Request for Information

Advanced Water Heating Specification

Residential Chapter Revision

February 2, 2026

Northwest Energy Efficiency Alliance
700 NE Multnomah Street, Suite 1300
Portland, Oregon 97232
p 503.688.5400
neea.org
info@neea.org

Northwest Energy Efficiency Alliance (NEEA)

NEEA is an alliance of more than 140 utilities and energy efficiency organizations working on behalf of over 14.5 million energy consumers across the four Northwest states.

Since 1996, NEEA has taken a market-driven approach to energy efficiency that is grounded in data, collaboration, and rigorous evaluation. NEEA works to transform markets by filling information gaps and identifying and removing barriers so that the market can align around evolving electric and natural gas energy efficiency needs. For more information, visit neea.org.

Advanced Water Heating Specification (AWHS), Residential

NEEA's AWHS provides guidance to manufacturers in developing residential HPWHs capable of providing consumer satisfaction and energy efficiency. Additionally, NEEA's residential HPWH Qualified Product List (QPL) recognizes products qualified by NEEA to the residential sections of the AWHS.

The AWHS addresses many factors, including varying operating conditions, cool climate efficiency (CCE), seasonal coefficient of performance (SCOP), installation guidance and design and warranty requirements. In 2026, NEEA intends to revise the residential AWHS to streamline it while retaining a framework for utilities and program operators to acquire energy efficiency resources.

With the updated federal standard (NAECA 4) coming into effect in 2029, NEEA seeks input on how to best position the Specification to support the HPWH market and the transition to a future when the federal standard will require most electric storage water heaters to be heat pumps. Furthermore, NEEA seeks to maintain a well-defined, referenceable product list that instills confidence in product performance while remaining agile enough to foster innovation and encourage adoption.

NEEA highly values your insights and perspectives, and your feedback plays a crucial role in shaping the AWHS. NEEA treats all information shared in response to this request confidentially and any NEEA future share out of individual or collective information publicly or with any third parties will be only in an anonymized form to protect privacy.

Request for Feedback

NEEA invites written feedback on the topics outlined on the following pages. We recognize that different stakeholders have varied interests and different areas of expertise. NEEA does not expect every respondent to provide feedback on every item, and encourages commenters to focus their responses on matters of interest to them.

Please submit your responses via

AWHS_residential@neea.org

by **April 3, 2026**

Please direct questions regarding this process to Adam Gage (agage@neea.org).

NEEA will use all stakeholder feedback to produce a draft revision of the residential portion of the AWHS by June 30, 2026. This draft will be shared with stakeholders for an additional round of feedback. NEEA expects to publish the revision (version 9) of the AWHS in Q4 of 2026.

Thank you in advance for your time and willingness to contribute your insights. We recognize that your expertise, perspectives, and input are not only valuable to this effort, but essential to shaping the AWHS's path forward. Your continued collaboration is appreciated.

NEEA is under no obligation to provide contracted work to any party responding to this Request for Information, nor is there any obligation or intent implied to reimburse any party for the cost of preparing a response. Responding parties shall have no right or expectation to obtain contracted future work absent a subsequent written contract agreed to by NEEA and the contracted party.

Topics

General

1.1 Federal Standard

The most recently adopted federal standard for consumer water heaters represents a significant change from the previous standard. NEEA recognizes that meeting the standard's requirements has significant impact on water heater manufacturers.

NEEA seeks feedback on desired roles for the AWHS under the new federal standard:

- Possibilities to revise the AWHS in ways that will help facilitate the transition to the new federal standards
- Product design and performance requirements that are meaningful to HPWH incentive programs but not covered by the federal standard

1.2 Enabling Innovation

The AWHS is written with the intention of differentiating HPWHs by energy savings potential while limiting prescriptive design requirements. NEEA recognizes there could be novel concepts for energy-efficient HPWHs that cannot meet AWHS requirements as written.

NEEA requests information on:

- Whether there are requirements in the AWHS that are hindering the development of specific HPWH products due to assumptions about design

1.3 Direction of HPWH Development

HPWH manufacturers are continually improving their products by increasing energy efficiency, adding new features, addressing user priorities, and developing innovative configurations among others. One function of the AWHS is to communicate NEEA's funders' interests for future products.

NEEA requests feedback on what the "next level" HPWH should look like:

- What aspects of product design/performance provide the greatest value?
- Which user interests are most important?
- Are there specific features missing from today's HPWHs?
- Does the AWHS evaluate characteristics that will encourage development in the right areas?

