

Efficiency in Action

Presented by City of Port Phillip staff
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Greenhouse Programs Officer

Local Government
JECO Annual Meeting Nov 30 2014



At your service

Brett Hedger – why I'm here?



1961 - 1985



1955 - 1972



Think Forward, Think Different



Edward De Bono says "that the biggest problem facing the world today is not global warming or climate change, it's the inadequacy of our thinking." ...and I agree.....wholeheartedly!



Think Forward, Think Different

Handwritten notes and diagrams illustrating a problem-solving process:

Notes: $c \ d + a g f$
 $2 \ 5 \ 5 \ i \ b \ l \ e \ w \ o \ r \ t$

Diagram 1: A 5x5 grid with 'B' in the first column and 'M' in the last two columns. A table to the right shows:

40	
16	24
Brett	Max
16	24

Diagram 2: A 5x5 grid with 'B' in the first column and 'M' in the last two columns. A table to the right shows:

Brett	Max
22	3

Diagram 3: A 5x5 grid with 'B' in the first column and 'M' in the last two columns. A table to the right shows:

40	
16	24
Brett	Max
16	24

Diagram 4: A 5x5 grid with 'B' in the first column and 'M' in the last two columns. A table to the right shows:

Brett	Max
22	3

Diagram 5: A 5x5 grid with 'B' in the first column and 'M' in the last two columns. A table to the right shows:

Brett	Max
22	3

Diagram 6: A 5x5 grid with 'B' in the first column and 'M' in the last two columns. A table to the right shows:

Brett	Max
22	3

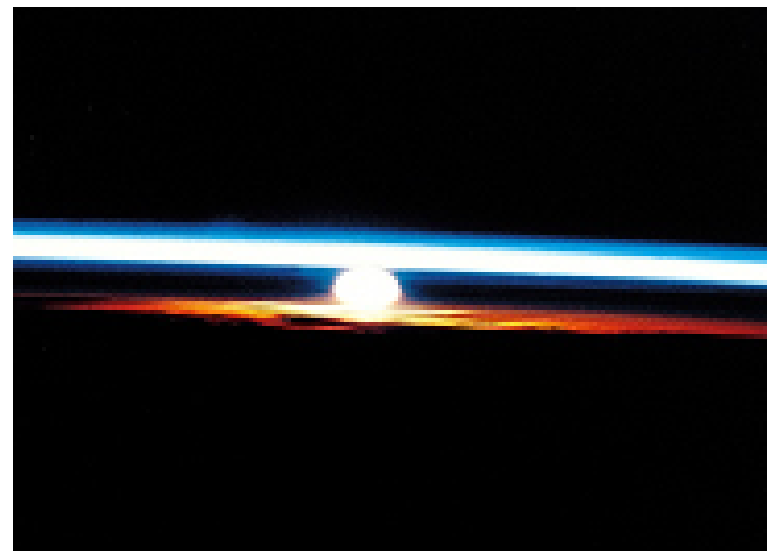
A really quick example....

Thinking outside the paddock!



Planet Earth – our home

The earth is getting warmer, there are limits and we have passed them.



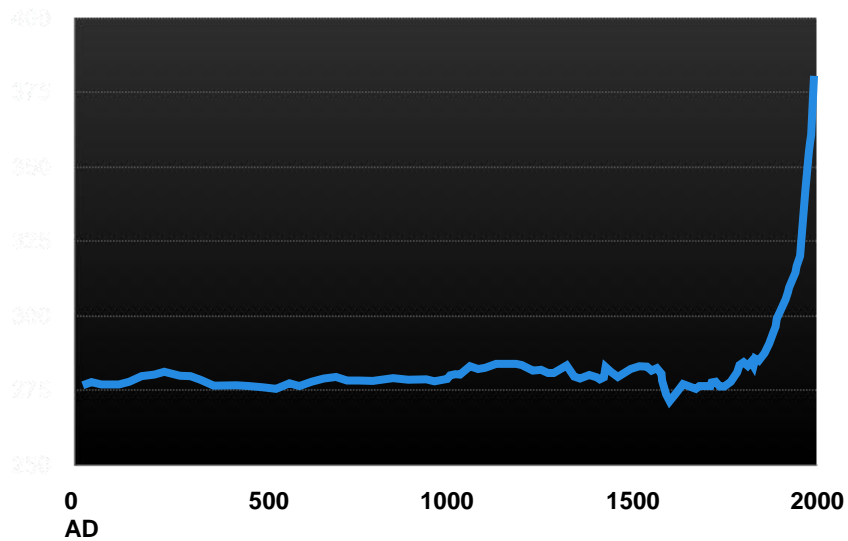
Why do we need to change?

