



Futureproofing Apartments Case Study

Owners Corporation (SP56063)

24 Woolcott Street Waverton NSW 2060

Updated 18th December 2024



North Sydney Council Contact: Ian Garradd

Cost and savings (Heat Pump)

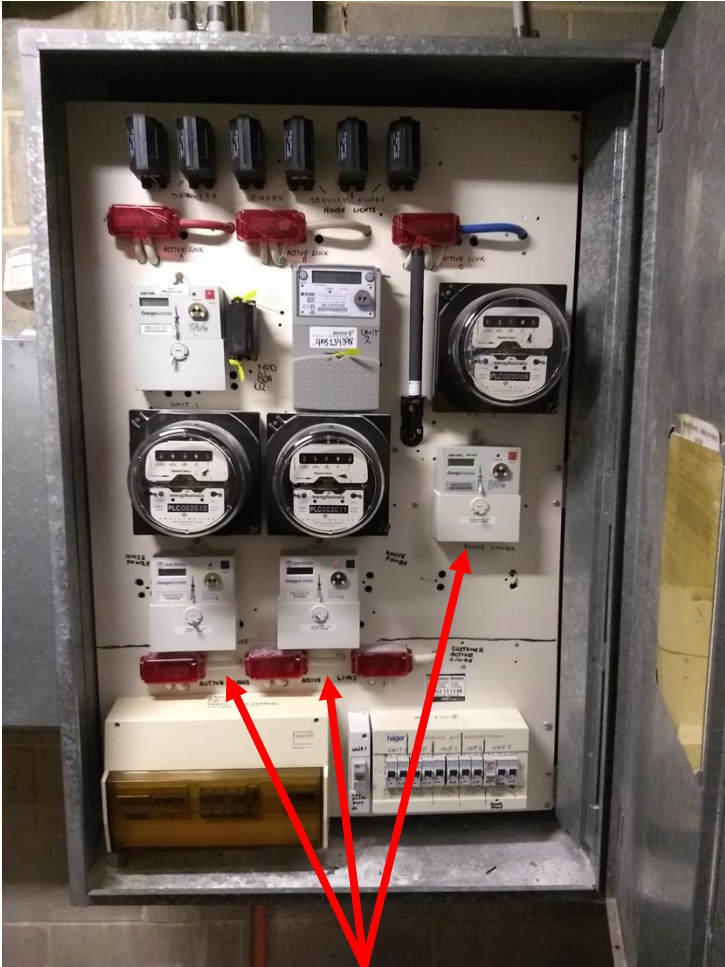
Heat Pump Retrofit	
Cost of heat pump system	\$9,622*
Annual electricity reduction	10,257kWh**
Greenhouse Gas (GHG) emissions mitigation	10.8 tons
Annual net heat pump total savings	\$1,453***
Simple payback on Hot Water System	6.6 years
(Project cost if done with new local council rebate)	\$7,217****
(Simple payback if done with new local council rebate)	5 years

NOTES:

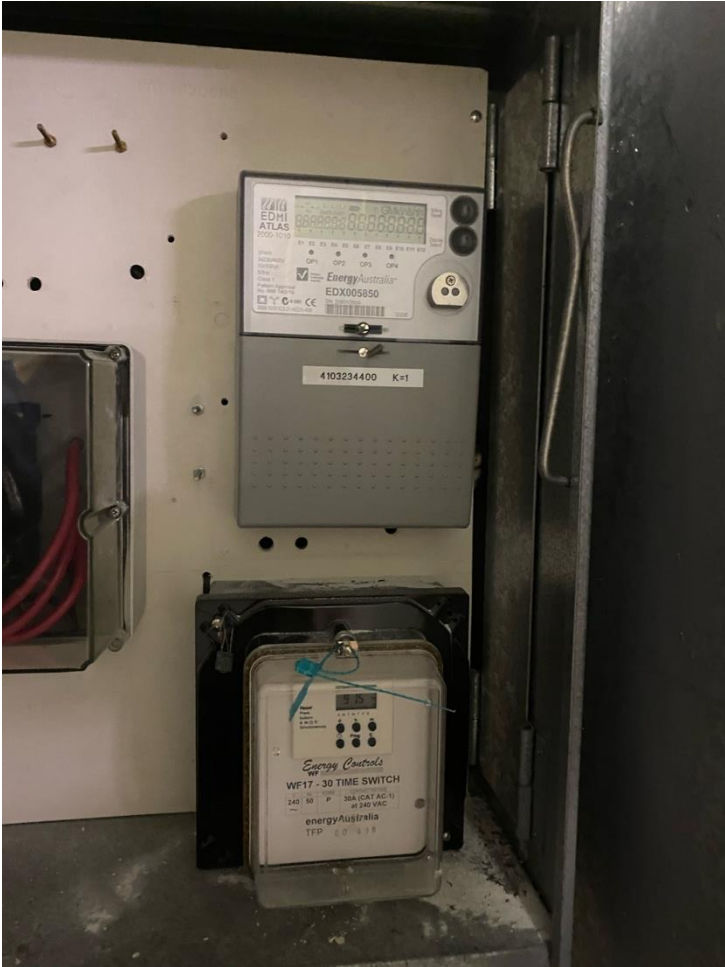
- *Net cost of heat pump after NSW Energy Savings Scheme (ESC), Federal Small-Scale Technology Certificate (STC) & NSW Peak Reduction Certificate (PRC) rebates
- **Based on actual consumption before and after the installation of heat pump
- ***The hot water system is on a controlled load circuit which has a lower electricity rate of 14.179c/kWh in 2024 compared with typical strata common area rates
- ****North Sydney Council heat pump rebate of 25% up to \$5,000



