THE GAME CHANGER

A Playbook Developed Exclusively for PHCC Members

The New Water Heater Efficiency Standards and How They Impact Your Business

September 2014

PLUMBING-HEATING-COOLING CONTRACTORS ASSOCIATION®
Best People. Best Practices.®

READY … New Water Heater Efficiency Standards Will Be Here Before You Know It!

On April 16, 2015, there will be significant changes to the water heater Energy Factor (EF) requirements as a result of updates to the National Appliance Energy Conservation Act (NAECA). These new mandates will require higher EF ratings on virtually all gas, electric, oil, and tankless water heaters.

Product changes will vary depending on class and volume. In some cases, changes could be minor; others could be more radical. For example, to meet the new EF standards, gas water heaters > 55 gallons (≤ 75,000 BTU/Hr.) may need to be fully condensing, based on today's technology. Electric water heaters > 55 gallons (≤ 12 KW input) likely will use an integrated heat pump configuration to meet the new standards.

SET … What Does This Mean For You?

As of April 16, 2015, manufacturers can no longer **produce** units that do not meet the new standards. (Contractors can still **buy and install** existing products after the changeover date.) Keep in mind, the DOE only sets the new standards; it does not dictate how manufacturers meet the new standards. Still, the necessary changes in design and technology will affect many facets of the plumbing industry … including you and your company!

It is crucial that plumbing professionals understand and prepare for these new EF standards, as the size, weight, and cost of these affected products will change, potentially impacting several facets of their businesses. The professional installer will have to consider training, installation, storage, transportation, maintenance, and more when it comes to any new or modified water heaters that meet the new NAECA guidelines.

GIVE ME MORE!

Whenever you see this icon, go to **www.phccweb.org/naeca** *to review and download additional information that you can share with your team and/or your customers!*

GO!

A Look Inside

PHCC, in partnership with Bradford White Water Heaters, has compiled this resource guide to help you, your company, and your customers prepare for these new efficiency standards.

Message from PHCC

As the plumbing industry gets closer to the April 16, 2015, deadline for the new water heater efficiency standards, PHCC is committed to helping our valued members prepare for this "game changer" by providing up-to-date information and resources. As always, our goal is to help you manage your business, train your workforce, and serve your customers with confidence. Plus, as a leader in energy and water conservation, we're pleased to support products and technologies that promote increased efficiency.

On your behalf, PHCC has been carefully following the federal regulations leading to these changes, and – via webinars, articles, and other resources – we've been continually educating our members on their impact. Stay tuned to PHCC for additional programs and updates as they become available. In fact, we're hosting a special session on the new regulations at CONNECT 2014 in New Orleans, Oct. 8-10. Join us!

For technical questions on how the new EF requirements will impact future products and installation issues, please contact PHCC at techline@naphcc.org or Bradford White at naeca2015@bradfordwhite.com.

For questions about other PHCC member resources, please contact PHCC's Member Services Department at membership@naphcc.org. And, stay tuned for future resource mailings on topics crucial to your business.

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This comprehensive resource was developed by PHCC—National Association exclusively for PHCC members. Since 1883, PHCC has been the leader in promotion, advancement, education, and training in the plumbing and HVACR industry.

BRADFORD WHITE® WATER HEATERS

PHCC extends special thanks to Bradford White Corporation for sharing training materials and other resources for the compilation of this publication.

What Are the New Energy Factor Requirements?

Below are the products affected by the change and their new energy factor requirements, effective April 16, 2015.

