

DOCKETED

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OIR-19-01 Headroom to reduce renewables curtailment

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Some building standards could be amended to provide more headroom to reduce renewables curtailment.

See attached below

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Additional submitted attachment is included below.

OIR-19-01 Headroom to reduce renewables curtailment

Some building standards could be amended to provide more headroom to reduce renewables curtailment.

As currently written, the CEC NONRESIDENTIAL COMPLIANCE MANUAL FOR THE 2019 BUILDING ENERGY EFFICIENCY STANDARDS Table F3 Standards for Small Federally-Regulated Water Heaters requires that electric storage water heaters >55 gallons are required to have a minimum Energy Factor (EF) of $2.057 - (0.0013 * \text{Tank Volume})$.

This requirement effectively prohibits electric resistance water heaters enabled as grid-interactive water heaters (GIWH) from being utilized for dynamic grid response because electric resistance water heaters have lower EF values than the currently written standard. The increased EF requirement effectively requires the use of heat pump water heater technology for tank volumes >55 gallons, which does not provide the same grid benefits as electric resistance water heaters.

On April 30, 2015, President Obama signed into law a bipartisan bill "the Energy Efficiency Improvement Act" which included amended draft language to be inserted into federal efficiency standards for electric water heaters that allowed for lower EF for electric storage water heaters when used for the aforementioned grid benefits.

See <https://efiling.energy.ca.gov/GetDocument.aspx?tn=205619>

**Table F-3
Standards for Small Federally-Regulated Water Heaters**

Appliance	Rated Storage Volume (gallons)	Minimum Energy Factor	
		Effective January 20, 2004	Effective April 16, 2015
Gas-fired storage-type water heaters	≤ 55	$0.67 - (.0019 \times V)$	$0.675 - (0.0015 \times V)$
	> 55		$0.8012 - (0.00078 \times V)$
Oil-fired water heaters (storage and instantaneous)	Any	$0.59 - (.0019 \times V)$	$0.68 - (.0019 \times V)$
Electric storage water heaters (excluding tabletop water heaters)	≤ 55	$0.97 - (.00132 \times V)$	$0.960 - (0.0003 \times V)$
	> 55		$2.057 - (0.00113 \times V)$
Electric tabletop water heaters	Any	$0.93 - (.00132 \times V)$	$0.93 - (.00132 \times V)$
Gas-fired instantaneous water heaters	Any	$0.62 - (.0019 \times V)$	$0.82 - (.0019 \times V)$
Electric instantaneous water heaters (excluding tabletop water heaters)	Any	$0.93 - (.00132 \times V)$	$0.93 - (.00132 \times V)$
Heat pump water heaters	Any	$0.97 - (.00132 \times V)$	$0.97 - (.00132 \times V)$

V = Rated storage volume in gallons.