



**ENERGY STAR Commercial Water
Heaters
Presented at the ACEEE Hot Water
Forum
Tuesday, February 24, 2015**

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EPA ENERGY STAR Certified Commercial Water Heaters – The Basics

Eligible Product Types	
Type	Capacity Requirements
Gas Storage	> 75,000 BTU/hr input; <= 140 gallons storage capacity
Gas Tankless	>= 4,000 BTU/hr per gallon of stored water; industrial equipment

Efficiency Requirements			
Metric	Type	Requirement	Federal Standards
Thermal Efficiency (TE)	Storage; Tankless	TE >= 0.94	TE >= 0.80
Maximum Standby Loss (BTU/hr)	Storage	$\leq 0.84 * [(Input\ Rate / 800) + 110(Volume_r)^{1/2}]$	$\leq [(Input\ Rate / 800) + 110(Volume_r)^{1/2}]$

Requires condensing technology!



Manufacturer Participation Has Been Excellent

- Effective March 2013
- Excellent Participation
 - Largest names in industry
 - 315 gas storage models
 - 66 gas tankless models
- Searchable (type, size, brand) list online

ENERGY STAR Certified Commercial Water Heaters

Compare up to 4 items

Sort by: Thermal Efficiency (TE) ↑↓

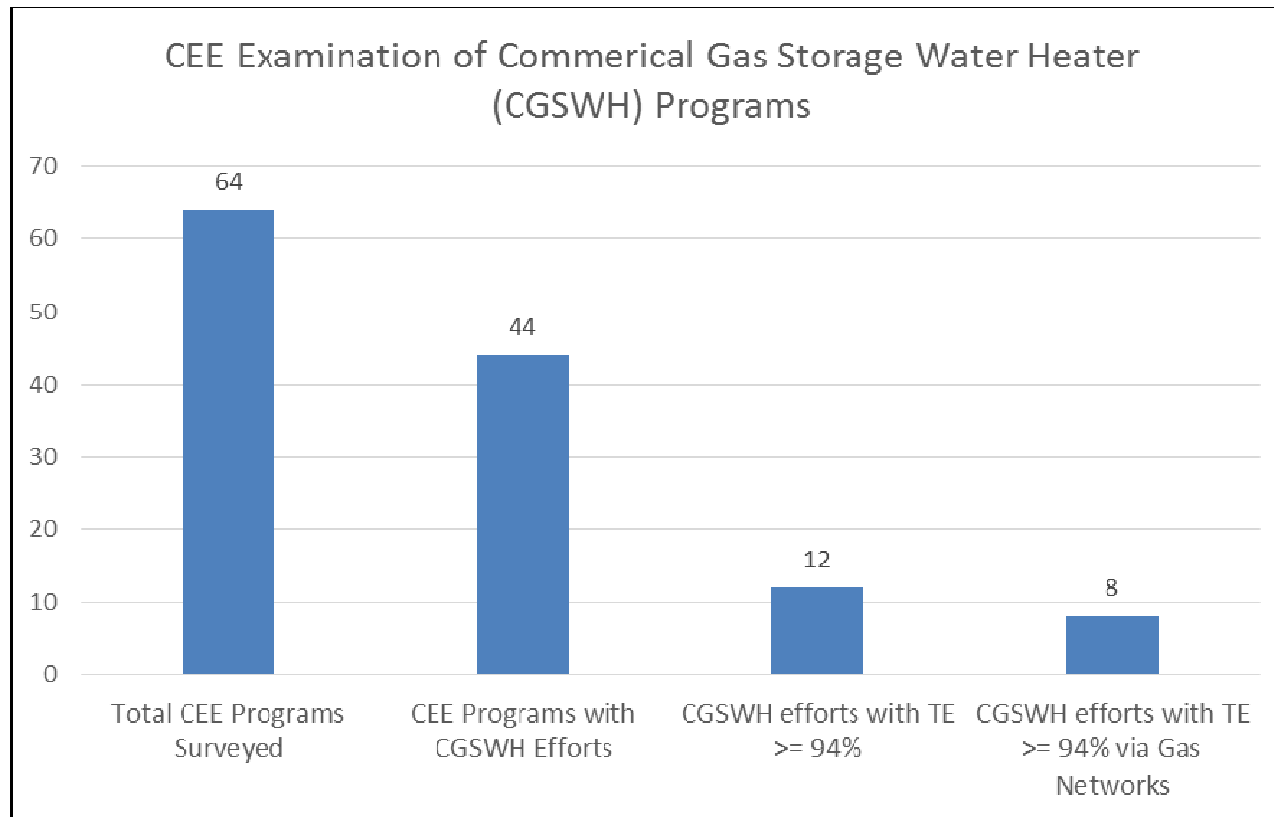
1 - 20 of 381 Records Found

Brand Name	Type	Energy Factor (EF)	Thermal Efficiency (TE)	Compare
A. O. Smith - BTH 150A 201	Gas Storage		98.0	<input type="checkbox"/>
State - SUF 100 150NEA 200	Gas Storage		98.0	<input type="checkbox"/>
John Wood - AJWSH100150 P 201	Gas Storage		98.0	<input type="checkbox"/>
American - AHCG3-100T150-3P 201	Gas Storage		98.0	<input type="checkbox"/>
A. O. Smith - BTH 150 201	Gas Storage		98.0	<input type="checkbox"/>





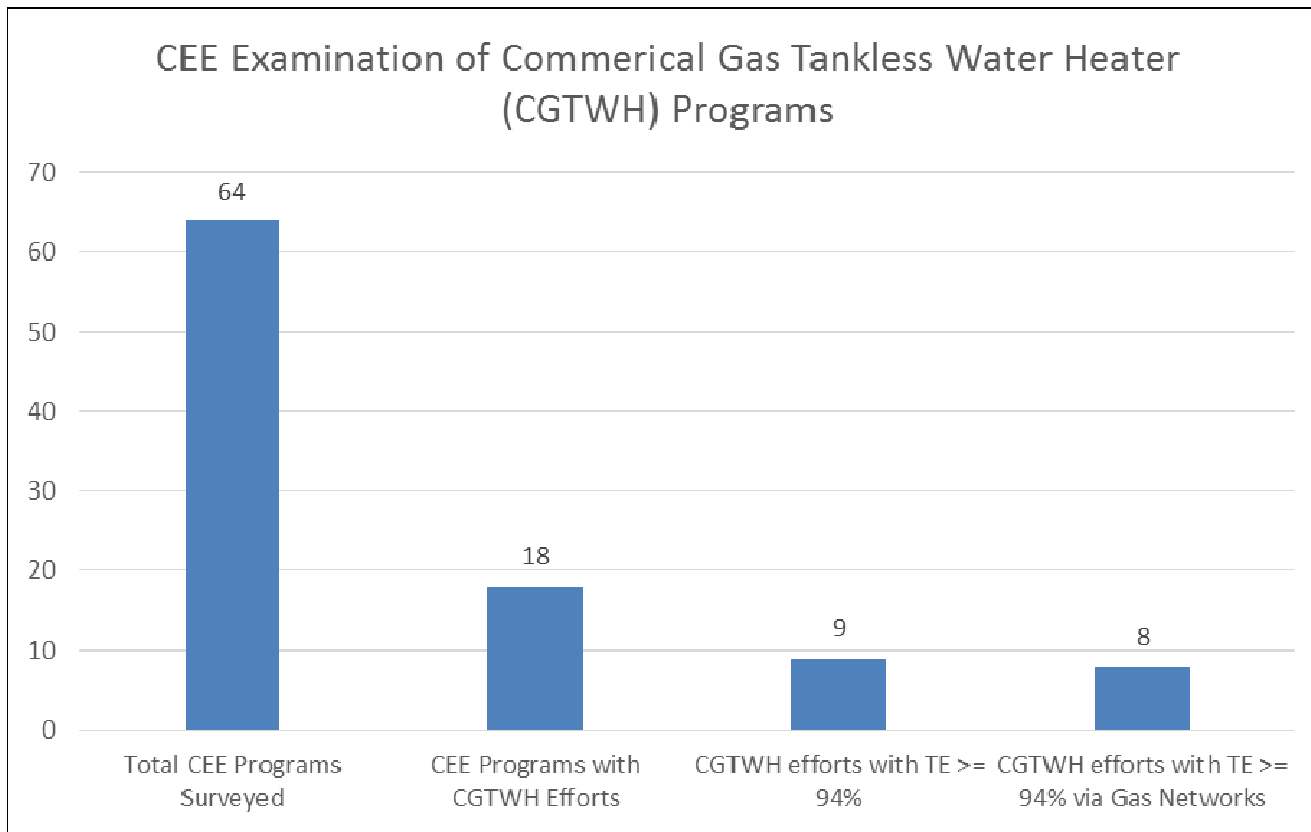
Some Utilities Use ES Criteria for Commercial Gas Storage



