



Welcome to Power Smart

Course Outline



<i>Wk 1: April 30</i>	<i>Intro to Living Smart</i>
Wk 2: May 7	Power Smart
Wk 3: May 14	Waste Smart
Wk 4: May 21	Gardening for Food
Wk 5: May 28	Travel Smart & Peak Oil
Wk 6: Jun 4	Healthy You
Wk 7: Jun 11	Gardening for Biodiversity
Wk 8: Jun 18	Water Smart
Wk 9: Jun 25	Healthy Home/Office
Wk 10: Jul 2	Beyond Living Smart
Field Trip ?	Community Smart - Painted Fish

Today's Program



11:00-11:15	Start-up, review goal achievement
11:15-11:35	Reducing Power Usage in the Home
11:35-11:45	Activity – Reducing Power Usage in the Office
11:45-11:50	Solar PV and Natural Power
11:50-12:00	Goal Setting
12:00-12:30	Lunch

What Have You Done Since Last Week?



- In Table Teams:
 - Discuss what you have done since last week;
 - Select the person/household that has achieved the most;
 - Prepare to report back to main group;
- Time: 5 minutes

Homework: Calculate Your Carbon Footprint

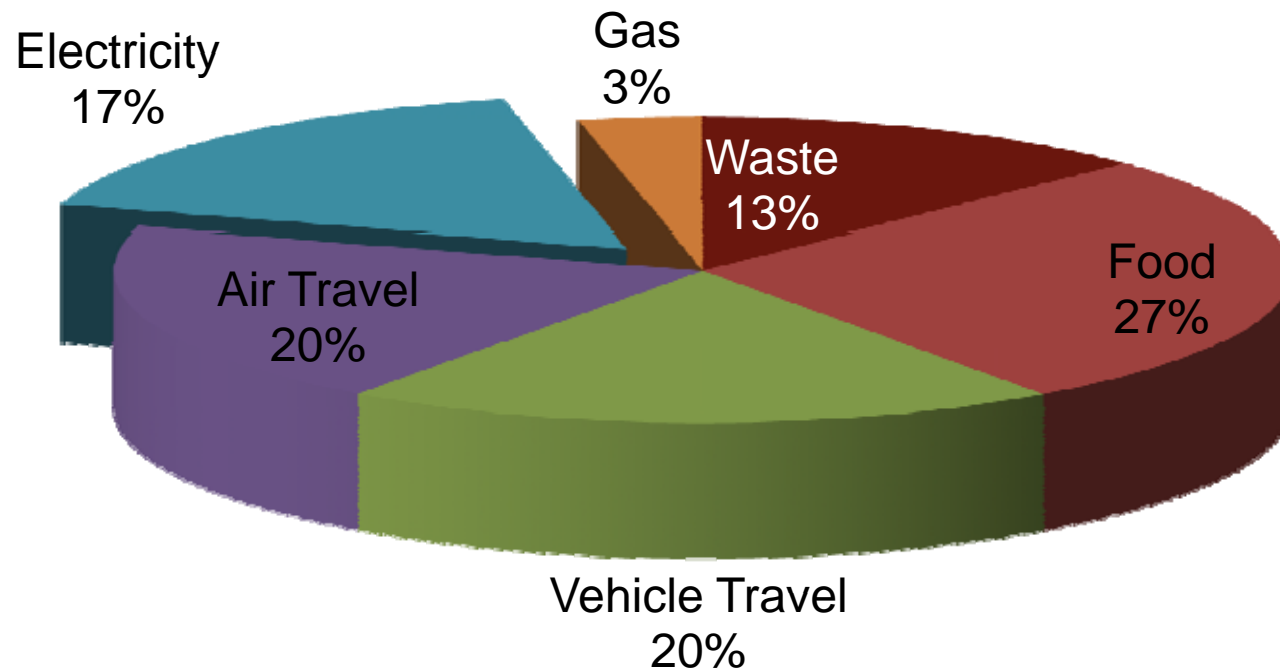


Question	Your Answer	a)	b)	c)	d)	e)	f)	g)	Your Score	Tonnes Calc	Tonnes
A	b)	1.30	2.00	2.60	3.30				2.00	A →	2.00
B	c)	0.00	0.10	0.11	0.17	0.23	0.30	0.37	0.11	BxC/D →	0.65
C	d)	2.5	7.5	12.5	17.5	22.5	27.5	35.0	17.5		
D	d)	1.0	1.5	2.0	3.0	4.0	5.0		3.0		
E	a)	0.0	0.2	1.0	2.5	5.0	12.0	25.0	0.0	E →	0.0
F	b)	2.10	4.20						4.20	FxG/N →	0.1
G	a)	0.10	0.20	0.40	0.60	0.80	1.00		0.10		
H	a)	-1.00	-0.75	-0.50	-0.25	0.00			-1.00	H/N →	-0.25
I	e)	0.0	1.0	3.0	6.0	12.0	24.0	48.0	12.0	IxJ/N →	0.0
J	f)	1.0	0.9	0.75	0.5	0.25	0.0		0.0		
K	c)	0.2	0.4	0.6	0.8				0.6	KxL/N →	0.45
L	a)	3.0	3.0	1.0	1.25	2.0	2.25		3.0		
M	c)	3.5	3.9	4.3	4.7				4.3	M/N →	1.1
N	d)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	4.0		Sum ↓
Your Carbon Footprint TOTAL:											4.05
Average Aussie Footprint:											13
Sustainable World Average Footprint:											2