NAECA EF Requirements for Residential Water Heaters

Product Classes Affected by Change	Rated Storage Volumes/Inputs Affected by Change	New Energy Factor Requirements
Gas-fired	≥ 20 gal and ≤ 55 gal, ≤ 75,000 BTU/Hr.	0.675 – (0.0015 x V)
	> 55 gal and ≤ 100 gal, ≤ 75,000 BTU/Hr.	0.8012 – (0.00078 x V)
Oil-fired	≤ 50 gal, ≤ 105,000 BTU/Hr.	0.68 – (0.0019 x V)
Electric	≥ 20 gal and ≤ 55 gal, ≤ 12 KW input	0.960 – (0.0003 x V)
	> 55 gal and ≤ 120 gal, ≤ 12 KW input	2.057 – (0.00113 x V)
Instantaneous Gas-fired	≤ 2 gal, ≤ 200,000 BTU/Hr.	0.82 – (0.0019 x V)
Instantaneous Electric *	≤ 2 gal, ≤ 12 KW input	0.93 – (0.00132 x V)

* no change

Energy Factor (EF) = the ratio of useful energy output from the water heater to the total amount of energy delivered to the water heater. The higher the EF, the more efficient the water heater.

V = the capacity of the water heater; rated storage volume in U.S. gallons

While all affected models will see an increase in the EF requirement, the most dramatic changes are in larger capacity models. The DOE established the EF requirement for residential gas and electric water heaters over 55 gallons to drive manufacturers to implement new, more energy-efficient technologies. While the new rule does not require a specific technology, the only currently viable technologies to meet the EF requirement over 55 gallons are heat pump water heaters for electric and high-efficiency condensing technology for gas water heaters.

How Do the New Standards Compare to the Old Ones?

The charts below show the Current vs. New 2015 Energy Factor standards in a variety of common size water heaters.

What Changes?

Changes will vary depending on class and volume. They will be minor in some cases and more radical in others.

Gas: To meet the required minimum EF, gas models may require additional insulation, incorporate newer flue baffling technologies (including flue dampers), utilize electronic ignition in lieu of a standing pilot, or any combination of these. One likely impact will be an increase in overall tank size – by up to 2 inches in diameter and 1-2 inches in height.

Units over 55 gallons will have to use condensing technology. What does that require? Find out at ***www.phccweb.org/naeca.***

2015 Standards: GAS – Common Sizes

	<55 Gallons				> 55 Gallons		
Calculation	EF = 0.675 – (0.0015 × V)				EF = 0.8012 – (0.00078 × V)		
Rated Storage Volume	Tankless	30	40	50	60	65	75
Current Standard	**.62**	**.61**	**.59**	**.58**	**.56**	**.55**	**.53**
2015 Standard	**.82**	**.63**	**.62**	**.60**	**.75**	**.75**	**.74**

Electric: Electric water heaters – already very efficient – likely will require more insulation. This will increase the diameter and/or height of the water heater (again by up to 2 inches in diameter and 1-2 inches in height). Additional insulation may be required for piping and fittings such as drain and T&P valves. For electric water heaters over 55 gallons, the only currently available technology able to meet the new EF requirement is a heat pump water heater.

What will this big change mean in terms of space, installation, and maintenance? Find out at ***www.phccweb.org/naeca.***

2015 Standards: ELECTRIC – Common Sizes

	<55 Gallons				> 55 Gallons		
Calculation	EF = 0.960 – (0.0003 × V)				EF = 2.057 – (0.00113 × V)		
Rated Storage Volume	20	30	40	50	65	80	120
Current Standard	**.94**	**.93**	**.92**	**.90**	**.88**	**.86**	**.81**
2015 Standard	**.95**	**.95**	**.95**	**.95**	**1.98**	**1.97**	**1.92**

Oil: Similar challenges are faced with the oil-fired products. Much like gas products, oil-fired water heaters likely will require additional insulation and completely new combustion systems, increasing their size by up to 2 inches in diameter and 1-2 inches in height.

2015 Standards: OIL – Common Sizes

Calculation	EF = 0.68 – (0.0019 × V)		
Rated Storage Volume	30	32	50
Current Standard	**.53**	**.53**	**.50**
2015 Standard	**.62**	**.62**	**.59**

How Do the New Requirements Impact Your Business?

