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Department of Transport

Living Smart Households: Closing the Attitude – Behaviour gap on household water use

1. Background (Water use and behaviour change)
2. Living Smart program (Key components)
3. Monitoring and Evaluation (Did it work?)
4. Conclusions and next steps



It's how you get there that counts

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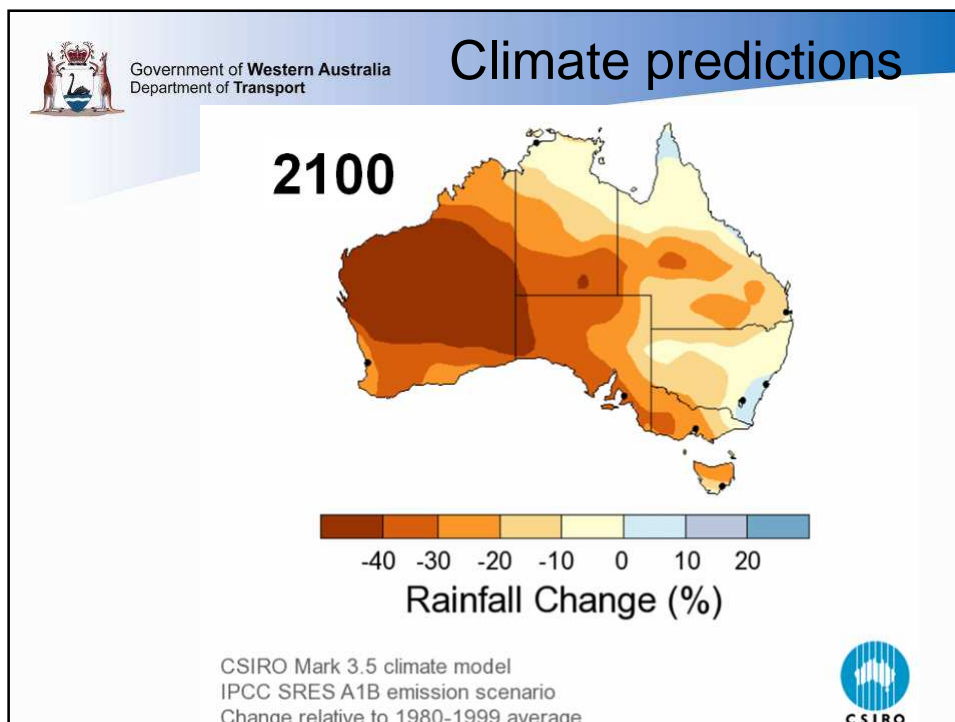
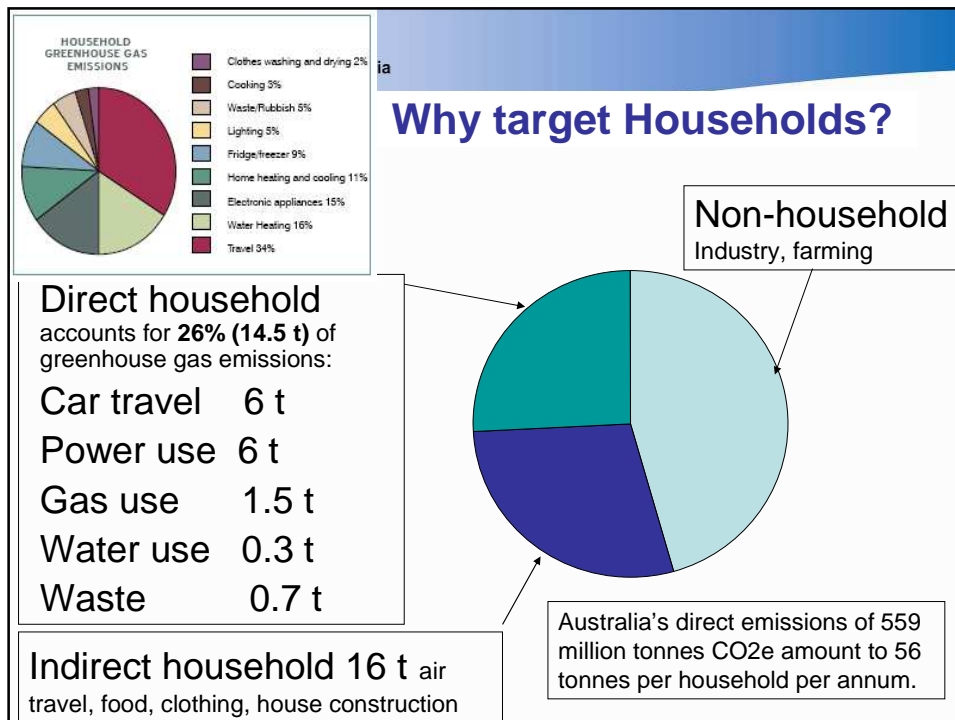
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Acting on climate change



