



HOMESTEAD APARTMENTS CASE STUDY

Ductless Air Source Heat Pumps: The Retrofit Solution for Homestead Apartments

Panasonic

Founded in 1954, Homestead Land Holdings has become one of Canada's largest landlords, managing 27,000+ apartments in 21 cities. Homestead owns 215 buildings, some of which are now more than 30 years old. The company has tasked an in-house Sustainability & Energy Efficiency Committee with assessing new technology solutions that will minimize operating costs and reduce the carbon footprint of its properties.



⊕ CHALLENGE

Retrofit two older apartment buildings with an effective, modern HVAC solution that significantly reduces the annual cost of electricity, maintenance and repairs.

⊗ SOLUTION

The company chose Panasonic Ductless Air Source Heat Pumps (DASHPs) for their energy efficiency, ease of installation, excellent performance, user-friendly controls and short payback period.

✓ RESULT

Expected payback is five and seven years, respectively, per building. So far, monthly electricity bills are in line with the \$228K annual savings estimate from Homestead's pilot projects. Tenants are more comfortable now, thanks to improved circulation, cleaner air, and accurate controls in every room.

Homestead identified two apartment buildings with outdated, inefficient HVAC equipment in its property portfolio. The operating cost of these aging systems had become unacceptably high due to excessive electricity consumption and mounting repair bills. With respect to performance and home comfort, the decades-old HVAC systems—packaged terminal air conditioners (PTACs) in one building and electric in-floor heating in the other—were no longer meeting tenants' expectations. Each system would have to be replaced with modern equipment that promised greater long-term value for Homestead and its customers.

The company needed to find an affordable, energy-efficient solution capable of delivering consistent heating and cooling throughout each apartment, supported by accurate, user-friendly controls. For a retrofit to be worthwhile, it would have to deliver annual savings on energy consumption, maintenance and repair that guaranteed a reasonable payback period. Wherever possible, the solution would have to reuse existing infrastructure such as duct work, enclosures, conduits and electrical supply lines. It would also have to fit seamlessly into apartments of various shapes and sizes, regardless of floor plan and ceiling height or the placement of openings and balconies; the system components could not significantly impinge on the living space, reduce its usability, detract from its appearance, or compromise tenant safety in any way.



Indoor Unit installed in living room



Panasonic Heat Pumps Pass the Test

Homestead set up two pilot projects designed to assess the long-term performance of Panasonic Ductless Air Source Heat Pumps (DASHPs) and evaluate their suitability for this retrofit. Contractors removed the existing PTACs and installed DASHPs in one- and two-bedroom test apartments. After some experimentation, they determined the optimal placement of indoor and outdoor DASHP system components in each layout. Over the course of a year, Homestead measured the electricity consumption of the DASHPs, as well as PTACs in two similar apartments, for comparison. The company also collected temperature readings within each apartment, to verify that the DASHPs were keeping up with heating and cooling demand. When the year was over, Homestead found that the new heat pumps had achieved an astonishing 68% savings on electricity costs, prompting the company to install Panasonic DASHPs throughout the two apartment buildings.



Indoor Unit installed in bedroom

A Flexible HVAC Retrofit Solution

In every apartment, our heat pump solution features wall-mounted indoor units connected to an outdoor compressor on the balcony, plus a wired or remote control; condensate pumps have been installed, as needed. This system configuration ensures optimal comfort because tenants can set the living room and bedroom units separately to their desired temperature. Each living room unit is equipped with Panasonic's patented nanoe™ X air purification technology, improving the air quality throughout the apartment. With no filters to change, nanoe™ X provides maintenance-free air cleaning, ideal for apartment retrofits.

Another major advantage of our DASHP solution is that it operates on a decentralized heating/cooling model, so tenants experience fewer inconvenient building maintenance shutdowns. Less inconvenience plus more comfort equals happier tenants—and fewer complaints to the building manager.

Homestead on Track for Impressive Savings

Taking into account all capital upgrades and operating expenses, including electricity costs, the estimated simple payback period for retrofitting the two apartment buildings is five and seven years, respectively. Based on the data collected during the pilot projects, a combined annual electricity savings of \$228K is expected for the two buildings, which would translate into a \$10 million savings over 25 years, adjusted for inflation. To date, Homestead's actual post-retrofit electricity costs support this projection.



Outdoor Unit installed on balcony

Tenants Report Increased Comfort

Feedback on the new heat pumps has been overwhelmingly positive. Tenants note that the Panasonic system provides instant heating/cooling and better air circulation, eliminating noticeable hot/cold spots for a more even profile across each temperature zone. For those who previously didn't have air conditioning in their apartment, the DASHP's cooling function is, of course, a welcome upgrade. Homestead's tenants especially appreciate having better control over their living space, citing major improvements such as automatic temperature and occupancy settings, Wi-Fi connectivity, and separate controls in each room.

Like all Breathe Well heating and cooling solutions from Panasonic, DASHPs are designed to maintain a comfortable ambient temperature and help maintain ideal moisture levels, no matter the season. Our whisper-quiet units consistently and efficiently distribute air throughout each apartment, with optimum health of the occupants in mind. The built-in air and surface purification nanoe™ X technology reduces pollutants and odours by penetrating deep into the fibers of carpets and furniture, keeping indoor air as clean as possible. So it's no wonder that Homestead's tenants say their apartments are more comfortable than ever before.