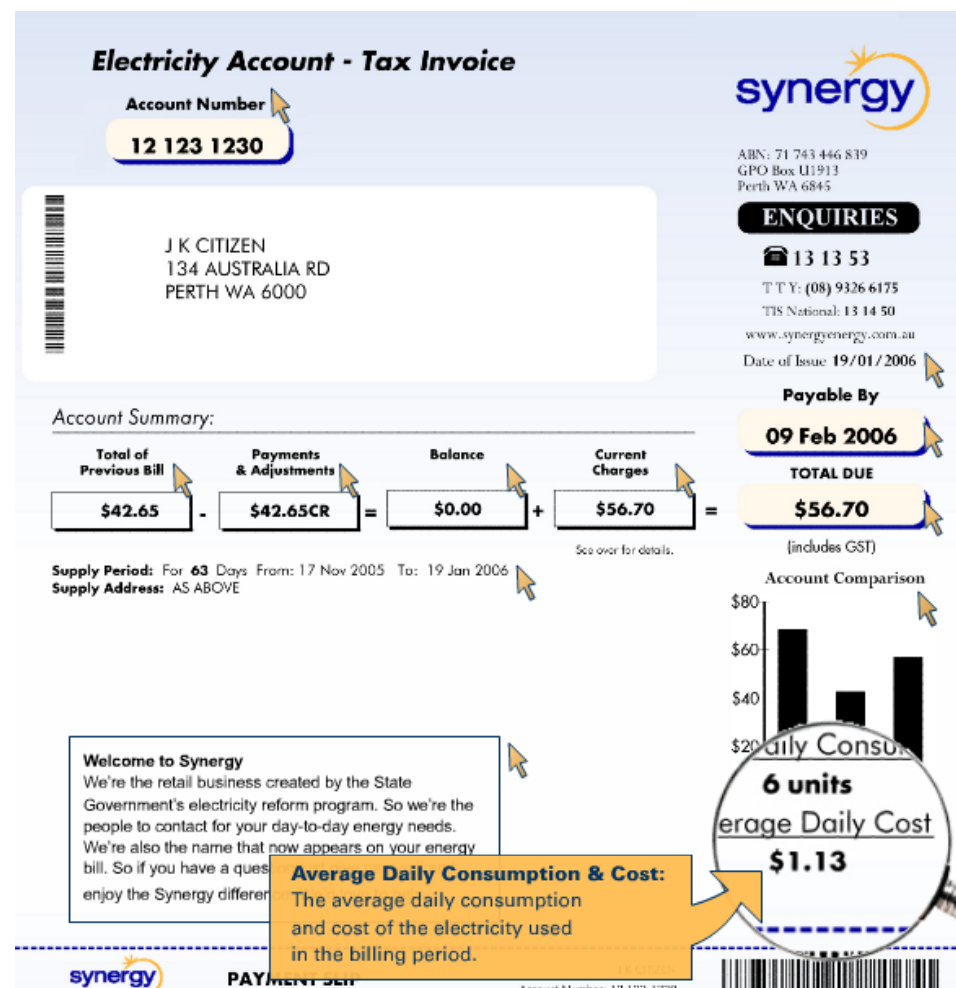


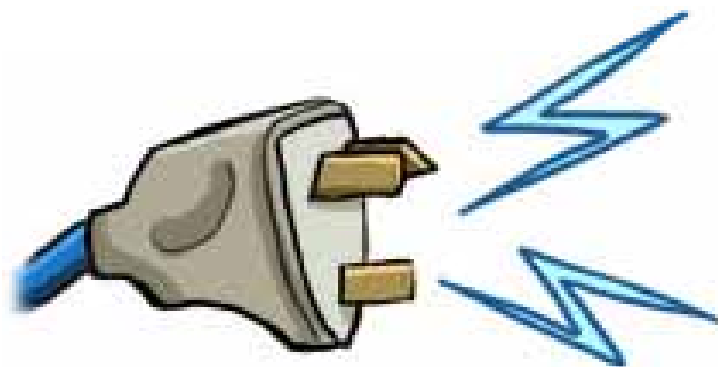
REDUCING POWER CONSUMPTION WITHIN THE HOME

Electricity Represents 17% of the Average Aussie Household's GHG Emissions



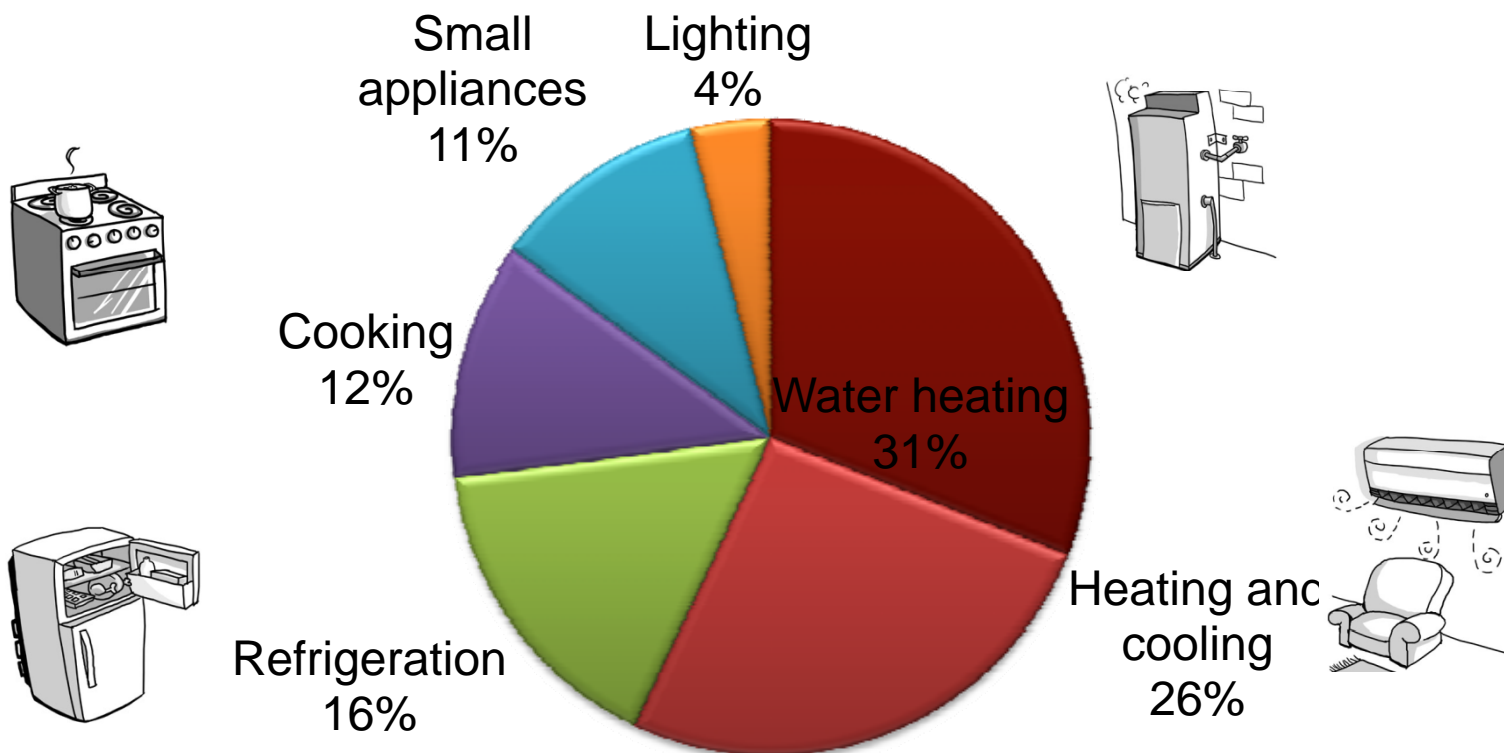
How much electricity do you use at home?





