High-Performance Measure Details

Measure Name
Heat Pump Water Heater Integrated with High-Performance Distribution System

Use Category
SHW – Water Heating Electrification

Effective Date
April 20, 2026

End Date
Pending New Version Release in September, 2026

Version
1.2

Measure Code
LM402

Measure Stage
Early Adoption & High Priority Data Collection

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Technology Summary

Central heat pump water heater (CHPWH) systems with high-performance distribution are centralized or semi-central domestic hot water (DHW) plants that use heat pumps as the primary heating source and incorporate optimized recirculation and distribution strategies to reduce thermal losses and parasitic energy use. These systems are typically applied in multifamily housing, lodging, hotels, and residential care facilities where hot water loads are concentrated, and distribution systems are extensive. Within the California Energy Design Assistance (CEDA) program—which advances electrification, decarbonization, and grid resilience in new construction—this measure focuses not only on electrifying service water heating but also on improving distribution efficiency, which often determines real-world system performance. High-performance distribution may include variable-speed recirculation pumping, thermostatic balancing valves, temperature maintenance strategies, and improved piping design to limit heat loss and excess flow.

This measure matters for California decarbonization because service water heating is a major source of on-site fossil fuel use in multifamily and hospitality buildings. Central HPWH systems can significantly reduce greenhouse gas emissions when designed to operate as the primary heat source. However, operational performance is highly sensitive to distribution design. Poorly designed recirculation systems can erode system COP through excessive pumping energy, uncontrolled temperature maintenance, and long return loop losses. Improving distribution performance enhances overall system efficiency, reduces peak electric demand associated with resistance backup or temperature maintenance, and supports more predictable load management strategies.

In practice, performance gaps are common. These include oversized or constant-speed recirculation pumps; lack of flow balancing between risers; excessive return loop lengths; improper temperature maintenance strategies that increase electric resistance operation; and central or semi-central HPWH systems that are correctly specified but undermined by distribution losses. Without coordinated design of both the heat pump plant and the distribution network, systems may not achieve expected system-level COP or carbon reduction outcomes.

Relevant industry standards and certifications include the Advanced Water Heating Specification (AWHS) v8.0 and v8.1 (NEEA), AHRI certification for heat pump water heaters, Title 20 Appliance Efficiency Regulations, and 2025 California Title 24, Part 6 service water-heating requirements.

Alignment with CEDA Program Goals

The CEDA program supports the implementation of energy efficiency measures that support Code Readiness' Long Term Tactical Plan (LTTP) to drive the goals of electrification, decarbonization, and load reduction.

Projects must meet the CEDA Inducement Requirements identified in the next section to receive an inducement on the equipment and will be evaluated for level of interest in metering to support Code Readiness Objectives.

This measure meets the CEDA program goals as follows:

- **Building partnerships with market stakeholders** by consulting on innovative technologies and best practices in energy efficiency which can lead to the development of more effective solutions and accelerate the adoption of new technologies. As teams adopt the measure, this increases the volume of engineers able to design the equipment, contractors capable of installing the equipment, and owners able to operate the equipment.
- **Increasing the supply of high-performance measures and all-electric buildings** by combining electrification with energy efficiency that can result in projects implementing measures to achieve greater energy savings, reduced emissions, and overall improved building performance. As more buildings specify and install HPWH with High Performance Distribution, this helps to increase the overall supply of these measures in the market for others to use, including beyond new construction.
- **Increasing the demand for high-performance measures and all-electric buildings** by pushing for electrification that drives the need for technological advancements, supporting economic growth opportunities through innovation, and raising awareness of the benefits of electrification to increase consumer adoption. As demand in the market increases for newer technologies, the long-term benefit is increased demand for manufacturers and suppliers to provide additional options available in the market.
- **Advancing new high-performance measure technology** by raising public awareness about new technologies and their benefits, helping build acceptance and demand through market support advocacy efforts that can influence stakeholder decisions that enables technological innovation.
- **Providing Codes & Standards with projects of interest** to collect metered data that will inform future California energy codes.