- If it takes 107 Wh to boil 1 litre of water in an electric kettle, then how much energy does it take to
- Heat our atmosphere - 6,150,000,000 km³
- Warm our oceans - 1,335,000,000 km³
- Dry our land – 147,610,000 km²
- Supply food & water to our population – 7,277,000,000
- Fly around the world - 40,057 km
- Drive to the edge of our atmosphere -12 km
- October 2014 Australia – Hottest on record by 2.76 degrees C

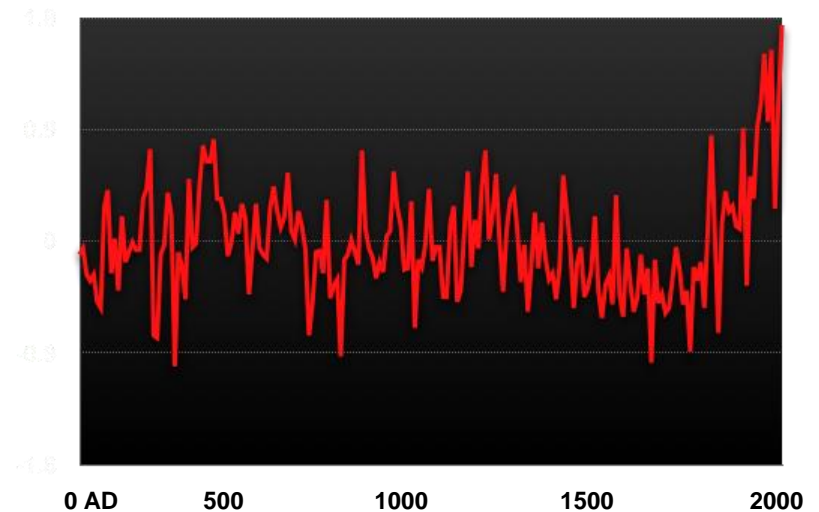


As CO₂ Increases, So Does Global Temperature

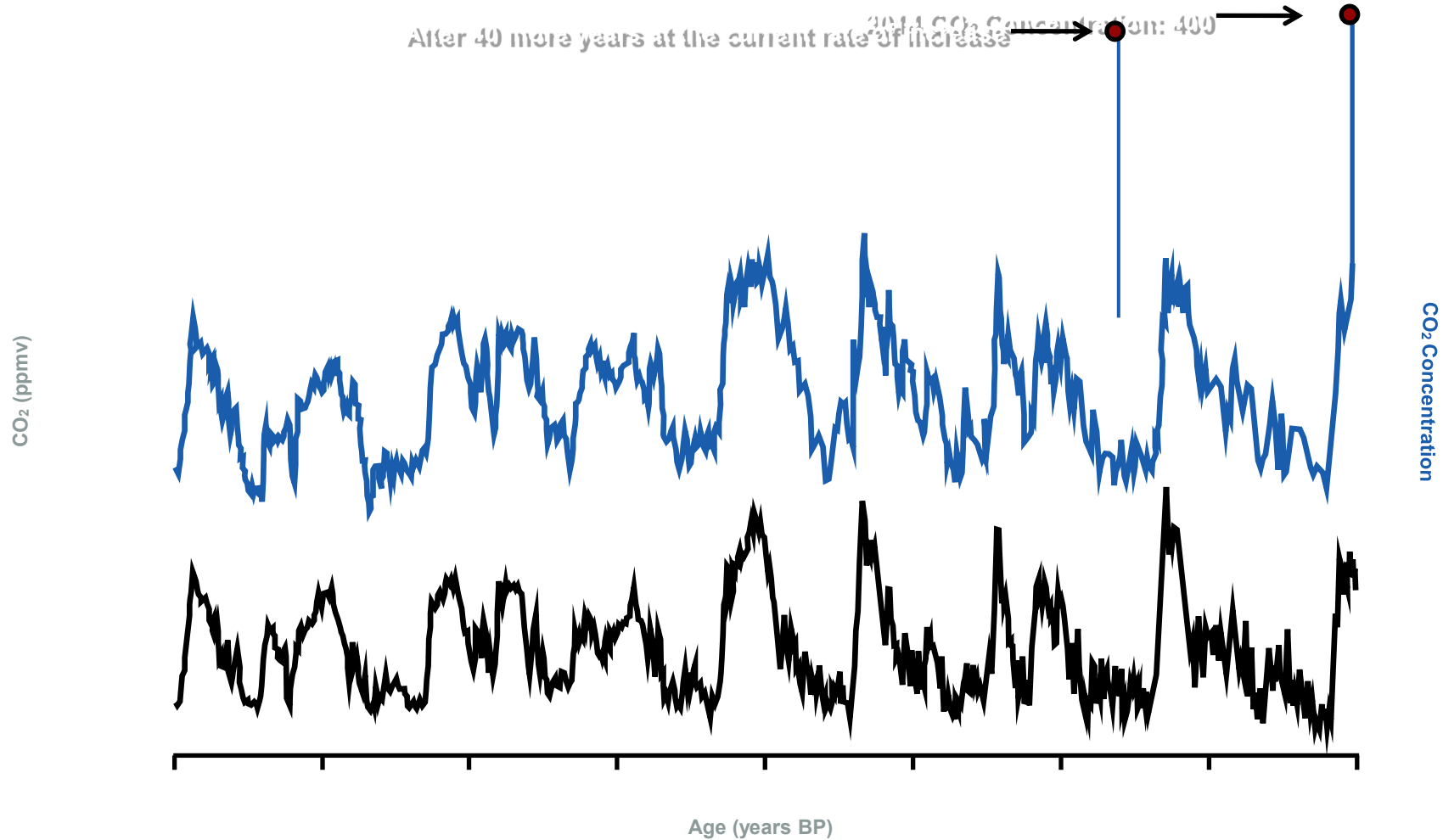
CO₂ Concentration



Temperature

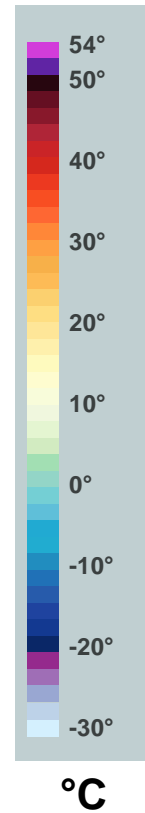
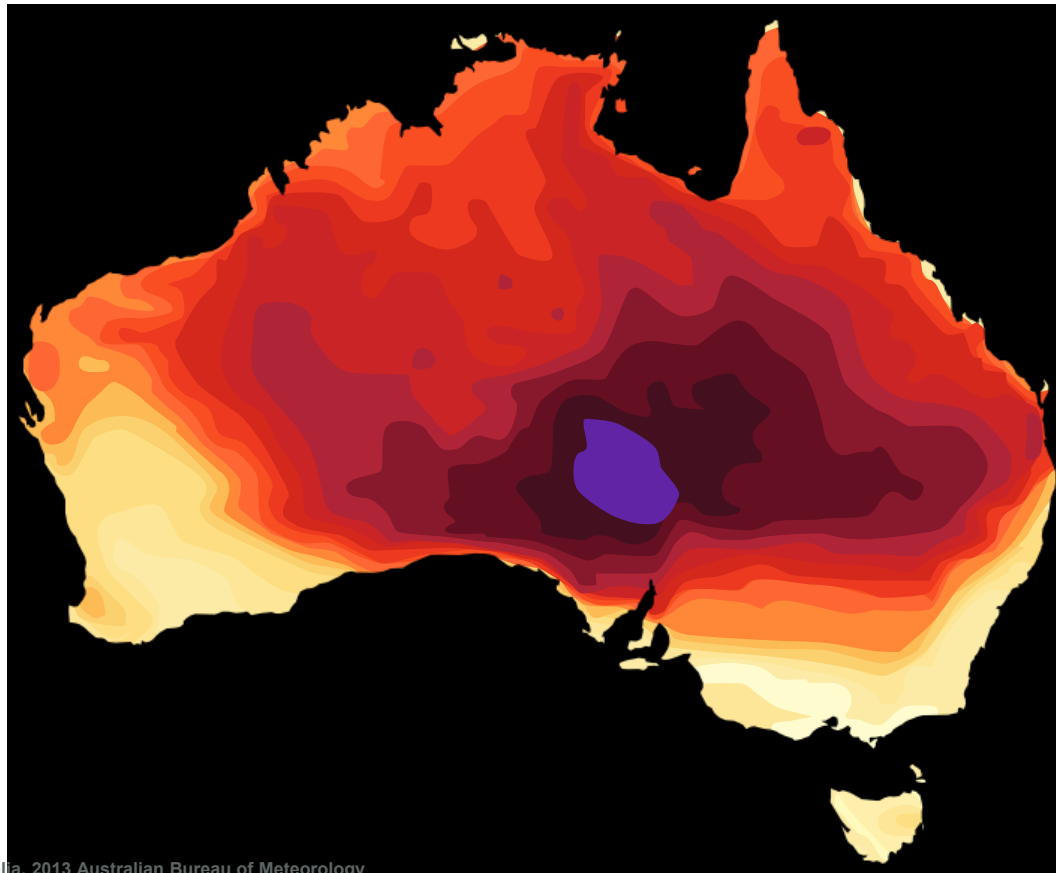


