

SENIOR HOUSING RETROFIT

Three Days to a New Central Heat-Pump Water-Heating Plant

At a 106-unit California disability and elder-care facility, two aging gas-fired water-heating plants were replaced with packaged WaterDrop systems - with only three hours of actual hot-water downtime.



Outdoor WaterDrop packaged central heat pump water-heating system. Image source: Carbon Zero Buildings / BetterBricks.

106
UNITS

2
WATERDROP SYSTEMS

3 DAYS
INSTALLATION

3 HOURS
HOT-WATER DOWNTIME

THE CHALLENGE

The facility was served by two central gas tank-type water heaters. Constant recirculation and poorly insulated piping contributed to high energy use, while unintended hot/cold crossover added further losses.

Because this was an occupied elder-care community, the retrofit also needed to preserve hot-water service and limit onsite construction.

THE WATERDROP SOLUTION

After evaluating multiple low-GWP heat pump water-heating systems, the project team selected WaterDrop to capitalize on a fully skid-built, packaged approach that could be installed outdoors near the existing electrical room.

- Two packaged central DHW systems
- Nine CO₂ (R744) heat pumps per system
- 505-gallon storage + 120-gallon swing tank per system
- Three additional heat pumps added beyond the original design for future occupancy

DOCUMENTED RESULTS

- Installation completed in three days.
- Only three hours of actual hot-water downtime.
- Thermostatic balancing valves and variable-speed recirculation pumps were added to reduce recirculation losses.
- Shower cartridges in one wing were replaced to address crossover.

The project team planned nine months of monitoring to track efficiency, energy consumption and load-shifting performance.

“Using a factory-built heat pump skid eliminates field installation errors and installation uncertainty and dramatically reduced construction timelines relative to a site-built system.”

- John Neal, Association for Energy Affordability

PROJECT TEAM

REALIZE-CA grant team: Rocky Mountain Institute, Association for Energy Affordability, David Baker Architects and Introba. Contractor: Carbon Zero Buildings.

PROJECT FUNDING

Funded through a California Energy Commission EPIC grant, with additional support from the Low-Income Weatherization Program and TECH Clean California.

WHY THIS PROJECT MATTERS FOR SENIOR HOUSING

This project demonstrates three benefits that are especially valuable in occupied senior communities:

MINIMAL DISRUPTION 3 hours of hot-water downtime

FUTURE-READY capacity added for occupancy growth

LOW-GWP CO₂ (R744) heat-pump technology

WaterDropSystems.com | System Designed. Performance Delivered.