



# ENERGY CHALLENGE

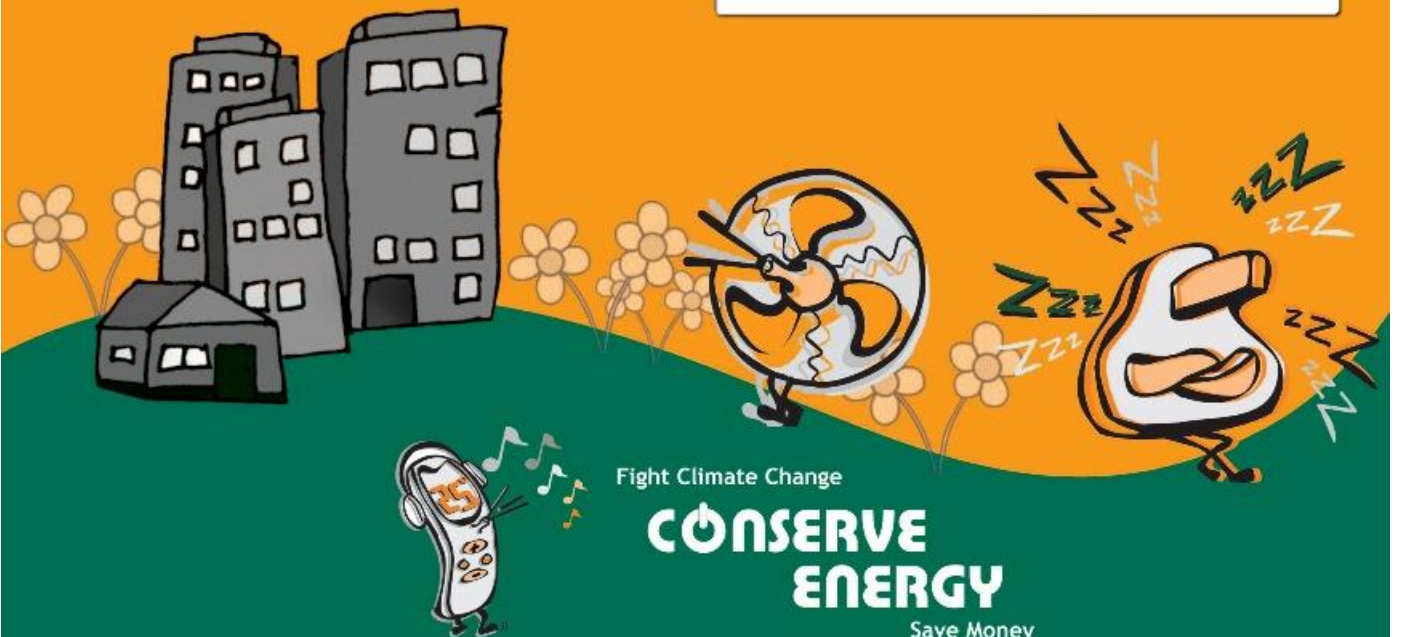
HomeOwners' COPY

Home Energy Audit Kit

Audited on

Date : \_\_\_\_\_

Time : \_\_\_\_\_



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ENERGY**

Save Money

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# AIR-CONDITIONER

## Windows

Compressor attached with cooling unit



## Casement

Compressor attached with cooling unit, air-conditioner is taller than wide



## Single-split

Compressor separated from cooling unit



Compressor



Cooling unit

## Multi-split

Compressor separated from cooling units. System number depends on number of cooling units.



Type	Estimated Power Rating <sup>^</sup> (kW) [A]	No. Of Compressor units <sup>1</sup> At Home [B]	Average No. of Hours <sup>2</sup> Used Per Day [C]	Average No. Of Days Used Per Month [D]	Total Electricity Usage Per Month [E] E = (A x B x C x D)	Total Electricity Cost Per Month [F] F = E x Electricity Tariff <sup>*</sup>
<b>Non-Inverter Air-conditioners</b>						
Window Unit	1.21				kWh	\$
Casement Unit	0.82				kWh	\$
Single-split	2.19				kWh	\$
Multi-split (System 2)	1.66				kWh	\$
Multi-split (System 3)	1.95				kWh	\$
Multi-split (System 4)	2.55				kWh	\$
<b>Inverter Air-conditioners</b>						
Single-split	0.99				kWh	\$
Multi-split (System 2)	1.03				kWh	\$
Multi-split (System 3)	1.21				kWh	\$
Multi-split (System 4)	1.58				kWh	\$
<b>Sub-total</b>					kWh	\$