- CGSWH programs are popular
 - 44 out of 64 surveyed have them
- Not many use ES TE level
 - only 12 out of 44
- Data may be biased as most from one effort
 - 8 of 12 affiliated with Gas Network in New England



Some Utilities Use ES Criteria for Commercial Gas Tankless



- CGTWH programs not as popular
 - 18 out of 64 surveyed have them
- Half (9 of 18) use ES TE level
- Data may be biased as most from one effort
 - 8 of 9 affiliated with Gas Network in New England



Gas Networks Go Beyond ENERGY STAR Specification

Gas Networks
Save energy solutions from your local gas company

FINANCING NOW AVAILABLE

2015 HIGH-EFFICIENCY Commercial & Industrial Natural Gas Equipment Rebates

Save energy with high-efficiency equipment. Rebates are provided to reduce the cost difference between standard efficiency and high-efficiency equipment.

- High-Efficiency Heating Equipment
- High-Efficiency Water Heating Equipment
- After Market Boiler Reset Controls
- Programmable Thermostats
- Steam Traps

ENERGY EFFICIENCY PROGRAM ADMINISTRATORS

 1-877-383-1759 www.berkeleygas.com efficiency@berkeleygas.com	 1-800-797-6699 www.capelight.com efficiency@capelight.com	 1-800-232-0120 www.columbiagasMA.com efficiency@columbiagas.com
 1-781-441-8592 www.eversource.com efficiency@eversource.com	 1-808-324-7811 www.libertyutilities.com efficiency@libertyutilities.com	 1-800-843-7636 www.nationalgrid.com efficiency@nationalgrid.com
 1-888-301-7700 www.unitil.com efficiency@unitil.com		

WATER HEATING EQUIPMENT		
ON-DEMAND TANKLESS with Electronic Ignition	RATING	REBATE
	Energy Factor of .82 or greater	\$500
	Energy Factor of .94 or greater	\$800
HIGH-EFFICIENCY INDIRECT WATER HEATER Must be connected to a Natural Gas Boiler		REBATE \$400
CONDENSING STAND ALONE 75 to 300 MBH	RATING	REBATE
	95% Thermal Efficiency or greater	\$500

- Rebates of \$500 to \$800
- Exceeding ES TE level for storage
- At ES TE level for tankless



PSE Uses ENERGY STAR Commercial Hot Water List

The screenshot shows the PSE website's 'Savings & Energy Center' page. The breadcrumb trail is 'Savings & Energy Center » For Businesses » Commercial Rebates and Grants ». The main heading is 'Gas Measures and Incentives for Commercial, Industrial and Non-Residential Projects'. Under this heading, there are three sections of incentives:

- High-efficiency commercial clothes washer: Up to \$200 per qualified machine**
 - High-efficiency coin operated commercial clothes washers
 - Eligible commercial washers must be ENERGY STAR® qualified.
- Condensing water heater in restaurants: \$800**
 - Eligible water heaters must be ENERGY STAR® qualified.
 - Must serve the dishwasher
- Condensing boiler in restaurants: \$1,500**
 - Eligible boilers must be ENERGY STAR® qualified.
 - Must serve the dishwasher
- Commercial water heater in laundry: \$800**
 - Eligible water heaters must be ENERGY STAR® qualified.
 - Click here for [application](#)
 - [Click here for a list of qualifying full service water heaters](#)

- \$800 incentive
- Linked directly to ENERGY STAR
- Limited to restaurants and laundry
- Uses ENERGY STAR certified product list