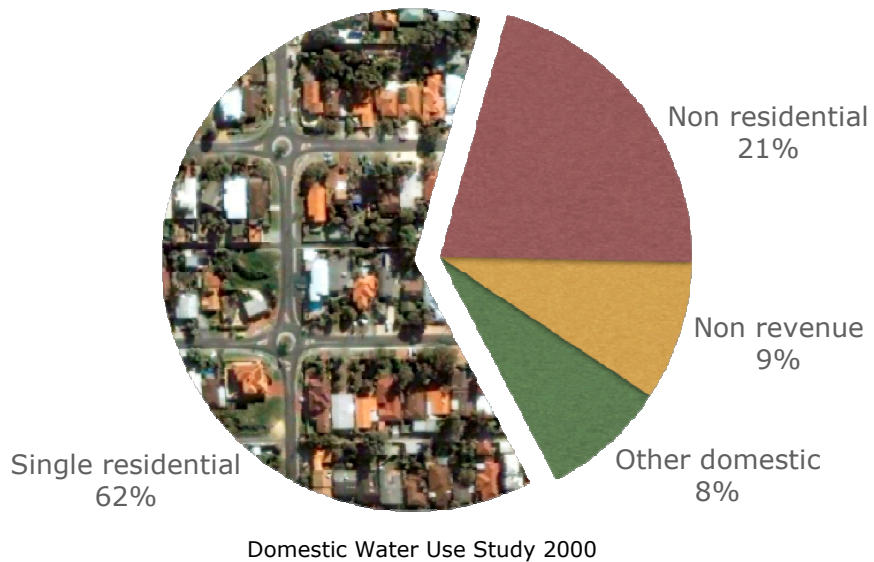
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1. Background (Water use and Behaviour Change)

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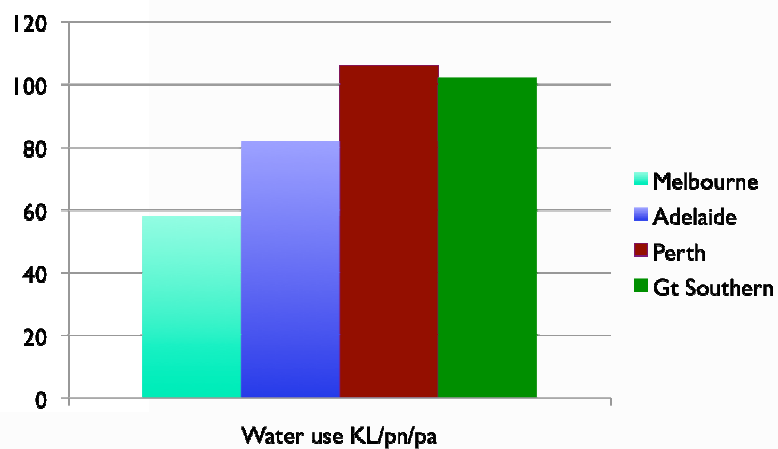


