

## For the Really Keen: Estimating Electricity Use for Space Heating, Water Heating and Cooking in Tasmania

The Power-Mate electricity monitor can only be used with appliances that plug into power points. This means it cannot be used to measure electricity used by three of the largest electricity using tasks in your home: space heating, water heating and cooking (if you use an electric stove and oven). Here's how you might use your household electricity meter to estimate electricity use for these tasks.

### WATER HEATING

Most Tasmanian households have a hot water tank which is heated by electricity. The electricity may be sold to you through the (a) hot water tariff 41; (b) the off-peak tariffs 61 or 62, or (c) the HydroHeat tariff 42. Check your most recent Aurora Energy Account to see which you have.

If your hot water is on tariff 41 (hot water tariff) this makes it easy. Just look at your account and it will tell you how many kWh you used per quarter and how much it cost. You will probably see that you use more in winter than summer because people usually have longer showers when it is cold.

If you have tariff 61 or 62 (off-peak) it is likely that you have an off peak water storage tank (they are usually a bit bigger than other tanks). The off-peak electricity is probably also used for some space heating and in some older houses there are also off-peak power points. To measure hot water electricity use you need to pick a day when you do not use any space heating or any of the off-peak power points. Read your off-peak meter (see below for how to do this), write down the reading and the time. Exactly 24 hours later take another reading. This will give you your hot water electricity use for that day. You can repeat this over two or three days to get an average daily use. But remember you must not use any off-peak space heaters on the day you check your hot water. Multiply by 91 to get quarterly use. Multiply by the cost per unit (shown on your account for the off-peak tariff) to get an estimate of quarterly cost.

Most hot water systems installed in the past 10 years use the HydroHeat tariff. Check your Aurora Energy account to see if you have this tariff. The HydroHeat tariff is also used for fixed space heaters (e.g. wall mounted panel heaters, heat pumps, floor or ceiling heaters). On a day when you do not use any space heating, read your HydroHeat meter and write down the meter reading and the time. Exactly 24 hours later take another reading. This is your hot water electricity use. Multiply by the cost per unit (shown on your account) to get daily costs and then multiply by 91 to get the cost per quarter.

### SPACE HEATING

The simplest way to get an idea of how much electricity you use for space heating is to compare your winter electricity use with your summer use. You probably use quite a bit more in winter and most of this is due to space heating. As a simple rule of thumb, take the difference between summer and winter and multiply by 0.9 (this allows for extra lighting and hot water use in winter) and that is the electricity used for space heating and the cost of heating. This approach does not work if you regularly use an air conditioner for cooling in summer or if you have a swimming pool.

Any electric heaters that plug into a power point can be monitored using the Power-Mate. If you use a woodheater for most of your heating you probably supplement this with some plug-in heaters.

If your main heater is electric (heat pump, panel heater, in-floor heater, ceiling heater, or any other heater that has fixed wiring) you probably run this on the HydroHeat tariff. It is difficult to get an accurate measure of space heating electricity use because the water heater is probably on the same meter. If you only run your electric heaters for a few hours in the evening you can use your household electricity meter to measure electricity use by switching of your hot water for a few hours. But if you run your heaters overnight or all the time this is not a satisfactory option unless you want cold showers for a day. It is simplest to just compare summer and winter accounts as suggested above.

### COOKING

There is no simple way to measure the electricity used for cooking. The problem is that the electricity used for cooking is mixed in with all the other electricity uses around the home. It can be done but the explanation is long and tedious. It is simplest to use Aurora Energy's estimate that about 9% of your electricity is used for cooking.

### METER READING

Tasmanian households are fitted with two types of electricity meters - the older dial type and the newer electronic type. Look in your meter box, if there are several meters you probably have the older dial type. Sometimes they are labelled (e.g. hot water) but often you will have to work out for yourself what each one is. You can do this by comparing the reading on the meter with your most recent Aurora Energy account, or you can turn on a plug-in electric heater and the disc on one of the meters will start spinning fast - this is your normal household tariff (tariff 31). If there are just two meters the other one will be your hot water, your off-peak or HydroHeat. If there are three meters you have to use your Aurora Energy account to work out which is which. When reading the dial-type meters take your time

because you will see every second dial has numbers running in the opposite direction. It is a bit confusing, but with care you will soon see how to read them correctly.

If you have a new electric meter you will see that the display changes every few seconds. What it is doing is cycling through each tariff you are using plus the date and time. To decide which tariff is which, you need to check your most recent Aurora account and, hopefully, identify the tariff you are interested in.

### USEFUL LINKS

**Hobart City Council**  
The HEAT information sheets are located here: [http://www.hobartcity.com.au/content/InternetWebsite/Environment/Energy\\_Efficiency\\_Guidelines\\_and\\_Incentives/Home\\_Energy\\_Audit\\_Toolkit\\_HEAT.aspx](http://www.hobartcity.com.au/content/InternetWebsite/Environment/Energy_Efficiency_Guidelines_and_Incentives/Home_Energy_Audit_Toolkit_HEAT.aspx)

**Sustainable Living Tasmania, Sustainable Living Guides**  
[www.sustainablelivingtasmania.org.au](http://www.sustainablelivingtasmania.org.au)

**Earn your stars - What can you do to earn your stars?**  
[www.climatechange.tas.gov.au/climate\\_classroom/earn\\_your\\_stars\\_today](http://www.climatechange.tas.gov.au/climate_classroom/earn_your_stars_today)