1.4 Qualified Products List (QPL)

NEEA welcomes feedback on the AWHS Qualified Products List, including:

- What information is included about each listed product
- How the list is made available (format, distribution, etc.)
- How changes to the list are communicated

1.5 Product Qualification Process

NEEA welcomes feedback on the process of qualifying products to the AWHS, including:

- Usability of the Product Assessment Datasheet (PADS)
- Accessibility / clarity of information about the process

1.6 Revision Effective Date

NEEA intends to publish a final version of a revised AWHS (version 9) by the end of the year. The requirements of this revision would become effective at a later date.

NEEA requests feedback on:

- The appropriate amount of time between publication of the final version of the specification and its effective date.

Rating System

2.1 Tiered Rating System

The AWHS uses a tiered rating system, with each tier having more, and stricter, requirements. Each tier is associated with a different estimated energy savings level. This approach differentiates qualified products by energy efficiency, and allows utilities and program operators to offer different incentives by tier. In recent years, the vast majority of new submissions to the AWHS QPL have been tier-3 or tier-4 products. It is NEEA's understanding that few incentives are currently offered for tier-1 or tier-2 HPWHs.

NEEA welcomes feedback on the tiered rating method, including:

- Usefulness of having multiple tiers versus a pass/fail-type standard
- Whether or not tiers 1 and 2 are relevant to today's HPWH market, or that of the near future (this may depend on availability and performance of lower priced units that still meet federal standards)

2.2 Recertification

With previous revisions to the AWHS, qualified products maintained tier ratings earned under previous versions. In limited cases, revisions have modified tier requirements. As a result, HPWHs with the same tier rating may have been evaluated under different criteria. If the next AWHS revision substantially changes tier requirements, it may be necessary for currently qualified products to undergo recertification in order to stay on the QPL.

NEEA is open to feedback on this practice:

- Is there benefit to maintaining an extensive list of products that were qualified to an expired standard?
- Does the current practice of including such models create confusion around QPL listings?
- Should previously qualified products be required to re-submit for rating each time the AWHS is revised?

2.3 120V / "Plug-Ins"

Previous versions of the AWHS defined a separate category for "plug-in" HPWHs with its own tier rating system and separate QPL. The current version retains a definition for "plug-in" but uses the same tier system and QPL as other HPWHs. The QPL indicates which products meet the AWHS definition of "plug-in".

NEEA is interested in feedback on:

- The usefulness of indicating which HPWHs on the QPL are "plug-ins"
- The AWHS definition of "plug-in," particularly the requirement that the HPWH can be plugged into a 15-amp circuit shared with other uses

Efficiency Ratings

3.1 Efficiency Metrics

The AWHS defines the Cool Climate Efficiency (CCE, formerly Northern Climate Energy Factor) and Seasonal Coefficient of Performance (SCOP). The metrics require testing under various ambient conditions and applying a calculation to the results to estimate an energy efficiency level that is representative for the Northwest. The approach reduces the need to prescriptively set minimums for specific performance values (lower compressor operating temperature limit, heat loss rate, efficiency or capacity at a given ambient temperature, etc.). This allows manufacturers to meet the efficiency goals of the AWHS by different means, choosing which aspects to optimize.

NEEA is interested in information on:

- Preferences between calculated single metrics (like CCE and SCOP) versus a set of multiple minimum requirements for different operating conditions. The tables below illustrate how a multiple minimums approach could compare to the current single metrics.

Indoor Heat Pumps

	Single Metric	Multiple Minimums
AWHS Evaluation Criteria	CCE	UEF E50 Compressor Operating Limit
Published Values	CCE	UEF E50 Compressor Operating Limit
Required Inputs *(testing requirements)*	UEF E50 Compressor Operating Limit Standby Heat Loss Rate	UEF E50 Compressor Operating Limit

Outdoor Heat Pumps

	Single Metric	Multiple Minimums
AWHS Evaluation Criteria	SCOP	UEF E_5 E_{34} E_{95}
Published Values	SCOP	UEF E_5 E_{34} E_{95}
Required Inputs *(testing requirements)*	UEF *(COP_C)* E_5 *(COP_A)* E_{34} *(COP_B)* E_{95} *(COP_D)*	UEF E_5 E_{34} E_{95}

3.2 E_{95} Test

UEF and E_{50} tests are required for AWHS evaluation. The similar E_{95} test, for warmer conditions, is optional, and results are not included in the QPL. AWHS stakeholders have expressed interest in having access to E_{95} test data for all qualified HPWHs.

