

Saving energy in the Waitakere NOW Home

Designed with passive heating and energy efficiency in mind, this home performed very well for its tenants.

The Waitakere NOW Home was a live research project showing that a sustainable home can be designed and built using products, technologies and methods available now. Its performance was comprehensively monitored in real life conditions.



Energy saving features

The Waitakere NOW Home was designed with the sun in mind. Large windows and doors faced north, bringing sun into the living areas. A polished and insulated concrete slab floor acted as a thermal mass, absorbing heat during the day and releasing it at night. R4.6 ceiling insulation, R2.8 wall insulation and double glazing kept the home warm.

In addition, a solar water heater used the free energy from the sun to significantly reduce energy costs. Appliances with the best possible energy efficiency ratings available in 2005 were selected and compact fluorescent lightbulbs were used throughout the house.

Overall energy savings

In their first year of living in the Waitakere NOW Home, the family of four used 7400 kWh per year or 33% less than an average 4 person household with school age children. This was also 45% less than the family's energy use in the house they occupied over the year prior to moving into the Waitakere NOW Home®. They were delighted with their lower energy bills which they noticed very early on.

In the second year, energy use rose to 8500 kWh over the year. While this is an increase in what was achieved in the first year, it is still 25% less than average 4 person households with school age children. The lower running cost has buffered the household against rising energy prices, and continued to provide more disposable income. The family still saved energy compared to similar households, while maintaining a high degree of comfort and expanding their use of the house. The house was increasingly used as a home office, reflecting that it was a pleasant, warm and quiet place to work. The high running costs of computers/servers were offset by the lower power bills. Additionally the family invested in more appliances. Lower energy bills mean more money in the pocket.

Home Energy Rating

The Waitakere NOW Home achieved a HERS (Home Energy Rating System) thermal rating of 8 stars out of a possible 10.

Solar water heating

In Year 1 the solar water heater provided more than half (55%) of hot water needs. That's equivalent to a saving of 1620kWh (compared to similar houses in the area) or about \$275 on water heating alone.

In Year 2 the solar water heater provided 45% of hot water needs, 1880 kWh in total. Although the solar water heater provided more kWh in total, the household used more hot water so that a lower proportion was provided by solar.



Indoor environment quality

Humidity: Despite constantly using their dehumidifier in their previous home, the family noticed how much drier the Waitakere NOW Home was. Humidity levels were all in the acceptable range for human health (25-75%), a good result given that the humidity levels in Auckland frequently exceed 75%. The family didn't unpack their dehumidifiers at all – there was no condensation and no mould. Their son's asthma improved rapidly and they were delighted to find after three months that he had hardly needed his nebuliser at all.

Temperatures: Designed to only need additional space heating on 10 days per year, the Waitakere NOW Home has performed better with additional heating only required on two days per year. There is no inbuilt heating – the family have used a small fan heater when necessary.

The family appreciated the evenness and stability of the temperature – even in winter all rooms were warm and comfortable with the living room having an average winter temperature of 21.6°C and the bedrooms having average night-time winter temperatures of 17.5°C. The winter mean temperatures all exceeded World Health Organisation minimum of 18°C for living areas and 16°C for bedrooms (compared to 30% of New Zealand homes which regularly don't meet these standards).

For more information:

- See the Beacon website www.beaconpathway.co.nz/new-homes/article/what_is_the_waitakere_now_home_project