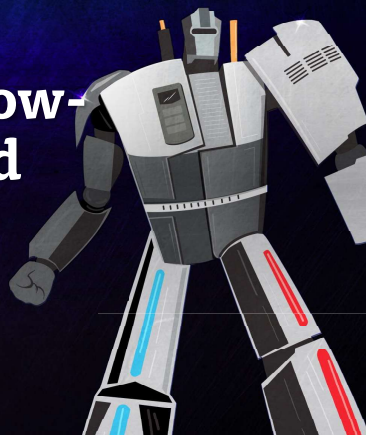


Heat Pump Water Heater Solutions in Low-Rise Multi-Family and Light Commercial

23rd Oct 2024



TRANSFORM THE MARKET



It's HPWH day. Let's chat



What's out there in the market



Let's make a choice



Be a Market Transformer

MARKET TRANSFORMERS



**Gregg
Holladay**



**Kyle
Jason**



**Russell
Stevens**



**Jon
Heller**



**Emily
Rosenbloom**

Assess and Evaluate

Assess New Construction

Value Proposition:
Highlight benefits to stakeholders.

Space Needed: Ensure adequate space for installation.

Evaluate

Prioritization Using the ABC's

A - Ready to Roll

Properties that are ready for immediate replacement.
Adequate space available for new installations.

B - Minor Updates Needed

Properties requiring minor updates or compromises.

Educate owners on necessary adjustments, including anticipated minor cooling effects and sound considerations, particularly for installations in bedroom closets.

C - Major Changes Required

Properties needing significant alterations that may diminish value.

Recommendation:
Walk away from these properties.

One Step Forward: Integrated Approaches



Heat Pump Applications

Light Duty

- Small offices
- Strip mall stores
- Warehouses

Medium Duty

- Multi-family
- Medium offices
- Standalone retail
- Outpatient healthcare
- Quick service restaurants
- Small hotel guestrooms

Heavy Duty

- Large offices
- Primary and secondary schools
- Hospitals
- Small hotel laundry
- Large hotels
- Full-service restaurants
- Mid- and high-rise apartments



Photo source: www.hotwatersizing.com



Heat Pump Sizing Tools

Apartment Building Sizing
 Complete the equipment settings and application sizing fields to have Pro-Size calculate the estimated hot water loads. When ready click the "Continue" button to view the recommended A. O. Smith heaters for your project.

[Back to Settings](#)

System Settings

Equipment:

- Water Heaters Only (no external storage)
- Water Heaters with external storage if required
- Commercial Tankless Heaters (no storage)
- Commercial Tankless Heaters PLUS Storage Tanks
- Heat Pump Heaters
- Boilers with external storage tank

Heat Pump Location:

Tank Location:

ASHE Required:

System Configuration:

(If Split System-Select)
 Heat Pump Load %:

Storage Settings

Max Storage Volume: USG

Application Data

Temperatures

Min Heat Pump Ambient Air Temp: °F (unit?)

Tip: Enter in 12-195. Get Air Temperature...

Water Inlet Temperature: °F

Water Storage Temperature: °F

Load Profile

Building Use: [Back to Index](#)

Peak Demand Period: HOURS (Custom?)

Unit Application Loads

Shower Head Flowrate: USGPM

Units with 1 Bath: Persons per unit: w/ Clothes Washer

Units with 1-1/2 Baths: Persons per unit: w/ Clothes Washer

Units with 2 Baths: Persons per unit: w/ Clothes Washer

Units with 2-1/2 Baths: Persons per unit: w/ Clothes Washer

Laundry Room or Coin-Op Laundry

Include Coin-Operated Laundry

Model 1 - Quantity: Capacity: LB

Model 2 - Quantity: Capacity: LB

Additional Load and Intentional Oversize

Additional Load: USGPH (☉ stored temp)

Design Oversize:

Load Summary

Peak Demand: USGPH Temperature Rise: °F

Select A. O. Smith Products Now

Photo source: www.hotwatersizing.com



Integrated Approach



CHP-120
CHP Series Fully Integrated Heat Pump Water Heater

Installation Type:	Integrated	1st Hour Delivery:	233 USG
# Heaters:	2	3 Hour Average:	114 USG
Heater Capacity:	45,177 Btu/hr	Est. Storage Recovery:	3h 18m

Usable Volume: 179 USG % Of Demand: 107%

Select

This is running in efficiency Mode.



CHP-120
CHP Series Fully Integrated Heat Pump Water Heater

Installation Type:	Integrated	1st Hour Delivery:	311 USG
# Heaters:	2	3 Hour Average:	192 USG
Heater Capacity:	110,126 Btu/hr	Est. Storage Recovery:	1h 21m

Usable Volume: 179 USG % Of Demand: 262%

Select

This is running in hybrid-208v Mode.



CHP-120
CHP Series Fully Integrated Heat Pump Water Heater

Installation Type:	Integrated	1st Hour Delivery:	331 USG
# Heaters:	2	3 Hour Average:	212 USG
Heater Capacity:	127,069 Btu/hr	Est. Storage Recovery:	1h 10m

Usable Volume: 179 USG % Of Demand: 303%

Select

This is running in hybrid-240v Mode.