Source: (Temperature) Thompson, *et al.*, "Abrupt Tropical Climate Change: Past and Present," *Proc. Natl. Acad. Sci. USA*, vol. 103, no. 28
(CO₂) Australian Academy of Science; Etheridge, *et al.*, "Law Dome CO₂, CH₄ and N₂O ice core records extended to 2000 years BP," *Geophys. Res. Lett.* 33, doi.10.1029/2006GL026152, 2006. © 2006 American Geophysical Union. Reproduced/modified by permission of American Geophysical Union.



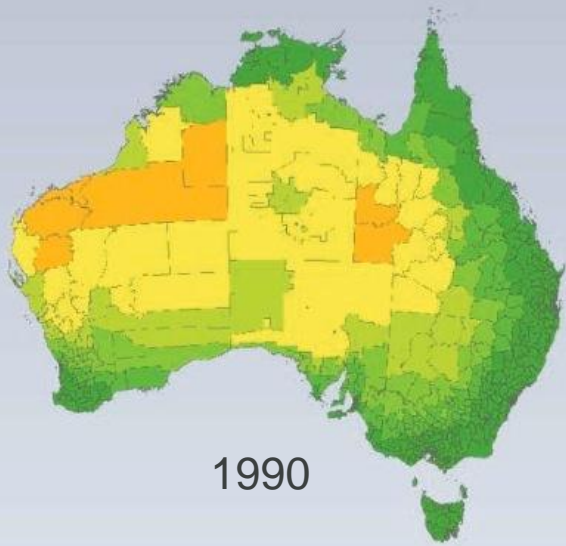
Source: National Climatic Data Center, NOAA

