



UTILITY QUALITY ASSURANCE WEBINAR

January 20, 2016

HOT
WATER
SOLUTIONS

AGENDA

- QA Overview
- Northern Climate Spec & QPL
- Virtual Inspection
- Inspection Results & Common Deviations
- Available Utility Support
- Q & A

QUALITY ASSURANCE GOALS

- Promote quality installations
- Verify installation compliance including:
 - Eligibility
 - Installation quality
 - Qualifying model
 - Installation location
- Gain insight into contractor performance
- Educate homeowners and contractors
- Strengthen utility-customer relationships



NORTHERN CLIMATE SPECIFICATION

Tier	Minimum Northern Climate EF	Minimum Northern Climate Features	Minimum supported installation locations	Sound levels
Tier 1	1.8	<ul style="list-style-type: none"> ENERGY STAR compliance 	<ul style="list-style-type: none"> Semi-conditioned Unconditioned 	dBA < 65
Tier 2	2.0	<u>Tier 1 features, plus:</u> <ul style="list-style-type: none"> Minimal use of electric heating elements Freeze protection Exhaust ducting option Compressor shut-down/notification 10 year warranty Condensate mgmt. 	<ul style="list-style-type: none"> Conditioned Semi-conditioned Unconditioned 	dBA < 60
Tier 3	2.4	<u>Tier 2 features, plus:</u> <ul style="list-style-type: none"> Intake ducting option Air filter mgmt 	<ul style="list-style-type: none"> Conditioned Semi-conditioned Unconditioned 	dBA < 55

To view the full specification visit: [NEEA.org/NorthernClimateSpec](https://www.neea.org/NorthernClimateSpec)

QUALIFIED PRODUCTS LIST

Last Updated: July 27, 2015

Northern Climate Product Tier	Product Brand	Model	Volume (gallons)	Northern Climate Energy Factor	Northern Climate Delivery Rating	Qualified Date
Tier 3						
	Bradford White	RE2H50R10B*	50	2.7	2.5	5/15/2015
	Bradford White	RE2H80R10B*	80	2.7	4.0	5/15/2015
	General Electric	GEH50DFEJXXX*	50	2.7	2.5	2/23/2015
	General Electric	GEH50DEEJXXX*	50	2.7	2.5	2/23/2015
	General Electric	GEH80DFEJXXX*	80	2.7	4.0	2/23/2015
	General Electric	GEH80DEEJXXX*	80	2.8	4.0	2/23/2015
Tier 2						
	Bradford White	RE2H50R10B	50	2.2	2.0	5/15/2015
	Bradford White	RE2H80R10B	80	2.0	4.0	5/15/2015
	General Electric	GEH50DFEJXXX	50	2.2	2.0	2/23/2015
	General Electric	GEH50DEEJXXX	50	2.2	2.0	2/23/2015
	General Electric	GEH80DFEJXXX	80	2.0	4.0	2/23/2015
	General Electric	GEH80DEEJXXX	80	2.0	4.0	2/23/2015
Tier 1						
	American	HPE10280H045DV	80	1.8	4.0	2/1/2012
	American	HPE10260H045DV	60	2.0	3.0	2/1/2012
	American	HPSE10280H045DV	80	2.1	4.0	3/17/2015
	American	HPSE10266H045DV	66	2.0	2.0	3/17/2015
	American	HPSE10250H045DV	50	2.0	2.5	1/27/2014
	A.O. Smith	PHPT-80	80	1.8	4.0	11/10/2011
	A.O. Smith	PHPT-60	60	2.0	3.0	2/1/2012
	A.O. Smith	SHPT-80	80	2.1	4.0	3/17/2015
	A.O. Smith	SHPT-66	66	2.0	2.0	3/17/2015
	A.O. Smith	SHPT-50	50	2.0	2.5	1/27/2014
	General Electric	GEH50DEEDSR	50	1.9	2.5	5/10/2012
	General Electric	GEH50DEEDSC	50	1.9	2.5	5/10/2012
	Kenmore	153.32118	80	1.8	4.0	2/1/2012
	Kenmore	153.32116	60	2.0	3.0	2/1/2012
	Kenmore	153.321151	50	2.0	2.5	1/27/2014
	Lochinvar	HPA080KD	80	2.1	4.0	3/17/2015
	Lochinvar	HPA066KD	66	2.0	2.0	3/17/2015
	Reliance	10 80 DHPT	80	1.8	4.0	2/1/2012
	Reliance	10 60 DHPT	60	2.0	3.0	2/1/2012
	Reliance	10 80 DHPST	80	2.1	4.0	3/17/2015
	Reliance	10 66 DHPST	66	2.0	2.0	3/17/2015
	Reliance	10 50 DHPST	50	2.0	2.5	1/27/2014
	Rheem	HB50RH	50	2.2	2.5	4/15/2013
	Rheem EcoSense	HB50ES	50	2.2	2.5	4/15/2013
	Richmond	HB50RM	50	2.2	2.5	4/15/2013
	Ruud	HB50RU	50	2.2	2.5	4/15/2013
	State	EPX 80 DHPT	80	1.8	4.0	2/1/2012
	State	EPX 60 DHPT	60	2.0	3.0	2/1/2012
	State	SPX 80 DHPT	80	2.1	4.0	3/17/2015
	State	SPX 66 DHPT	66	2.0	2.0	3/17/2015
	State	SPX 50 DHPT	50	2.0	2.5	1/27/2014
	Stiebel Eltron	Accelera 220 E	58	2.6	3.0	7/27/2015
	Stiebel Eltron	Accelera 300	80	1.9	5.0	2/27/2012
	U.S. Craftmaster	HPE2K80HD045V	80	1.8	4.0	2/1/2012
	U.S. Craftmaster	HPE2K60HD045V	60	2.0	3.0	2/1/2012
	U.S. Craftmaster	HPSE2K80HD045VU	80	2.1	4.0	3/17/2015
	U.S. Craftmaster	HPSE2K66HD045VU	66	2.0	2.0	3/17/2015
	U.S. Craftmaster	HPSE10250HD045V	50	2.0	2.5	9/18/2014
	Whirlpool	HPE2K80HD045V	80	1.8	4.0	2/1/2012
	Whirlpool	HPE2K60HD045V	60	2.0	3.0	2/1/2012