24 Woolcott St already had a “controlled load” hot water meter providing more competitive electricity rates for the hot water plant



Three phase common area meters



Common area “Controlled Load” meters specifically for electric hot water plant

What is a 'controlled load' hot water system?

Energy bills can be full of unfamiliar terms. Here we explain controlled load (also known as 'dedicated circuit usage'). Controlled load is the electricity used by a stand-alone item, which is separately metered to the rest of your electricity usage. It's most commonly used for hot water systems, but it can also be used for other items, including under-floor or slab heating and pool pumps. They are generally appliances and devices that use a large amount of energy but don't need to be running all the time.

Controlled load operating hours – that is, the timing window that your controlled appliances may turn on – can vary based on your state and distribution area and are usually set by your distributor [Ausgrid]. Energy retailers may also vary your controlled load timings from time to time. In New South Wales, from 1 July 2024 Ausgrid has both overnight and daytime operating windows as standard for controlled load tariffs. An overnight-only option is no longer available.

Controlled load appliances have traditionally been switched on overnight, for the purposes of using cheaper off-peak power. With more solar energy produced during the day due to the increasing number of rooftop solar systems, adding a daytime operating window is becoming more common. Shifting certain electrical loads to other times can reduce pressure on the grid and optimise the use of renewable energy.

EA030 controlled load 1, suitable for large electric hot water systems (250 - 630L)

Controlled Load 1 tariff is available for supply that is usually connected for at least six hours duration within any 24 hour period: midnight to midnight. Controlled Load 1 switching times may be varied at the discretion of Ausgrid.

EA040 controlled load 2, suitable for smaller electric hot water systems (100 - 250L)

The EA040 Controlled Load 2 tariff is available for supply that is usually connected for at least sixteen hours duration within any 24 hour period: midnight to midnight, including at least four hours between 7 am and 5 pm.

From 1 July 2024 there are changes to switching times to make use of solar energy during the day for Controlled Load 1 (EA030). Customers on Controlled Load 2 (EA040) already have access to these switching times.

In 2024 controlled load 2 rates enjoyed by 24 Woolcott St have been as low as \$0.1289 ex GST per kWh.



The carpark was a perfect location for heat pump compressors



Carpark wall adjacent to hot water plant room has space to install the heat pump compressors



Existing split air conditioning units mounted in the carpark area push warm air into the carpark, which improves performance of the heat pumps

Before & after



Original common area electric storage hot water system consisted of 3 x 315L combined heating/storage tanks located in a separate hot water room adjacent to the carpark.



New system:

Consists of 3 x Quantum Titan “split” heat pumps in a manifold system. Each heat pump is 1.7kW, which is less power than an electric vehicle charging off a general power outlet. Each storage tank is 340L of hot water.



Heat pump compressors located on wall of carpark adjacent to the hot water room
(needs regular cleaning of fan coils for dust, cobwebs etc.)



New tanks in hot water room

Sustainability Case Study – 24 Woolcott Street, Waverton

A premium apartment block of 5 units implemented sustainability upgrades after participating in the North Sydney Futureproofing Apartments Program in Jan 2021

Projects

- A number of projects were suggested for the strata scheme including upgrading lighting in the carpark and common stairwell to LED lighting and replacing the existing ageing electric hot water system with a more efficient heat pump hot water system.

Solution



Kin Technology designed and installed a common area heat pump system to replace the existing electric storage hot water system in 2024



**3 x 1.7kW &
3 x 340L**

Heat pump & hot water storage tank size



\$9,622

Capital cost after ESC, STC and PRC rebates (without North Sydney council rebate)

Benefits



>50%

Reduction in hot water heating costs



~6.6 years

Est. payback (assume 14.179c/kWh for heat pump electricity use)



>10 tonnes

CO2 reduced per year



Further information



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Futureproofing Apartments Program:

https://www.northsydney.nsw.gov.au/Environment_Waste/Get_Involved/Futureproofing_Apartments

North Sydney Council Sustainability Rebates:

<https://www.northsydney.nsw.gov.au/homepage/174/sustainability-rebates>

Heat Pump Fact Sheets:

<https://www.northsydney.nsw.gov.au/downloads/download/458/futureproofing-apartments-fact-sheets>