Australia's Clear Sky Days Being Added to the Map



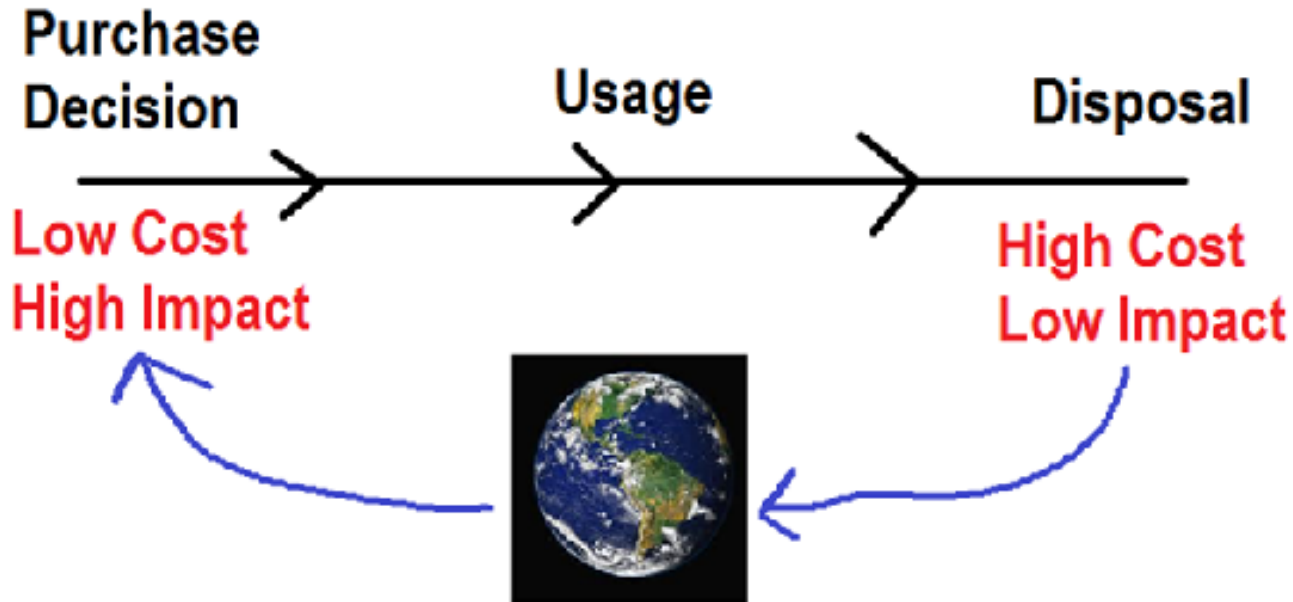
Data: Commonwealth of Australia, 2013 Australian Bureau of Meteorology

Days Per Year Over 40° C



Source: IPCC WGII AR5 Chapter 25, Figure 25-5

Basic Philosophy



Some actions get better results than others:

1. Aim changes at the point of lowest \$ and highest impact
2. Maximise Usage / Re-use / Minimise Waste
3. Repeat steps 1 & 2 until you have zero or positive C02



A quick example

Do Not Call Register **Difficult and Costly**

~~Do Not~~ **Call Register** **Simple and Cheap**



Another quick example or 2



11,800,000 households by 2031, 75% without stickers = 531,000 tonnes

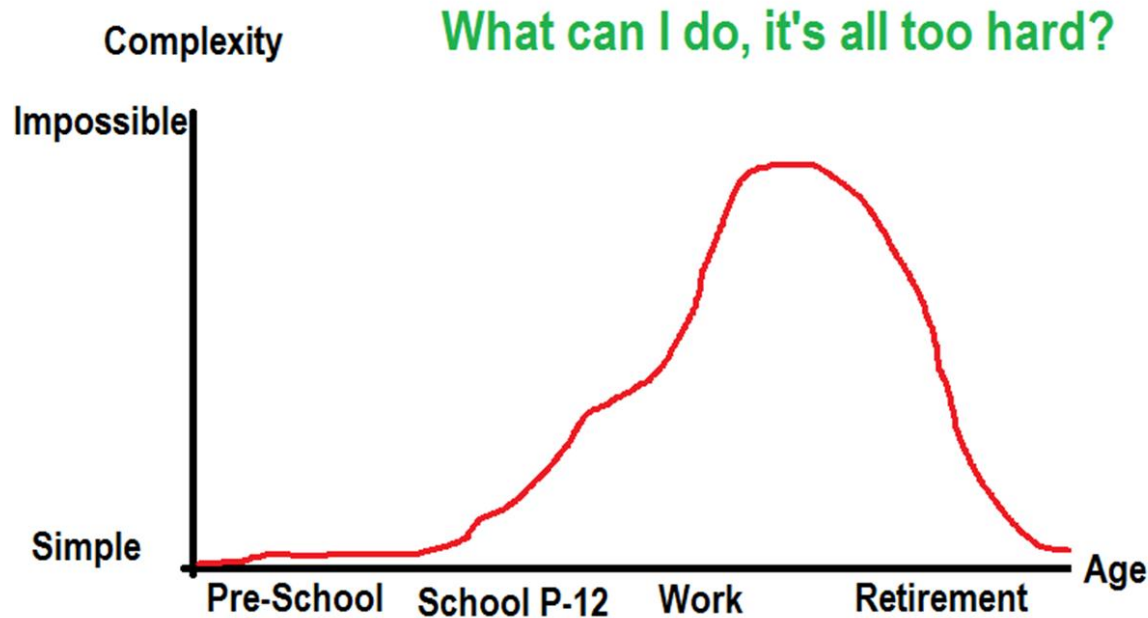


Think Forward, Think Different

What would be a better solution for reducing the impact of junk mail?