Which
appliances
consume the
most
electricity?

Energy use chart for an average home



Source: SEDO

What can you do?



- **Measure YOUR energy use**
- **Address your energy use**
 - Hot water actions
 - Heating & cooling actions
 - Refrigeration & Cooking
 - Lighting
- **Address your electricity source**
 - GreenPower tariff from Synergy
 - Your own roof-top solar PV system
- **Address energy in goods, travel**

Measuring Your Energy Use



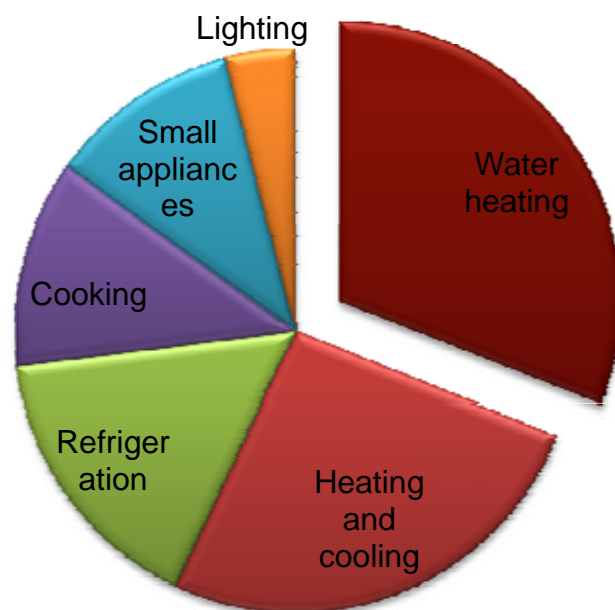
- Multifunction Meter;
- Simple to operate;
- Accurate over long time period;
- No good for stand-by power.
- \$29.95
- Altronics

Measuring Your Energy Use



- Efergy power meter;
- Simple to operate;
- Monitors energy use for entire house
- \$105.00;
- Bunnings
- <http://www.topbuy.com.au>

Reducing your Water Heating



- Time in showers;
- Minimising energy used by existing hot water system;
- Recirculating mains;
- Low flow shower heads;
- Low energy hot water systems.