Why target household water use

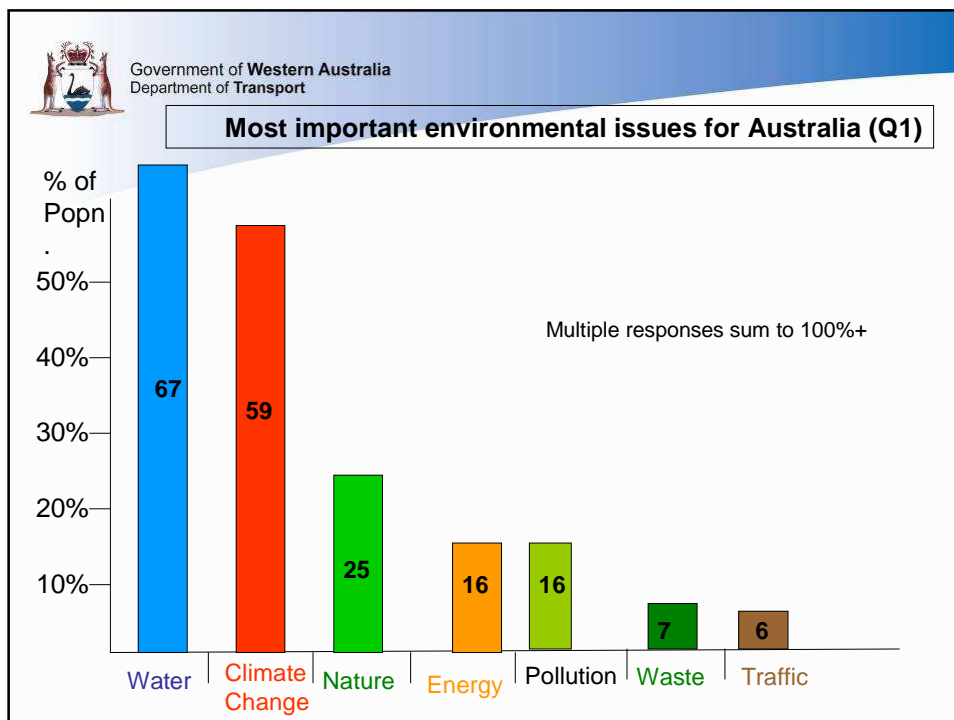


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How WA household water use compares



Slide 6



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What do you currently do (on Climate Change)? Q7a-d

Energy:		Water:	
Switch off lights	25%	Grey-water/ collect it	16%
Turn off standby	19%	Short Showers	15%
Use CF globes	17%	Waterwise Garden	12%
Solar hot water	10%	Water saving appliances	13%
Green Power	2%	Rain water tanks	2%
Waste:		Transport:	
Recycling	52%	Walk	29%
Composting	9%	Trip chain/ car pool	26%
Choose less packaging	9%	Public Transport	11%
No plastic bags	3%	Cycle	6%

Pro environmental attitudes are insufficient for behaviour change

Which messaging influences action?

Door hanger message	Outcome (for energy use)	Reaction
Switch off to save money		Recall message
Switch off to reduce pollution		Recall message
Join your neighbours by switching off		Don't recall message

Collective messaging influences action

Door hanger message	Outcome (for energy use)	Reaction
Switch off to save money	No change	Recall message
Switch off to reduce pollution	No change	Recall message
Join your neighbours by switching off	Reduced use	Don't recall message

Information alone is insufficient for behaviour change

Are we rational? Do we want to save money?



We are social (heart) beings first and we respond to the values of others through 'social contracts' (hands)

Collective concerns – an emerging market?

In Western Australia:

12% have done and 69% are prepared to 'pay more for a greener and more fuel efficient car'

Research for Woolworths shows that consumers are prepared to pay around a 10% premium for eco-products.

There is net support (48% in favour and 27% opposed) for 'a Government policy to require a level of energy efficiency before a house is sold or rented (costing some home owners \$5,000)'

We want to 'do/ buy the right thing'

So ...

- Price and Information do not influence demand much

- Attitudes do not lead directly to behaviour

But ...

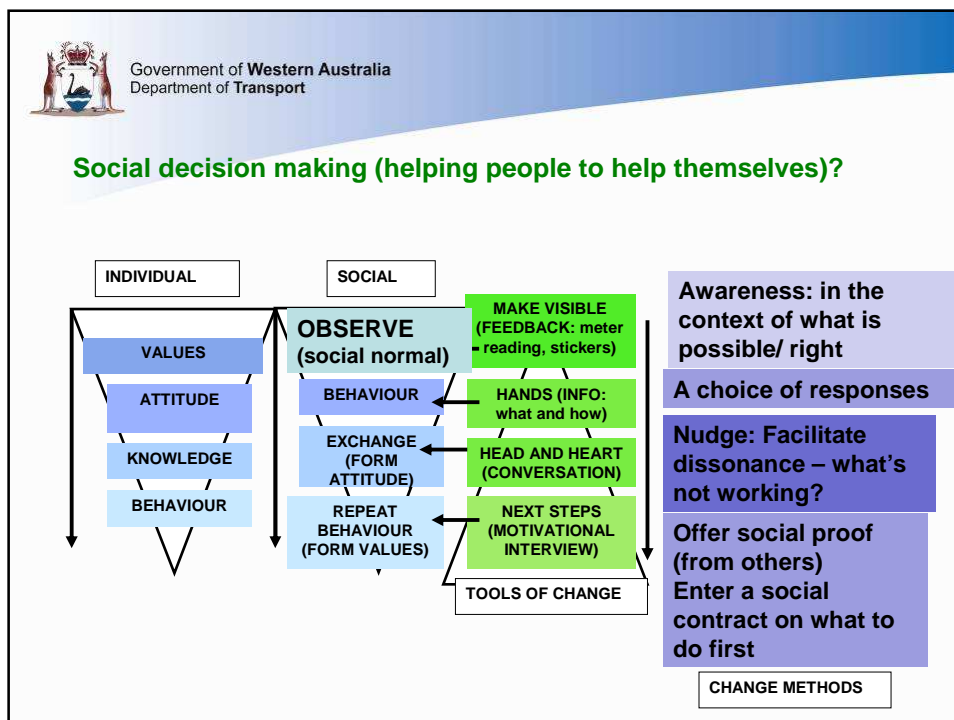
- We respond to conversations ('social contracts')