Basic Philosophy



The problem is just as straight forward as the solution:

- But there is something in the way
- Economic & social conditioning
- Processes & Structures
- Inefficiency is encouraged



Community Carbon Cops

- Energy Efficiency Team
- Cut 50% of electricity consumption
- (\$0 funding)



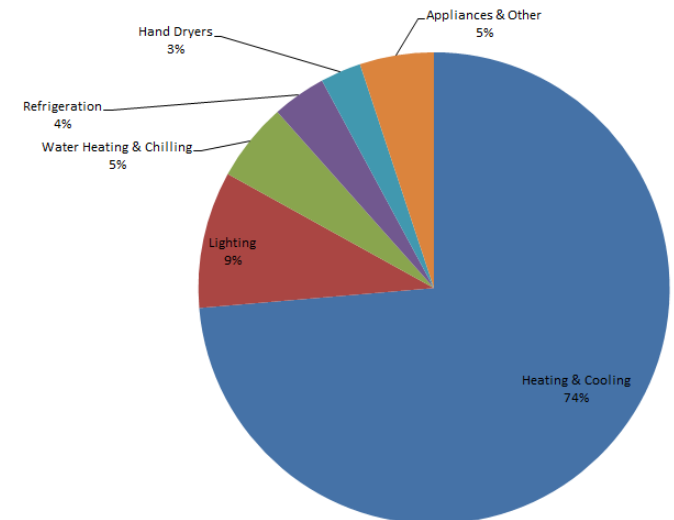
Community Carbon Cops

Start with information & education

Then 6 simple steps

1. Find the electricity meter
2. Read the meter / Get interval Data
3. Review available bills
4. Determine what is using the electricity
5. Make recommendations
6. Take action / review / take action / review ...

Major Electricity Consumption Categories



Zone	Location	Item Type	Specification / Model / Brand	Notes	Total Units	Working Units	Failed OR Remove d Units	Op Watts per unit	Standby Watts per unit	Actual OR Estimate	Op Hours	Op Days	Stdby Hours	Stdby Days	Op kWh	Stand By kWh	Total kWh	Op %	Stand By %	% of Total
Hall		HVAC	Heating / Cooling System	Switch for outside dual fan unit.	1	1	0	7200.0	0.00	E	10	160	0	0	11,520	0	11,520	100%	0%	48.2%
Hallway		HVAC	Heat / Cool Switch	Not sure what this operates???	1	1	0	5200.0	0.00	E	7	140	0	0	5,096	0	5,096	100%	0%	21.3%
Kitchen		Hot & Chilled Water	Zip Autobowl / Chilled Water Unit	Not configured properly	1	1	0	83.0	0.00	E	24	365	0	0	727	0	727	100%	0%	3.0%
Hall		HVAC	Heater	I think it is used more than 6 times	1	1	0	2417.0	0.00	A	10	25	0	0	604	0	604	100%	0%	2.5%
Hallway	Hallway Kitchenette	Hot & Chilled Water	Instant Hot / Cold Water Unit	Tried to measure / arrange with Jacek	1	1	0	56.0	0.00	E	24	365	0	0	491	0	491	100%	0%	2.1%
Hall		Light	Light Switch 1	Not all lights will be used at once	20	20	0	28.0	0.00		3	252	0	0	423	0	423	100%	0%	1.8%

- What they found:
 - Electricity Usage 21,000 kWh per year
 - 203 Electrical Appliances / Lights
 - 5 appliances = 77.1% of total power
 - Heating & Cooling of Air & Water



Community Carbon Cops - Results

Community Carbon Cops

- **Key Recommendations**
 - Insulation & Gaps
 - Solar Power
 - HVAC
 - Lighting
 - Education
- **Early results and ongoing work:**
 - Since October 2013 – 33% down
 - Insulation installed - 12-May-2014
 - Solar Panels / Gap Sealing – June
 - Solar 82% turned on 30-July-14
 - Light Changes – commenced / ongoing
 - Energy Positive – November 2014



Basic Heating - Example

Six Key Points that determine energy usage (heating):

1. The Building
2. System Efficiency
3. Size of Space
4. Ability to Retain Heat
5. Thermostat Setting
6. Behaviour of Occupants