NEEA requests feedback on E_{95} testing:

- Benefits / drawbacks of including E_{95} data on the QPL
- Benefits / burdens of requiring E_{95} testing (without a required minimum result)

3.3 Operating Modes

Most HPWHs allow users to select an operating mode that determines when/how they use different heating method(s) (resistance elements and heat pump). While specific models have different options and use different names, the following are common options:

1. *Heat pump:* Never uses electric resistance (ER), or only when heat pump cannot operate.
2. *Hybrid:* Usually the default mode. Balances efficiency and hot water availability by using ER when heat pump capacity is low compared to demand.
3. *High-demand:* Uses both heat pump and ER, but uses ER more readily than in hybrid mode.
4. *ER:* Only uses ER; does not use heat pump.

HPWH efficiency testing – both for DOE and AWHS – is done in the default mode. Other modes could result in substantially different energy use. At present, the AWHS efficiency metrics do not account for this potential difference. NEEA seeks to better understand these other modes to evaluate whether their availability significantly affects the energy use of HPWHs compared to what would be expected from hybrid mode operation.

NEEA seeks information on:

- The energy efficiency of high-demand modes relative to hybrid mode, in both the E_{50} and UEF test conditions
- What benefits high-demand and ER modes provide to users; what needs they are meant to address
    - For benefits that are only needed on a temporary and occasional basis, how long that need lasts
- How frequently the different operational modes are used, and data demonstrating what share of total HPWH operation occurs in each mode

3.4 Integrated Mixing Valves and Elevated Storage Temperature

Some HPWHs have a user-selectable option to increase effective storage volume by using an integrated mixing valve and elevating stored water temperature above the desired delivery temperature. DOE procedures exempt HPWHs from efficiency testing with such an option activated. It is expected that activating this feature would reduce energy efficiency in most cases.

NEEA seeks information on:

- The impact on energy efficiency of activating this option, particularly for hybrid HPWHs
    - NEEA seeks data on the energy use of an elevated stored water temperature in E_{50} and UEF tests
- How this option affects the share of heat added by the heat pump versus ER elements
- What benefits this option provides to users / what needs it is meant to address
- How frequently these modes are used, and data demonstrating what share of total HPWH operation occurs with the option activated

Assuring Energy Efficiency Performance

4.1 Warranty and Reliability

The AWHS requires a minimum 10 year parts / 1 year labor warranty. This is intended to ensure a HPWH accumulates a total energy savings over the equipment's lifespan and to increase consumer confidence. NEEA is considering alternatives to ensure that the reliability of installed HPWHs produces sufficient product-life energy savings.

NEEA is interested in suggestions on:

- Ways to measure the reliability and lifespan of installed HPWHs
- Ways to improve the likelihood of a new HPWH to achieve its expected lifespan
- A reasonable and appropriate expectation for HPWH lifespan
- Elements that ensure installers/customers are protected from product failures
- Ways other than a warranty to protect the installer and consumer
- How to define labor warranty to communicate scope and usefulness to installers/customers

4.2 Demand Response / Load Flex

To meet tier 3 requirements, a HPWH must demonstrate demand response / load flex capability by meeting either EcoPort[CM] or AHRI 1430 standards.

NEEA seeks feedback on:

- Whether it is appropriate to have two options for demonstrating these capabilities
- Preferences between EcoPort and AHRI (or other) standards
- Value of requiring demand response / load flex capability as a tier criterion

4.3 Installation Manuals

NEEA has observed that installation factors – the nature of the installation space and the quality of installation work – determine a HPWH's energy efficiency and delivery capacity as much as the product's design. To encourage high-quality installations, the AWHS requires installation manuals cover certain topics, including clearances, condensate management, and airflow.

NEEA requests feedback on installation manual requirements:

- What topics are appropriate to require in the interest of user satisfaction and product performance
- Potential alternatives to AWHS requirements, such as industry guidelines/standards

4.4 ER Use Prescriptions

Limiting the share of heating performed by the ER elements is crucial to the energy efficiency of hybrid HPWHs. To limit ER use under demand patterns that are common but not represented in UEF or other standard tests, the AWHS includes prescriptions including: requiring that two-thirds of the tank volume be drawn in the FHR test before ER elements engage (tier 2), and prohibiting use of ER in the bottom half of the tank when the heat pump is operational (tier 4).

