

FACT SHEET

Reducing energy and water use –what makes the biggest difference

Summary of findings from *Determinants of residential energy and water use in Sydney and surrounds - Regression analysis of the 2008 and 2010 IPART household survey data*

December 2011

IPART released a report on the factors that help explain why some households use more energy and water than others, even though they have the same number of people and the same income. This is available at:

http://www.ipart.nsw.gov.au/Home/Industries/Research/Reviews/Household_Survey/Determinants_of_residential_energy_and_water_consumption

Our analysis is based on our household surveys in Sydney, the Hunter, Gosford and Wyong about energy and water use.¹ We collected information about each household and what they use energy and water for, as well as information about their electricity, gas and water consumption.

From these surveys we identified factors that have the biggest impact on household energy and water use. By knowing what these factors are, households that want to reduce their bills can more easily identify where they should make changes.

What makes a difference to energy use

Swimming pools, hot water systems, 2nd fridges and spas use a lot of energy. Air conditioners, clothes dryers or even dishwashers can also use a lot.

There is a big difference between the amount of energy consumed by households that use these items and those that don't (Table 1). For example, a household with a swimming pool will spend on average \$620 per year more on energy than a household that doesn't but is similar in other respects. This is a lot compared with the typical Sydney household's energy usage bill of about \$1,500 per year.²

¹ The Sydney survey was done in 2010 and the Hunter, Gosford and Wyong surveys were done in 2008.

² The usage bill means the amount you pay for the electricity or gas you use (ie, excluding fixed charges and rebates).

Comparing hot water systems, off-peak ones³ are generally the cheapest to use, then gas ones. Standard electric ones tend to be the most expensive.⁴ And households pay less for hot water if they have solar hot water that is electric or gas boosted. But anything that reduces how much hot water you use - such as having shorter showers or washing clothes in cold water - means you will pay less.

Some low-income households have only 1 or 2 people but use quite lot of energy. One reason is because many of these households live in fairly big houses, which can be difficult to heat or cool. Also, big houses usually have big hot water systems. And often these households have things like an old 2nd fridge and a big air conditioner. Some have a swimming pool. All of these things add up to higher energy bills.

Table 1 Impact of selected uses on energy bills and electricity consumption

Type of use	Contribution to energy bill ^a	Annual electricity use
	\$ pa	kWh pa
Swimming pool	620	2,520
2nd fridge ^b	290	1,171
Spa	244	959
Air conditioning (average use) ^c	163	691
Dryer, used once per week	77	290
Dishwasher, used once per week ^b	77	309
Solar hot water (electric boosted)	-174	-1,397
Electric hot water	Not available ^d	2,762

^a Energy bills are calculated using regulated electricity and gas tariffs for 2011/12, excluding fixed charges and rebates.

^b Note that the figure identified in our analysis is high compared with amount that technical information suggests is reasonable – it may show consumption for other uses too. This applies in particular to dishwashers.

^c In Sydney the average use is about 280 hours per year, which is equivalent to 5.5 hours per day, 2 days per week for 6 months of the year. The amount of electricity used per hour is 2.5 kW.

^d The cost of electric hot water will depend on what type of system it is and whether a standard tariff or an off-peak tariff applies. The full report provides further information.

Note: Linear regression analysis of Sydney (2010) household survey data.

³ An off-peak hot water system is switched on (at night) and off (early in the morning) by the electricity company. It is bigger than a standard hot water system (and so uses more electricity) but is cheaper to use because you pay a much lower price for the electricity it uses.

⁴ Whether or not a gas hot water system is cheaper than an electric one depends on gas prices compared to electricity prices. These could change in the future. Also, our cost comparisons don't include the fixed charges for gas or electricity.

What makes a difference to water use

Indoor water use is affected most by the number of adults in the household (adults tend to use more water than children), since most water that is used indoors is used for personal hygiene (eg, showering and flushing toilets) and for washing clothes.

Outdoor water use is most affected by swimming pools and watering the garden, especially with a sprinkler. Outdoor use is also affected by climate - households in inland areas use more water outdoors than similar households living on the coast.

Households that use water outdoors can use quite a lot more water than households that don't. For example, a household that lives in a coastal area and waters the garden with a sprinkler will pay on average \$83 per year more than a similar household in the same area that doesn't water the garden at all (Table 2). This is a lot compared with a typical Sydney household's water usage bill of about \$370 per year.

Households use less mains⁵ water if they use dual flush toilets, a rainwater tank and/or grey water. And 'Water Wise'⁶ households in Sydney on average use at least 10% less mains water than other households that are otherwise the same (Table 2).

Table 2 Impact of selected uses on water bills and consumption^a

Type of use	Contribution to water bill ^b	Annual water use
	\$pa	kL pa
Per adult (other than 15 years)	78	37
Per child (15 years or younger)	42	20
Washing machine - used once per week ^c	17	8
Dishwasher - used once per week ^c	6	3
Have a swimming pool	69	33
Use sprinkler	82	39
Water garden with hose, 700m ² plot	48	23
Inland and use water outdoors	25	12
Per dual flush toilet	-11	-5
Have rainwater tank	-25	-12
Use grey water	-27	-13
Water Wise	-59	-28

^a Detached houses and mains water only.

^b Calculated using Sydney Water's 2011/12 usage charge of \$2.10 per kL, excluding fixed charges and rebates.

^c Note that the figure identified in our analysis is high compared with the range suggested by the technical data - it may show consumption for other uses too. This applies in particular to dishwashers.

Note: Linear regression analysis of Sydney (2010) household survey data.

⁵ Mains water refers to water delivered through a network of pipelines by a water service provider.

⁶ 'Water Wise' households have water-saving fixtures like low-flow shower heads, take shorter showers and generally use water sparingly.

Where to find more information

- ▼ The NSW Home Power Saving program – www.savepower.nsw.gov.au
- ▼ IPART's Consumption Comparator – available from our website, allows you to compare your own household's annual electricity, gas and/or water consumption with other households and to identify possible ways of reducing your bills – http://www.ipart.nsw.gov.au/files/efd24b50-a161-4530-aa68-9fc000e8bb87/Determinants_of_demand_-_Consumption_Comparator_-_Web_site_version_-_APD_-_21_December_2011.xls