

Heat Pump Water Heater

Sawara SEATTLE

BUILDING TYPE
multifamily
affordable family housing

SIZE
114 units
1-4 bedroom apartments

COST PER UNIT
\$1,454
before incentives

PERMITTED
2020

OWNER
 Seattle Housing Authority (SHA)

ENGINEER
 Ecotope



PERFORMANCE

Driven by participation in the Housing Development Consortium's Exemplary Buildings program, the Seattle Housing Authority (SHA) elected to use Sanden CO₂ heat pump water heaters (HPWH) for its Sawara building. The efficiency of the Sanden units, along with an optimized plumbing distribution system, brings significant energy and utility savings while reducing their carbon footprint.

HPWHs that use CO₂ as the refrigerant work well in Seattle's climate, are much more environmentally friendly, and are easy to operate and maintain by onsite maintenance staff. And because they are 3x more efficient than standard electric heaters, the building owner can use operational savings to keep rents affordable for low-income residents.



TECHNOLOGY
 Centralized Sanden CO₂ Heat Pump Water Heating



LESSONS LEARNED

- ✓ Invest in early design decisions. Working closely with the architects to allocate space in the garage to house both water heating plants and inform the arrangement of dwelling units to minimize hot water distribution piping are two critical details that were addressed early in the design process. The advanced plumbing distribution design informed the sizing of the HPWH system to minimize the overall system cost and increase the payback for the building owner.

Photo by Anikrom Moisan Architects

ENERGY SAVINGS OF
67%
 OVER STANDARD ELECTRIC WATER HEATER AND 73% OVER GAS BOILER

UTILITY COST SAVINGS OF
\$24K
 PER YEAR OVER STANDARD ELECTRIC HEATER

CARBON REDUCTION OF
55+
tons CO₂/year
 OVER REGIONAL ELECTRIC¹ AND GAS BASELINES

SIMPLE PAYBACK OF
7
years
 BEFORE UTILITY INCENTIVES

exemplarybuilding.housingconsortium.org



¹ eGRID subregion NWPP emission rates