One Step Forward: Unlocking Benefits

Photo source: www.hotwatersizing.com



Market Transformation: TRC's California Chapter

- TRC successfully installed **232 HPWHs** in the San Diego Gas & Electric territory from 2023-2024
- This initiative of electric resistance retrofits saved over **188,300 kWh annually**
- Fuel substitution installations saved customers over **1.1 million therms** per year!
- These efforts equate to removing **1,385 cars from California roads** each year

CEMS Program
Comprehensive Energy Management Solutions



SD EnergyLink



Installation Solutions:



Large Supermarket. Replaced 199,000 Btu/hr natural gas tank water heater with (2) CHP-120 HPWH

Image: WinSupply

Assisted Living Facility. Replaced 710,000 Btu/hr natural gas boiler with (5) CHP-120 HPWH

Image: Core Energy



The Path to Market Transformation



LIMITED CUSTOMER AWARENESS OF HPWH TECHNOLOGY AND PERFORMANCE.

SPACE AND ELECTRICAL CONSTRAINTS HINDER INSTALLATION OPTIONS.



HIGHER INITIAL COSTS FOR MATERIALS AND LABOR ASSOCIATED WITH HPWHs.

INCREASED UTILITY BILLS POST-INSTALLATION, MAKING FUEL SWITCHING LESS ECONOMICAL.



INSUFFICIENT CONTRACTOR FAMILIARITY WITH HPWH INSTALLATION PROCESSES.

Market Reaction: Overall positive, with successful installations and no complaints regarding hot water demand, only two customers reported significant increases in their utility bills

Keys to Success: utility rebates, state and local regulations, early, and extensive outreach to both contractors and customers



The Path to Collaboration

Areas for Improvement

A wider range of cost-effective HPWH models tailored to the commercial market

Consistent rebate programs across IOU Implementer initiatives

Potential collaboration with utilities to offer bill credits or rate adjustments for customers transitioning to HPWHs



Areas for Collaboration and Study

TRC's Research & Consulting division is conducting comprehensive studies and measurement & verification on commercial HPWH installations.

The study will have an emphasis on developing standardized best practices through future collaborations with various research entities and stakeholders.

One Step Forward: Unlocking Potential



Design Configurations & Considerations



Split System

Photo Source: [SmallPlanetSupply](#)



Monobloc

Photo Source: [IntelliHot](#)



Study: Hopeworks



AWH
ADVANCED WATER HEATING INITIATIVE

Photo Source: Ecotope

Reference: CO2 Heat Pump Water Heater Study, Hopeworks Station Place, Everett, WA

Why a Hot Water Innovation Prize?

In 2029, heat pumps will be required for most electric storage water heaters

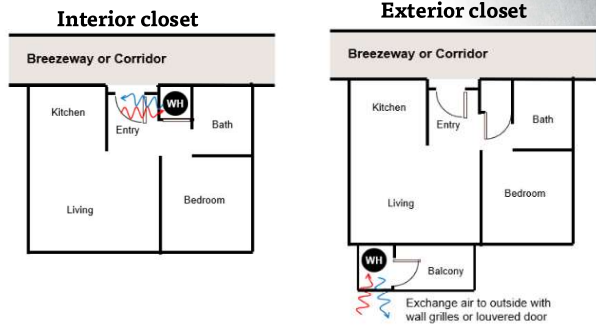
Water heaters ≤ 35 gallons with low and very low draw patterns will be allowed to remain electric resistance

For practical reasons, integrated heat pump water heaters (HPWHs) < 51 -gallon FHR can be challenging to install in certain space-constrained locations (e.g., multifamily and small housing units)



AWH
ADVANCED WATER HEATING INITIATIVE

NEEA Convened a Design Charette

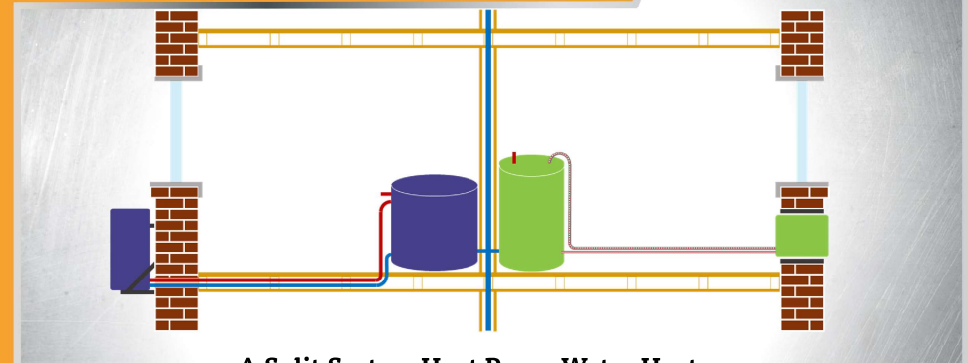


Participants: 12 industry professionals including architects, mechanical designers, and installation contractors

<https://neea.org/resources/heat-pump-water-heaters-in-multifamily-new-construction-design-charrette-findings>



The Solution



A Split System Heat Pump Water Heater

Widely Available & Affordable



Innovation

HOT WATER INNOVATION PRIZE



Develop innovative split system HPWHs and bring the technology to market.



Panel Discussion

Best practices

Challenges to Innovation and market adoption

Retrofitting: Integration with existing systems

Design Consideration

Logistics

