

Memorandum



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SUBJECT: Residential Advanced Water Heating Specification Revision

The intent of this memorandum is to highlight how each requirement in Section 2.4 of the Advanced Water Heating Specification (AWHS) version 8.1 is proposed to change with respect to the draft residential AWHS version 9 published for stakeholder review and feedback on June 30, 2026.

In recognition of the feedback received, the wide availability of highly efficient products, and the maturity of the technology, no new, more stringent, nor additional performance requirements are proposed. NEEA has proposed the reduction or removal of requirements where possible to accommodate a simpler compliance process. The proposed requirements defining HPWHs in the residential AWHS version 9 are set to maintain a well-defined, referenceable product list that instills confidence in product performance while creating space for a greater diversity of products.

For version 9 of the residential AWHS, NEEA proposes three product tiers. The tiers are numbered 1 through 3 with Tier 3 representing the highest efficiency products. The changes in compliance requirements with respect to the AWHS version 8.1 are as follows:

2.4.1.1 Standards

NEEA proposes dropping this requirement in version 9 as it is not NEEA's purview and is partially redundant with other requirements, such as those necessary for an ENERGY STAR certification.

2.4.1.2 ENERGY STAR®

NEEA proposes keeping this requirement for Tier 2 and Tier 3.

2.4.1.3 Freeze Protection

NEEA proposes dropping this requirement in recognition of feedback received and the increased maturity in the monobloc heat pump category since this requirement's introduction.

2.4.1.4 Shipments Data

NEEA proposes keeping this voluntary data sharing option.

2.4.1.5 High Volume Draw Test

NEEA proposes modifying this requirement so that it is only required for Tier 3 products with one or more electric resistance element(s) with a combined maximum operating input capacity greater than 1.5 kW. This change reduces the barriers for listing Tier 1 and Tier 2 products on the Qualified Product List (QPL) while ensuring that more advanced water heaters continue to be recognized for

their energy savings contributions. Results of the High Volume Draw Test are used to improve estimates of the share of water heating performed by the heat pump to inform savings valuations. No proposals were received outlining an alternative approach.

2.4.1.6 Product Documentation

See 2.4.9 Product Documentation.

2.4.2.1 Indoor Heat Pumps – Cool Climate Efficiency (CCE)

NEEA proposes keeping this metric, but modifying its application. Only Tier 3 will require a minimum CCE and there will now be two thresholds depending on the combined maximum operating input capacity of the electric resistance elements.

Tier 1 will have an efficiency threshold aligned with the UEF values listed in NAECA IV. Tier 2 will require a UEF no less than 3.3 which is aligned with ENERGY STAR's UEF requirement for 240 V integrated products. Manufacturers with products qualifying for the Tier 1 or Tier 2 may submit the necessary data to output a CCE for publication on the QPL, but this is not a requirement.

CCE is an established metric that provides useful information about a HPWH's performance under common operating conditions not reflected in other measures. CCE is an important factor in considering a HPWH's fitness for installation in semi-conditioned and unconditioned locations in cool climates. While informative for all models, making CCE reporting optional for all but the highest tier provides a pathway to the QPL with a lower testing burden.

2.4.2.2 Outdoor Heat Pumps – Seasonal Coefficient of Performance (SCOP)

NEEA proposes keeping this metric, but modifying its application. Only Tier 3 will require a SCOP no less than 2.7.

Tier 1 will have an efficiency threshold aligned with the UEF values listed in NAECA IV. Tier 2 will require a UEF no less than 3.3. Manufacturers with products qualifying for Tier 1 or Tier 2 may submit the necessary data to output a SCOP for publication on the QPL, but this is not a requirement.

SCOP is a valuable metric that provides useful information about a HPWH's performance when the heat pump is installed outside, something not captured fully by one test condition in isolation. While informative for all models, making SCOP reporting optional for all but the highest tier provides a pathway to the QPL with a lower testing burden.

2.4.3.1 Electric Resistance Heating - Product Design

NEEA proposes keeping the requirements that two-thirds of the tank volume be drawn in the FHR test before electric resistance (ER) elements engage for Tier 2 and Tier 3, and prohibiting the use of ER in the bottom half of the tank when the heat pump is operational for Tier 3. Limiting the share of heating performed by the ER elements is crucial to realize energy savings. As it is highly uncommon for the UEF and E50 standardized tests to elicit ER element usage, these requirements remain necessary to limit their usage in real world operation.

2.4.3.2 Operating Mode Selection

NEEA proposes modifying the requirements on mode selection. For Tier 1 and Tier 2, the timeout is only applicable if the user selects the ER-only operating mode. For Tier 3, the timeout is applicable to any mode that allows the use of a lower ER element when the heat pump is operational. Mode timeout is valued as a safety net to ensure the product operates as represented by its performance ratings. NEEA proposes removing the requirement that the product operates in

default mode without user input upon startup as it can complicate new construction installation practices.

2.4.3.3 Power Failure

NEEA proposes dropping this requirement in recognition of the feedback received.

2.4.3.4 Normal Disruption to Heat Pump Operation

NEEA proposes dropping this requirement in recognition of the feedback received.

2.4.3.5 Fault Condition Alarms

NEEA proposes modifying this requirement and only requiring it for Tier 2 and Tier 3 in recognition of the feedback received.