PSE Uses ENERGY STAR Certified Commercial Water Heater List

For use by:
Puget Sound Energy, Cascade Natural Gas

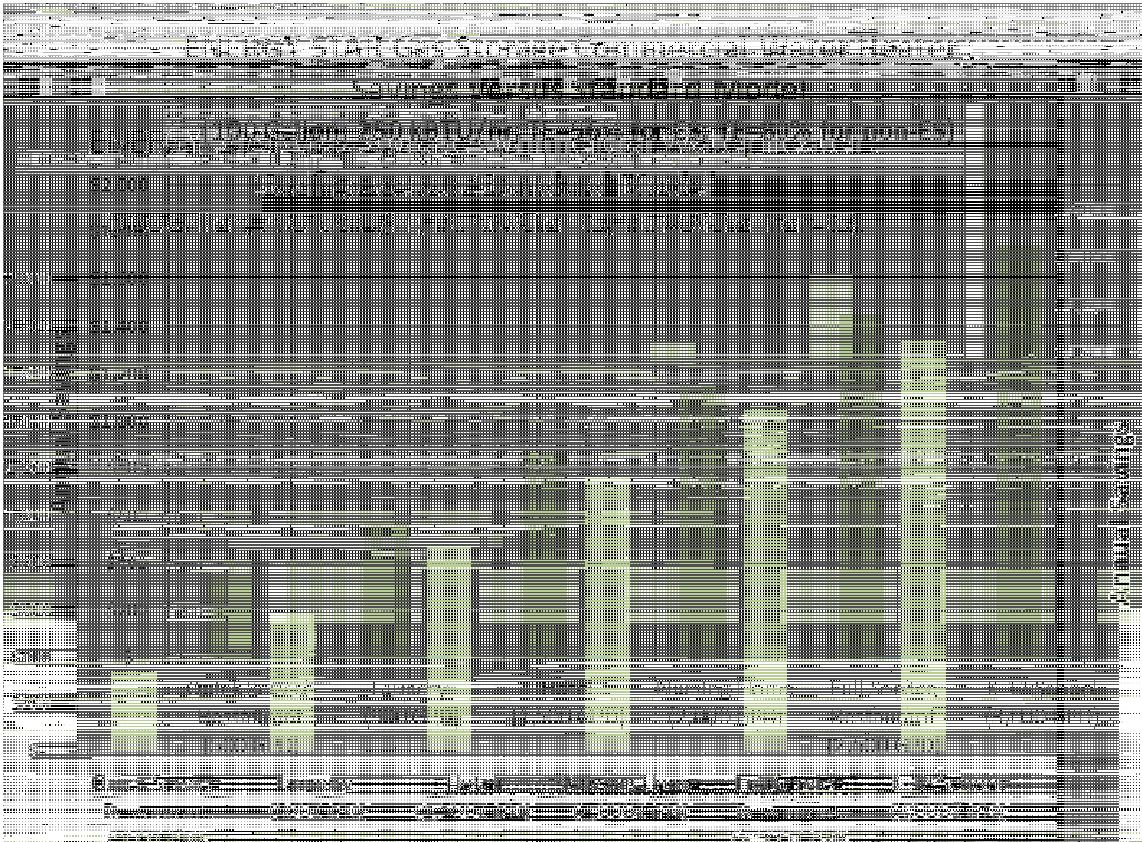
ENERGY STAR Certified Commercial Gas Water Heaters