SCHEDULE INSPECTION

- Step 1: Schedule with homeowner
 - Inspection takes 15-20 minutes
 - Contractor may be present
 - Opportunity to ask questions
- Step 2: Invite contractor (and utility)
 - Gauge customer satisfaction and encourage contractor collaboration
 - Receive feedback

INSPECTION FORM

Hot Water Solutions – On-Site Inspection Form

Inspector name:	Phone number:	Date:	Customer ID
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Inspection Check Points:

General Requirements	
1. Equipment Type (Circle one): Tier 1 / Tier 2 / Tier 3 * *refer to Q.16 <i>Matches provided form data?</i> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
2. Brand & Model # of HPWH: <i>Matches provided form data?</i> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
5. Serial #: <i>Matches provided form data?</i> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
3. Size of HPWH: <i>Matches provided form data?</i> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
4. Installer (Circle one): Homeowner/ Contractor <i>Matches provided form data?</i> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
6. Installation location: <i>Matches provided form data?</i> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
7. Previous unit fuel type:	
8. Approx. room dimensions (W' x L' x H'):	9. Adequate clearance around HPWH?: <input type="checkbox"/> Yes <input type="checkbox"/> No
10. Adequate air filter clearance: <input type="checkbox"/> Yes <input type="checkbox"/> No	11. T&P relief valve properly installed and not plugged: <input type="checkbox"/> Yes <input type="checkbox"/> No
12. Is the HPWH level? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>Notes:</i>	13. Are seismic straps installed? <input type="checkbox"/> Yes <input type="checkbox"/> No
14. HPWH settings and temperature, as found: <input type="checkbox"/> Efficiency/Economy <input type="checkbox"/> Auto/Hybrid <input type="checkbox"/> Electric/Heater <input type="checkbox"/> Other Temperature Setting _____	15. Condensate drain: <input type="checkbox"/> Floor drain <input type="checkbox"/> Laundry drain <input type="checkbox"/> Sink <input type="checkbox"/> Outside <input type="checkbox"/> Wall drain <input type="checkbox"/> Other:
16. Is unit set with advanced tier or efficiency settings? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <i>(e.g. CCE mode, refer to manufacturer specifications)</i>	
17a. Does the homeowner have any noise issues? <input type="checkbox"/> Yes <input type="checkbox"/> No	17b. If there are noise concerns, are vibration, or noise dampening mounts installed? <input type="checkbox"/> Yes <input type="checkbox"/> No
18. Has the homeowner been educated on proper system operation, maintenance, safety, noise and cooling effects? <input type="checkbox"/> Yes <input type="checkbox"/> No	
19. Does the homeowner have an operation manual? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Ducted Only	
1. Installed ducting? Yes: <input type="checkbox"/> Exhaust only <input type="checkbox"/> Exhaust & Intake <input type="checkbox"/> No <i>Notes:</i>	
2. Are there combustible appliances in the home? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>Note appliance(s):</i>	
3. Is a CO monitor installed in the home? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <i>Note location(s):</i>	
4a. Does ducting terminate outside the home? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <i>Notes:</i>	4b. Does ducting have proper wall cap(s)/terminations? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <i>Notes:</i>
5. Is any condensation present on ducting? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <i>Notes:</i>	
7. Estimate duct length(s) and number of elbows: <input type="checkbox"/> N/A Exhaust _____ no. elbows _____ <i>Notes:</i> Intake _____ no. elbows _____ <i>Notes:</i>	
8. Is ducting in alignment with manufacturer specifications?: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <i>Notes:</i>	