Energy Wasting Habits	Tick <sup>3</sup>	Energy Saving Tips
Use of air-conditioner to cool a large room.		Consider putting dividers or partitions so that you cool a smaller, more targeted space. The larger the space to be air-conditioned, the more energy needed to cool it.
Presence of appliances that expel heat (e.g. bar fridge) in an air-conditioned room		Avoid using such appliances in an air-conditioned room.
Use of model with 2 or less ticks on energy label.		Buy an air-conditioner with 3 or 4 ticks on its energy label. Choose a 4-tick air-conditioner if cooling a room more than 2 months a year. <b>A 4-tick air-conditioner saves you about \$420 a year* over a 1-tick model.</b>

<sup>1</sup>This refers to compressor units which differ from cooling units. For better understanding, refer to the air-conditioner diagrams at the top of the page.

<sup>2</sup>For multi-split air-conditioners only, use the average usage hours considering all the cooling units = (Sum of hours used per cooling unit / number of cooling units used).

<sup>3</sup>Put a tick in the box if the energy wasting habit is being practiced in the home.

<sup>^</sup>The estimated ratings serves as a guide and electricity consumption may vary depending on its usage patterns.

\* Electricity Tariff varies. (\$0.2780/kWh is the average 2011 electricity tariff)

Daily or frequently use of air-conditioner.		<b>Use a fan instead of an air-conditioner. You can save about \$790 a year*.</b> Turn off the air-conditioner half an hour earlier using a timer. Close curtains or blinds over the windows during the hottest part of the day, or use solar window film, especially for west-facing windows.
Thermostat setting below 25°C.		Set the temperature at about 25°C. <b>For every degree raised you can save about \$25 a year*.</b>
Cleans air filter less than twice a year.		Clean the air-conditioner air filter regularly (e.g. once a month) so that it runs efficiently. Dirty air filters impede airflow.
Does not service air-conditioner regularly (e.g. not even once every 2 years).		Service the air-conditioner regularly (e.g. once a year). The condition of other components (e.g. refrigerant, pipes and motors) affects its efficiency.

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# REFRIGERATOR

## Large

Fridge height > 1.7m, multiple doors, capacity > 500 Litres

## Medium

Capacity 300 to 500Litres

## Small

Capacity <300 Litres



50-144 Litres



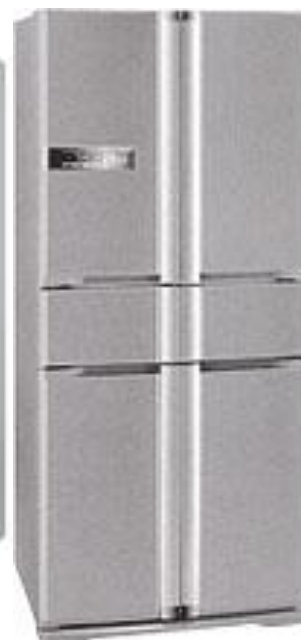
210-490 Litres



430 Litres



500-710 Litres



610 Litres

Type	Estimated Power Rating <sup>^</sup> (kW) [A]	No. Of Units At Home [B]	Average No. of Hours Used Per Day [C]	Average No. Of Days Used Per Month [D]	Total Electricity Usage Per Month [E] E = (A x B x C x D)	Total Electricity Cost Per Month [F] F = E x Electricity Tariff*
<b>Fridges with Freezer</b>						
Small	0.04		24	30	kWh	\$
Medium	0.05		24	30	kWh	\$
Large	0.07		24	30	kWh	\$
<b>Fridges with Freezer and Through-the-door Ice Dispenser</b>						
Small	0.06		24	30	kWh	\$
Medium	0.07		24	30	kWh	\$
Large	0.09		24	30	kWh	\$
<b>Subtotal</b>					kWh	\$

Energy Wasting Habits	Tick	Energy Saving Tips
Use of a large refrigerator for a small family, e.g. fridge looks quite empty.		Buy smallest model refrigerator that meets your needs as generally larger models use more energy to operate.
Use of refrigerator with 2 ticks or less on its energy label.		Buy a refrigerator with more ticks on its energy label. <b>A 4-tick refrigerator saves you about \$65 a year* over a 2-tick model.</b>
Refrigerator placed near to a heat source, e.g. direct sunlight, cookers, oven.		Place the refrigerator away from heat sources.
No gap between refrigerator and wall.		Allow at least 5cm gap all around the refrigerator to allow heat to escape from the compressor and condensing coil.
Refrigerator overcrowded with items.		Overloading the fridge may block air circulation and reduce cooling capabilities. Consider using food storage containers to minimize clutter.
Put hot food in the fridge.		Allow hot food to cool before putting it in the fridge.