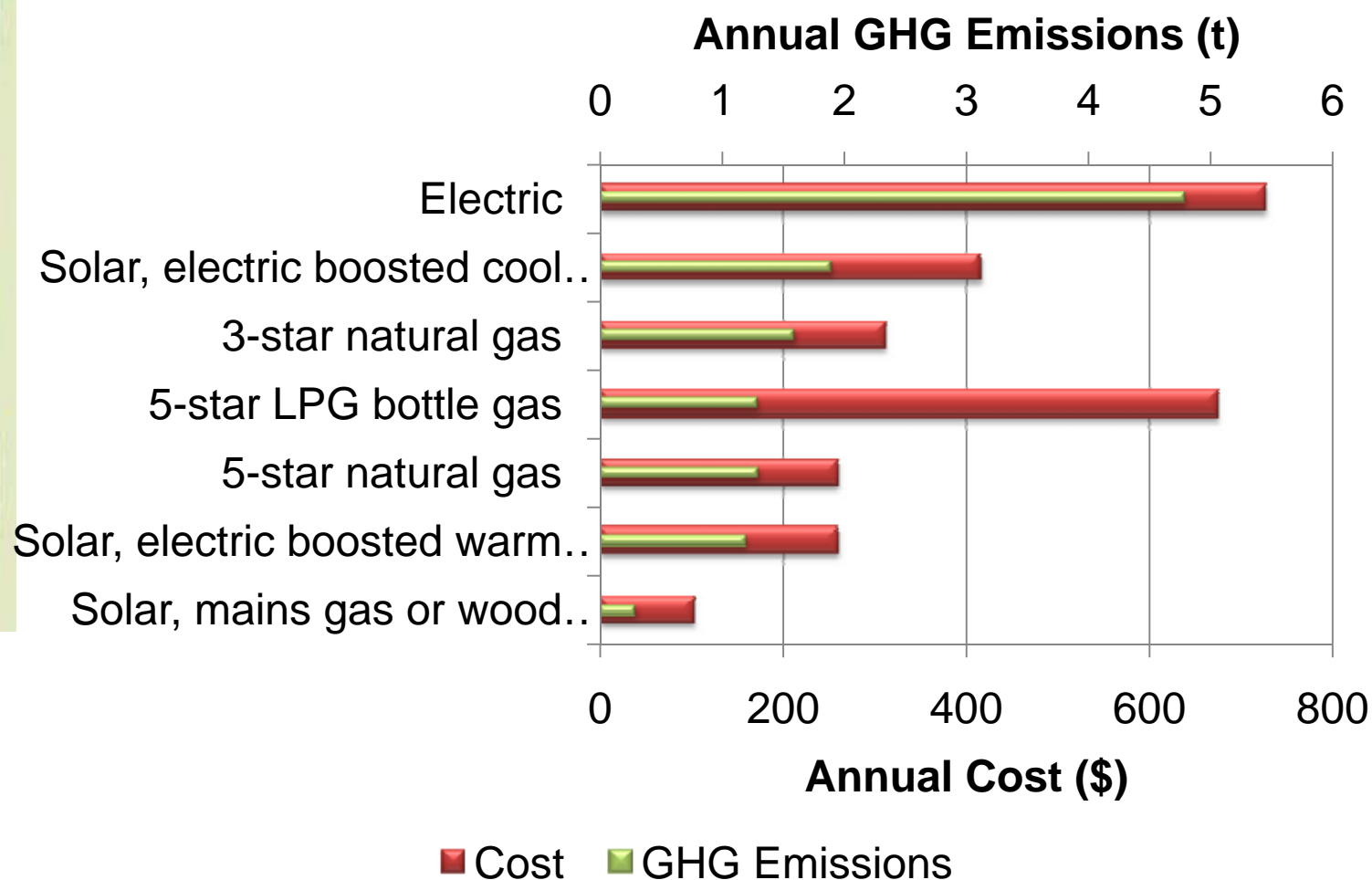
Low Flow Shower Heads



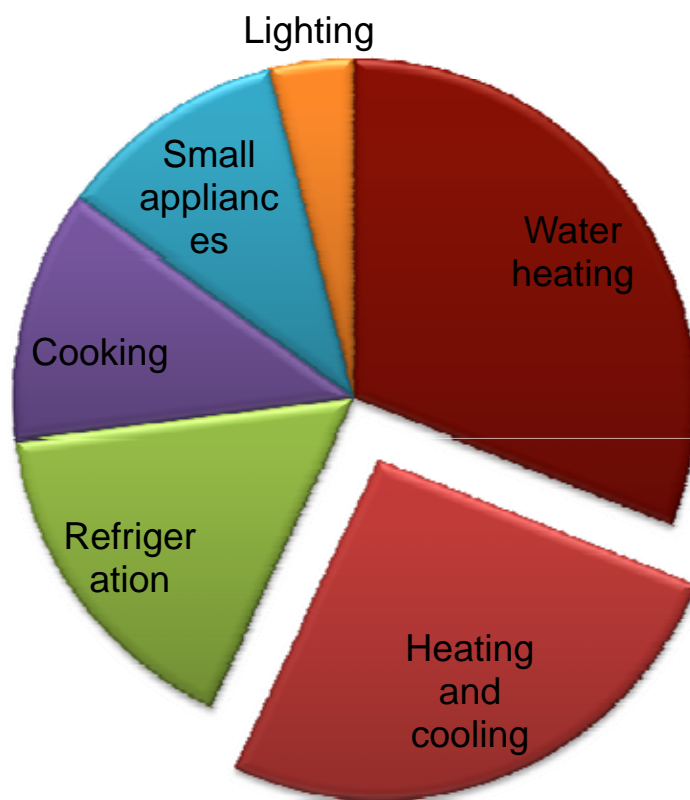
- Perfectflow Ultimate showerhead
- 5.5l per minute
- \$24.99
- www.perfectflow.com.au



Costs and Emissions from Different Water Heaters



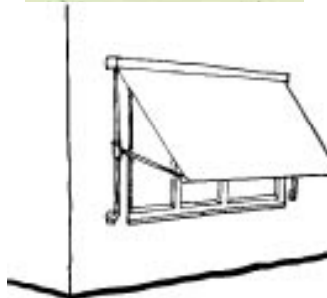
Reducing your Heating and Cooling



- Passive Solar Design;
- Retrofitting your home to make it passive solar;
- Energy efficient cooling;
- Energy efficient heating.

Blocking heat through E-W Windows

What makes a difference in blocking the sun's heat in rooms with E or W-facing windows? Suggest some solutions.



