Standby Energy Cost* = 1822 x Energy Rate (cost per kilowatt hour in your area)
 *Data is based on standard test procedure for Portable Electric Spas as stipulated in ANSI/APSP/ICC-14 2014. Note: This is the amount of power used at test conditions and does not include spa usage or extreme cold conditions. This data should be used only for comparison of spa models. Power is not monthly energy consumption.
 Based on testing with the spa manufacturer's specified cover. This spa must be sold with this cover or a manufacturer's approved equivalent that has also been tested with the unit.
 Tested Cover Model(s): xxx
 Tested Cover Model(s): xxx
 Power calculated based on standby testing @ 60°F. Actual values will vary based on use.

This Label Must Remain Adhered to Spa Until Point of Sale.



Revised Label Requirement (Cont.)

Proposed Changes to Table X, section 1606

For models tested with more than one cover:

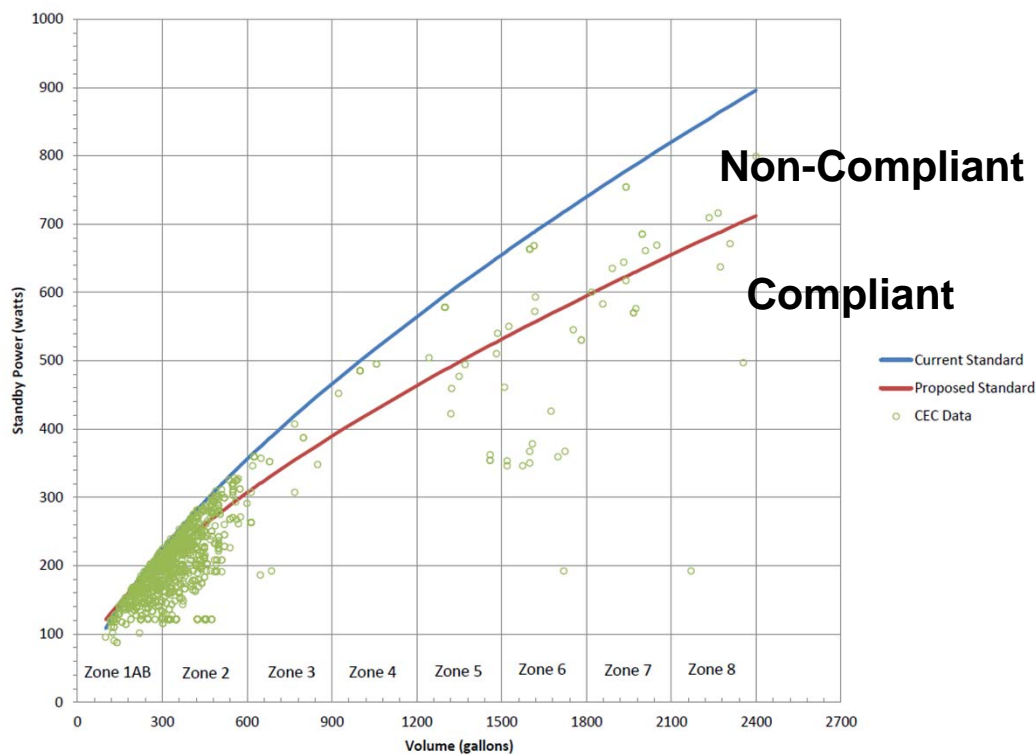
- only the covers that result in a passed standby test may be sold with the unit, and
- only the cover that yields the maximum standby result shall represent the model on the label

	Appliance	Required Information	Permissible Answers
G	Portable Electric Spas	<u>**Tested Spa Cover Model Number</u>	
		<u>*Spa Type</u>	Portable Electric Spa, Exercise Spa, Combination Spa
		<u>*Voltage</u>	
		<u>Spa Volume (gallons) (for spas and combination spas only)</u>	
		<u>Exercise Spa Volume (gallons) (for exercise and combination spas only)</u>	
		Rated Capacity (number of people)	
		<u>Normalized Standby Power Spa Portion (watts) (for spas and combination spas only)</u>	
		<u>Normalized Standby Power Exercise Spa Portion (watts) (for exercise and combination spas only)</u>	
		Spa Enclosure is Fully Insulated	Yes, No