2.4.4 Demand Response Capability

NEEA proposes dropping this capability as a requirement and instead recognizing it as an optional endorsement at all tier levels. This change is intended to reduce compliance complexity while still providing the ability for programs to easily identify demand response capable products. NEEA strongly supports the development of load flexibility resources through demand response capabilities in heat pump water heaters and will continue to encourage their growth. Requirements of the endorsement will continue to be based on the OpenADR Alliance's EcoPort certification and AHRI Standard 1430-2022 (I-P).

2.4.5.1 Sound Level – Indoor Heat Pumps

NEEA proposes modifying this requirement in recognition of the feedback received and only having a sound level requirement for Tier 3. AHRI is developing a sound testing methodology for indoor heat pump water heaters; *AHRI 350 (SI/I-P): Sound Performance Rating of Non-ducted Indoor Air-conditioning and Heat Pump*. NEEA supports this effort. In the interim, an attestation of a sound pressure level no more than 50 dB(A) as measured by the AWHs Sound Pressure Test Method will be required for Tier 3. With the finalization of AHRI 350, the NEEA Sound Pressure Test Method is no longer necessary, and NEEA expects to align the residential AWHs with the adopted standard. Feedback received highlighted that market competition can effectively control sound-related irritation and that sound level is not as important in all installation situations.

2.4.5.2 Sound Level – Outdoor Heat Pumps

NEEA proposes dropping this requirement in recognition of the feedback received and only having a sound level requirement for Tier 3. AHRI is developing a sound testing methodology for outdoor heat pump water heaters; *AHRI 270 (SI/I-P): Sound Performance Rating of Outdoor Unitary Equipment*. NEEA supports this effort. In the interim, an attestation of a sound pressure level no more than 50 dB(A) as measured by the AWHs Sound Pressure Test Method will be required for Tier 3. With the finalization of AHRI 270, the NEEA Sound Pressure Test Method is no longer necessary, and NEEA expects to align the residential AWHs. Feedback received highlighted that market competition can effectively control sound-related irritation and that sound level is not as important in all installation situations.

2.4.6 Condensate Management

See 2.4.9 Product Documentation.

2.4.7 Airflow

See 2.4.9 Product Documentation.

2.4.8 Warranty - Parts

NEEA proposes modifying this requirement in recognition of the feedback received. The parts warranty requirement in version 8.1 set at a premium 10 year minimum is perceived to increase customer costs and limit opportunities for price competition. Reducing the minimum parts warranty across all tiers reduces this barrier, recognizes the maturation of the product, and provides greater alignment with the warranty requirements of the ENERGY STAR program for Tier 2 and Tier 3.

2.4.8 Warranty - Labor

NEEA proposes modifying this requirement in recognition of the feedback received. The labor warranty requirement as currently written creates challenges for uniform and effective application. Compliance criteria will be outlined in greater detail. Specifically, labor warranty must cover the cost of labor to address product issues, under parts warranty, in full for the duration of the labor warranty period. Market confidence is critical both to broad adoption of HPWHs and the cost effectiveness of energy savings investments.

2.4.9 Product Documentation

NEEA proposes modifying this requirement in recognition of the feedback received. AHRI is actively developing a guideline to address installation practices, which NEEA expects to adopt as a replacement for documentation requirements once finalized. In the interim, NEEA proposes a less prescriptive approach to documentation requirements.

2.5.1 Endorsement - Demand Response

See Section 2.4.4.

2.5.2 Endorsement - Plug-In

NEEA proposes dropping this endorsement and instead having a different, lower minimum CCE requirement for Tier 3 based on the combined maximum operating input capacity of the electric resistance elements. This segment of the HPWH market has matured significantly since the plug-in endorsement was first developed. The proposed change aligns AWHS with the present market state and acknowledges the way input-limited HPWHs contribute to energy savings.

2.5.3 Endorsement – Space Constrained

NEEA proposes dropping this endorsement. There has been limited interest in this endorsement to date, and no feedback was received to indicate otherwise.

NEW Endorsement – Adaptive Controls

NEEA is considering adding a new endorsement to recognize products that adapt their control algorithms in response customer draw patterns to optimize heat pump operation over ER elements.

Recertification

NEEA proposes recertification of all products to the new version so that all products are listed to a uniform set of criteria. Compliance information from version 8.1 and past versions is sufficient for NEEA to generate and present directly to each manufacturer a report of their currently listed products' alignment with the new version 9 tier structure. Manufacturers can then confirm the products, and to which tier, they are targeting for listing and provide any remaining information to meet compliance requirements. Manufacturers then become responsible for the compliance accuracy of updated and new products.

Compliance Timeline

NEEA proposes a compliance date of June 1, 2027. With the reduction of requirements and ability to relist with minimal new information submittals, NEEA recommends an expedited timeline to maximize effective time before the federal standard change in May 2029.

Qualified Products List

NEEA received various recommendations on how and what information to present on the QPL. NEEA proposes keeping the QPL succinct and not listing detailed product technical specifications due to the complexity of intaking and managing that data set. NEEA does recognize the need for greater access and usability of the QPL and proposes making a locked Excel version available on nea.org.