Available for download at:
<https://hotwatersolutionsnw.org/partners>

INSPECTION CHECKLIST

- Before you begin, be sure to have:
 - Provided Rebate Data
 - Inspection Form
 - Small Level
 - Camera
 - Homeowner Guide
 - Best Practices Installation Guide

GENERAL SITE INSPECTION PROTOCOL

- Upon arrival of contractor:
 - Approach the home
 - Verify provided site data as reported
 - Introductions
 - Ask permission to look at the heat pump water heater



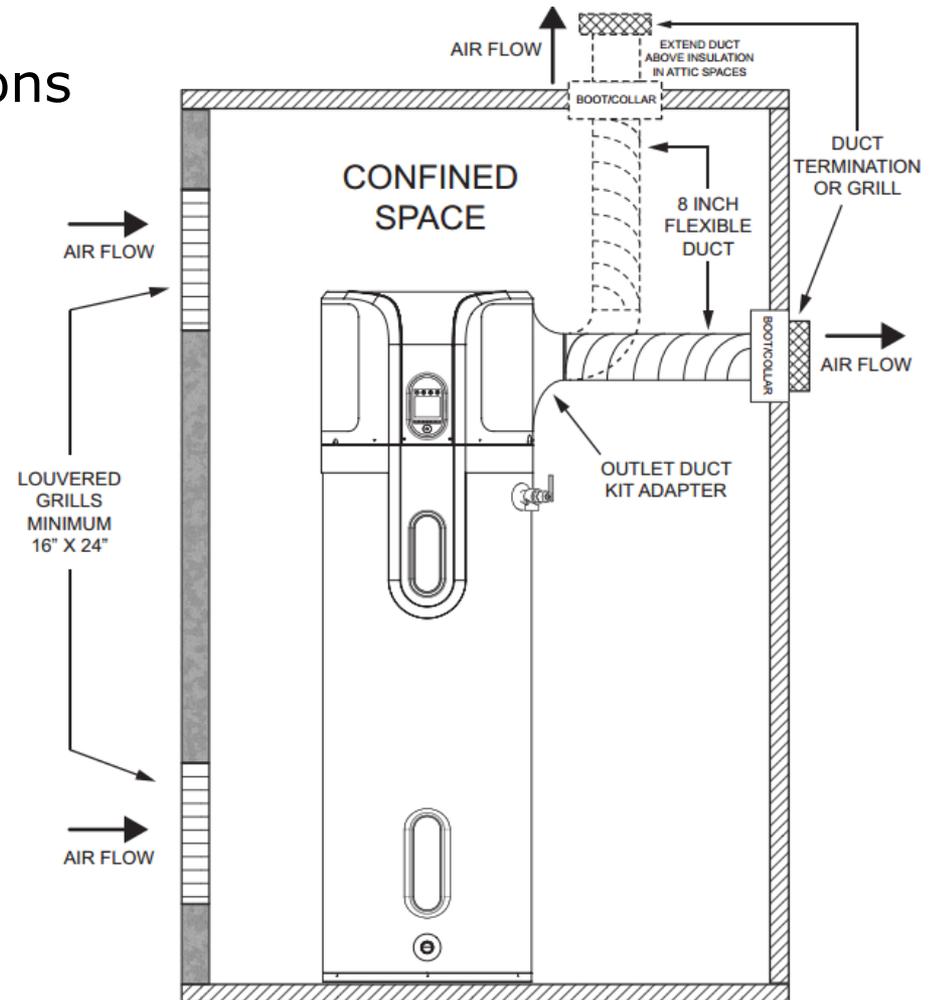
VERIFY MEASURE IN PLACE

- HPWH verification:
 - Brand
 - Size
 - Model
 - Serial number



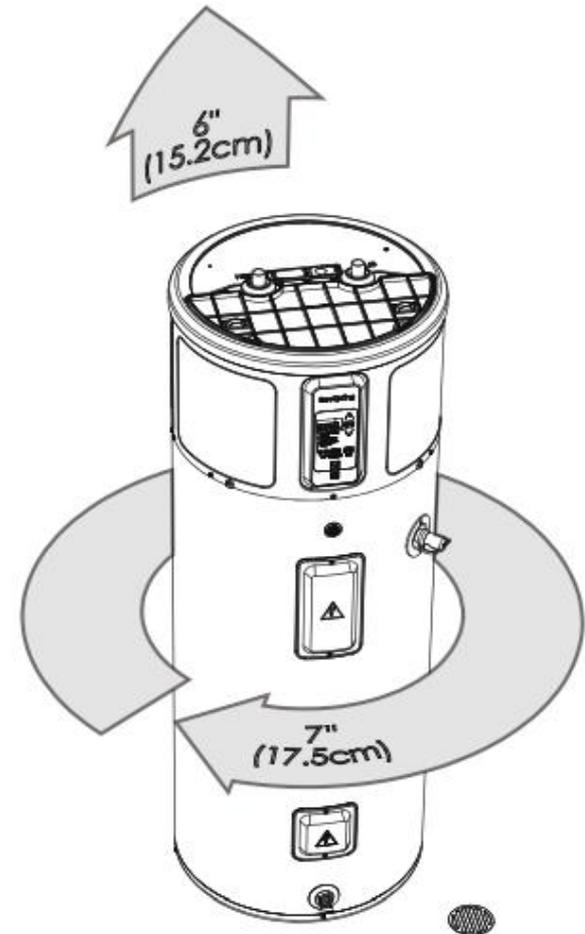
INSPECTING THE UNIT