Awning blind



Reduction in Heat

0% 20% 40% 60% 80% 100%

Unshaded single glazed window

Internal venetian blinds

Internal holland blinds

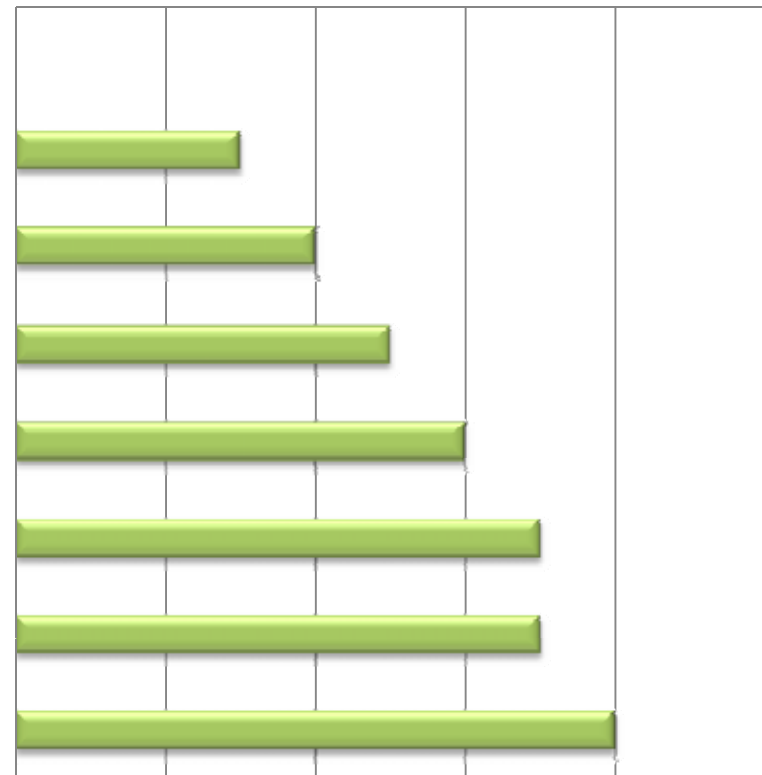
Tinted glass

Trees-full shade to light shade

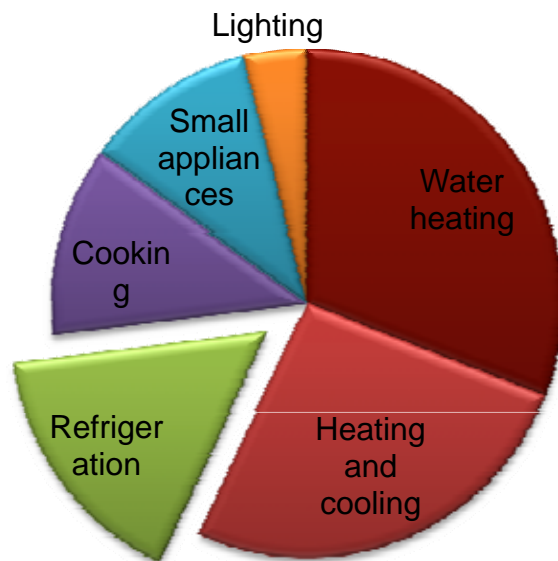
External roller shutter

External awning

Pergola with vines or shade cloth

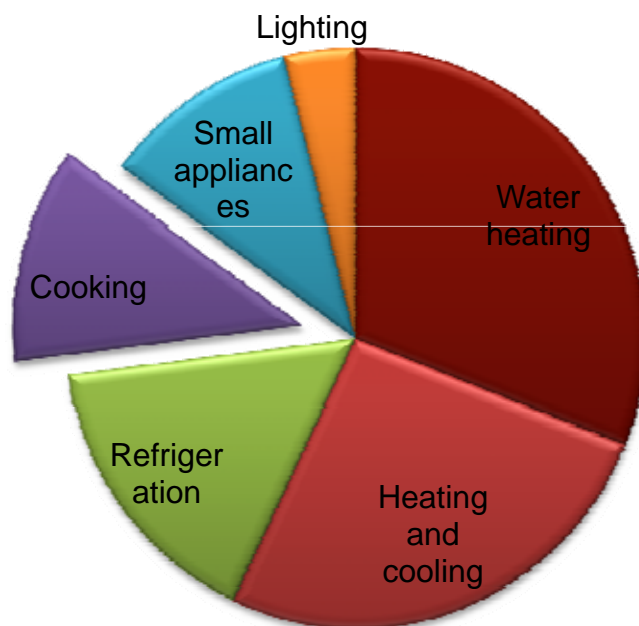


Reducing your Refrigeration Energy Use



- Get rid of “beer fridge”, or switch off except for parties;
- Replace worn seals on fridge;
- Ensure fridge is well ventilated;
- Don’t overload the fridge;

Reducing your Cooking Energy Use



- Use microwave or gas (75% less energy than electric stove);
- Ensure oven seal in good condition;
- When using oven, cook several dishes at once;
- Use cooking pots with flat bases on tight-fitting lids;
- Use pressure cooker;

Buying Energy Efficient Appliances



Australia's leading guide to choosing an energy efficient appliance

a joint initiative of Commonwealth, State, and Territory government agencies

www.energyrating.gov.au

Everyone has a role to play in reducing greenhouse gas emissions that contribute to climate change. Choosing an energy efficient appliance is one way to do this while saving money.

[Search & Compare Appliances](#)

[Product Information](#)

[What's New?](#)

[Registering a Product](#)

Energy Programs

Regulations

Product Standards

E₃ Committees

Electronic Library

Other Resources

Search

Australian Government
Department of the Environment,
Water, Heritage and the Arts

www.energyrating.gov.au

Energy Efficient 400-500l Fridge/Freezers



Australia's leading guide to choosing an energy efficient appliance www.energysrating.gov.au [Product Information](#) [What's New?](#) [Registering a Product](#)

[Energy Programs](#) [Regulations](#) [Product Standards](#) [E₃ Committees](#) [Electronic Library](#) [Other Resources](#) [Search](#)

Refrigerators/Freezers - search result. [Cost Calculator](#)

Your search returned 215 Refrigerators/Freezers for:
 Type: All,
 Capacity: 400 litres to 500 litres,
 Brand Names: All,
 Sorted by: New SRE - Descending order.

You can re-sort the list on any field by using for ascending order or for descending order.

Electricity Cost: 15 c/kWh
 Show Energy Costs for: 10 years
[Recalculate Costs](#)
[Tips on Use](#)

[Show comprehensive details](#) [Help on headings and content](#) [Do another Search](#)

Brand	Model	Available	Type	Total Volume (litres)	Energy Consumption(kWh/annum)	10 Yr Energy Cost	Star Rating
MIELE	K8962SD	AUS & NZ	1	413	272	\$408	
FISHER & PAYKEL	E450	AUS & NZ	1	451	330	\$495	
LIEBHERR	Kes 4200	AUS	1	407	335	\$502	
LIEBHERR	SKes 4200	AUS	1	407	335	\$502	
LIEBHERR	Kes 4200	AUS	1	407	335	\$502	
WESTINGHOUSE	WRM4300S	AUS & NZ	1	434	380	\$570	
WESTINGHOUSE	WRM4300W	AUS & NZ	1	434	380	\$570	
WESTINGHOUSE	WRM4300S	AUS & NZ	1	434	390	\$585	
WESTINGHOUSE	Refrigerator RP432	AUS & NZ	1	434	390	\$585	
ELECTROLUX	Refrigerator CS430	AUS & NZ	1	434	390	\$585	
ELECTROLUX	Refrigerator ERM4300W	AUS & NZ	1	434	390	\$585	
FISHER & PAYKEL	C450	AUS & NZ	1	451	406	\$609	