North Sydney/City of Sydney/Waverley webinar on heat pumps for strata:

https://www.youtube.com/watch?v=OPBqAU_GaFA

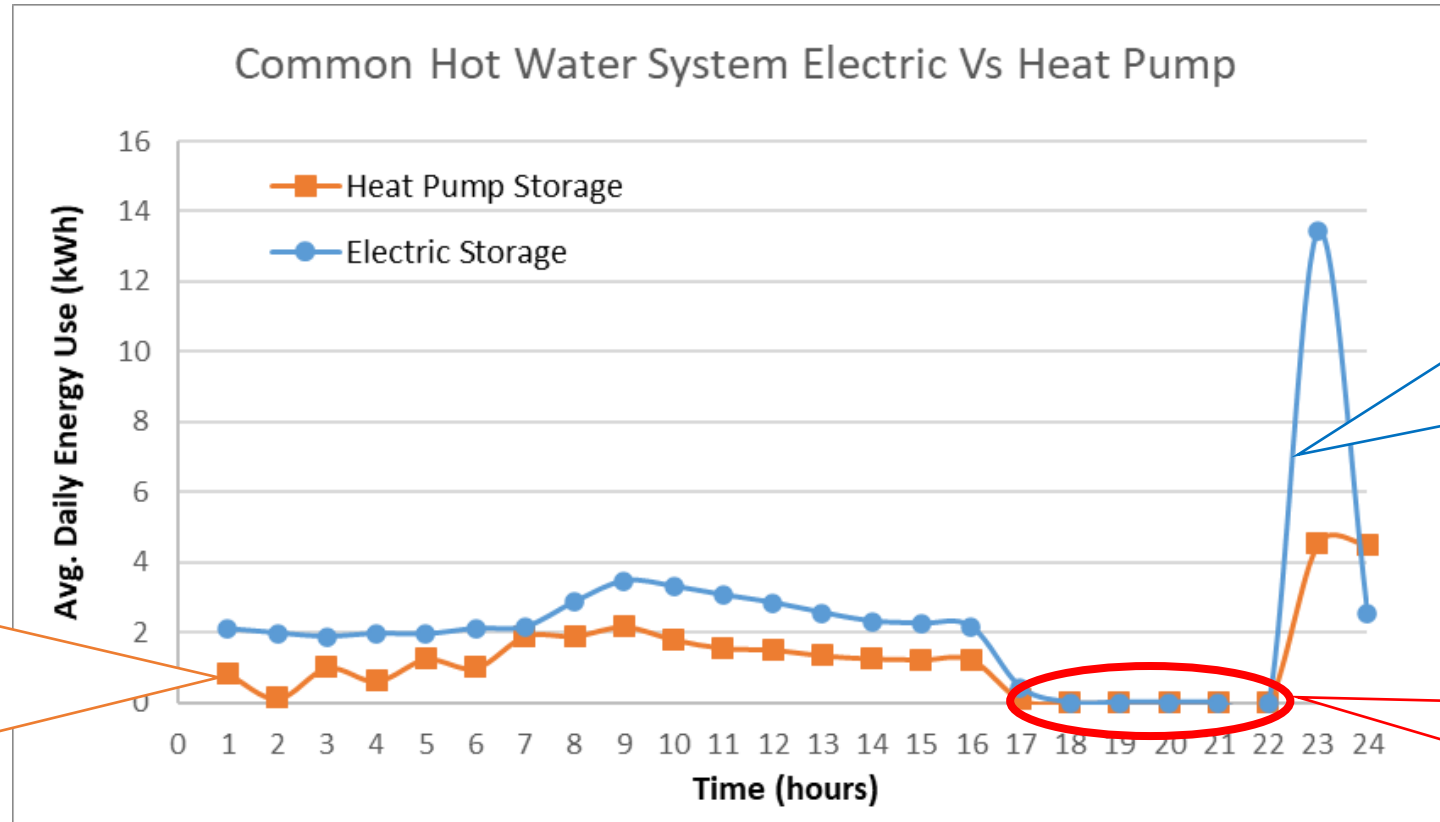
Slideshow of heat pump installs for residential strata buildings in Sydney:

https://www.youtube.com/watch?v=M4luE0s_OM4

Electrify Strata



Appendix: Comparison of Common Electric Hot Water and Heat Pump



Heat pump consumes less electricity to heat more water as it is assisted by heat captured from ambient air temperature

Electric storage hot water heats water more quickly than electric heat pump after a break in hot water heating

Controlled Load period with no electricity consumption

NOTE:

- * This is an example of a 5 unit apartment building with a shared hot water service which started with electric storage hot water and upgraded to heat pump with storage
- * Both hot water systems are electric, but the heat pump captures air temperature to heat water which reduces the electricity which is required for water heating
- * Both hot water systems have been connected to a controlled load 2 electricity circuit in the Ausgrid network. This is why there is a 6 hour window where they don't use electricity, during the peak electricity period of the day, in return for being given more competitive electricity rates.
- * The original electric hot water plant had 945L of hot water storage which was increased to 1,020L of hot water storage when the upgrade to the heat pump occurred