- Installation location
- Approximate room dimensions
 - ~ 700 – 1,000 cubic feet



INSPECTING THE UNIT

- Clearances around unit



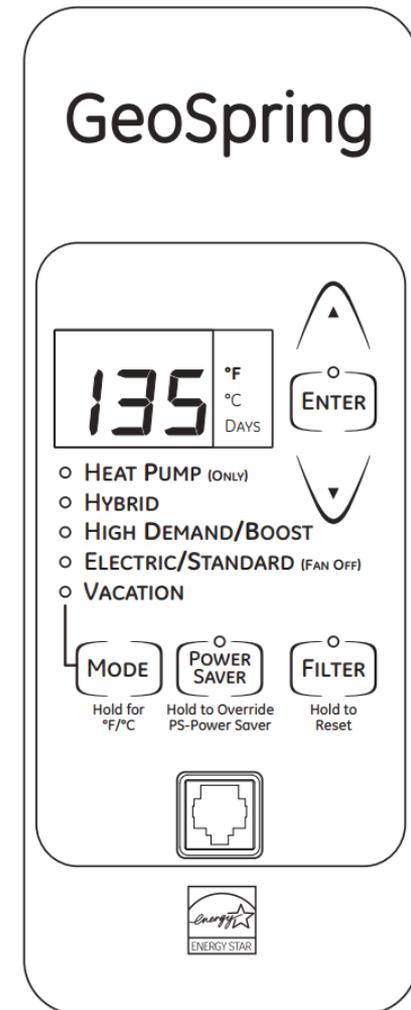
INSPECTING THE UNIT

- Unit is level
- Seismic straps



INSPECTING THE UNIT

- Condensate drain
- T&P discharge pipe installed
- Temperature and mode setting



INSPECTING DUCTED HPWHS

- CO monitor
- Duct condensation
- Ducting terminated as appropriate
- Ducting settings



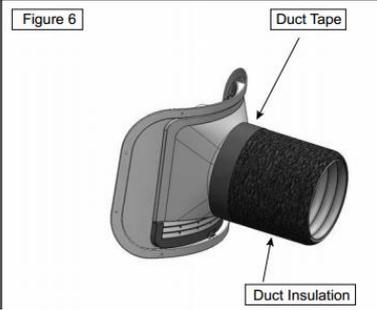
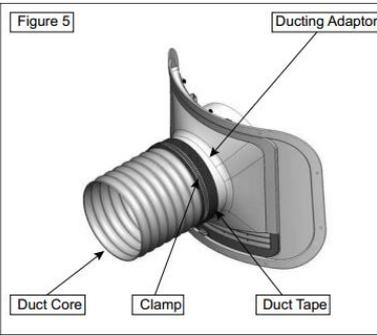
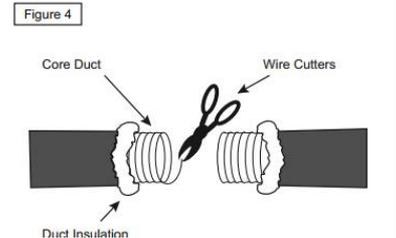
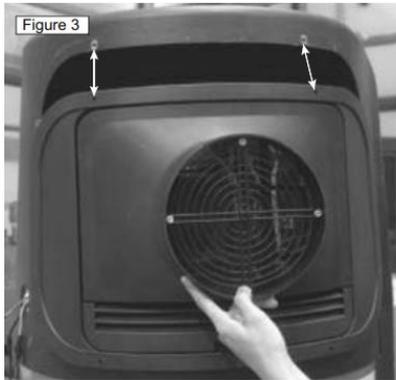
POLL QUESTION