CEDA Inducement Requirements

This measure is intended to address a persistent market and implementation gap in the design of centralized heat pump water heater (HPWH) systems with high-performance distribution. Although central HPWH systems are increasingly used to support building electrification, current Title 24 requirements focus primarily on equipment efficiency, pipe insulation, and baseline recirculation provisions, and do not fully establish performance-based expectations for optimized distribution system design. In practice, distribution design factors such as recirculation pump control, riser balancing, return loop length, and temperature maintenance strategy can materially affect overall system efficiency, operating performance, and realized system COP. Without targeted guidance and inducement support, projects may satisfy minimum code requirements yet still underperform because of unnecessary distribution losses and parasitic energy use.

This measure incorporates selected distribution design criteria—such as return loop length targets, recirculation pump control, and thermostatic balancing valve (TBV) application—to align with emerging CASE code concepts intended to improve recirculation system performance, support more effective balancing, and reduce distribution losses. In this way, the measure is structured to encourage intentional, well-documented domestic hot water distribution designs that improve operational efficiency, reduce implementation risk, and support more consistent long-term performance of central and semi-central HPWH systems. The measure emphasizes coordinated hydraulic, temperature maintenance, and controls design practices that help preserve the efficiency benefits of HPWH technology at the system level, not just the equipment level.

Inducement eligibility is determined by compliance with the applicable System Design Requirements and Supporting Documentation Requirements, with final eligibility verified through the CEDA review process. This measure is offered only as an **add-on to qualifying projects implementing the Central or Semi-Central HPWH HPMs** and applies to domestic/service hot water distribution systems serving eligible Group R-1 and R-2 occupancies, including high-rise multifamily, lodging, hotel/motel, dormitories, assisted living facilities, and similar residential-use building types.

System Design Requirements

A qualifying heat pump water heater system must serve as the primary source of domestic/service water heating and must be designed in accordance with one of the following eligible hot water distribution system configurations:

- **Central HPWH DHW/SHW Systems**
  - Single-pass HPWH
    - Hot water circulation returned to the primary storage.
    - Hot water circulation returned to a temperature maintenance tank in series w/electric resistance element, also referred to as a “swing tank.”
    - Hot water circulation returned to a temperature maintenance storage tank in parallel with multi-pass HPWH for reheat.
  - Multi-pass HPWH
    - Integrated/packaged HPWH, hot water circulation returned to primary storage.
    - Split-system, hot water circulation returned to the primary storage.

- **Semi-Central HPWH DHW/SHW Systems**
  - Single-pass HPWH
    - Hot water circulation returned to the primary storage.
    - Hot water circulation returned to a temperature maintenance tank in series w/electric resistance element, also referred to as a "swing tank."
    - Hot water circulation returned to a temperature maintenance storage tank in parallel with multi-pass HPWH for reheat.
  - Multi-pass HPWH
    - Integrated/packaged HPWH, hot water circulation returned to primary storage.
    - Split-system, hot water circulation returned to the primary storage.

*Note: Example system diagrams for these configurations can be found in the **Advanced Water Heater Specification v8.1** (effective July 15, 2024) or later:* AWHS v8.1 (neea.org).

System Type Exclusions:

The following HPWH system type configurations are excluded from this measure:

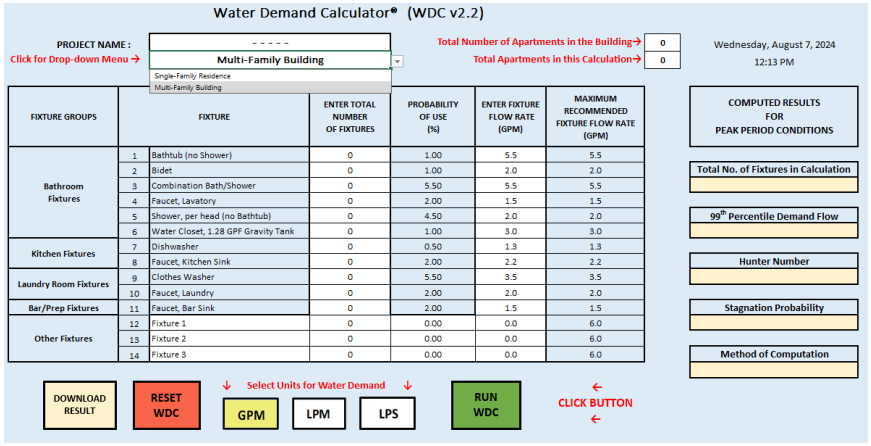
- Single-pass HPWH with **no hot water recirculation**, primary heat pump water heating only.
- Multi-pass integrated/packaged HPWH with **no hot water recirculation**.

