

A SURE Energy Case Study

An Energy Measuring and Saving Exercise in an Otley House

This study and report was designed and written up by a member of SURE who is committed to helping people save money on their energy bills, 9th December 2008



This presentation will represent the usage of power in our house over a period of 10 days

I will divide it into three short sections:

1. Large or white goods i.e. Fridge, freezer, washing machine, tumble dryer and dishwasher
2. Lights and other equipment around the house
3. Conclusions

There are two assumptions: 1. 28 day period 2. 15p/ KWatt/hour

I would like to say at the start that, all the times recorded here were as frequent as possible, purely for accuracy. The reason I did this in this way was to try and separate fact from fiction and ask the question – what actually does make the difference in the home??

Part 1

First – we have the washing machine rated at 3 Kw. It runs for around 1 hour 30 minutes so what does it use?

The graph (1) you have there shows how it is working and in fact over the time it actually uses only about 927 watts equivalent to around 14.0 pence. The machine heats initially using just over 40 watts per minute and then tops up until the rinse and spin when it climbs back up to around 11 watts per minute.

Likewise the dishwasher (2) also 3kw and running for two hours and twenty five minutes only heats the wash (11 minutes) at around 40 watts per minute with the rinse with the heating cycle at the end also using 40 watts per minute but only for 18 minutes and only 1200 watts over the whole cycle equivalent to around 18.0 pence.

The tumble dryer (graph 3), also 3kw, is the greedy one in the home, although it still pulses the power to dry the clothes and then uses a small amount of heat to remove the creases. By the end of the 75 minute cycle it actually uses about 1696 watts equivalent to around 25.5 pence and is virtually off in the last 12 minutes. The drum just moving to cool and

untangle. Mmmmm! Don't believe that. Have you tried fishing for a sock from inside the duvet cover??

The bottom line is that you can stay clean, hygienic and keep your quality of life without being overly concerned about cost.

In fact a significant cost is in the tablets or powder you use. A dishwasher tablet is around 12 pence and the washing machine tablet around 20 pence while tumbler dryers, unless you put in scented products in, costs no extra. It pays to shop around.

So what about large equipment. There is no standby on them and except for the fridge and freezer off is off.

However, off is still off on these two as well. The fridge, unless you are going in there every five minutes will only run for around 10 minutes every hour. The same for the freezer. Did you know that the bulb in the fridge can be as large as 10watts . Don't leave the door open !!!

If the rating is, as the one measured, is 110 watts then it uses about 18.33 watts per hour or £1.98 per 30 days. I believe wasted food would cost more as would the effect on the planet of producing it simply to throw away.

Many kitchen items now have a clock or a timer which may sometimes be able to be switched off. However, they do not use a measurable amount of energy – well – not on this meter which is pretty sensitive. So you have to balance whether you leave it or are prepared to reset the thing every time you want to use it.

So – in summary to this section – I do not see the larger items in the house as being the problem.

Manufacturers are very aware of energy saving and are now producing appliances which are extremely efficient.

The things that catch you out are the little ones and the ones that maybe never occurred to you.

I tried to get everything into the wash at the same time. For some reason that is a NONO. Something about white and dark wash, nylon and cotton. Tumble drying – I shrank my wife's best sweater. So save but do it with care

Part Two

At the end of the last part I made the remark that the little things can catch you out so in this bit I will try to highlight what I found. Some of you will, of course, already have found these things out and I apologise to any of you if it sounds like a grandmother and eggs situation.

The lights, TV, equipment around the home are another thing entirely. We all know you can get light bulbs which save energy. The problem has been in the past that they do not fit your light fittings. That is changing. There are a greater variety of bulbs now available.

I have started to use 11w bulbs in place of 60w and am looking at the use of quartz halogen replacements. Mind you, I have changed as many as possible but I still have one or two that I cannot fit them into.

So – what is the answer? Switch off the ones you don't need. At this point it is uneconomical to go around changing all the fittings to suit the bulbs. Mind you – there may come a time.

(As a note to this. We are hoping to have a display of energy saving bulbs on our Energy Day so if you come along to that I am sure we can give you something to think about.)

I found some little surprises in doing this exercise. I was happily running around switching things on and off when I realised that the readings were not really adding up. Why did a 60w bulb or a cluster of three actually give me a rise of 200 watts. This happened for lights and other equipment. It turns out there is a surge when you switch on. No wonder bulbs always go pop when switching on and not when running.

The other was finding that the Central Heating boiler uses about 120w when running and running hot water from a combination system uses 45w

Anyone who has a computer may also have a voltage backup system to prevent a crash if the power goes off. We have one on one of our computers.

I must add that although we have three computers it is because I work from home. I have now found that if the pack is constantly running even when the computer is off it is using power to top up the battery. In our case 110 watts per hour.

I am, or was a bit lazy and tend to like a soak in the bath with a book so lights were on in the bathroom for quite a while. I am not stopping that habit so I made changes elsewhere.

I did try to cut the use of the washing machine but I was banned from putting in the dark with the light wash. Can't think why!!

A cautionary note – When deciding whether to put something off and not leave on standby. Some HD recorders will clear the memory when switched off so you will lose your recording unless it is transferred to a disc.

Sky at least – and I cannot comment on other suppliers, can be switched off but it sometimes scrambles the memory. This has to be reset. If the box stops working and you do not have their insurance at around £5 per month it will cost £70 to get them out to fix it. Some electronics have clock/timers which will need to be reset if off too long. This can be very inconvenient.

The good thing seems to be and probably will be hotly disputed, the amount of energy modern electronics use is miniscule now.

In the last part after questions, I will summarise where I got to and savings I have managed so far.

Part Three – The savings and summary.

I found that the most significant savings were in the items I would not have thought about. I should have, but didn't seriously consider the computers and battery back-up

In sort of reverse order – We now put off the battery backup on the computer so it is only on as long as the computer is on.

This went down from 7200 to 1800 minutes over a five day period and is an equivalent saving of £13.50 per month.

Running the computers only for as long as required saves £7.50 on one and £3.60 on the other.

Television on standby uses 60w, a lot more than I expected, and was like this for around 18 hours per day so is now off so saving £4.86 per month.

So without sacrificing our comforts and our lifestyle to any serious extent we manage now to save, thanks to this little gadget a total of

£29.46 on our original electricity direct debit of £75 per month which is around 39%

These figures are as accurate as I can make them and based on what we used in our ignorance of what was happening in our household.

It is something we will continue to do without losing our creature comforts.

Through any cost cutting exercise it is essential to know what you can safely switch off.

You will all know which lights you can safely leave off.

The bigger items are really not the issue under normal circumstances although if you have a large and or young family there will be more pressure to try and save.

So as said previously – be comfortable, stay healthy and be safe while saving.

We and the planet deserve to have a good life . Lets also make it a less expensive one.