- Act collectively (to do the right thing)

- Want rules and restrictions

- Buy/ do the same things as those around us

- Choose to pay more for 'green' products





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2. Living Smart Program (key components)

Australian Water Association (WA) – Water Efficiency Award Winner 2010



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What is Living Smart?

- A program to support and empower households to make changes such as:
 - switching off standby power
 - changing one car trip per week
 - installing water / energy saving devices
- This support includes
 - coaching conversations
 - information,
 - rewards,
 - referrals,
 - home audits, and
 - workshops and courses.



The Living Smart Program – How it works

1. Engagement by letter

May

2. Active choice of information

(Energy /Water, then Travel / Waste)

3. Motivational phone call

June

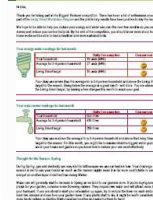
4. Information Delivery

June and Sept

5. Follow up coaching and referral to Home Assessments

(5 times)

Aug to April



Project Services – ‘Interactive’

- **Meter Readings with ‘interactive’ regular calls for about 6,000 (50% of) households**
- **Home visits including CF globe installation, water heater adjustment, referrals to a waterwise retrofit program and ‘eco plans’ for about 3,250 (27% of) households in the project**





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3. Monitoring and evaluation (Did it work?)

Evaluation Plan

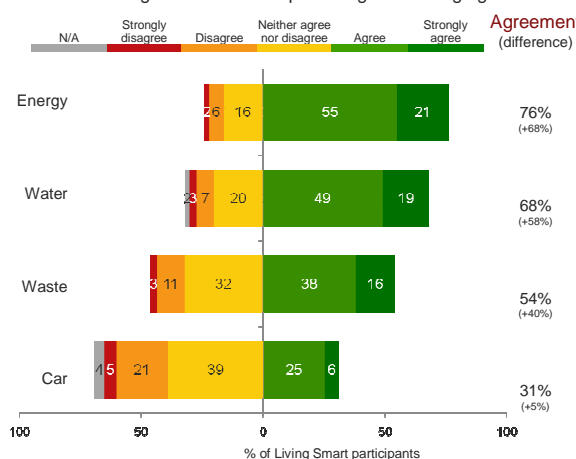
Process measures:

- Ordering info
- Interest
- Uptake of meter reads
- Uptake of assessments
- Workshop participation
- Self report (Quotes)
- Globe installations
- Showerhead installations
- Quality survey

Indicator	Aim	System measure	Sample measure
Electric use	Reduce 10%	Suburb data	Meter reads (participant and control)
Gas use	Reduce 10%	Suburb data	Meter reads (participant and control)
Water use	Reduce 10%	Suburb data	Meter reads (participant and control)
Waste	Reduce 10%	Suburb data	
Recycling	Increase proportion of total waste	Suburb data	
Car use (km)	Reduce 10%	Bus ticketing (proxy)	Random sample diary of target and control

The programme had the biggest impact on household energy and water consumption

A smaller proportion of households reported changes in car use compared to changes in energy, water and waste. This reflects the greater barriers reported against changing car use.



The largest changes were in energy efficiency

n=225

Q. Now thinking about the overall Living Smart programme & the impact it has had on your household. To what extent do you agree or disagree that your usage of the following has been reduced as a result of the information you have received from the programme?