*Note: This measure would exclude **instantaneous water heaters** which have short distribution runs and do not cover processes utilizing distribution systems.*

Additional System Design and Product Requirements:

The following additional system requirements are necessary for measure eligibility in alignment with the 2025 Title 24 CASE proposal language for Multifamily Domestic Hot Water: 2025_T24_CASE-Report-_MF-DHW-Final-1.pdf

- **Appendix M - Building Water Supply System Sizing:**
  - **2025 CBC Residential Group R-1** and **R-2** occupancy projects using qualifying HPWH(s) are required to size the domestic cold & hot water distribution system using ***Appendix M of the 2025 CA Plumbing Code (CPC),*** which is based on the IAPMO Water Demand Calculator.
    - **2025 CPC Appendix M Section 102.2:**
      - *Water Demand Calculator* the estimated design flow rate for the building supply and principal branches and risers shall be determined by the *IAPMO Water Demand Calculator*.



- **Variable Volume Circulation Pump (VVCP):**
    - Multiple-riser hot water circulation systems shall use a **variable-volume circulation pump** configured to modulate pump speed in response to system demand, such as through differential pressure control. A compliant VVCP may consist of a variable-speed DHW recirculation pump integrated with temperature and differential pressure controls to optimize system operation.

- **Thermostatic Balancing Valve(s):**
    - Provide **self-actuating thermostatic balancing valves (TBVs)** to regulate recirculation flow at each riser. Where more than one DHW supply riser is installed, each TBV shall be accessible, located downstream of the last supply branch on the riser in the direction of flow, and set to a maximum temperature of 120°F. TBVs shall be provided on each branch return line.
        - *TBV: A thermostatic, self-actuating balancing valve that automatically and continuously adjusts the flow of a domestic hot water recirculation system to maintain a specified temperature at the end of each branch or riser. TBV regulates flow in response to heat loss and demand fluctuations, reducing labor time and eliminating callbacks.*

- **Master Mixing Valve(s):**
    - Provide a **master mixing valve (MMV)** on the central heating plant hot water supply outlet header upstream of the recirculation loop.
        - *Master Mixing Valves: Thermostatically blend hot and cold water to ensure safe delivery throughout hot water distribution systems in commercial, institutional, and industrial facilities.*

- **Return Loop Length:**
    - Design the domestic hot water recirculation system so that each return loop is **generally limited to 160 feet of total developed length**, consistent with the return-loop threshold referenced in the Title 24 CASE proposal language for thermostatic balancing valves (TBVs). This limit is intended to support more consistent recirculation balancing, temperature maintenance, and distribution efficiency by reducing excessive loop heat loss and control variability.
    - For systems with one return loop, target a maximum return piping length of 160 feet.
    - For systems with multiple recirculation return loops, target no more than 160 feet of total developed length for each individual return loop.
        - *Total developed length of piping refers to the actual length of the pipe, including all fittings and bends, measured along the centerline of the pipe. This measurement is crucial in plumbing and piping systems to ensure accurate calculations for material requirements and pressure loss.*

Note: The 160-foot value is used here as a design-alignment criterion tied to the CASE proposal framework for high-performance recirculation distribution, not as a claim that one single field study established a universal empirical limit. The intent is to reflect the CASE-defined applicability threshold used for TBV-based distribution optimization and to guide project teams toward loop geometries more likely to support effective balancing and lower distribution losses.