10/21/2014

ENERGY STAR Partner	Brand Name	Model Name	Model Number	Additional Model Information	Type	Fuel	Vent Type	Storage Volume (gallons)	Tank Height (in.)	Height to Vent (in.)	Tank Diameter (in.)	Vent Size (in.)	Vent Size 2 (in.)	Standby Loss	Energy Factor (EF)	Therms/yr for Natural Gas
A.O. Smith Corporation	A. O. Smith	BTH 120 *	BTH 120 *		Gas Storage	Natural Gas	Power Vent	60.0	41.8	11	24	3	4	613		
A.O. Smith Corporation	A. O. Smith	BTH 120 200	BTH 120 200		Gas Storage	Natural Gas	Power Direct Vent	60.0	41.8	11	24	3	4	800		
A.O. Smith Corporation	A. O. Smith	BTH 120A 200	BTH 120A 200		Gas Storage	Natural Gas	Power Direct Vent	60.0	41.8	11	24	3	4	800		
A.O. Smith Corporation	A. O. Smith	BTH 150 *	BTH 150 *		Gas Storage	Natural Gas	Power Vent	100.0	62.4	11	24	3	4	1079		
A.O. Smith Corporation	A. O. Smith	BTH 150 200	BTH 150 200		Gas Storage	Natural Gas	Power Direct Vent	100.0	62.9	11	24	3	4	1000		
A.O. Smith Corporation	A. O. Smith	BTH 150A 200	BTH 150A 200		Gas Storage	Natural Gas	Power Direct Vent	100.0	62.9	11	24	3	4	1000		
A.O. Smith Corporation	A. O. Smith	BTH 199 *	BTH 199 *		Gas Storage	Natural Gas	Power Vent	100.0	62.4	11	24	3	4	967		
A.O. Smith Corporation	A. O. Smith	BTH 199 200	BTH 199 200		Gas Storage	Natural Gas	Power Direct Vent	100.0	62.9	11	24	3	4	1000		
A.O. Smith Corporation	A. O. Smith	BTH 199A 200	BTH 199A 200		Gas Storage	Natural Gas	Power Direct Vent	100.0	62.9	11	24	3	4	1000		
A.O. Smith Corporation	A. O. Smith	BTH 250 * 100	BTH 250 * 100		Gas Storage	Natural Gas	Power Direct Vent	100.0	62.4	11	24	3	4	800		
A.O. Smith Corporation	A. O. Smith	BTH 250 200	BTH 250 200		Gas Storage	Natural Gas	Power Direct Vent	100.0	62.9	11	24	3	4	1000		
A.O. Smith Corporation	A. O. Smith	BTH 250A 200	BTH 250A 200		Gas Storage	Natural Gas	Power Direct Vent	100.0	62.9	11	24	3	4	1000		
A.O. Smith Corporation	A. O. Smith	BTH 300 *	BTH 300 *		Gas Storage	Natural Gas	Power Vent	119.0	63.5	12	30	4	6	1084		
A.O. Smith Corporation	A. O. Smith	BTH 300 200	BTH 300 200		Gas Storage	Natural Gas	Power Direct Vent	119.0	63.5	12	30	4	6	1200		
A.O. Smith Corporation	A. O. Smith	BTH 300A *	BTH 300A *		Gas Storage	Natural Gas	Power Vent	130.0	63.5	12	30	4	6	1084		
A.O. Smith Corporation	A. O. Smith	BTH 300A 200	BTH 300A 200		Gas Storage	Natural Gas	Power Direct Vent	119.0	63.5	12	30	4	6	1200		
A.O. Smith Corporation	A. O. Smith	BTH 400 *	BTH 400 *		Gas Storage	Natural Gas	Power Vent	119.0	63.5	12	30	4	6	1100		
A.O. Smith Corporation	A. O. Smith	BTH 400 200	BTH 400 200		Gas Storage	Natural Gas	Power Direct Vent	119.0	63.5	12	30	4	6	1200		
A.O. Smith Corporation	A. O. Smith	BTH 400A *	BTH 400A *		Gas Storage	Natural Gas	Power Vent	130.0	63.5	12	30	4	6	1100		
A.O. Smith Corporation	A. O. Smith	BTH 400A 200	BTH 400A 200		Gas Storage	Natural Gas	Power Direct Vent	119.0	63.5	12	30	4	6	1200		
A.O. Smith Corporation	A. O. Smith	BTH 500 *	BTH 500 *		Gas Storage	Natural Gas	Power Vent	119.0	63.5	12	30	4	6	1080		
A.O. Smith Corporation	A. O. Smith	BTH 500 200	BTH 500 200		Gas Storage	Natural Gas	Power Direct Vent	119.0	63.5	12	30	4	6	1200		
A.O. Smith Corporation	A. O. Smith	BTH 500A *	BTH 500A *		Gas Storage	Natural Gas	Power Vent	130.0	63.5	12	30	4	6	1080		
A.O. Smith Corporation	A. O. Smith	BTH 500A 200	BTH 500A 200		Gas Storage	Natural Gas	Power Direct Vent	119.0	63.5	12	30	4	6	1200		
A.O. Smith Corporation	A. O. Smith	BTX 100 *	BTX 100 *		Gas Storage	Natural Gas	Power Vent	50.0	55.7	8	18	2	3	499		
A.O. Smith Corporation	A. O. Smith	BTXL 100 *	BTXL 100 *		Gas Storage	Natural Gas	Power Direct Vent	75.0	51.9	20.1	22.5	2	3	520		
A.O. Smith Corporation	A. O. Smith	XWH 1000N *	XWH 1000N *		Gas Tankless	Natural Gas	Power Vent	3.0			36		6			
A.O. Smith Corporation	A. O. Smith	XWH 1300 *	XWH 1300 *	MUST USE NATURAL GAS ONLY	Gas Tankless	Propane,Gas	Power Vent	4.0			36		8			
A.O. Smith Corporation	A. O. Smith	XWH 1700 *	XWH 1700 *	MUST USE NATURAL GAS ONLY	Gas Tankless	Propane,Gas	Power Vent	5.0			36		8			
A.O. Smith Corporation	A. O. Smith	XWH 2000 *	XWH 2000 *	MUST USE NATURAL GAS ONLY	Gas Tankless	Propane,Gas	Power Vent	6.0			68		8			
A.O. Smith Corporation	A. O. Smith	XWH 2600 *	XWH 2600 *	MUST USE NATURAL GAS ONLY	Gas Tankless	Propane,Gas	Power Vent	8.0			68		8			
A.O. Smith Corporation	A. O. Smith	XWH 3400 *	XWH 3400 *	MUST USE NATURAL GAS ONLY	Gas Tankless	Propane,Gas	Power Vent	9.0			68		10			
A.O. Smith Corporation	American	AHCG3-100T150-3N *	AHCG3-100T150-3N *		Gas Storage	Natural Gas	Power Vent	100.0	62.4	11	24	3	4	1079		

