



ENERGY STAR® Water Heaters Update

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Overview



- Residential Water Heaters
 - Version 2.0 Specification
 - On the Horizon
 - Sales and Marketing Outreach
- Commercial Water Heaters
 - Version 1.0 Specification Roll Out
 - Sales and Marketing Perspective
 - Future Plans



ENERGY STAR[®] Residential Water Heaters



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Certified Water Heaters



- Electric Heat Pump (HPWH)
- Gas storage
- Gas instantaneous (Tankless)
- Solar



Savings, Pay Back, & Incentives



Type	Specification	Typical Installed Cost	Annual Savings	Pay Back	# of States with Incentives
HPWH	EF \geq 2.0	\$1,000 - \$2,000 (May be higher in some markets)	\$220	4 years	16 states
Gas Storage	EF \geq 0.67	\$1,265 (Maybe higher depending ductwork)	\$41	10 years	22 states
Gas Tankless	EF \geq 0.82	\$1,470 - \$2,500 (Some sites installation can cost up to \$5,000)	\$86	7 – 19 years	28 states
Solar	SEF \geq 1.8 for electric backup SEF \geq 1.2 for gas backup	\$3,200 - \$6,000	\$259	9.5 – 20 years	18 states

Version 2.0 Specification



- Effective July 2013
- Key changes:
 - Includes “Light duty EPACKT”
 - $75 \text{ kBtu/hr} \leq \text{input} \leq 100 \text{ kBtu/hr}$,
 - $2 < \text{Storage volume between} < 100 \text{ gallons}$
 - $\text{TE} \geq 0.90$ (condensing),
 - $\text{Standby loss} \leq 2374 \text{ btu/hr} * (\text{TE} - 0.74)$
 - Solar WH: Solar Energy Factor replaces Solar Fraction metric, equivalent performance requirement

Exciting Developments!



- First storage units above 0.70 EF
 - Rheem PRO+G29-60N RH70
Rheem Prestige condensing storage WH
- Additional condensing units in light duty EPACT category
 - A.O. Smith, American, State, Reliance
- New web site expands EPA role in consumer advice

On the Horizon



- Upcoming DOE activity will require a revision:
 - Test method finalized Summer 2014
 - Crosswalk finalized December 2014
 - Test method and new standards effective April 2015
- EPA anticipates acting in response:
 - Version 3 developed with stakeholders in 2014
 - Goal of April 2015 effective date
 - To meet, will need to develop spec in terms of EF, use December 2014 crosswalk as DOE will
 - Maintains relevance of ENERGY STAR label in 2015

New Test Method for Uniform Descriptor of Efficiency



- Now in development through DOE process
 - New test method for all water heaters used in residential applications
 - Supersedes current test method
 - Also includes some gas storage units > 75 kBtu/hr input rate
 - Fills test method holes, including units with 2-20 gallons of storage
- Crosswalk will be used to compare results of new test with already finalized Federal standards

April 2015 DOE standards



- April 2015 DOE standards
 - At or near ENERGY STAR levels for all gas WH and for large electric storage WH
 - Will also include electric backup tanks used with solar water heaters
 - NOPR references waiver for grid-connected
- Look for launch of Version 3.0 ENERGY STAR Residential Water Heater development

Sales and Marketing Outreach



- Working closely with retail partners
 - Increased ENERGY STAR Messaging
 - Provided employee training materials
 - Consumer education materials
- Conducting outreach to contracting groups and distributors
- Coordinating with industry groups and advocates on messaging
- Developing blog posts and social media content
- Implementing a new, more consumer friendly website



ENERGY STAR[®] Commercial Water Heaters



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Now in business!



- Specification went into effect March 2013
 - Thermal efficiency 0.94 (or EF 0.93)
 - Standby loss (storage only) 16% below DOE standard
 - Excludes storage WH greater than 140 gallons
- Currently 204 products from 12 brands certified
- ENERGY STAR Commercial Kitchens marketing now includes water heater information
- FEMP has discontinued their list, referring to the ENERGY STAR list instead

115 ES certified commercial gas storage water heaters



- Meet following criteria:

TEF > 0.04 or EE > 0.02 Condensing technology required

- Standby loss $\leq 0.84 * [(Input\ Rate / 800) + 110 * (Volume_r)^{1/2}]$ (Btu/hr)

- Made by all the major manufacturers

- AO Smith
- Bradford White
- Larrs
- Rheem

- Range of sizes

- Storage volume ranges from 50 to 140 gallons
- Input rate from less than 140 to over 200 kBTU/hr



Sales and Marketing: Commercial WH Market



- 2010 US shipments: 79,000 gas; 58,000 electric
- 10% sold are tankless
- 18% sold are gas condensing
- Market structure: makers sell to
- Property manager key in replacement scenarios;

Barriers to ES Commercial Water Heaters Market Entry



- Emergency replacement an issue – not regularly stocked
- Costs and paybacks
 - Capital costs for gas storage unit 30% more
 - Install costs can be higher due to special PVC venting for condensing units
 - Need for quick paybacks due to lower lifetime of heavily used
- Building owners, building managers, and design engineers unaware -- driven by low cost bid quotes
- Utilities are not incenting ES CWHs specifically
 - Centerpoint incents WHS with only $\geq 88\%$ efficiency
 - PG&E incents residential water heaters $EF > 0.67$

ES Commercial Gas Storage WH

Savings Encouraging



- Energy savings depend on water
- Payback less than 2 years – full service restaurant saves \$1550 per year at an incremental cost of \$2400*
- Condensing units have been around for 15 years -- incremental install costs not always present

* Extra cost of 2 ES gas storage WHs



ES Efforts in Next Few Months

- Partner with gas utilities (tie to ES EEPs efforts) to incentivize commercial gas storage equipment spec
- Target restaurants (tie to ES CFS efforts) whose
- Conduct trade press outreach

Outreach Materials



- Developing materials targeting food service industry
 - Less than 2-year payback in a full-service restaurant
 - Case Study with Food Service Technology Center and Yum!

350 -

On the Horizon



- Partner with food service and gas utility programs to
 - Develop blog posts and a webinar highlighting
- Add commercial heat pump water heaters into scope, once DOE completes test method
- Revise specification to resolve whether new uniform descriptor can be used

Contact Information



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