HPWH System Efficiency Requirements

- HPWH products selected must be listed on the **AWHS Commercial Qualified Products List (NEEA) v8.1** or later: Commercial HPWH Qualified Products List - Northwest Energy Efficiency Alliance (NEEA)
- HPWH products **must be Tier 2 SysCOP or better** per NEEA HPWH System Efficiency Tiers:

Table 1: NEEA HPWH System Efficiency Tiers

	HPWH Minimum SysCOP
	Mild Climate (IECC Zone 3-4)
Tier 1	1.50
Tier 2	2.00
Tier 3	2.50
Tier 4	3.00

More information on this can be found here: NEEA - Advanced Water Heating Specification (July 15, 2024)

Supporting Documentation Requirements

Provide documentation identifying the applicable qualifying system configuration consistent with the example configurations above and, as applicable, AWHS v8.1. Submittal shall include the following:

- **System schematic:** A piping schematic showing the overall hot water system configuration and connection to the building, including supply and return piping, HPWH equipment, ancillary heating devices, temperature maintenance tank arrangement (series or parallel), thermostatic balancing valve (TBV) locations, and other key distribution components.
- **Equipment information:** Manufacturer cut sheets or schedules identifying HPWH and temperature maintenance equipment, including rated efficiency/performance data, single-pass or multi-pass configuration, refrigerant type, and defrost strategy/controls, as applicable.
- **Sizing information:** Basis of design or equipment schedule showing HPWH capacity sizing, storage volume sizing, and load-shift sizing assumptions, if applicable.
- **Flow design information:** Maximum design water flow through the HPWH, including the design basis used to determine it.
- **Distribution system details:** Distribution pump information, including efficiency, and distribution pipe insulation values with corresponding pipe sizes shown on the schematic or schedule.
- **Building information:** Project building type, conditioned floor area, number of stories, and number of hot water risers served by the system.

Incremental Measure Cost

The Incremental Measure Cost (IMC) values presented below are program calibration inputs used to support CEDA inducement calculations and portfolio-level cost-effectiveness screening. They represent a normalized estimate of incremental first cost associated with implementing a central or semi-central heat pump water heater (CHPWH) system with high-performance distribution relative to a code-minimum baseline configuration. These values are not intended to serve as contractor bid estimates, project reconciliation tools, or final accounting benchmarks.

Actual project costs vary based on building size, riser count, plant configuration, distribution layout, temperature maintenance strategy, and local labor conditions. The IMC values reflect typical market conditions in new construction and are informed by manufacturer pricing, industry studies, published case reports, and program experience. They are intended to capture the incremental cost of distribution system upgrades beyond standard central HPWH installation.

Base Case

The Base Case assumes a CHPWH system meeting minimum Title 24 prescriptive requirements for service water heating, including standard storage tank insulation and recirculation loop compliance under §110.3. The distribution system consists of constant-speed recirculation pumps, conventional balancing methods (manual valves), and return loop lengths typical of multifamily or lodging construction. Temperature maintenance may rely on uncontrolled recirculation or basic swing-tank configurations without active flow optimization.

The Base Case does not include advanced flow balancing devices, demand-based recirculation control, or optimized return loop design intended to minimize distribution losses.

Measure Case

The Measure Case includes a CHPWH system where the distribution network is intentionally designed to reduce thermal losses and parasitic pumping energy. Incremental elements may include:

- Variable-volume recirculation pumping with differential pressure control
- Self-actuating thermostatic balancing valves (TBVs) at risers
- Master mixing valves integrated with recirculation strategy
- Optimized return loop lengths and pipe routing
- Enhanced distribution pipe insulation beyond code minimum
- Coordinated temperature maintenance strategy to reduce electric resistance operation

The incremental cost reflects additional materials (TBVs, control valves, upgraded pumps), controls integration, commissioning effort, and modest additional design coordination.

Normalization Approach

For multifamily and lodging applications—the primary market for this measure—the most appropriate normalization metric is: **$/Dwelling Unit (DU)**

Distribution system complexity scales most directly with riser count and unit count rather than total heating capacity (MBH). This aligns with the Central HPWH IMC framework in the reference sheet and maintains consistency across water-heating HPMs.

For other qualifying residential care type buildings, **gross floor area (GFA)** scaling is appropriate.

Representative Pricing Anchor

Observed incremental cost components (typical mid-rise multifamily):

- Variable-speed recirculation pump upgrade: $2,500–$5,000
- TBVs (6–20 risers typical): $300–$600 per valve
- Additional control integration & commissioning: $5,000–$10,000
- Enhanced insulation and routing optimization: $3,000–$8,000

Representative 80-DU multifamily building example:

Total incremental distribution upgrade cost ≈ $40,000
IMC per DU calculation:
$40,000 ÷ 80 DU = ***$500 per DU***

Recommended IMC

- **High-Rise Multifamily**

  Measure IMC: $500 per Dwelling Unit

  This reflects incremental distribution upgrades above standard central HPWH installation.