* Difference calculated by subtracting agree/strongly agree from strongly disagree/disagree

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21

With respect to water usage, participants believe they are undertaking a wider range of water efficient practices as a consequence of the programme

The biggest water efficiency behavioural change has been the reduction in shower times.

	Before	After	Difference
Take short showers/use timer	26%	56% ↑	30
Efficient garden irrigation	46%	70% ↑	24
Install a waterwise showerhead	15%	30% ↑	15
Only run washing machine with full load	14%	23% ↑	9
Only run dishwasher with full load	8%	12%	4

n=225

Q. What actions were you taking before the Living Smart programme to reduce your use of water? What actions are you taking as a result of the Living Smart programme to reduce your use of water? ↑ indicates significant difference between before & after

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Households reported savings of:

- ↓ 2.7 kWh/day = 940kg CO₂e- pa saving from energy use (9% saving)
- ↓ 50L/day = 23 Kg CO₂e- pa saving from water use (8% saving)
- ↓ 3 km/day = 370 Kg CO₂e- pa saving from car use (5% saving)
- ↓ 0.4 kg/week = 17 Kg CO₂e- pa saving from waste disposal (2% saving)

TOTAL annual savings per participating household of :

1.1 tonnes CO₂e-

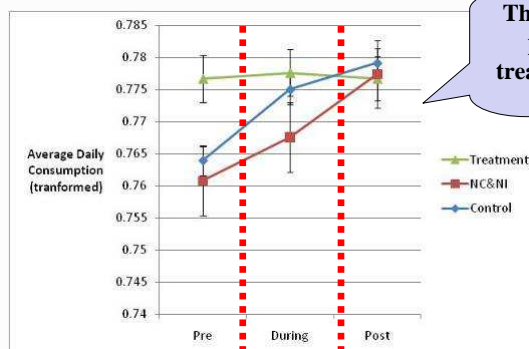
19,000 litres of water

\$200 lower electricity bills

1,000 km less car use



Water Meter Readings - Treatment vs Controls: Joondalup



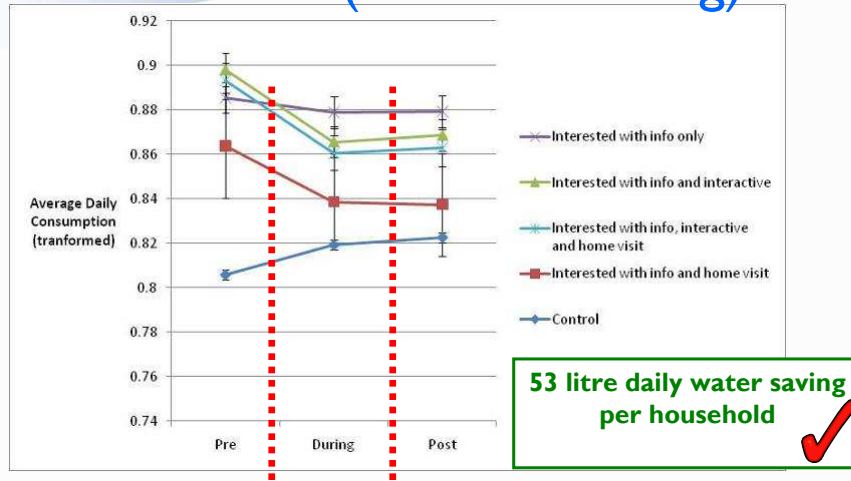
This translates to a 23 litre per day saving for the treatment groups relative to controls

Data on 2,500 participating and 7,000 control households



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Mandurah (water metering)

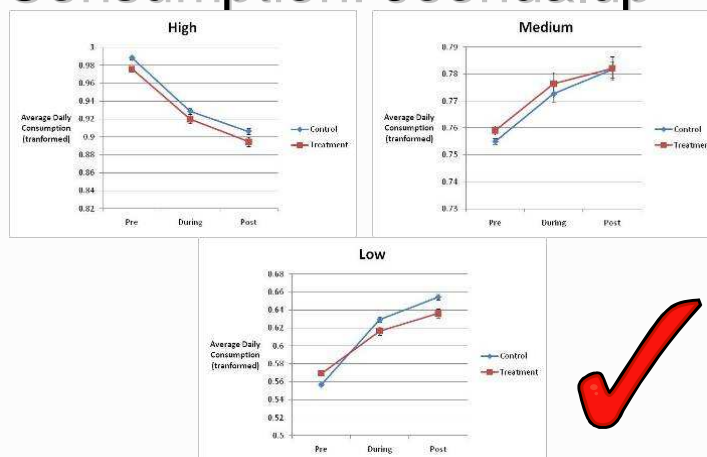


Data on 4,200 participating and 2,000 control households



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Treatment vs. Control by Consumption: Joondalup