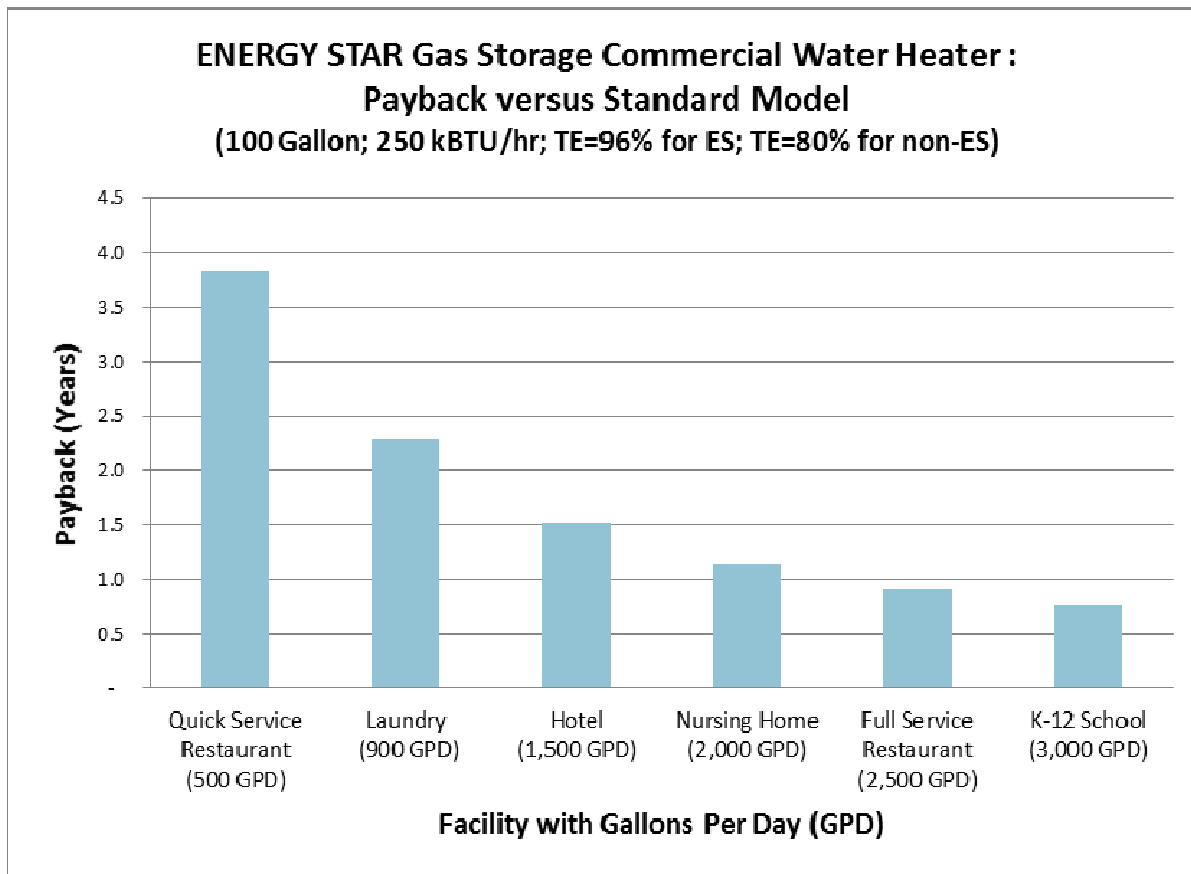
Savings for ENERGY STAR Gas Storage Water Heater

