

# Is This Your House?

## Two Retrofit Case Studies

Two examples of how an ordinary suburban house can be improved so that the people living in it are not only saving money on their heating bills but are also healthier and more comfortable. There is a lot you can do yourself for a low cost.

	1	2
<b>BACKGROUND</b>	<p>House 1 is an 1870s timber frame weatherboard house on stumps, facing north but shaded by heritage-listed trees. A family of 5, including 3 children under 10, were residents in the house at the time of the energy retrofit. The house was retrofitted in 2003 as part of a Hobart City Council research project with the University of Tasmania.</p> 	<p>House 2 is a 1970s timber frame, weatherboard, former Tasmanian Housing Commission residence. It faces east with large windows and just one small window facing north. The building is set low to the ground and is adequately sealed below floor level. Timber floors are carpeted. One occupant.</p> <p>It was one of the houses retrofitted under a pilot project of the Dept of Health and Human Services and Sustainable Living Tasmania in the Huon Valley during 2010 to assess the impact of improved energy efficiency of houses on resident health.</p>
<b>PROBLEMS</b>	<p>The house was very draughty because of:</p> <ul style="list-style-type: none"> <li>• gaps between skirting boards and walls or floors;</li> <li>• poorly sealed external doors and sash windows; and</li> <li>• no door between kitchen and large hallway.</li> </ul> <p>and it was losing heat because of:</p> <ul style="list-style-type: none"> <li>• no insulation;</li> <li>• large chimneys with open fireplaces no longer in use; and</li> <li>• few curtains ( 2 sets of lace ones) in the windows.</li> </ul> <p>The members of the family were often sick, with many colds and chest infections, asthma and chilblains.</p>	<ul style="list-style-type: none"> <li>• The house was draughty and cold.</li> <li>• Windows had only flimsy lace curtains.</li> <li>• The occupant experienced long-term joint pain, asthma and other health problems, made worse by cold weather.</li> </ul>
<b>RETROFIT</b>	<p><b>Draught Reduction:</b></p> <ul style="list-style-type: none"> <li>• External doors and windows were sealed with weather-stripping.</li> <li>• A kitchen door that had been removed was repaired and replaced.</li> <li>• Unused chimneys were sealed.</li> <li>• Silicone was applied to gaps around skirting boards and in weatherboards.</li> </ul> <p><b>Insulation</b></p> <ul style="list-style-type: none"> <li>• R3.8 pink batts were installed in the ceiling and R1.5 batts (with heavy-duty reflective foil) under the floor.</li> <li>• Pine pelmets were constructed and installed on all windows.</li> <li>• Heavy, lined curtains (from Op Shops) were hung in all windows.</li> </ul>	<ul style="list-style-type: none"> <li>• Old damaged back door was removed and replaced with a new solid core door.</li> <li>• Perspex was fitted to laundry louvres to stop draught.</li> <li>• 2 broken panes of glass in the front door were replaced by 10mm Ply.</li> <li>• Raven RP3 door seals were fitted to front and back doors.</li> <li>• MDF pelmets were made and fitted to 4 windows in living area, with new curtain tracks.</li> <li>• 4 sets of heavy lined curtains (ready-made) were hung in the living area.</li> <li>• One set of lined curtains (from Op. Shop) were hung to prevent heat loss through double glass sliding door.</li> </ul>
<b>RESULTS</b>	<ul style="list-style-type: none"> <li>• The house was warmer in winter, with an average temperature increase of 4.5°C in the lounge and kitchen.</li> <li>• The family experienced big savings in wood purchases.</li> <li>• Everyone was healthier with many fewer colds, improved asthma and no chilblains.</li> </ul>	<ul style="list-style-type: none"> <li>• The overall house temperature increased and warm air reached the cold bedrooms.</li> <li>• The resident felt less joint pain and discomfort and was much happier.</li> </ul>

### What it might cost you (approximate Feb. 2011 prices.)

Remember these are one-off costs. The savings last for years. Making your home more energy efficient can save you hundreds of dollars a year in power bills, make you more comfortable and add value to your home. These are just examples.