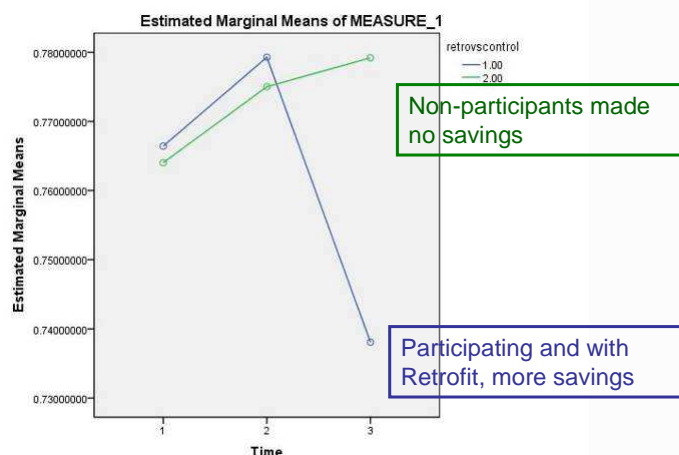


Water data conclusion...

- Reliable reductions in water usage
- Savings pre-post (Mandurah):
 - 53 l per hh day
 - July to Feb moderate/ high use period
 - N= 4,200 hh Target/ 2,000 hh Control
- Savings pre-post (Joondalup):
 - 23 l per hh day
 - April to Nov low use period
 - N= 2,500 hh Target/ 7,000 hh Control



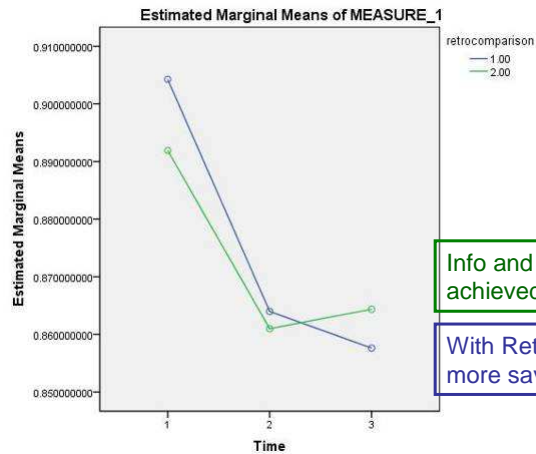
Retrofit vs Internal Control: Joondalup





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Retrofit vs non-retrofit interactive: Mandurah



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Similar results for energy
savings ...

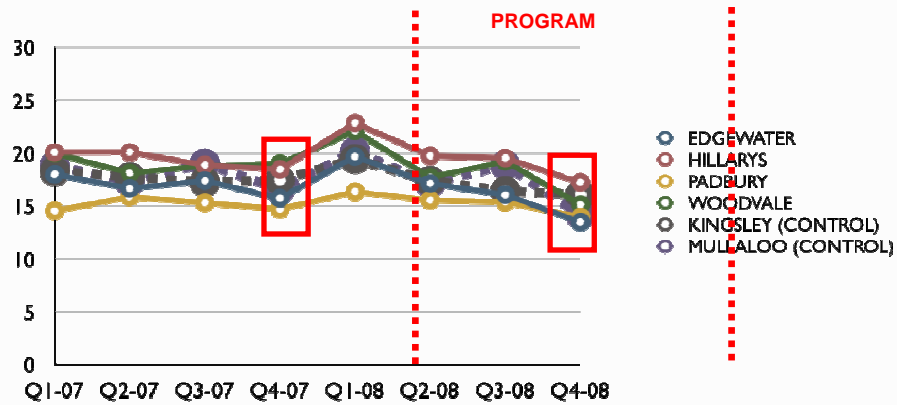
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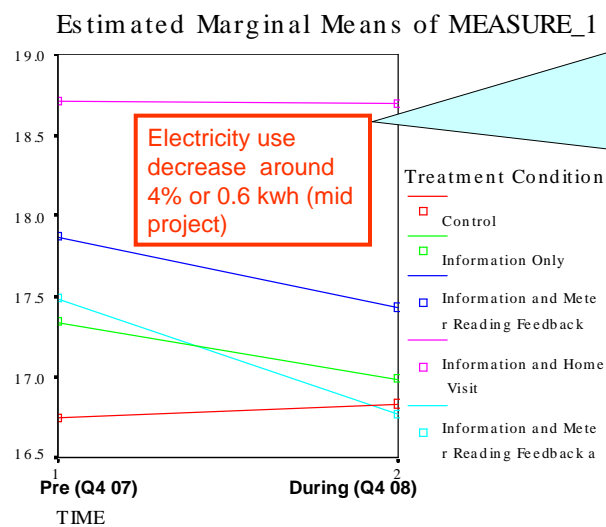
illustrative example