Reducing Lighting Energy Use



- Halogen replacement LED lights now available;
- 5 watts → 90% less energy than halogen;
- Very long life → 35,000 hours+;
- From \$35

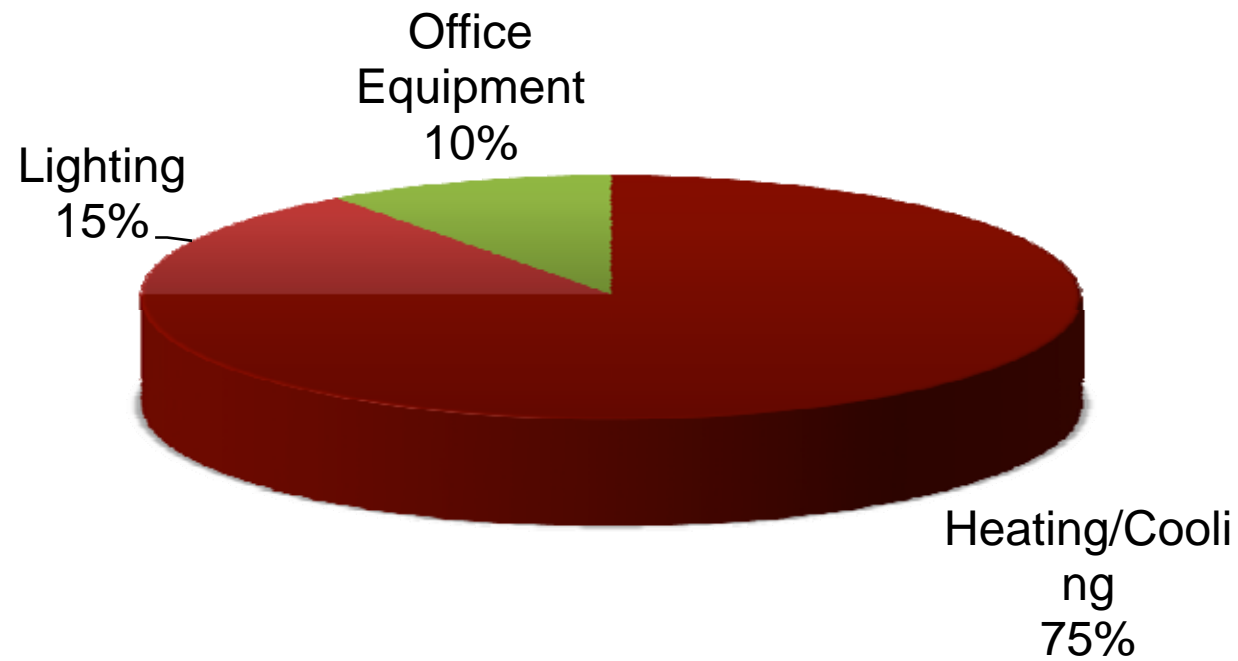


shop.ata.org.au



REDUCING POWER USAGE IN THE WORKPLACE

Electricity Consumption for Typical Office



Activity



- In table groups discuss what you could do to reduce the power usage within the City of Fremantle;
- Prepare to report back to main group;
- Time: 5 min

Reducing Heating/Cooling Costs



- Set A/C operating times to match occupancy hours;
- If your building has an after hours heating or cooling option, only use it when necessary;
- Keep windows closed in air conditioned rooms (except when evaporative cooling is used);
- If possible turn off air conditioning to unused rooms and spaces or close them off from controlled areas by shutting doors.

Reducing Lighting Costs



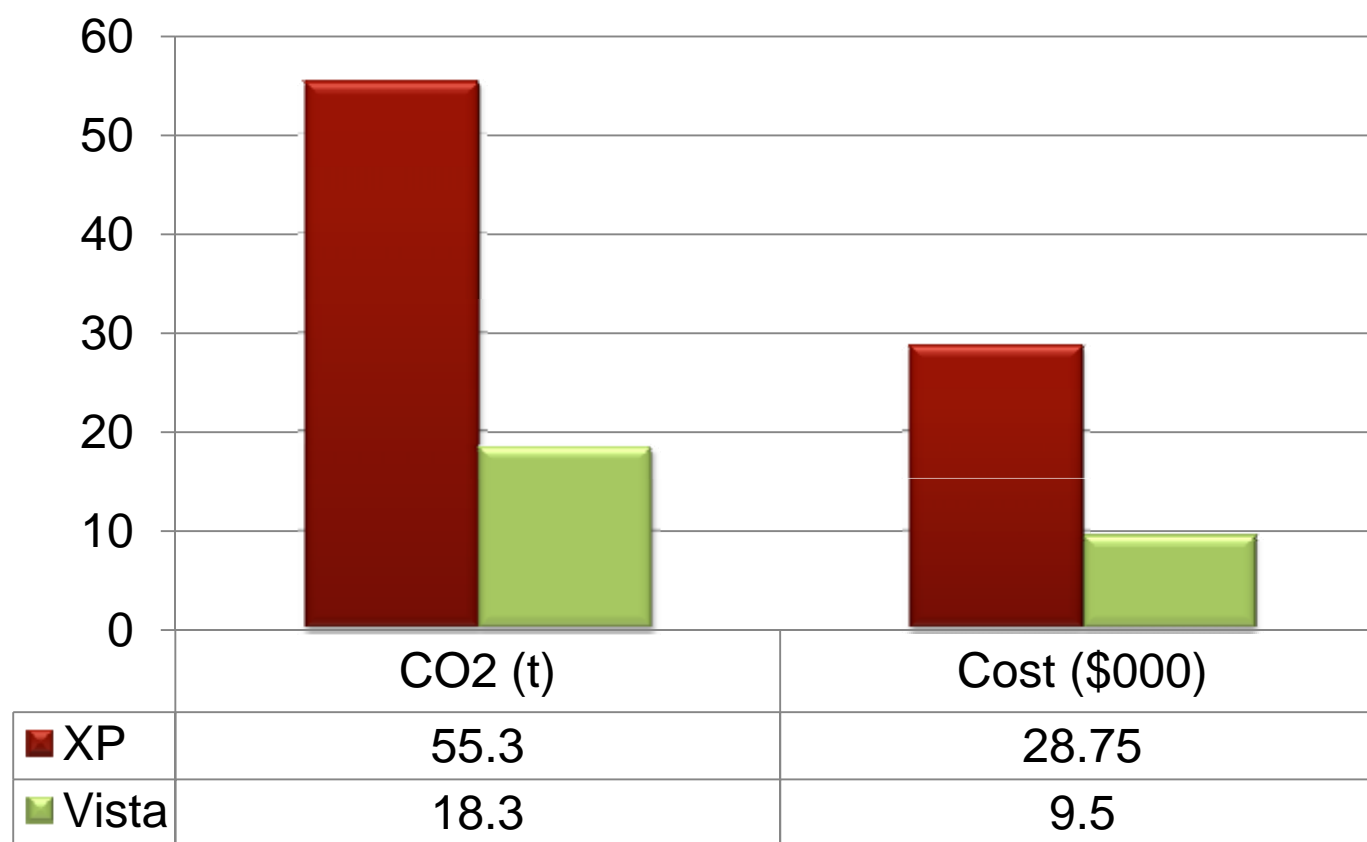
- Natural Lighting;
- Task Lighting;
- Sensors;
- Timed Lighting;
- CFLs/LEDs;