NEEA welcomes feedback on these requirements:

- Effectiveness in appropriately limiting unnecessary ER operation
- Alternative design requirements for achieving these goals
- Preference between these prescriptive requirements and a performative alternative (e.g. requiring testing under additional simulated use patterns)

4.5 High Volume Draw Test

Because the UEF, E_{50}, and E_{95} tests typically do not elicit ER use, but ER use is common in installed hybrid HPWHs, an accurate prediction of real-world energy use requires additional data. Currently, NEEA gathers that data through the High Volume Draw Test defined in the AWHS. While the results of this test do not affect a product's rating, they are used to estimate a whole tier's energy use and savings. Those estimates directly inform the incentives offered by NEEA's funders and other organizations.

NEEA requests comment on:

- Alternative methods to the High Volume Draw Test and subsequent calculations for determining in-field electricity use

Design and Documentation

5.1 Heat Pump Fault Awareness

If the heat pump experiences a malfunction, a hybrid HPWH is often able to continue providing hot water with the ER elements alone. To ensure users are aware when this happens and can address the malfunction, the AWHS includes requirements that the HPWH display a visual error indication on the control panel and also produce an audible alert or electronic notification.

NEEA requests feedback on methods of making users aware of heat pump malfunction:

- Effectiveness of each of the types referenced in the AWHS (visual, audible, electronic)
- Alternative options
- Consumer preferences

5.2 Ducted Operation

The AWHS requires HPWHs for indoor spaces be designed to allow the attachment of standard ducting products. Ducting is a useful option for dealing with some installation site challenges, particularly rooms that are too small and have insufficient ventilation to allow efficient heat pump operation. Recent NEEA research suggests this challenge is less prevalent than previously thought, and ducting is likely not necessary in many of the cases that remain. NEEA also recognizes that fully indoor split systems represent another way to store hot water in one location while collecting heat from another.

NEEA is interested in feedback on:

- The importance of being able to duct an integrated HPWH
- Whether it is appropriate to require ducting capability in split system HPWHs designed for indoor installation of both the heat pump and water storage components

- What other requirements related to ensuring sufficient thermal resource would be appropriate in lieu of a ducting requirement

5.3 Sound Level

The sound produced by heat pumps can be irritating. To avoid/limit irritation, the AWHS includes maximum allowable sound levels for each tier and a test procedure for sound levels. The test procedure was developed with an emphasis on limiting test burden, allowing all manufacturers to self-test their HPWHs without investing in specialized facilities. As a consequence, the procedure trades off repeatability for accessibility.

NEEA is interested in feedback on:

- Potential alternatives to the AWHS sound test procedure, such as AHRI Standards 270 and 350
- The current sound pressure level requirements in the AWHS
- Alternative and additional ways to effectively limit sound irritation for HPWH users

5.4 Condensate Management

The AWHS includes requirements for both the design of condensate removal/management systems and instructions for installation of condensate drainage. These requirements are intended to ensure user acceptance of HPWHs by reducing property damage from poorly managed condensate and ensuring affordable condensate drain maintenance.

NEEA is interested in feedback on:

- Whether AWHS requirements are necessary to prevent issues related to condensate
- The specificity of the requirements, both for product design and installation instructions

5.5 Air Filters

The AWHS requires a HPWH with an air filter indicate when that filter should be cleaned or replaced. It is NEEA's understanding that many HPWHs produce the filter indicator after a set duration of time, regardless of how dirty (or clean) the filter may be at that time. NEEA recognizes the optimal cleaning frequency will depend on air quality, and making a HPWH capable of diagnosing insufficient airflow may have a questionable cost/benefit relationship.

The AWHS also requires any consumable air filter used in a HPWH's design be of a standard size and type, allowing users to replace them easily and affordably. NEEA is not aware of any current HPWH that uses a consumable air filter.

NEEA is interested in feedback on:

- The effectiveness of the air filter indicator requirement
- Potential alternatives to the indicator requirement
- The implications of removing the requirements regarding availability of replacement filters for consumable-filter HPWHs

5.6 Freeze Protection

Under the AWHS, HPWHs designed to circulate water outside the thermal boundary of a conditioned structure are required to undergo testing to demonstrate their ability to survive freezing conditions without electrical power and that the product manual provides instruction to prevent freezing. This is intended to ensure that monobloc-type split system HPWH designs can endure weather that is typical in NEEA territory, including during a power outage. The requirement precludes AWHS qualification of split system designs that cannot endure such conditions, even though this level of resiliency may not be necessary depending on how and where individual units of the HPWH are installed.

NEEA is interested in feedback on:

- Implications of removing this freeze protection as an AWHS requirement
- Implications of eliminating the testing requirement while retaining the performance requirement