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\* Electricity Tariff varies. (\$0.2780/kWh is the average 2011 electricity tariff)

Presence of uncovered liquids in refrigerator.		Cover liquids stored in the refrigerator. Uncovered liquids release moisture and make the compressor work harder.
Door is not shut tightly, door is easy to open.		The hinge may need adjustment or the seal may need replacing.

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# WATER HEATER / LAUNDRY APPLIANCES

**Storage**



**Instantaneous**



**Washing Machine**



**Clothes Dryer**



## WATER HEATER

Type	Estimated Power Rating <sup>^</sup> (kW) [A]	No. Of Units At Home [B]	Average No. of Minutes Used Per Day [C]	Average No. Of Days Used Per Month [D]	Total Electricity Usage Per Month [E] $E = (A \times B \times C \times D) \div 60$	Total Electricity Cost Per Month [F] $F = E \times \text{Electricity Tariff}^*$
Instantaneous	2.000				kWh	\$
Storage	3.000				kWh	\$
<b>Subtotal</b>					kWh	\$

Energy Wasting Habits	Tick	Energy Saving Tips
Use of storage type heater.		<b>Choose a more energy efficient instantaneous water heater instead of a storage water heater and you can save about \$100 a year*</b> . Consider installing a solar water heater if you have access to rooftops.
Water heater is left on all the time.		Instantaneous heater: switch it on before you shower and turn it off after use. Storage heater: switch it on 10 to 20 minutes before shower and turn it off after use.

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<sup>\*</sup> Electricity Tariff varies. (\$0.2780/kWh is the average 2011 electricity tariff)

# LAUNDRY APPLIANCES

Type	Estimated Power Rating <sup>^</sup> (kW) [A]	No. Of Units At Home [B]	Average No. of Hours Used Per Day [C]	Average No. Of Days Used Per Month [D]	Total Electricity Usage Per Month [E] E = (A x B x C x D)	Total Electricity Cost Per Month [F] F = E x Electricity Tariff*
Washing Machine (no heating element)	0.300				kWh	\$
Clothes Dryer	4.500				kWh	\$
<b>Subtotal</b>					kWh	\$

Energy Wasting Habits	Tick	Energy Saving Tips
Use of water heater function in washing machine.		Wash clothes in cold water. It is not necessary to use the water heater function in our washing machines as our water is warm enough for the wash to be effective.
Wash with half load or less than full load.		Wash with a full load.
Use of clothes dryer for drying clothes all the time and not just on rainy days.		Air-dry your clothes on a clothesline or drying rack, instead of using a clothes dryer. Whenever possible, dry laundry under natural sunlight.
Use of model with 2 or less ticks on energy label.		Buy a clothes dryer with more ticks on its energy label. <b>A 4-tick dryer saves you about \$90 a year* over a 1-tick model.</b>

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# ELECTRIC AIR-POT / KITCHEN APPLIANCES

## Electric Air-pot



## Thermal Cooking Pot



## Pressure Cooker



Type	Estimated Power Rating <sup>^</sup> (kW) [A]	No. Of Units At Home [B]	Average No. of Hours Used Per Day [C]	Average No. Of Days Used Per Month [D]	Total Electricity Usage Per Month [E] E = (A x B x C x D)	Total Electricity Cost Per Month [F] F = E x Electricity Tariff <sup>*</sup>
Electric Air-pot	0.700		144 <sup>#</sup>		kWh	\$
<b>Subtotal</b>					kWh	\$

Energy Wasting Habits	Tick	Energy Saving Tips
Leaving electric air-pot on through the night.		Use thermo-flask instead of electric air-pot, boil water only when necessary (e.g. electric kettle) or switch off air-pot at night.
Pots are not covered while cooking.		Cover your pots while cooking. Covered food cooks faster.
Open the oven door frequently while cooking.		Avoid opening the oven door while cooking.
Use of conventional pots and pans		Consider using thermal cooking pots which can reduce energy use by 80%, or pressure cookers which can cut energy use by 50-75% compared to conventional methods.