What percentage of units are ducted in your territory?

- 75-100%
- 50-74%
- 25-49%
- 0-25%
- Unsure

INSPECTING DUCTED HPWHS

- Proprietary ducting kits



HOMEOWNER EDUCATION

- Mode settings
- Filter maintenance
- Unit clearance
- Condensate drain maintenance
- Manufacturer's operating instructions



HOMEOWNER QUICK REFERENCE GUIDE

- Companion piece to the owner's manual
- Five details of HPWH ownership
 1. Space and airflow considerations
 2. Water temperature choice
 3. Operation mode selection
 4. Noise awareness
 5. Maintenance



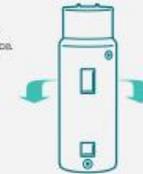
GET THE MOST OUT OF YOUR HEAT PUMP WATER HEATER: A QUICK REFERENCE GUIDE

A heat pump water heater's special features offer more flexibility than standard electric water heaters, providing you with reliable hot water and saving you up to 50% on water heating costs.

USE THESE FIVE QUICK STEPS TO MAXIMIZE THIS ENERGY-SAVING TECHNOLOGY

1. GIVE IT SPACE

Heat pump water heaters need space around them for airflow and maintenance. Crowding the area surrounding it can reduce its energy efficiency and heating potential.



2. SET THE RIGHT TEMPERATURE

Both heat pump water heaters and standard electric water heaters are preset to 120°F, a good starting temperature for the average homeowner. Most models allow temperature adjustments between 90°F and 150°F.



SCALD WARNING! Water temperatures over 125°F can cause severe burns or death. Children, the disabled and the elderly are at a higher risk of being scalded.

3. DIAL IN EFFICIENCY



Efficiency/Economy—We recommend starting in this mode, as it maximizes energy efficiency and savings.

Auto/Hybrid—The default setting is ideal for daily use, providing energy-efficient water heating with sustained heat.

Electric/Heater—This setting heats water quickly but only uses the electric heating elements, making it the least energy-efficient setting. Use this mode during high-demand situations (such as when you have

guests or high multi-appliance demand) to make sure there's no delay in hot water delivery.

Some units have additional settings, including a cold climate setting ideal for the Northwest—please refer to your manufacturer's manual for more information.

Vacation and timer—This mode saves energy when you're away from home by placing the unit in a "sleep" mode until you return. Available on select models.

4. THE SOUND OF HOT WATER

Your heat pump water heater will generate sounds similar to an electric fan. Don't worry, it's just the sound of energy-efficient hot water.



5. KEEP IT RUNNING

All water heaters require maintenance. With heat pump water heaters, there are a few extra things to consider:

- The air filter must be cleaned at least once a year
- A visual inspection should be done periodically to ensure the moisture drains are clear
- If ducted, make sure the exhaust duct vent is free of dust and debris

WARNING! Always shut off power to the unit at the circuit breaker/fuse box before inspecting and clearing moisture drains.

VISIT HOTWATERSOLUTIONSNW.ORG FOR MORE INFORMATION

This Quick Reference Guide provides general tips for operating your heat pump water heater. For complete information regarding features, operation and maintenance, review your manufacturer-provided owner's manual.

Hot Water Solutions is an initiative of the Northwest Energy Efficiency Alliance (NWEA), an alliance of more than 140 Northwest utility and energy efficiency organizations working to accelerate the innovation and adoption of energy-efficient products, services and practices in the Northwest.

HOMEOWNER TESTIMONIAL

- Ask homeowner to provide testimonial
- Fill out comments
- Ask homeowner about energy savings
- Answer any final questions

Homeowner Testimonial	
	Official Use Only: Customer ID <input type="text"/>
How was the installation process?	
Why did you choose to purchase this particular product?	
How did you hear about the technology?	
What do you like most about your new heat pump water heater?	
Any additional comments?	