Reducing Computer Energy Costs



- Consider purchasing laptops rather than desktop computers. These use MUCH less energy;
- Switch off computers when not in use;
- Consider switching to Vista

Vista versus XP



Analysis is for an office with 200 computers

Reducing Photocopier Footprint



- energy-efficient photocopier;
- copy double-sided whenever you can;
- set up an effective paper recycling system;
- set the photocopier to powersave when you're not using it.



SWITCHING TO GREEN POWER

Switch to Green Power



- Synergy offers two options for green power:
 - “Natural Power”
 - Costs an extra 4.4c per unit for NaturalPower
 - For the average household means an extra 50c per day
 - Ensures 100% of your electricity comes from renewable sources
 - “Easy Green”
 - Customers can sign up in \$10 annual increments
- Switching to NaturalPower or Easy Green is easy
- Call Synergy on 13 13 53
- Go to their website
<http://www.synergyenergy.com.au>

The Take-up of Green Power in WA is Embarrassing



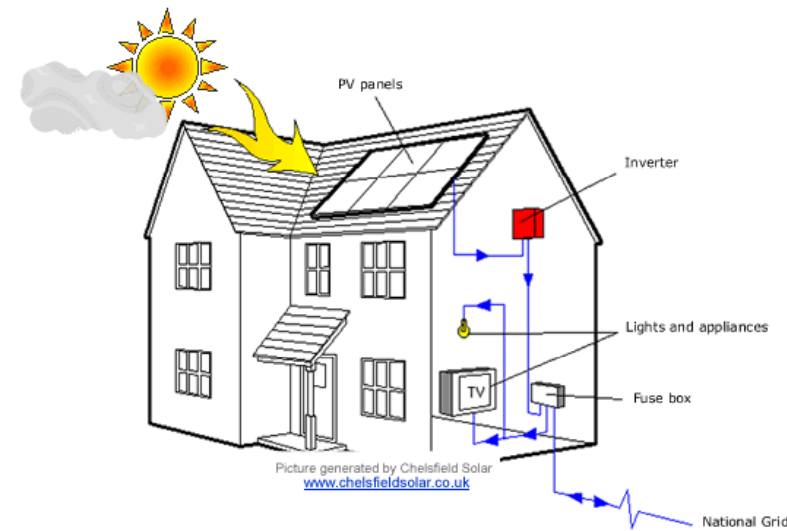
Residential Green Power Customers





GENERATING YOUR OWN ELECTRICITY

Grid-Connected System Components



1. Solar Array – generates DC electricity from sunlight.
2. Inverter – converts DC electricity into AC for use in the home.
3. Monitor displays energy production (usually incorporated into Inverter).
4. Meter – can move forwards or backwards depending on energy use in the home.

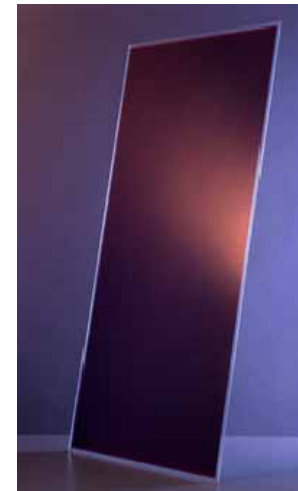
Benefits of Solar PV



- Solar electricity is generated without emitting greenhouse gases.
- Solar electricity is generated on-site from a free renewable energy source.
- Energy security.
- Buffer against future increases in energy costs.
- Solar modules should last 20 to 30 years.
- Solar electricity helps stabilize the grid and provides peak power.
- Unobtrusive and silent.
- Increase the value of your home/business.