- Draught snake: \$3
- Draught tape/weather stripping 5m (enough for one door): \$3.98 - \$11.99 depending on quality
- Shower timer \$5
- Silicone gap sealant: \$6.40 - \$9.70 per tube and caulking gun \$1.85
- Door seals: \$14.32 - \$37
- Op Shop curtains (heavy, lined): \$30 - \$50 a pair
- Water efficient shower head 9 litres/min. \$19.95; 7.5 litres/min. \$52.50
- Hot water cylinder blanket \$85
- Ready-made insulating curtains: \$90- \$250 a pair (watch out for sales).
- Pelmets for 4 windows: \$150+
- Fridge seal replacement two door fridge/freezer \$155 (do-it-yourself \$105)

Ceiling insulation: This depends on the R value (insulation level), the area to be insulated and the material you choose. For example. R4.1 glasswool batts for 100 m<sup>2</sup> (for an uninsulated ceiling space) might cost you \$1000, to self install.

Check Sustainable Living Tasmania's Sustainable Living Guides for more information and ideas:

<http://www.sustainablelivingtasmania.org.au/content/slg.htm>



Door seals



Pelmets & heavy curtains

# More Energy Saving Hints

Here are 17 suggestions for reducing electricity use in your home. Every household is different but the point is that by making relatively small changes you can maintain your lifestyle but save hundreds of dollars on your electricity bills.

The Information Sheets in the HEAT provide more detail about potential savings and list many other options for making your home more electricity efficient.

## Easy no-cost actions

1. Switch off: - turn off lights, TVs, heaters, radios and computers when they are not needed. It is easy to reduce electricity use by 1 to 2kWh per day, or more, saving \$75 to \$150 per year
2. Turn off at the power point all appliances that have remote controls if you are not using them (TVs, music systems, air conditioners, etc.). A typical house will save \$2 to \$5 per appliance per year. It all adds up.
3. Turn off at the power point any appliances with clocks if you do not need the clock. Each unnecessary clock costs you \$3 or \$4 per year in electricity.
4. Keep your refrigerator in as cool a spot as possible; make sure it is not in direct sunlight. Better positioning of your fridge or freezer could save \$30 to \$50 per year.
5. Make sure air can circulate behind and up the sides of your fridge or freezer. There should be a 3 to 5cm gap at the rear and 2 to 3cm each side. Poor ventilation can add up to \$100 to annual electricity bills.
6. Wash small loads of dishes in the sink instead of the dishwasher. Use of a dishwasher every day costs \$100 to \$150 per year in electricity.
7. Keep doors closed leading to unheated parts of your house. Savings will vary from house to house.
8. Dry your clothes on the line instead of in the clothes dryer whenever possible. It costs roughly 60 cents in electricity to dry a load of clothes in the dryer.
9. Try taking shorter showers - aim for a 4 minute shower and save on both water and electricity.

## Low-cost actions

10. Add extra insulation to your hot water cylinder. Extra insulation on a typical hot water cylinder can save up to \$200 per year in electricity use.
11. Fit a water-efficient shower head. Reduced hot water use can save up to \$100 per year in electricity for a family of 4.
12. When buying new appliances, buy those with the most stars (i.e. the most efficient models) and the lowest annual energy use. Often these do not cost any more than less efficient models.
13. Good window treatments such as heavy, lined curtains and pelmets or 'honeycomb' blinds are very effective in keeping heat in your rooms in winter.
14. Draught-proof your living areas by sealing gaps and draught-taping doors and windows. Block off unused chimneys.

## Medium-cost actions

15. If you have a wooden floor, install insulation under the floor. Improved comfort and reduced heating costs can be substantial.
16. If you have no ceiling insulation, or very little, consider insulating the roof space, or at the very least the space above the rooms in which you spend most time. Big energy savings and improved comfort are possible. If your home has some ceiling insulation, consider adding additional insulation to improve the home's thermal performance.
17. Consider double glazing for your windows. This can be quite expensive so seek professional advice on costs and potential savings.

Go to the Sustainable Living Tasmania Sustainable Living Guides for more detailed information:  
<http://www.sustainablelivingtasmania.org.au/content/slg.htm>