7/18/2013

POLL QUESTION

What is the most common homeowner concern you've encountered?

- Noise
- Cool exhaust air
- Lack of hot water
- Other
- No concerns
- Unsure

CONTRACTOR FOLLOW-UP

- Share inspection results
- Inform contractor of deviations & remediation work
- Share the Best Practices Installation Guide

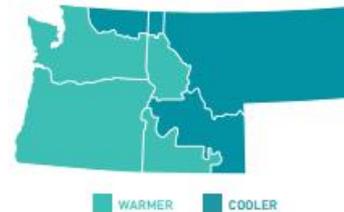


INSTALLER'S GUIDE BEST PRACTICES FOR HEAT PUMP WATER HEATER INSTALLATION

Heat pump water heaters are the most efficient replacement option for standard electric water heaters. Use this best practices guide to ensure quality installations and satisfied customers.

CLIMATE CONSIDERATIONS

- Consider your climate when choosing a heat pump water heater. Cool climates and warm climates may require different equipment and placement.
- Tier 2 and higher units are well suited for cooler climates; they operate in lower temperatures and can vent cool air to the outside.



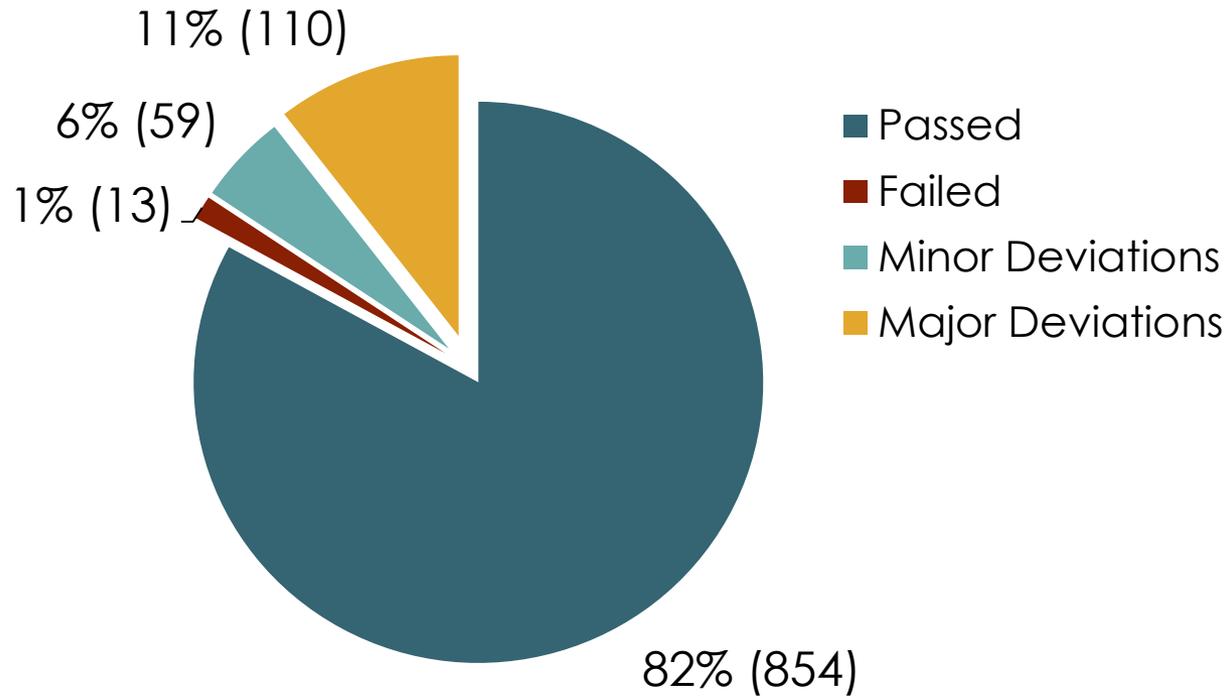
INSTALLATION LOCATION

- Tier 1 units are well suited for unconditioned spaces.
- Tier 2 and higher units are suitable for both unconditioned and conditioned spaces.
- For all units, allow for minimum clearance requirements for proper airflow and accessibility.