Types of Solar Panels

- Also called Solar Modules, or Photovoltaic (PV) Panels.
- There are three basic types of solar panels: Monocrystalline, Multicrystalline, Thin Film



Summary of Rebates



System	Circumstance	Pre-June 30	Post-June 30
1 kW System	Households > \$100,000K	\$0	\$5,000
	Households < \$100,000K	\$9,000	\$5,000
	Businesses	\$0	\$5,000
1.5kW System	Households > \$100,000K	\$0	\$7,500
	Households < \$100,000K	\$9,000	\$7,500
	Businesses	\$0	\$7,500

Act Quickly

Wait Until July 1

Listing of Perth suppliers of Solar Systems

Listing of Perth supplier of Grid-connected Home Solar Power Systems

from the ENERGYSMART DIRECTORY www.energysmartdirectory.com

Company Name	Better Living Energy Solutions	Electrical Renewable Energy	Green Grid Power	Renewable Logic	Solar Energy Systems Ltd	Solar Sales Pty. Ltd.	Solar Unlimited	Solarshop Australia	WA Solar Supplies
Contact Name	Alex Bruce	Markus Enkler	Glen George	Ramon Gregory	Tony Martin	Bob Blakiston	Kieron D'Arcy	Nathan Stone	Dacre Barrett-Lenard
Address	39 Louise St Nedlands 6009 Nedlands, Perth WA 6009	PO Box 241 Rockingham City, Rockingham WA 6968	4/9 Boag Rd Morley, Perth WA 6062	7 Irvine St Bayswater WA 6053	3/81 Guthrie St Osborne Park, WA 6017	16 Belgravia Street Belmont, WA 6104	P O Box 359, North Perth 6906 North Perth WA 6906	4/146 Carrington St, O'Connor, Fremantle WA 6163	5/83 Hector Street (West) OSBORNE PARK WA 6916
Phone	0400 134 894	+61 8 9527 5969	(08) 9376 1183	9371 5111	(08) 1800 454 161 (country) 08 9204 1521 (metro)	08 9477 5888	(08) 1300 765292 (1300 SOLAWA)	08 9331 2200	(08) 9244 2668
Email	alex@bles.com.au	renewableenergy@iprimus.com.au	Greengridpower@bigpond.com.au		info@sesltd.com.au	info@solarsales.com.au	kieron@solarunlimited.com.au	nathan.stone@solarshop.com.au	energy@wasolar.com.au
WebSite	http://www.bles.com.au		http://www.greengridpower.com.au	www.renewablelogic.com.au	http://www.sesltd.com.au	http://www.solarsales.com.au	http://www.solarunlimited.com.au	http://www.solarshop.com.au	http://www.wasolar.com.au

Created 5 Feb 2008, Updated May 2008

Some possible questions to ask suppliers:

Do they provide performance warranty on the solar panels over 25 years, replacing panels if they drop in performance?

What is the inverter warranty and expected lifetime?

Do they provide emergency (post-sales) maintenance on the system, especially inverter?

How do the solar panels perform in cloudy conditions or part-shade conditions (if this is relevant to your Northern roof)?

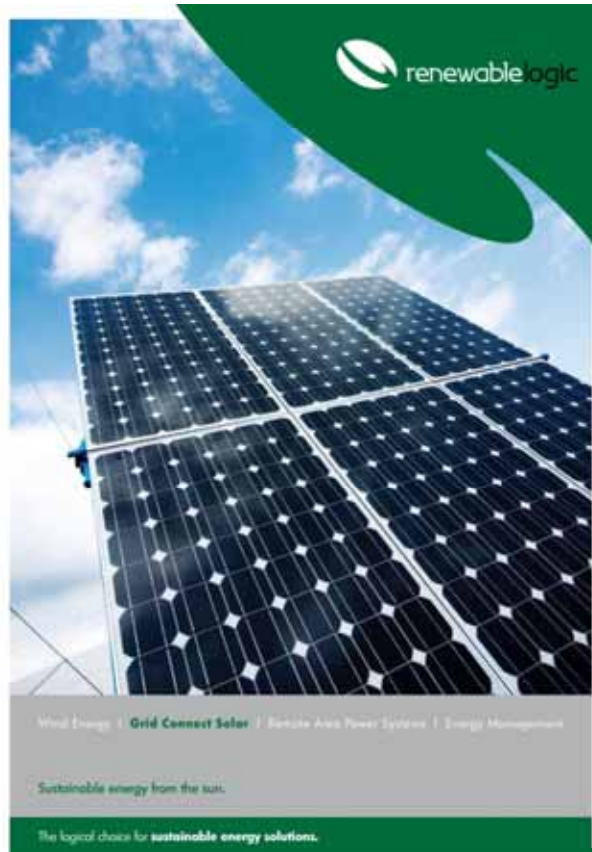
Do they have any systems you can see or visit on public buildings?

What is the price with you holding onto the renewable certificates (and getting the greenhouse benefit) rather than them onselling the certificates (RECs)?

What is their installation history like?



Solar Panel Offer



- Renewable Logic;
- 1kW Suntech system;
- \$2,190 (assuming \$8,000 government rebate);

Solar Panel Offer - Steps



1. Indicate your interest on the attendance register;
2. We will give your details to Renewable Logic;
3. A Renewable Logic representative will ring you to arrange a time for a visit;
4. A representative will visit you to assess your needs and quote;
5. You can sign up then and there, shop around, or decide not to proceed.




GOAL SETTING

Goal Setting



Smart

nable communities



of wisdom because he asked only one little - a. a. a. a.

Smart Journey

roughout the
ome of the goals
ve as a result of at-
se. More goal set-
ailable if you need

d steps to achieve

_____ ☐

_____ ☐

_____ ☐

hieve my goal:

goal by:

ve wish to see in

a. k. ghandi

My overall goal and steps to achieve
this are:

goal: _____

step 1: _____ ☐

step 2: _____ ☐

step 3: _____ ☐

Why i want to achieve my goal:

I will achieve my goal by:

"Whatever you can do or dream you can,
begin it. boldness has genius, power and
magic in it. begin it now."

goethe

Topic:

My overall goal and steps to achieve
this are:

goal: _____

step 1: _____ ☐

step 2: _____ ☐

step 3: _____ ☐

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goethe

Topic:

My overall goal and steps
this are:

goal: _____

step 1: _____

step 2: _____

step 3: _____

Why i want to achieve m

I will achieve my goal b

"be the change we wish
the world"

Topic:

Topic:

Next Week

- Topic: Waste Smart;
- Don't come at normal time;
- 1:30pm to 2:30pm followed by afternoon tea;