- **Other Qualifying Residential Group R-1 and R-2**

  Distribution complexity scales with building size and riser length; recommended normalization:

  Measure IMC: $0.50 per square foot (GFA)

  Example:
  50,000 ft² building
  50,000 × $0.50 = ***$25,000 incremental cost***

Sources

IMC values are informed by a combination of publicly available market pricing, industry cost references, and program experience, and are intended to reflect typical market conditions in new construction rather than project-specific pricing, including:

- NEEA Advanced Water Heating Specification (AWHS) v8.0 and v8.1
- 2025 Title 24 CASE Report – Multifamily DHW
- ET22SWE0017 Commercial and Multifamily CO_2 Heat Pump Water Heater Final Report
- Brooks (2020) Central Heat Pump Water Heating – Key Design Considerations
- ACEEE HW+HA 2024 workshop materials on multifamily DHW distribution

Code Readiness Objectives

This measure supports CEDA's Code Readiness efforts by collecting performance and market data to inform future Title 24 improvements related to central heat pump water heater (HPWH) systems with high-performance distribution. While current code language addresses service water-heating equipment efficiency and basic recirculation requirements, distribution system performance remains a major source of energy loss and variability in real-world installations. The data gathered through this measure will help determine the most cost-effective, scalable configurations of central HPWH systems that reliably maintain high system-level COP while minimizing recirculation losses and parasitic pumping energy across climate zones and building types.

The objectives include the following:

- Define prescriptive distribution configurations suitable for inclusion in future energy code, including variable-volume recirculation pumping, thermostatic balancing valves, and return loop design limits.
- Evaluate operational performance of central HPWH systems under real-world conditions, including system COP, temperature maintenance energy use, and pump energy relative to hot water load.
- Quantify the impact of distribution system design (riser count, loop length, insulation levels, control sequencing) on total system efficiency and peak electric demand.
- Assess control strategies for recirculation and temperature maintenance, including differential pressure control and flow balancing effectiveness across varying occupancy and load conditions.
- Identify cost drivers and installation complexity associated with high-performance distribution systems to determine cost-effectiveness thresholds for prescriptive adoption.
- Assess contractor readiness, product availability, and commissioning practices to understand market scalability and implementation barriers.
- Recommend potential enhancements to efficiency criteria in future code cycles that address distribution system performance in addition to equipment ratings.

By linking field-monitored performance, cost data, and market readiness insights, this measure advances the development of prescriptive and performance-based pathways for central HPWH systems that deliver measurable energy and carbon reductions in future Title 24 updates.

Code Readiness Site Monitoring

If selected for Code Readiness monitoring, equipment energy consumption and mechanical system performance may be monitored on-site for a period of up to 24 months. To support performance evaluation and data collection, projects shall provide reasonable access for the installation and operation of metering, sensors, and communication equipment.

Projects equipped with a Building Automation System (BAS), Energy Management System (EMS), or equivalent platform should enable integration of advanced metering devices through the existing system to facilitate data collection and remote access. For projects without a BAS or EMS, the Code Readiness team may install temporary stand-alone data loggers, sensors, and communication equipment as needed to monitor system performance for the duration of the monitoring period.

Instrumentation may be installed or supplemented, where necessary, to measure key system and equipment parameters sufficient to evaluate system performance and operational characteristics. All monitoring equipment will be temporary and installed in a manner that minimizes disruption to normal building operations.

Data Benefits

Collected data will help support the following:

- Quantify system-level COP and temperature maintenance COP (TMCOP) for central HPWH systems under varying load conditions and climate zones.
- Document distribution system efficiency, including recirculation losses, return loop temperatures, and parasitic energy use of variable-volume pumps.
- Measure the impact of thermostatic balancing valves, loop length, insulation levels, and control sequencing on overall service water-heating performance.
- Provide insight into first costs, installation complexity, and configuration tradeoffs associated with high-performance distribution strategies.
- Support refinement of Title 24 prescriptive and performance criteria that address distribution system efficiency in addition to equipment ratings in future code cycles.

