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

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

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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

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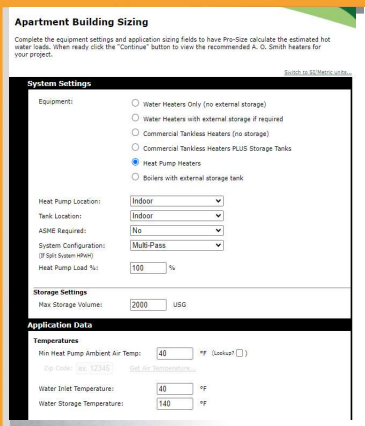
Heat Pump Sizing Tools



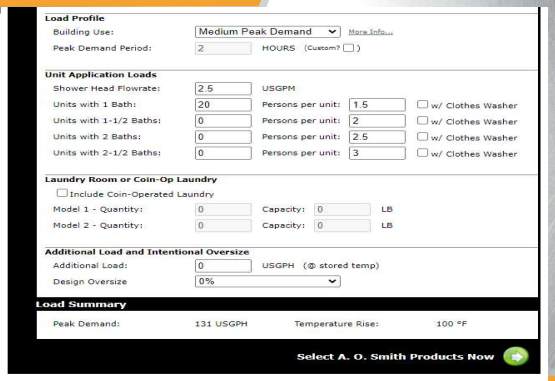


Photo source: www.hotwatersizing.com

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Integrated Approach

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

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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

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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

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Design Configurations & Considerations

Split System

Monobloc

Photo Source: SmallPlanetSupply

Photo Source: IntelliHot

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Study: Hopeworks

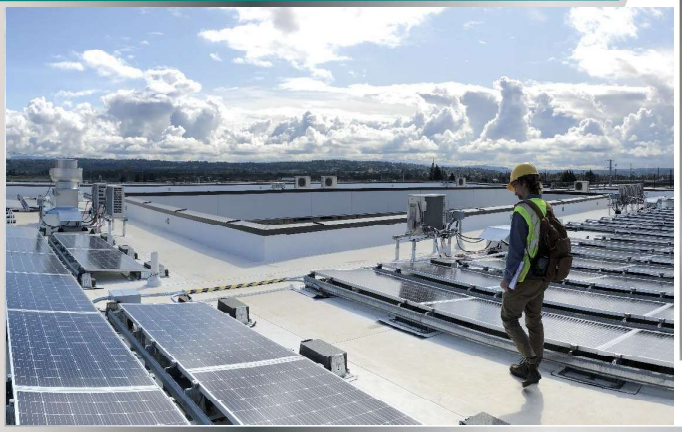

Photo Source: Ecotope

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

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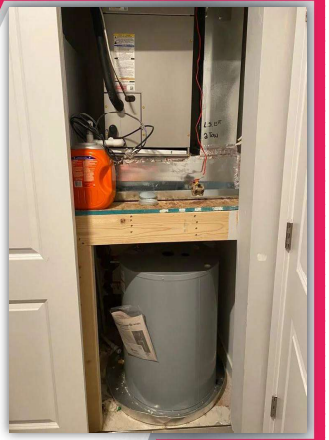
Why a Hot Water Innovation Prize?

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)



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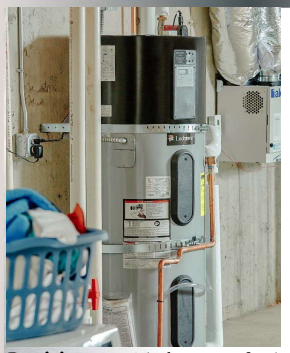
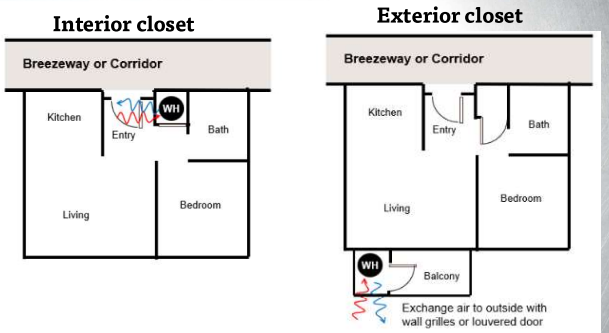
NEEA Convened a Design Charette

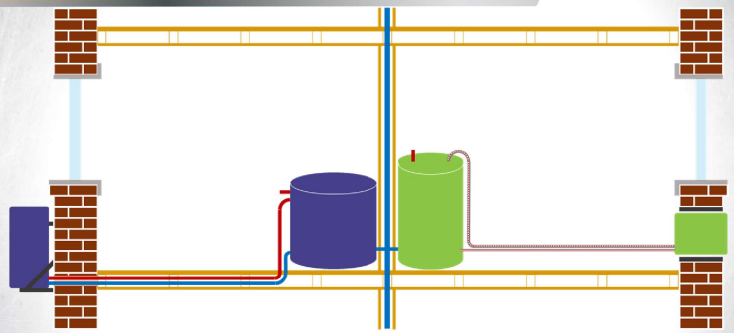




Participants: 12 industry professionals including architects, mechanical designers, and installation contractors

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.

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Panel Discussion

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