	TIER 1	TIER 2
Unconditioned space installation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Conditioned space installation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minimum 40-45 degree installation location	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Installation location >1,000 cu ft (garage, etc.)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Installation location <1,000 cu ft (utility room)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

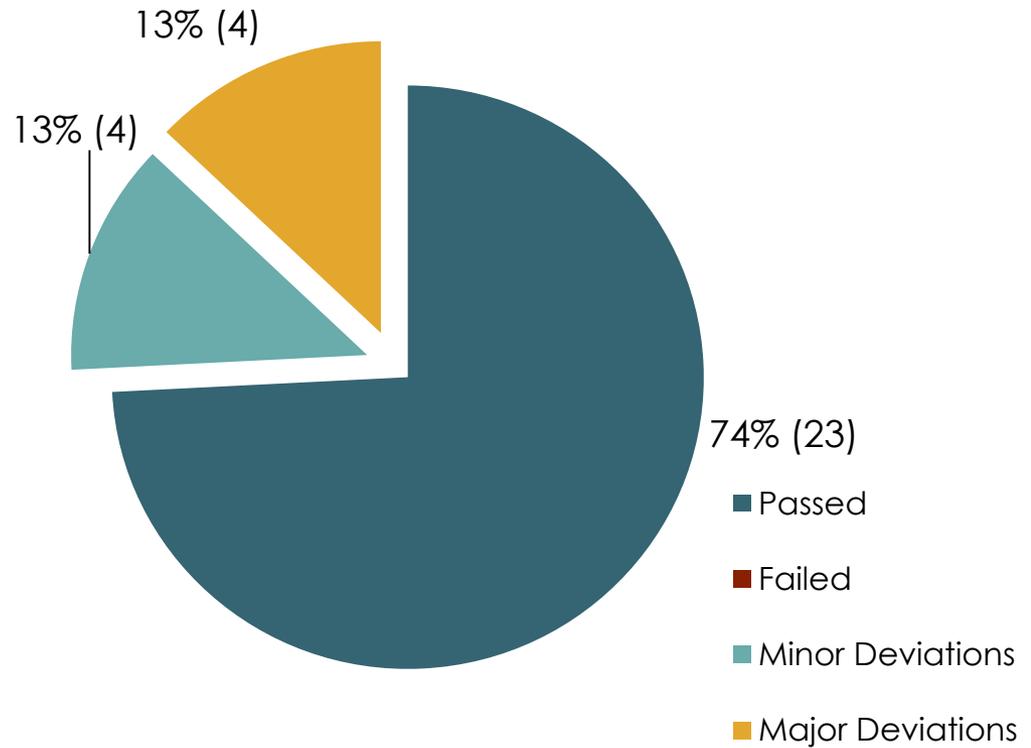
QA INSPECTION RESULTS TO DATE

- All data:
 - 1036 inspections
 - 82% (854) pass
 - 6% (59) minor deviations
 - 11% (110) major deviations
 - 1% (13) fail



2015 QA INSPECTION RESULTS

- 31 inspections
 - 74% (21) pass
 - 13% (4) minor deviations
 - 13% (4) major deviations
 - 0% (0) fail



- QA Inspection Outcomes:

Pass

- Installation meets requirements
- Educated homeowner

Deviation

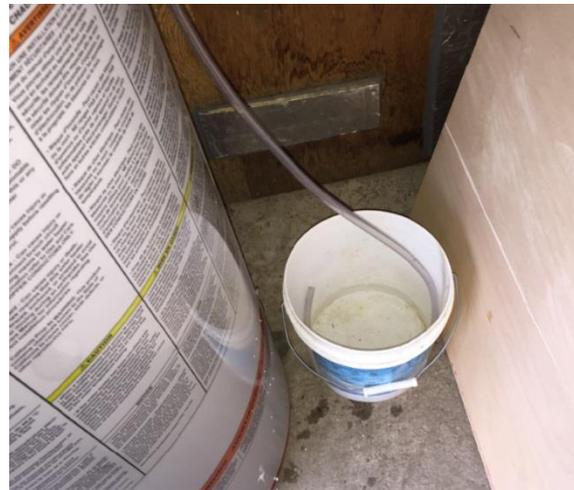
- Installation requires follow-up and/or remediation

Fail

- Installation is ineligible or equipment is inoperable

COMMON DEVIATIONS

- Improper condensate drainage
- Missing T&P discharge pipe, seismic straps
- Inadequate clearances



COLD CLIMATE EFFICIENCY MODE (CCE)

- Educate homeowners on CCE mode function and access
- Ensure display is up before activating



POLL QUESTION

How often is CCE mode activated on applicable installs in your territory?

- Majority activated
- Sometimes activated
- Rarely activated
- Never activated
- Unsure/Have not been checking

INSTALLATION RESOURCES

Easy to Replace. Easy to Install. Easier to Enjoy.



