



Saving Power at Work – Understanding your Office’s energy consumption and energy bills

The four basic steps to reducing your power bills are:

- Record **DATA** (that is, your costs and consumption)
- Set **TARGETS** for improvement
- Track **PROGRESS** to your targets
- Give **FEEDBACK** to your colleagues on how the organisation is going

You can do all of these four steps through analysing your power invoices, as these tell you how much power your organisation uses and how much money the organisation is spending on energy consumption. Once you understand what your invoices are showing, and follow the 4 steps above, you will be well on your way to reducing your organisations energy consumption.

What are the basic terms on your energy bill?

Some of the basic terms and concepts used to describe energy generation and consumption are:

Unit	Description
Watt (W)	Power is the term used to describe the rate at which energy is used, measured in Watts (W). 1000W = 1kW
Kilowatt-hours (kWh)	Electricity consumption is measured in units of kilowatt-hours (kWh). 1 kWh means 1 kW of power being used for 1 hour.
Electricity Daily Average (kWh/day)	Average daily consumption is how much power is consumed in one day, calculated by dividing the total consumption by the number of days in that bill period. Your invoice will show this compared to the previous invoice, the same time in the previous year and to the National average.
Greenhouse Gas Emissions (kg CO2-e)	The amount of carbon dioxide equivalent emitted as a result of energy consumed. For every kWh of energy used, 0.75 kg CO2-e is produced (i.e. through the burning of fossil fuels). Greenhouse Gas Emissions factors are different for every state/territory, depending on how the energy is produced. In the NT the greenhouse gas coefficient is 0.75 kg CO2-e per kWh

What is consumption and costs?

Energy consumption is expressed in kWh. This is how much power you are drawing from the electricity grid. For each kWh you consume you pay Power and Water Corporation \$0.23 (the is the commercial rate as at 2011). This price rises each year on 1 July.

NB: Price tariffs will vary for community organisations for Alice Solar City customers.

An example of energy consumption and costs is given below:

1 x 3.5 horse power (hp) non-inverter air conditioner running for 8 hours per day at 23.5°C

$$\begin{aligned} &= 18 \text{ kWh/day} \times \$0.23 \\ &= \$4.14/\text{day} \times 5 \text{ days} \\ &= \$20.70/\text{week} \times 52 \text{ weeks} \\ &= \$1076/\text{year} \end{aligned}$$

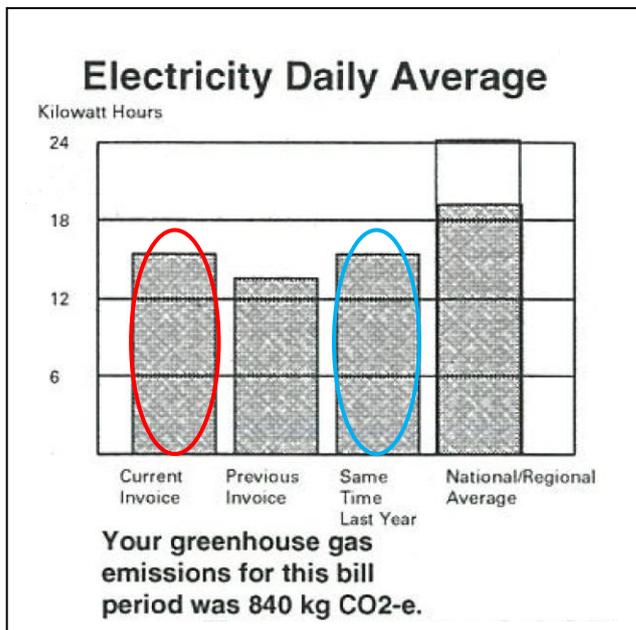
If there are 3 x 3.5 hp ACs running for the same time:

$$= \$3229/\text{year}$$

The more energy you use in your workplace, the more money you will spend on your energy bills. The term 'energy efficiency' means using less energy for the same outcome. For example, an inverter air conditioner run for the same period quoted above will cost approximately 30% less on your energy bills. Refer to COOLmob's other factsheets on 'Saving Energy' for more ideas.

What to look for on your invoice – *Electricity Daily Average Graph:*

On the first page of your office's PowerWater invoice you will see the following graph:



How to read your Comparisons Graph



This shows how many kWh/day you consumed during the current quarter

This shows how many kWh/day you consumed during the same quarter in the previous year

TIP: Use this comparison to see whether you consumption has increased, decreased or remained stable

The Invoice gives you information on:

- your current daily consumption;
- the daily consumption on your last invoice;
- the daily consumption in the same period last year (see the key above);
- the daily average compared to the regional daily average consumption;
- the amount of greenhouse gas emissions that were produced as a result of your electricity consumption.