Technical Feasibility

Revised Charts of Certified Portable Electric Spas in the Appliance Database



	Volume (gal.)	Compliant (%)	Non-Compliant (%)
Portable Spas	0 to 899	72.5	27.5
Exercise Spas	900 to 2,400	47.7	52.3
All Certified Units	0 to 2,400	71.3	28.7



Technical Feasibility (cont.)

- Increase spa standby performance by:
 - Using better shell insulation
 - Improving spa cover designs or insulation materials
- Test method
 - Represents an updated industry standard
 - ANSI/APSP/ICC-14 (2011) effective in Florida on March 15, 2012



Cost Effectiveness

Incremental Costs from Non-compliance to Compliance

	Incremental Cost to Improve Insulation and/or Cover (\$)	Incremental Cost of Labeling (\$)
Portable Electric Spas	\$100	\$0.39
Exercise Spas	\$375*	\$0.39

2006 study by Nadel, deLaski, Eldridge, & Kleisch, and 2014 CASE Report

Weighted Unit Energy Savings and Lifecycle Benefits

	Design Life (years)	Electricity Savings (kWh/year)	Lifecycle Costs (\$/unit)	Lifecycle Benefit (\$/unit)	Lifecycle Benefit/Cost Ratio
Portable Electric Spas	10	317	\$ 100.39	\$ 512	5
Exercise/Combo Spas	10	1,451	\$ 375.39*	\$ 2,349	6

*Includes an additional assumed \$275 since referenced study did not look at swim spas



Statewide Energy and Cost Savings

Table A: Standby Power Standard Statewide Annual Stock Savings

	First-Year Savings		Complete Turnover Savings	
	Energy Consumption (GWh/yr)	Savings (Million \$)	Energy Consumption (GWh/yr)	Savings (Million \$)
Total	6.1	1.00	77.6	12.6

Table B: Statewide Annual Stock Savings Adjusted for Label Impact

	First-Year Savings		Complete Turnover Savings	
	Energy Consumption (GWh/yr)	Savings (Million \$)	Energy Consumption (GWh/yr)	Savings (Million \$)
Total	6.9	1.1	83.8	13.6

5% impact on total consumption based on improvement to sales-weighted average efficiency using the categorical European Union (UE) Labeling Scheme



Environmental Benefits

	Annual Avoided Emissions (tons)					
	Oxides of nitrogen (NO _x)	Sulfur dioxide (SO _x)	Carbon monoxide (CO)	Particulate matter (PM _{2.5})	Total Air Pollutants	Green house Gas (eCO ₂)
Portable Electric Spas	3.9	0.56	5.57	1.67	11.7	38,399
Exercise Spas	1.75	0.25	2.51	0.75	5.26	17,285
Total	5.5	0.77	7.93	2.38	16.96	55,684



Discussion Topics

- With different ways to increase spa efficiency, what is currently the most cost effective improvement in the industry for a spa?
- Do manufacturers see any recent improvement trends in the spa market?
- How are small spa businesses affected by the staff proposal?



Comments

- Comments due **by 5:00 p.m. on July 29, 2016**
- To submit electronically:
 - Go to <http://www.energy.ca.gov/appliances/2015-AAER-02/rulemaking/>
 - Click on “Submit eComment”
- To send a hard copy:

California Energy Commission
Dockets Office, MS-4
Re: Docket No. **15-AAER-02**
1516 Ninth Street
Sacramento, CA 95814-5512
- To send a digital copy: docket@energy.ca.gov, include docket number **15-AAER-02** and indicate Pool Pump Motors and Portable Electric Spas in the subject line



Thank You!

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