- Over \$1,000 in annual savings for full service restaurants





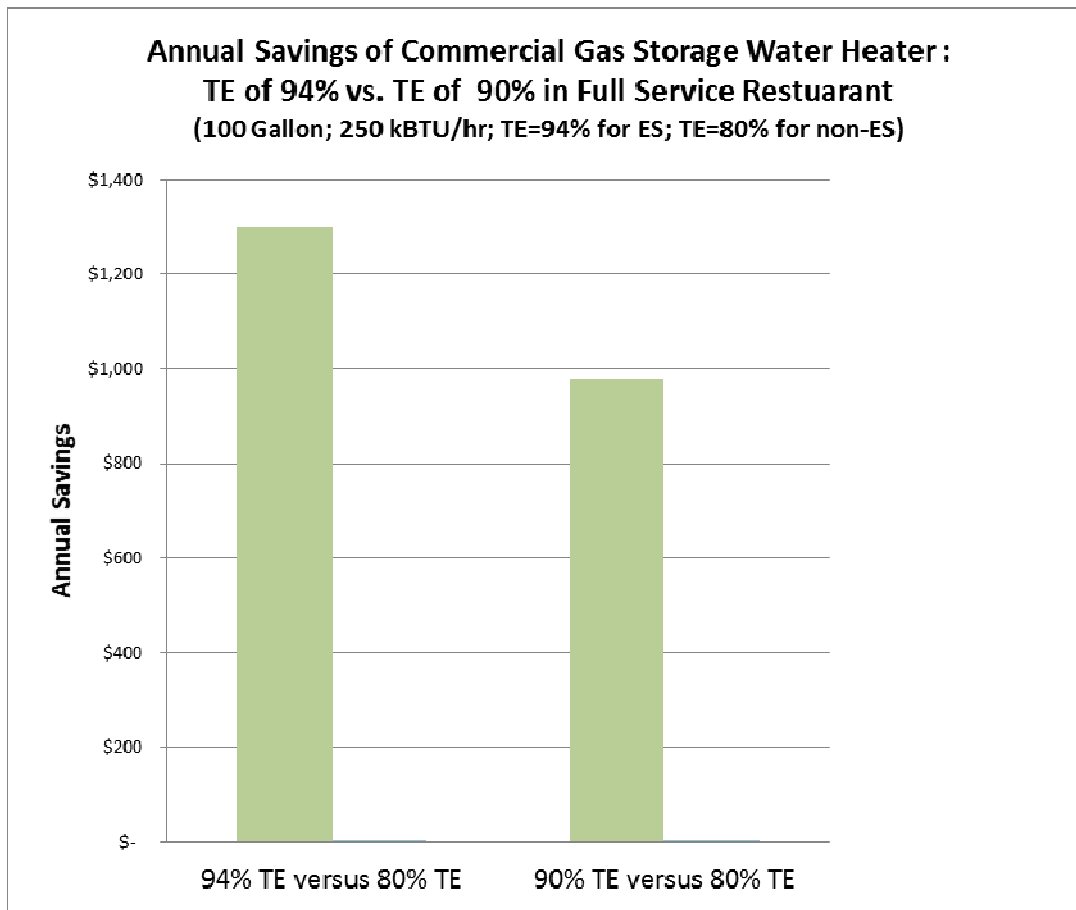
Paybacks for ENERGY STAR Gas Storage Water Heater



- Paybacks less than a year for full service restaurants



Lost Saving Opportunity Without Specifying ENERGY STAR



- CEE survey indicates many utilities use 90% TE
- \$300 less annual savings for an efficient unit at 90% TE compare to ES's 94% TE
- ES products must be 3rd party certified and subject to verification testing



Summary

- Effective in 2013, ENERGY STAR Commercial Water Heaters required to use condensing technology.
- Manufacturers have embraced ENERGY STAR requirements – close to 400 models certified.
- Some utilities use ENERGY STAR specification for commercial water heaters but more should be.
- **NEXT STEPS:** Work with utilities to adapt ES specification for commercial water heaters.



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