UP-SPEC

Simple Steps to Higher-Performing Homes

When designing a new home, some simple upgrades can improve its performance. These go beyond the minimums required by the NZ Building Code and can help to:

- ✔ keep temperatures more comfortable for longer
- ✔ use fewer resources such as energy and water
- ✔ make it cheaper to run.

The performance upgrades are based on independent research by BRANZ and are region-specific where possible. Only the most cost-effective improvements have been selected, based on homes consented in 2012. The cost and benefit figures are averages derived from actual consented plans, and take inflation and returns into account. All figures are estimates and should be seen as starting points for discussions.

Once the upgrades have been chosen, the estimated figures for the extra costs will need to be more accurately determined and will vary depending on the specific design.

The figures in the regional checklists consider those costs and benefits that are reasonably easy to quantify. Harder to quantify – but which might be even more important to the owner – are the:

- ✔ health and comfort benefits from having a warmer, drier home
- ✔ improved resilience and self-sufficiency for the home
- ✔ Homestar points resulting from the upgrades.

Ideally, these other benefits should also be considered as part of the decision-making process.

How to use

1. Confirm the budget with your client.
2. Determine the theme(s) you and your client want to address: comfortable temperatures, energy efficiency and/or water management.
3. Pick the desired features with your client, up to the budget.
4. Develop an accurate quote.

Comfortable temperatures

The following improvements will help make the house more comfortable while needing less heating or cooling over the year, therefore saving on energy costs. (Note that an accurate 'yearly savings' figure cannot be determined by adding two or more thermal improvements together.)

THERMAL improvement	Extra cost	Yearly savings	Thermal benefit
House orientation			
Living areas facing north, garage facing south	Marginal	$200	Very good
Windows			
Thermally broken aluminium framed windows	$1,900	$220	Very good
Standard (non-thermally broken) double glazing with low-E coating	$1,800	$310	Very good
Thermally broken, aluminium framed, double glazing with low-E coating	$4,100	$520	Excellent
Insulated concrete slab			
50 mm expanded S-grade polystyrene insulation, continuous, under entire slab (i.e. not pod-style)	$2,300	$500	Excellent
As above but with 20 mm polystyrene around perimeter	$3,600	$590	Excellent
Combinations			
50 mm expanded polystyrene insulation under slab + exposed slab in living areas	$3,100	$420	Excellent
As above, but with 20 mm insulation around perimeter	$4,400	$530	Excellent
50 mm expanded polystyrene insulation under slab + R2.8 walls + R4 ceiling + low-E glazing	$6,100	$930	Outstanding
As above, but with thermally broken frames as well	$8,400	$1,100	Outstanding

The 'extra cost' refers to the costs over and above what a more standard component or system would typically cost to purchase initially. The 'yearly savings' are a result of the lower need for space conditioning energy use only. Figures are based on the needs of typical spec homes.

Energy efficiency

The following improvements will help make the house cheaper to run. (Individual improvements can be added together to provide combined extra costs and yearly savings.)

ENERGY improvement	Extra cost	Yearly savings (per household)	Energy benefit
Renewables			
Photovoltaic-ready house (installing cabling only)	$400	NA	NA
3 kWh grid-connected photovoltaic system fully installed	$10,000	(see note 1)	(see note 1)
Appliances and lighting			
4 Energy Star fridge-freezer (380 litres)	$100	$60	Good
Correctly-sized heat pump	$0	$210	Very good
All lighting energy efficient (CFL or LED)	$300	$150	Very good

1 Savings are difficult to determine given the rapid price changes for photovoltaics (PVs) price changes and a number of other factors. See Photovoltaic (PV) Design factsheet for more information: www.level.org.nz/fileadmin/downloads/Other_Resources/PV_s.pdf

The 'extra cost' refers to the costs over and above what a more standard component or system would typically cost to purchase initially. The 'yearly savings' is the estimated benefit in lowered energy costs resulting from better appliance efficiencies.

Water management

The following improvements will help to manage water resources better. As Dunedin's supply and waste water council charges are fixed, the suggested improvements below are based on the most cost-effective solutions from usage-based charging councils.

WATER improvement	Extra cost	Yearly savings (per household)	Water benefit
Small fittings and appliances			
4 star or better WELS[1] toilets	Marginal	1,600 litres	Good
4 star WELS[1] kitchen + bathroom tapware	Marginal	2,300 litres	Good
4 star or better shower heads	Marginal	57,100 litres	Excellent
Rainwater tank systems			
1,000 litre water tank with feed pump to garden	$2,400	63,000 litres	Excellent

1. WELS = Water Efficiency Labelling Scheme www.mfe.govt.nz/fresh-water/we-all-have-role-play/water-efficiency-labelling-scheme

The 'extra cost' refers to the costs over and above what a more standard component or system would typically cost. The 'yearly savings' is the estimated benefit in terms of saved water over a typical year given typical occupants.

Feedback

We'd like to hear from you – please provide feedback via **up-spec@branz.co.nz**