**Australian Government technical guide to energy efficient and sustainable home design**  
[www.yourhome.gov.au/technical/index.html](http://www.yourhome.gov.au/technical/index.html)

**Choosing an energy efficient appliance**  
[www.energyrating.gov.au/](http://www.energyrating.gov.au/)

**Aurora Energy information**  
[www.auroraenergy.com.au](http://www.auroraenergy.com.au)

**South Australia Home Energy Audit Kit**  
[www.sa.gov.au](http://www.sa.gov.au)

**Australian Government tips and rebates information**  
[www.livinggreener.gov.au](http://www.livinggreener.gov.au)

# HEAT Electricity Use Record Sheet

Keep this record sheet. It allows you to make approximate estimates of the quarterly electricity cost of many appliances in your home.

Electricity costs for Tasmanian households (tariff 3) at time of writing were \$ 0.26807 per kWh, in the calculations below this has been rounded off to \$0.27 per kWh





LARGER APPLIANCES (switched on and off by householder)	Power (Watts) (Power-Mate)	kW (W/1000)	Time used per day in hours	Energy use per day (kWh) (kW x time)	Daily Cost kWh x \$0.27	Cost per quarter (daily x 91)	Standby Power (Watts) (Power-Mate)	Multiply by 2.18 to get kWh/quarter	Standby cost per quarter (kWh x 0.27)
TV (example)	285	0.285	4	0.285 x 4 = 1.14	1.14 x 0.27 = \$0.31	0.31 x 91 = \$28.21	3	3 x 2.18 = 6.54 (3/1000 x 24 x 91)	6.54 x 0.27 = \$1.77
Heater*									
TV #1									
TV# 2									
Microwave oven									
Music system									
Computer #1									
Computer #2									
Computer screen									
Other									

\*this is only for heaters without thermostats, see below for measuring heaters with thermostats

LARGER APPLIANCES (that run through a cycle of operation)	Energy (kWh) for full cycle (Power-Mate)	Times used per week	Energy use per week (kWh) (energy x times used)	Weekly Cost kWh x \$0.27	Cost per quarter (weekly x 13)	Standby Power (Watts) (Power-Mate)	Multiply by 2.18 to get kWh/quarter	Standby cost per quarter (kWh x 0.27)
Dishwasher* (example)	1.67	7	1.67 x 7 = 11.69	11.69 x 0.27 = \$3.16	3.16 x 13 = \$41.10	Not applicable		
Washing machine								
Dishwasher								

\*some dishwashers use no standby power

LARGE APPLIANCES (that run continuously or for long periods)*	Energy (kWh) for 24 hours (Power-Mate)	Daily Cost kWh x \$0.27	Cost per quarter (daily x 91)
Fridge* (example)	1.2	1.2 x 0.27 = \$0.324	0.324 x 91 = \$29.48
Fridge #1			
Fridge #2			
Freezer			
Heater with thermostat			
Other**			

\* Try to measure the energy use for exactly 24 hours; if you forget and measure for, say, 28 hours then you must multiply the measured energy by 24 and divide by 28

\*\* Other appliances that could be added here include swimming pool pumps (plug in units for small pools), fish tank heaters or aerators, room humidifiers.

SMALL APPLIANCES Used daily	Energy per use (kWh) (Power-Mate)	Number of uses per day	Energy use per day / kWh (No. x energy)	Daily Cost kWh x \$0.27	Cost per quarter (daily x 91)
Jug/kettle* (example)	0.08	4	4 x 0.08 = 0.32	0.32 x 0.27 = \$0.09	0.07 x 91 = \$8.19
Jug/kettle*					
Toaster					
Hair dryer					
Other**					
Other					

\*Energy use will depend on how much water is in the jug; make measurement for typical water use.

\*\*Other appliances that could be added here include electric juicer, or any other appliance you use most days.

SMALL APPLIANCES Used weekly*	Energy per use (kWh) (Power-Mate)	Number of uses per day	Energy use per day / kWh (No. x energy)	Daily Cost kWh x \$0.27	Cost per quarter (daily x 13)
Iron (example)	0.10	4	4 x 0.10 = 0.40	0.40 x 0.27 = \$0.11	0.11 x 13 = \$1.43
Iron					
Vacuum cleaner					
Food processor					
Electric frying pan					
Food processor					
Mobile phone charger					
Other**					
Other					

\* The energy used will depend on how long you use each appliance so try to make measurements for typical use, e.g. a typical load of ironing.

\*\* Other appliances that could be added here include: electric lawn mowers, electric hedge clippers, sewing machine, workshop tools.

SMALL APPLIANCES (that run continuously*)	Energy per use (kWh) (Power-Mate)	Energy use per day / kWh (No. x energy)	Daily Cost kWh x \$0.27	Cost per quarter (daily x 91)
Clock radio** (example)	2.5	2.5 x 24 / 1000 = 0.06	0.06 x 0.27 = 0.0162	0.0162 x 91 = \$1.47
Clock radio**				
Router/wireless-modem				
Cordless phone #1				
Cordless phone #2				
Answering machine				
Electric toothbrush				
Other				
Other				

\* When recharging a cordless phone or an electric toothbrush the power used will change depending on how fully charged the batteries are, so these power estimates are approximate.

\*\* Clock radios usually do not use much more power when the radio is in use, but try both just to check.