The Building

Old



System Efficiency

Old Style Californian Bungalow / Lean To at Rear (Rental)



System Efficiency

Classic Rinnai 2000T with clock option



Size of Space

How big is the space to be heated

Room	Width	Length	Height	floor m2	volume m3	% floor	% volume
Bed1	4.1	3.6	3	15	44	16%	17%
Bed2	3.6	3.6	3	13	39	14%	15%
Lounge	3.6	3.6	3	13	39	14%	15%
Kitchen	3.6	3.6	3	13	39	14%	15%
Dining	2.6	4.6	2.7	12	32	13%	12%
Hall	2	4	3	8	24	9%	9%
Bed3	2.6	3.5	2.4	9	22	10%	8%
Bath	2.6	1.8	3	5	14	5%	5%
Toilet	2.6	1.1	2.7	3	8	3%	3%
Pantry	1	2	3	2	6	2%	2%
			TOTAL	92	267		



Ability to Retain Heat

Surface area of the room with major retention issues

<i>Areas in Room that could be better sealed or insulated</i>					
Location	Length	Width	Total m2	Action	Status
Ceiling	3.6	3.6	12.96	Insulate	Done
Window	1.7	2	3.4	Thick Curtains	
Floor	3.6	3.6	12.96	Insulate	
Door 1	2	0.8	1.6	Seal for the winter	Done
Door 2	2	0.8	1.6	Thick Curtains / Better Door	
Vent 1	0.2	0.1	0.02	Seal	
Vent 2	0.2	0.1	0.02	Seal	
Fireplace	0	0	0	No action required - heater in place	
		TOTAL	32.56		
TOTAL SURFACE AREA OF ROOM			69.12		
% of Surface with major issues			47%	**Note that this figure ignores the walls	



Thermostat Settings

Selection Knob – we try to keep it at around 3 (max is 7)



Behaviour of Occupants

It's okay to have a beanie and a jumper on in winter?



Some quick fixes

Seal a doorway for winter – 8 screws



Some quick fixes

4 bags of insulation



Some Results

My rental house, 3 people, no RWWT, no PV, 0 star

Electricity 93% less than average

Water 87% less than average

Gas 76% less than average (pre insulation / gap sealing)

Waste – bins never get put out

And there is heaps moreanother time.



Applied on a Building Scale



- Dripping Taps, Open Doors, Lights left on, etc.
- Last year our town hall saved
 - 561,000 MJ of Gas
 - 794,000 L of water
 - 272,000 kWh of electricity



The Canary in the Coal Mine

Supermarket toilet rolls

- 2 shop mini survey
- 45m² of shelf space
- Only 1.2% is recycled



SCAN 8

Climate Change – What would you do?



“No nation is immune and every nation has a responsibility to do its part. In Australia it means longer droughts and more wildfires. The incredible natural glory of the Great Barrier Reef is threatened. Worldwide this past summer was the hottest on record.”



Individual Scale Problem Solving

The TOP 10 things you can do to take action right now include:

1. **Switch to Renewables** or buy green energy
2. **Zero Waste** and cut down on chemicals, fuel and poisons
3. **Zero Carbon Transport** walk, cycle and use public transport - avoid cars and planes
4. **Switch off** and be energy efficient, replace inefficient lights and appliances, insulate, save water, use less heat and less air conditioning
5. **Plant Trees** and help restore the balance
6. **Avoid Shopping** and buy locally grown organic food without packaging
7. **Don't Eat Meat** switch to a predominantly vegetable diet
8. **Stand Strong** use your voice to make polluters pay
9. **Support the Solutions** donate and provide voluntary goods & service
10. **Stay informed** find out what's going on and stay up to date



Global Scale Problem Solving

Switch to Renewables

- Create massive wind & solar farms
- Close 1,000 coal fired power stations
- Build a wind turbine in every town

Zero Waste

- No more waste, use everything

Zero Carbon Transport

- Remove inefficient cars
- Only essential flights

Switch Off

- Ration Electricity
- Retrofit every building



The TOP 10 on a global scale

Plant Trees

Dramatically reduce deforestation & logging
Maximise Soil Carbon

Avoid Shopping

Global scale 'no shopping' program

Don't Eat Meat

Reduce Consumption of high emission protein

Stand Strong

Capture or burn methane
Carbon Capture & Storage?
Geo-engineering?