Sample Data Points

A sample set of data points that would ideally be collected is provided below for reference. This list will be re-developed for each project based on the infrastructure and need of the monitoring effort:

Data Points to Meter	Unit	Additional Specifications
HPWH Electrical Power	kW	Average, peak, and interval data
HPWH Thermal Output	Btuh/h	Calculated from flow and temperature difference
System COP	COP	Calculated at regular intervals
Recirculation Pump Power	kW	Average and peak values
Recirculation Flow Rate	GPM	Average and peak values
Primary Hot Water Supply Temperature	°F	Average and peak values
Primary Hot Water Return Temperature	°F	Average and peak values
Temperature Maintenance Tank Supply Temperature	°F	If applicable
Temperature Maintenance Tank Return Temperature	°F	If applicable
Recirculation Loop Temperature at Key Return Locations	°F	Representative risers or return branches
End-of-Line or Distal Hot Water Temperature	°F	At representative remote locations
DHW Load Flow Rate	GPM	Building hot water draw profile
DHW Load Volume	gal	Daily and interval totals
Distribution Heat Loss Indicator	Btu/h or °F differential	Can be derived from flow and supply/return temperature difference
TBV Position or Representative TBV Temperature	°F or status	If available, at selected representative risers
Building Occupancy / Operating Mode	status	Occupied/unoccupied or comparable operating flag

Code Reference

2025 CA Title 24, Part 6, Section 110.3– Mandatory Requirements for Service Water-Heating Systems and Equipment

110.3(a) Certification by manufacturers*:*

Any service water-heating system or equipment may be installed only if the manufacturer has certified that the system or equipment complies with all of the requirements of this subsection for that system or equipment.

1. *Temperature controls for service water-heating systems. Service water-heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use as listed in Table 3, Chapter 50 of the ASHRAE Handbook, HVAC Applications Volume or Table 613.1 of the California Plumbing Code for healthcare facilities.*

Exception to Section 110.3(a): *Residential occpuancies.*

110.3(b) Efficiency*:*

Equipment shall meet the applicable requirements of the Appliance Efficiency Regulations as required by Section 110.1, subject to the following:

1. *If more than one standard is listed in the Appliance Efficiency Regulations, the equipment shall meet all the standards listed; and*
2. *If more than one test method is listed in the Appliance Efficiency Regulations, the equipment shall comply with the applicable standard when tested with each test method; and*
3. *Where equipment can serve more than one function, such as both heating and cooling, or both space heating and water heating, it shall comply with all the requirements applicable to each function; and*
4. *Where a requirement is for equipment rated at its "maximum rated capacity" or "minimum rated capacity," the capacity shall be as provided for and allowed by the controls, during steady-state operation.*

110.3(c) Installation*:*

Any service water-heating system or equipment may be installed only if the system or equipment complies with all of the applicable requirements of this subsection for the system or equipment.

1. *Outlet temperature controls*
2. *Controls for hot water distribution systems*
3. *Insulation*
4. *Water heating recirculation loops serving multiple dwelling units, high-rise residential, hotel/motel, and nonresidential occupancies*
5. *Service water heaters in state buildings*
6. *Isolation valves*
7. *Air-source heat pump water heaters (HPWHs)*

2025 CA Title 24, Part 6, Section 170.2– Prescriptive Approach

170.2(d)2C Domestic Hot Water Systems – Central Systems*:*

All hot water piping shall be sized in accordance with the California Plumbing Code Appendix M

Eligible Climate Zones and Building Types

Eligible Climate Zones

This high-performance measure applies statewide in **California Climate Zones 1-16** (Title 24). Applicants must identify the project's climate zone in the submittal.

Eligible Building Types

This high-performance measure applies to:

- **High-Rise Multifamily (Group R-2):**
  Buildings with four (4) or more habitable stories above grade.
- **Lodging and Residential Care Facilities (Group R-1 and R-2):**
  Including hotels, motels, dormitories, senior housing, and nursing homes.