Joondalup: average kwh per day



analysis 1c – electricity use/hh/day (Q4 07 v Q4 08)

treatment level: Joondalup (mid project)



Hard (meter reading) data is consistent and logical: the more personal the contact, the greater the change



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Electric data conclusion...

- Reliable reductions in electric usage
- Savings pre-during (Mandurah):
 - 0.4 kWh per hh day ✓
 - Q4 pre to Q4 during moderate use period
 - N= 6,400 hh Target/ 5,300 hh Control
- Savings pre-during (Joondalup):
 - 0.6 kWh per hh day ✓
 - Q4 pre to Q4 during moderate use period
 - N= 3,700 hh Target/ 4,100 hh Control



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**Similar results for travel
savings ...**

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Pre and Post Travel survey results

Trips/pn /pa	Before	After	Change
Walking	87	101	+ 16%
Bicycle	17	24	+ 41%
M'Cycle	3	3	-
Car Driver	697	662	- 5%
Car pas	275	260	- 5%
P T'port	39	44	+ 13%
TOTAL	1118	1094	- 2%

= -1.7km/car/day
or -3km per
household/ day
(4km per
participating hh)

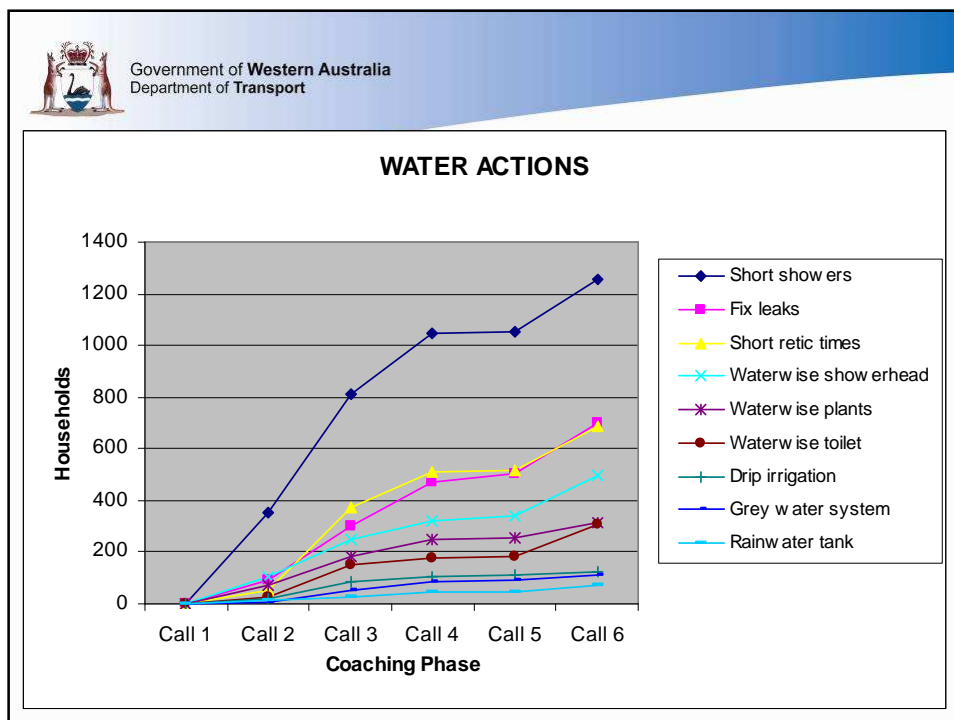
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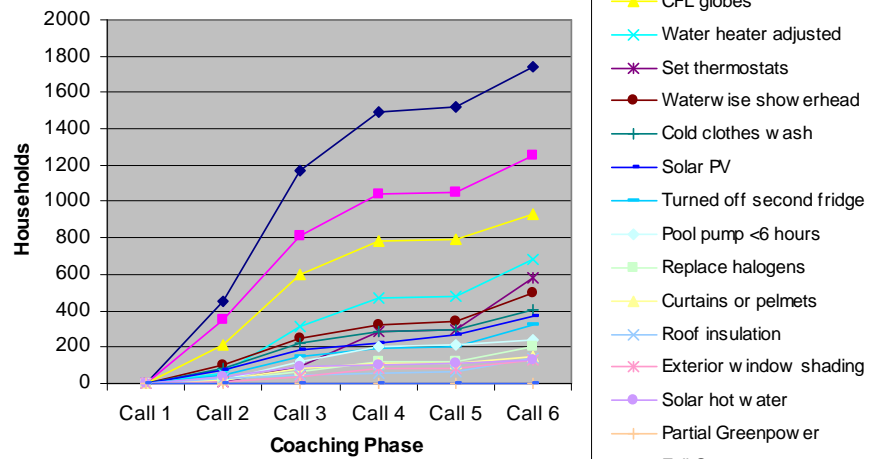
Living Smart 2 (Perth Solar City) tracking for similar results