You will usually see fluctuations between adjacent graphs as they are issued in different seasons. For instance, electricity consumption usually increases around October and remains high until around March, depending on how hard your air conditioner has to work. Consumption can be drastically reduced if air conditioning is used less during the dry season.

Look for sharp increases or decreases between years, for example, is the red circle (i.e. the current energy consumption) considerably higher or lower than the blue circle (i.e. the energy consumption in the same period during the previous year)? If yes, get your colleagues together and ask:

- Was this year hotter than last year? (*and as a consequence we air conditioning more frequently*)
- Were more people working on the weekends, or after hours this year?
- Do we have more staff in our office?
- Do we have more computers or appliances running this year?
- Has the room been well sealed while the air conditioners were used?
- Does the air conditioner need servicing?
- Have the lights or air conditioners been accidentally left on over weekend periods or after hours?

Make these observations routinely (for instance every time an invoice comes in), and as a workplace team ask the questions together. Addressing anomalies in energy consumption is the **easiest** way to discover and implement financial savings from reduced energy consumption.

What to look for on your invoice – Details of Invoice Table

On the second page of your invoice you will see the details of your current invoice in the following table:

POST billpay®		Power and Water Corporation GPO Box 3596, Darwin NT 0801						
ELECTRICITY - WATER - SEWERAGE								Page No.
								2
DETAILS OF INVOICE								
DESCRIPTION	BILLED DAYS	CURRENT READING	PREVIOUS READING	CONSUMPTION (kWh / k L) USAGE X RATE	TYPE	READ TYPE	YOUR ACCOUNT CALCULATIONS AV. DAILY CHARGE	AMOUNT
Service Charges								
Electricity Supply Charge	92	08718	05928	2790 X 0.23	COMMERCIAL	Normal Reading	\$6.97	\$641.70
Service ID:1034158	09/12/2011	09/03/2012		FIXED DAILY CHARGE 92 days x \$0.608600				\$55.99

How to read the back of your invoice

-  This is the number of days in the billing cycle. In this billing period the cycle is between 07/10/2011 to 06/01/2012
-  This is the number of kWh read by PowerWater (this is calculated by taking the 'current read' from the 'previous read').
-  This is the total amount due from electricity usage, calculated by multiplying the number of kWh by the price of electricity (i.e. \$/kWh). The price of electricity at the time of issuing this invoice was \$0.23 per kWh
-  This is the total amount due for the supply charge, calculated by multiplying the fixed daily charge by the number of days

NB: You may have more than 1 meter at your workplace. If this is the case then they will be listed one after the other.

How to use your invoice to set improvement goals

Understanding the information contained in your power invoices is important because you can't reduce what you don't measure. Take these steps to set improvement goals:

1. Choose a 'start date' which corresponds to the beginning of your 'energy efficiency journey' (i.e. the day you begin attempting to reduce energy consumption).
2. Write down what all of the energy reduction measures your workplace can commit to (for example making sure all lights are switched off, air conditioners aren't left on, replacement of lights to energy efficient bulbs, etc).
3. Take out the organisation's past invoices (at least 12 months worth) and write down the total kWh consumed and total amount due (\$) during each period. Be sure to take note of the month and year so you can see how it fluctuates over time. It is good to use a spreadsheet so you can automatically create graphs.
4. Each time a new invoice comes in write down the total kWh consumed and total amount due (\$) in that most current period.
5. Check the consumption on the most current invoice against the figure you noted for the same time in the previous year and ask "Has this increased?"

NB: Use the kWh to calculate reductions because energy prices may increase and so reductions may not be as easy to see, but talk about reductions in dollar figures.

Always remember:

- You may have to spend money to create long term savings, so prepare costings and projected savings over a 2 , 5 or 10 year period. This will also keep staff motivated.
- It may take time for reductions to appear because energy reduction is as much about changing people's behaviours as switching to efficient lights, appliances and computing equipment.
- Use the kWh and dollar figures to motivate your colleagues to change their behaviour. Use the example in this fact sheet to show people how much lighting and air conditioning costs the organisation.
- Always display the information in your power invoice around the office in a simple, clear way.
- If you calculate a reduction make sure you tell your colleagues about it. This should encourage your colleagues to do more (think of it like telling a student to study for an exam, and never giving them their exam score).
- Setting challenges for your workplace may also help motivate staff. For instance, set a goal for a 5, 10, 15, 20% reduction in energy consumption on your next invoice.
- And most importantly, good environmental ethic and attitude around the workplace is just as important as other energy reduction measures you put in place around the office. An example of this is proactively SWITCHING OFF lights, appliances and computing equipment when they are not needed, turning the air conditioning up a few degrees so it isn't using as much power each day or simply showing your colleagues how much energy was used in the most recent quarter.

WANT MORE INFORMATION?

Contact COOLmob on 8981 2532 or visit www.coolmob.org