The new EF requirements will be here before you know it! The time is now to educate yourself on the new rules, open the lines of communication with your wholesalers and distribution network and/or manufacturers on how the new products will impact your company, and start preparing your technicians and your customers. Ask yourself some key questions:

- **Do I have the proper space to store potentially taller, wider, and heavier products?** Given the potentially larger size and weight of the new products, you may have to modify how you store and move them within your own storage space. You may want to explore other options, such as direct product delivery from the wholesaler to your job site.
- **Will my current vehicles allow for the proper moving and handling of taller, wider, and heavier products?** You may need a larger work truck to deliver the water heater to the job. For example, the height of a heat pump water heater may exceed the height of your van. If the product cannot be laid down, you may need to acquire a larger box van or open truck.
- **Will I need more than one person to move a product?** Some installations may now require two people as water heaters get larger and heavier and become too awkward to be handled by one person. This is especially true with models over 55 gallons and the more top-heavy heat pump water heaters.
- **Will additional site visits for product maintenance be required following installation?** For example, heat pump products may need filters that have to be changed periodically. This could change your routine site visits and/or maintenance agreements with your customers. Be sure to work with your customer service department on communicating these changes to your customers, as well as with your sales department on embracing new opportunities to promote service agreements.
- **How do I prepare my technicians?** Training on the new products will be critical. Work with your distributors and manufacturers on obtaining the needed resources and coordinating training sessions for your installers. Keep in mind that a significant amount of time will be required for training, which will impact the revenue-generating production from those employees. (See page 6 on considerations regarding your technicians.)
- **How do I prepare my customers?** Again, communication will be key. Start educating your customers and prospects now on how the new products will impact them – from needed space to accommodate potentially larger products to, in some cases, increased maintenance. (See page 7 for tips on communicating these changes with your customers.) Of course, be sure to promote that the increased efficiency of the new water heaters will result in lower operating costs!

Good News!

With EF requirements changing and some products and installations becoming more sophisticated, it is less likely that these water heaters will be purchased and installed by non-professionals. That means the share of water heaters sold through wholesale distribution will probably increase … and so will the installation opportunities for you!

The Countdown Begins Today!

Use this handy checklist to prepare your company for the new standards, which become effective April 16, 2015:

- ☐ Connect with your wholesaler/distributor and manufacturers' network to get more information.
- ☐ Schedule training sessions on new product installation and maintenance techniques for your technicians.
- ☐ Make accommodations to store potentially taller, wider, and heavier products.
- ☐ Plan to secure larger work trucks, if needed.
- ☐ Consider the potential for additional people needed to install new water heaters.
- ☐ Discuss marketing opportunities with your sales force.
- ☐ Be prepared to discuss possible construction needs during customer site visits, as some new products may prevent a simple in-and-out replacement. There may be a need to modify the current space or select a totally new location to accommodate the size or functionality of the new unit.
- ☐ Be sure to integrate potential maintenance requirements of new equipment into your service agreements.
- ☐ Develop a marketing plan that communicates with customers the new standards and possible implications (i.e. new maintenance requirements and product location, etc.).
- ☐ Review your business plan and make necessary adjustments on staffing, storage space, supplies, and marketing.

PHCC already has programs and resources available to help get your company ready for this game changer! Check them out at ***www.phccweb.org/naeca.***

What Should You Tell Your Technicians?

The new technologies associated with the new products will require product and installation training. You will need to coordinate training sessions – either on-site or off-site – for your installers. More specific information will surface as manufacturers begin to release information regarding the size and design of NAECA 2015-compliant products. In the meantime, here are some potential considerations:

- Condensing gas water heaters are generally a much heavier product than their standard counterparts, and there are other requirements that must be met when installing these types of water heaters. First, 120 VAC is required for a condensing gas water heater. Depending on the design, even gas water heaters under the 55-gallon threshold may now require electricity. Plumbing contractors may or may not need to invest in electrical equipment (such as multi-meters) for installations and troubleshooting.
- By their nature, the highest efficiency gas water heaters produce condensate. Many installations will require a drain somewhere in the vicinity of the water heater, and/or a condensate pump. The installer will have to understand local codes with respect to condensate disposal.
- Condensing gas water heaters extract enough heat from the exhaust that it is generally cool enough to vent with plastic pipe, either through the sidewall or through the roof. Some models even require a plastic pipe for combustion air (intake). The venting system, usually PVC, CPVC or ABS, has to be constructed by the installer.
- The location of the old water heater may not be appropriate for the new one. Space constraints may impact installation of the new units. The installer will need to be well versed in making alternate recommendations – in terms of either a lower capacity unit or a re-location – to the customer.
- The installer also must be cognizant of the impact of noise. Where the existing water heater may produce very little noise, the new model may operate at a higher noise level, which could lead to homeowner complaints if not addressed up front.
- Heat pump water heaters need sufficient air volume for their heat source and may not operate properly in the same area as a standard electric water heater, especially if the original water heater was inside a utility closet or other confined space.

PHCC already has programs and resources available to help get your company ready for this game changer! Check them out at ***www.phccweb.org/naeca.***

What Should You Tell Your Customers?

These new efficiency standards are a prime opportunity for you to reach out to your customers and potential customers. The earlier, the better, as you'll surface as a leader in the industry for being proactive on making them aware of these upcoming changes. Some key messages to use in your customer communications and on your web site:

- The new EF requirements go into effect April 16, 2015, and are mandated by the federal government.
- The new products will be more efficient and save energy, resulting in lower operating costs!
- The new water heaters will have a more sophisticated design – possibly integrating blowers, fans, condensers, and other components – making a professional contractor the best choice for safe and proper product selection and installation.
- In some cases, the new water heater may have to be re-located to fit properly, operate safely, or mitigate noise.
- In rare cases, the performance of the new water heater in terms of hot water deliverability will be less than the model that was replaced. You may need to consider a different size or alternative solution to meet your family's hot water needs.
- As a professional [or certified] installer of [name of product], your company is well qualified to install and maintain this unit for maximum performance and efficiency.

THE IMPACT ON MANUFACTURERS AND DISTRIBUTORS

The new 2015 Final Rule completely alters the water heater landscape. Our industry partners already are facing challenges as they prepare for the new requirements. For manufacturers, the changes will prove time-consuming and costly. In some cases, resources have been added, or shifted from other projects, to complete the R&D, manufacturing equipment selection and installation, testing and certification, training, sales, and marketing for the 2015 products. Because the product likely will increase in size, additional distribution facilities or warehouses may be ways in which manufacturers manage inventory. Distribution costs also may increase as fewer units may fit into a trailer or shipping container. Manufacturers will have to balance their inventory and production, as there will be increased demand for the current products just ahead of the effective date.

Distributors will be required to re-train their employees so that they understand the intricacies of the new standards and the changes to the new water heaters. As with the manufacturer, space is always a premium, and these new products will take up more space in the warehouse. In addition to understanding the technical changes in the product, the distributor also will have to understand and train personnel as to any new handling and logistics requirements. And, because the new style water heaters may require additional components for installation, such as venting material and condensate pumps, the distributor may have to stock additional SKUs to support their customers.

Want some tools on marketing this information to your customers? PHCC has done the work for you! Go to ***www.phccweb.org/naeca*** *to download sample marketing messages and social media posts.*

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Want to Know More?

PHCC is pleased to share everything we know to date about the new water heater efficiency standards and how they'll impact your business. Still, you probably have more questions:

- Are there product changes that are known at this time?
- Do manufacturers have 2015-compliant water heaters available today?

*Go to **www.phccweb.org/naeca** for a full list of frequently asked questions that you can conveniently share with your team and your customers!*

PHCC continually will be updating our members as new information becomes available. Be sure to visit www.phccweb.org/naeca often for the latest resources and seminars on the new water heater regulations, as well as a full list of frequently asked questions that you can conveniently share with your team and your customers!

For technical questions on how the new EF requirements will impact future products and installation issues, you may contact PHCC at **techline@naphcc.org or Bradford White Corporation at naeca2015@bradfordwhite.com.**