The TOP 10 on a global scale

Support the Solutions

Actively assist those groups that are working on solutions with your time and / or \$\$

Stay Informed

Part of what you are doing right now!

One other quick thing that's worth thinking about

Global Population = 7,276,655,662

223,000 extra people every day

Over 81 million each year



Here's something I did

man vs suburbia
life on the edge of the middle

LIFE MVS EOL HOUSE BUBBLE OFFICE

home campaigns petitions philanthropy planets reality myhouse contact

welcome to man vs suburbia

This site is dedicated to busting through the myths related to living simply in a world that demands complexity. The problem and the solution are complex simply because we made it that way. Most people will find an answer to an environmental problem, will come up with the answer straight away. In contrast, most adults will apportion blame, place responsibility on someone else's shoulders and then plead ignorance, talk about jobs and/or the economy or deny that a problem even exists.

Could you do the 52 week challenge?

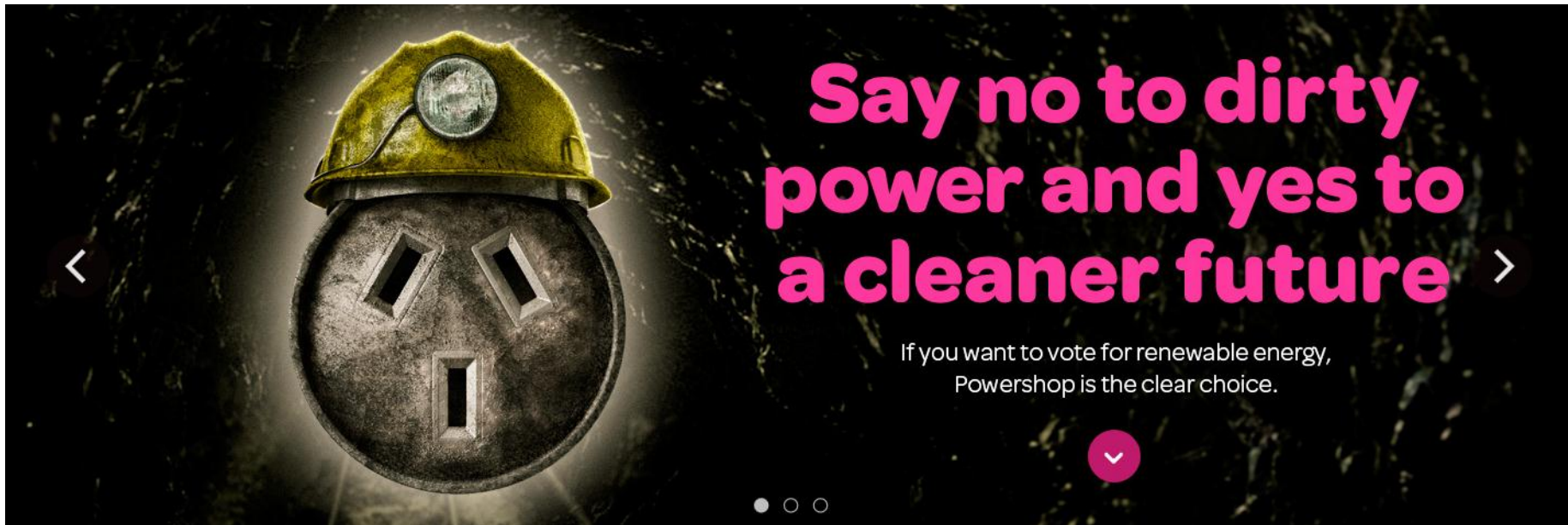
simple stuff made difficult

I reckon that we have two real challenges on our horizon. The first is climate change which is already happening and the second is the system collapse. Both of these problems are alarming, both are real and

- 52 separate challenges over 1 year
- Unlimited Free Entry / No pre-requisites
- Would you do this?



Will you take some action?



The Powershop campaign is being run by GetUp & Planet Ark – it is an easy way to make a difference and to take a stand against dirty power.



What about this?

Please don't eat me!



Or, maybe this?

We know this uses a lot of fuel and damages our atmosphere.



Think Forward, Think Different

Can you change your thinking?

What action will you take?

One (quick) step at a time – we have a lot to do and little time to waste.

Thank you.