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ENERGY ACTIONS



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4. Conclusions and next steps

4. Conclusions and Next Steps

- Living Smart was well received by households
- Multiple behaviour changes were achieved
- Self reported changes of 2.7 kWh of energy reduction per household per day at the end of the project (-9%)
- The meter reading data records a 0.5 kWh reduction in electricity only use at the mid point of the program
- Meter data records 15 kL of water saving (-8%)
- Travel diary reductions of 3 km/day/hh (-5%)
- The program saved 1.2 tonnes CO₂e per active household - with an estimated 10 year abatement cost of \$25 per tonne (\$2.2m to reach 8,000 active hh)



what was the annual impact?



8250hh save 10,100
tonnes CO₂
= \$247/ tonne (\$25)

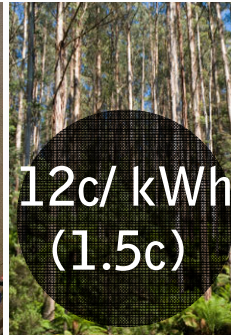
OR



9c/ km
(1c)



\$6.94/ kL
(\$0.75)



12c/ kWh
(1.5c)

Value for money (10 year)?



It's how you get there that counts

Why is behavioural demand management on the agenda?

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- The Stern Review identified as a main policy response
- "... *informing, educating and persuading individuals about what they can do to respond to climate change Dangerous climate change cannot be avoided solely through international agreements; it will take behavioural change by individuals and communities, particularly in relation to their housing, transport and food consumption decisions.*"

The Garnaut Review Report (page 409) acknowledges Western Australia as a leader in community education:

"Information and education programs have strong synergies with an emissions trading scheme, as they can help individuals to identify the energy and other costs affected by a carbon price and respond to it..... Basic media campaigns and pamphlets are often neither targeted nor tailored and there is considerable evidence that their effectiveness is limited ... Programs need to be targeted and tailored to ensure that the right individuals receive suitable information. This seems to be done particularly well in the Western Australian Government's TravelSmart program."

4. Conclusions and Next Steps

- Collect and analyse Gas and Electric data post project (For Joondalup and Mandurah Pilot Project – 8,000 active households)
- Commence evaluation of Perth Solar City Project (5,000 active households)
- Conduct Socio-economic analysis of all project results
- Develop Business Case for separate (eg. Water Smart, TravelSmart etc) or combined (Living Smart) delivery models
- Behaviour change is surprising, good value and can be 'joined up'



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Acknowledgements

- Living Smart is a community owned brand (founded by the Southern Metropolitan Regional Council, City of Fremantle, Meeting Place and Murdoch University) to support a suite of programs developing capacity in community sustainability.
- The Living Smart program for households is being managed by the Department of Transport.
- Many individuals and agencies have also contributed to the development of the Living Smart program design. These include Water Corporation, Alinta Sales, Synergy, Office of Energy, Office of Climate Change, City of Joondalup, City of Mandurah, SMRC, EMRC, Western Power and the Australian Government.



Further Information

- www.transport.wa.gov.au/livingsmart
- www.livingsmart.org.au



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