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<sup>\*</sup> Electricity Tariff varies. (\$0.2780/kWh is the average 2011 electricity tariff)

<sup>#</sup> Average electricity usage for electric air-pot per month = 1/5 of a month (due to re-boil function) = 30 days/ 5 = 6 days. Thus, total monthly electricity usage (hrs) = 24hrs X 6 = 144hrs

# LIGHTING / OTHER HOME APPLIANCES

**Incandescent bulbs**



**Halogen lamps**



**Compact Fluorescent Lamps (CFLs)**



**Light Emitting Diodes (LEDs)**



## LIGHTING

Type	Estimated Power Rating <sup>^</sup> (kW) [A]	No. Of Units At Home [B]	Average No. of Hours Used Per Day [C]	Average No. Of Days Used Per Month [D]	Total Electricity Usage Per Month [E] E = (A x B x C x D)	Total Electricity Cost Per Month [F] F = E x Electricity Tariff*
Incandescent Bulbs	0.040				kWh	\$
Halogen Lamps / Bulbs	0.028				kWh	\$
Compact Fluorescent Lamps / Bulbs	0.009				kWh	\$
Light Emitting Diodes Lamps/ Bulbs	0.008				kWh	\$
Subtotal					kWh	\$

Energy Wasting Habits	Tick	Energy Saving Tips
Use of incandescent bulbs or halogen lamps for long periods.		Replace them with CFLs or LEDs / energy saving lamps to cut down on electricity consumption. <b>For every bulb, you can save about \$20 a year*.</b>
Closed curtains with lights on during the day.		Make the most of the natural light available. Use light-colored, loose-weave curtains to allow daylight to penetrate while preserving privacy.
Use of dark colours in areas you want to be bright.		Use lighter colours in areas where you want to be bright, as lighter colours reflect light.
Lights left on when you leave the room.		Switch the lights off when you leave the room.

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# OTHER HOME APPLIANCES

Type	Estimated Power Rating <sup>^</sup> (kW) [A]	No. Of Units At Home [B]	Average No. of Hours Used Per Day [C]	Average No. Of Days Used Per Month [D]	Total Electricity Usage Per Month [E] E = (A x B x C x D)	Total Electricity Cost Per Month [F] F = E x Electricity Tariff*
Entertainment						
TV	0.075				kWh	\$
Set top box	0.02				kWh	\$
Laptop	0.05				kWh	\$
Desktop	0.3				kWh	\$
Other Home Appliances						
Iron	1				kWh	\$
Kettle	1				kWh	\$
Rice cooker	0.8				kWh	\$
Fan	0.075				kWh	\$
Subtotal					kWh	\$

Energy Wasting Habits	Tick	Energy Saving Tips
Appliances left on standby.		Switch off home appliances at the power socket. Do not leave them on standby as they are still consuming electricity. <b>Reduce standby energy wastage and save about \$65 a year*.</b>
Set top boxes, modems, left on when not in use (e.g. overnight).		Switch them off when not in use.
Presence of desktop computers.		Consider buying a laptop for your next computer upgrade for general computing as they use less than half the energy used by desktop computers.
Computer is left on for hours.		Switch off the computer completely when not in use for long periods.
Energy saving features in computer is not enabled		Enable your computer's energy-saving features to switch to standby mode after some time

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\* Electricity Tariff varies. (\$0.2780/kWh is the average 2011 electricity tariff)

# Home Energy Audit Summary Sheet

## Estimated Electricity Costs of Key Appliances

Electrical Appliances	Total Electricity Cost Per Month (\$)	No. of Energy Wasting Habits
Air-conditioner		
Refrigerator		
Laundry Appliances		
Water Heater		
Electric Air-pot		
Lighting		
Other Home Appliances		
<b>TOTAL</b>		

**Relevant Energy Saving Tips:** (please cut and paste below the energy saving tips which correspond to the energy wasting habits you identified)

- 1.
- 2.
- 3.
- 4.
- 5.
- .....

***Thank you for taking part in this 10% Energy Challenge Home Energy Audit. You may wish to print this page and put it up somewhere prominent in your home to remind yourself of the key energy-using appliances in your home and the energy saving tips to implement!***

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