Mixed-Use Buildings:
Mixed-use buildings may be eligible where Group R-1 and/or R-2 occupancy is the primary qualifying occupancy served by the system. In general, eligible R-1 and/or R-2 uses should account for more than 50% of the building gross floor area or served domestic/service hot water load. Projects with mixed occupancies will be reviewed case by case to confirm that the qualifying residential use is the dominant occupancy for measure eligibility.

Eligible Project Scopes

This high-performance measure applies to:

- **New construction**, **additions**, and **major alterations/retrofits** to systems served by the measure.

This high-performance measure does not apply to (not in scope):

- **Low-rise residential** (single-family and multifamily ≤3 habitable stories above grade).

Measure Exclusions

- **Projects without a central or semi-central heat pump water heater (HPWH) system:**
  This measure is only available as an add-on to projects implementing a central or semi-central HPWH system as the primary service water heating source. Projects utilizing distributed, in-unit, or point-of-use water heating systems are not eligible.
- **Projects not claiming the associated CHPWH or Semi-Central HPWH HPM:**
  Eligibility for this measure requires concurrent participation in the corresponding central or semi-central HPWH measure. *This distribution measure is not eligible as a standalone measure.*
- **Systems without recirculating distribution networks:**
  Buildings that do not include a recirculating domestic hot water distribution system (e.g., systems with minimal piping runs or demand-only distribution) are not eligible.
- **Non-qualifying building types:**
  Buildings outside of Group R-1 and R-2 occupancies (as defined in the Eligible Building Types section) are not eligible.
- **Non-DHW applications:**
  Systems serving pool heating, spa heating, or process loads unrelated to domestic/service hot water are excluded.

Reviewer Checklist

High-Performance Measure Reviewer Checklist: HPWH with High-Performance Distribution System – V1.2

Checklist Description: This checklist captures the elements that must be present in the project design to be eligible for the high-performance measure inducement or consideration for additional site metering.

Project Name: _____ **Review Date:** _____

Assessment:

- ☐ Approved
- ☐ Not approved

Notes:

Reviewer: _____ **Signature:** _____

High-Performance Measure Requirements	Comments

System Eligibility

- ☐ Project includes a qualifying central or semi-central heat pump water heater (HPWH) system serving as the primary heat source for service water heating and meeting the applicable requirements of the Central HPWH or Semi-Central HPWH HPM.
- ☐ Project scope includes a qualifying domestic/service hot water distribution system serving multiple dwelling units or occupiable spaces.
- ☐ Distribution design is submitted as an add-on measure to the qualifying central or semi-central HPWH system, not as a standalone measure.
- ☐ Project is not seeking inducement solely for packaged HPWH units with limited distribution scope or short distribution runs.

Distribution System Eligibility

- ☐ Project includes an eligible hot water distribution configuration consistent with the measure requirements.
- ☐ System includes recirculation serving multiple risers, branches, or occupiable areas, as applicable.
- ☐ Required distribution features are identified, including applicable recirculation pump control, thermostatic balancing valve (TBV) locations, and temperature maintenance components, where applicable.
- ☐ System serves domestic/service hot water loads only, not pool or process heating.

Product & Equipment Eligibility

- ☐ HPWH products are listed on the NEEA Advanced Water Heating Specification (AWHS) Qualified Products List (v8.1 or later), where applicable.

- ☐ Manufacturer documentation includes product performance and capacity ratings for the HPWH and applicable temperature maintenance equipment.
- ☐ System design documentation demonstrates compliance with the minimum Tier 2 system coefficient of performance (SysCOP) requirement.

System Sizing & Documentation

- ☐ Applicable qualifying system configuration is identified.
- ☐ Piping schematic is provided showing key system and distribution components.
- ☐ HPWH and storage sizing documentation is provided, including maximum design water flow through the HPWH.
- ☐ Equipment cut sheets or schedules are provided for the HPWH and temperature maintenance equipment.
- ☐ Distribution pipe sizes, insulation values, and pump efficiency information are documented.
- ☐ Building type, floor area, number of stories, and number of hot water risers are documented.

Version History Log

Version	Effective Date	End Date	Change Description
1	February 23, 2023	April 19, 2026	N/A
1.2	April 20, 2026	Pending New Version Release in September, 2026	Updated measure to the current CEDA HPM format, IMC, and added reviewer checklist