Installing a GeoSpring™ Hybrid Water Heater



A.O. Smith – Voltex™ Hybrid Electric Heat Pump Water Heater Installation Instructions and Use & Care Guide

To obtain technical, warranty or service assistance during or after the life of your water heater, call toll free 1-800-391-6223.

When calling for assistance, please have the following information ready:

1. Model number
2. Field number
3. Serial number
4. Date of installation
5. Place of purchase

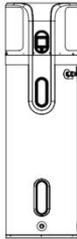


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GET THE MOST OUT OF YOUR HEAT PUMP WATER HEATER. A QUICK REFERENCE GUIDE

A heat pump water heater's special features offer more flexibility than standard electric water heaters, providing you with reliable hot water and saving you up to 50% on water heating costs.

USE THESE FIVE QUICK STEPS TO MAXIMIZE THIS ENERGY-SAVING TECHNOLOGY

- 1. GIVE IT SPACE**
 Heat pump water heaters need space around them for airflow and maintenance. Considering the clearances below, it can reduce its energy efficiency and heating capacity.
- 2. SET THE RIGHT TEMPERATURE**
 Both heat pump water heaters and standard electric water heaters are preset to 120°F at a good energy temperature for the average home. Heat mode also allows temperature adjustments between 80°F and 100°F.

COLD WATER (low temperature) use 100°F can extend tank life or tank. **Check the thermostat and adjust it to a higher set of being cooler.**
- 3. DIAL IN EFFICIENCY**
 EfficiencyMax™ is the recommended dial-in for the most, an maximum energy efficiency and heating.

AutoMax™—The auto setting is ideal for daily use, providing energy-efficient water heating with automatic heat.

Electric/Heat—The setting heats water quickly (but only) uses the electric heating element, resulting in the least energy-efficient setting. Use this mode during high-demand situations such as when you have guests or high multipurpose demands to make sure there's no delay in hot water delivery.

Some units have additional settings, including a cold climate setting used for the best energy efficiency. To get manufacturer's manual for more information.

Installation and clearances—The mode uses energy when only the heat from flaring to clean the unit is a "heat" mode until you return. Available on select models.
- 4. THE SOUND OF HOT WATER**
 Your heat pump water heater will generate sounds similar to an electric hot water heater. Don't worry, it's just the sound of energy-efficient hot water.
- 5. KEEP IT RUNNING**
 All water heaters require maintenance. With heat pump water heaters, there are four ways to keep it running:
 - The air filter must be cleaned at least once a year.
 - An air filter should be checked regularly to ensure the module drains are clear.
 - If needed, make sure the annual drain and a flush of tank and drain.

WARNING: Always shut off power to the unit at the circuit breaker before touching any internal wiring or components.

The User Interface is located at the bottom of the heater. For service information regarding features, operation and maintenance, visit our website at www.aosmith.com.

HOT WATER SOLUTIONS



1. REMOVE EXISTING UNIT

Turn off power to the existing unit at the breaker box and disconnect electrical connections. Turn off water to the existing unit and disconnect water connections, leaving some pipe for new connections. Use a hacksaw or pipe cutter for this step. Remove existing unit.



2. POSITION HEAT PUMP WATER HEATER

Heat pump water heaters are top heavy and much heavier than standard electric units. Use care when moving.

Place drain pan in desired installation location, ensuring proper space between unit and wall.

Unless ducted, most units require at least 1,000 cubic feet of airflow from which to draw air. This is equivalent to space dimensions of 10'x12'x8'.

Installation in an outdoor or unprotected area is not recommended.

Position the unit so the air filter, cover and front panels can be easily accessed for inspection and servicing.

Place the new unit inside the drain pan.

Attach earthquake straps that comply with manufacturer's clearance requirements and local code. If necessary, attach blocks to studs using appropriate anchors and maintain proper spacing from wall when straps are tightened. Blocks may help reduce vibration transferring from the straps to the wall.



3. VERIFY FILTER CLEARANCE

Ensure installation location allows access to air filter, which must be cleaned regularly. See the manufacturer's manual for cleaning schedule.

Some filters lift up, while other filters are accessed on the side of the unit.

- Support includes:
 - QA inspections
 - QA consulting
 - On-site inspection forms
 - Homeowner and Best Practices Installation guides
 - Sharing experience and notes from the field
- Utility QA resources can be found at:
<https://hotwatersolutionsnw.org/partners/resources>

THANK YOU

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503.808.9003

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