How can sustainability work for small business?

By John Dale

EXECUTIVE SUMMARY

When small and medium sized businesses generally think of sustainability and energy efficiency, we often think it's something for bigger companies. This white paper is for every business owner who wants to understand what options and technologies are available, accessible and affordable to not only reduce their energy consumption, but save them money as well.

This paper reveals what government help is available, how to get an energy assessment done and examines energy efficient technology such as Wireless Networking and Equipment, Computers, PABX Phone choices, Remote teleworking, video conferencing and Cloud Computing. It also includes a check –list of operational questions to ask yourself.

When small and medium sized businesses think of sustainability and energy efficiency, we often think it's something for bigger companies. After all, how much difference does our little operation make to the world? We can't be expected to lay out the time and cash – can we?

This white paper is about specific strategies small and medium sized businesses can undertake to help reduce their impact on the environment and save money. It doesn't contain strategies that can only be afforded by large corporate firms like data centre virtualisation, computer room air flows and conditioning, building design and lots of things that are really interesting but not very useful for SME's. It includes smart technology ideas and ways to get support from the government to change the way you do business.

Government Help

The Department of Environment and Climate Change NSW's (DECC) new Energy Efficiency for Small Business program is a good way to get an energy assessment of your business. If you spend up to $20 000 on electricity you can get rebates up to $5,000 to approved electrical retrofit upgrades.

Energy efficiency improvements that attract the rebate are: lighting - including skylights, heating, ventilation and air conditioning. Insulation, electric motors and air compressors, commercial refrigeration, boilers and hot water systems.

Energy Assessment

Without an energy assessment you will not know how much you can save or what energy saving projects will work best for you with the greatest return on investment. The cost of an audit under the Energy Efficiency for Small Business Program is only an upfront fee of $50! Click here to Register Now!

More information is available at www.environment.nsw.gov.au/sustainbus

Reduce Your Bills and Carbon Footprint with more Energy Efficient Technology

There are many other things you can do that aren't covered by a grant, but will still reduce your energy consumption and bills.

Now that bills are rising with the introduction of the Independent Pricing and Regulatory Tribunal (IPART) effective July 1st 2009 and will be reviewed in 2011 (expect them to go up again!), there is a compelling reason for SME's to do whatever they can to reduce consumption. The good news is that there are many small things that small and medium business can do that when applied properly can substantially reduce environmental impact and in many cases your electrical energy usage and bills!

As technology plays a vital role in small and medium sized businesses, it makes sense when purchasing or upgrading your technology to look for ways you can also reduce your energy consumption.

So let's examine how you can get what you need and reduce your energy by examining the commonly used technologies:

- Wireless Networking
- Network Equipment
- Computers
- PABX based Phone Choices
- Remote TeleWorking
- Video Conferencing
- Cloud Computing

Wireless Networking

It may not be immediately obvious how wireless networking can save on resources but if you think about your office environment, you will know that every person has a phone and a computer and sometimes additional devices like printers. In many offices, 3 cables are wired to each station!

Organisation A has 20 users, each with a telephone (IP Handsets), a computer, three shared printers each with 3 lines cabled for each station.

From a cabling perspective there are 3 x 20 cables plus 3 cables for printers which equal 63 cables all together. These are all wired to a communications rack or central patch panel and because the phones are IP handsets, they need network switches that support 2 x 20 ports (plus three for printers) which equals 43 network switching ports.

Using wireless access points in a small office like this would require no more than 3 access point units – each unit requiring a single network switch port. Therefore if we could put all devices on wireless we would reduce our network switch port count by 40 ports!
Now for the power saving – if you could use wireless phones (and you can), you could remove one of your network switches – that may be 300 watts of energy that is usually left on all year round. That's 728 Watts per month plus the cascade affect of reduced air conditioning cost because no heat from that switch!

Add to that, the fact that your users are now mobile – there are no adds, moves and changes and if you move to another building there are significantly less costs in cabling.

Network Equipment

Switch vendors vary wildly in the amount of power that is consumed. Some of the best known switches are the most power hungry. In fact the smaller vendors are very active in promoting the fact that their switches require 33% to 50% less power. The following table highlights this variance:

Table 1 - Switching For Power Efficiency

Foundry CX Series POE 24 Port 10/100/1000 Layer 3 switch (No POE Load)				**Cisco Catalyst 3560E-24PD POE 24 Port 10/100/100 Layer 3 Switch (No POE Load)**			
Consumption Factors	**Power Consumption (kWh)**	**Hours per year**	**Annual Power consumption (Kwatts)**	**Consumption Factors**	**Power Consumption (kWh)**	**Hours per year**	**Annual Power con-sumption (Kwatts)**
Total Power Consumption Calculation	0.107	8760	937.32	Total Power Consumption Calculation	0.173	8760	1515.48
Hours - Weekends and Holidays*	2504			Hours - Weekends and Holidays*	2504		
Tarrif Type	Off Peak Hours	Shoulder Hours	Peak Hours	Tarrif Type	Off Peak Hours	Shoulder Hours	Peak Hours
Daily Busi-ness Hours Tarrif Split**	0.333	0.375	0.292	Daily Busi-ness Hours Tarrif Split**	0.333	0.375	0.292
Business Hours Tarrif Split*2	All Off Peak			Business Hours Tarrif Split*2	All Off Peak		
Calculated Hours Per Tarrif	4589.33	2346.00	1824.67	Calculated Hours Per Tarrif	4589.33	2346.00	1824.67
Charge Rate	$ 0.081	$ 0.156	$ 0.265	Charge Rate	$ 0.081	$ 0.156	$ 0.265
Charge	$ 39.78	$ 39.16	$ 51.74	Charge	$ 64.31	$ 63.31	$ 83.65
TOTAL Annual BILL			**$ 130.67**	**TOTAL Annual BILL**			**$ 211.28**

* Hours - Weekends and Holidays calculated as 52 weekends plus 8 public holidays
** www.energyaustralia.com.au/energy/ea.nsf/Content/NSW+TOU+Bus+Rates

Ensure you ask your vendor how many watts your Network switches use before you buy them.

Computers

Almost all computer vendors can tell you their energy star ratings for their machines but take note as each machine left powered up 24 x 7 can accumulate to considerable power con-sumption. If we assume we have 10 desktop machines. The following is a sample showing power consumption of HP Compaq dc7900 Series Business PC with no monitor:

Table 2 – The Power of Computing

Consumption Factors	**Power Consumption (kWh)**	**Hours per year**	**Annual Power Comsumption (kWh)**
Total Power Consumption Calculation	2.4	8760	21024
Hours - Weekends and Holidays*	2504		
Tarrif Type	Off Peak Hours	Shoulder Hours	Peak Hours
Daily Business Hours Tarrif Split**	0.333	0.375	0.292
Business Hours Tarrif Split*2	All Off Peak		
Calculated Hours Per Tarrif	4589.33	2346.00	1824.67
Charge Rate	$ 0.081	$ 0.156	$ 0.265
Charge	$ 892.17	$ 878.34	$ 1,160.49
Total Annual Bill			**$ 2,931.00**

* Hours - Weekends and Holidays calculated as 52 weekends plus 8 public holidays

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All modern machines have all sorts of settings for energy conservation, so use them and switch them off overnight! And let's not forget that the hungriest component of your system could be the monitor. If you are still using the old CRD screens – update them to flat panel LCD.

PABX Based Phone Choices

Lots of companies are telling small and medium sized businesses that IP Telephony and unified communications are the way forward. In most cases they are being told to install VoIP phones that will need Network switches that provide power to the IP phones.

There is no doubt that IP Telephony is a great way to go if you want to reduce call connections to multiple branches and if you have remote office teleworkers. However, if you are in the office, choosing to use the more traditional Digital handsets rather than IP handsets will reduce capital infrastructure costs and incur less power consumption.

Generally speaking, a newer digital telephone off hook (in use and without sophisticated displays) will draw 25mA to 30mA. Since we're interested in watts, a phone off hook will draw about 1375 Watts or 137.5 milliwatts.

Power over Ethernet phones are quite a different story and depends significantly on the manufacturer e.g. Avaya 9640 top of the line phones have an average power consumption of 4.35 watts while the industry average tested for similar 10/100 phones is 7.61 watts*. It is most likely that Digital phones will reduce energy costs and if you assume a Digital phone takes 1 Watt and have a 100 phones that's a hundred Watts and hour rather than 400!

* Cited: www.avaya.com/usa/resource/assets/whitepapers/AVAYA%20UC%20450%201600%208Dec08.pdf

Table 3 – The Cost of POE

Digital Phones @ 1Watt per Handset and 100 handsets				**POE Phones @ 4Watt per Handset and 100 handsets**			
Consumption Factors	**Power Consumption (kWh)**	**Hours per year**	**Annual Power consumption (Kwatts)**	**Consumption Factors**	**Power Consumption (kWh)**	**Hours per year**	**Annual Power consumption (Kwatts)**
Total Power Consumption Calculation	0.1	8760	876	Total Power Consumption Calculation	0.4	8760	3504
Hours - Weekends and Holidays*1	2504			Hours - Weekends and Holidays*	2504		
Tarrif Type	Off Peak Hours	Shoulder Hours	Peak Hours	Tarrif Type	Off Peak Hours	Shoulder Hours	Peak Hours
Daily Business Hours Tarrif Split*2	0.333	0.375	0.292	Daily Business Hours Tarrif Split**	0.333	0.375	0.292
Business Hours Tarrif Split*2	All Off Peak			Business Hours Tarrif Split*2	All Off Peak		
Calculated Hours Per Tarrif	4589.33	2346.00	1824.67	Calculated Hours Per Tarrif	4589.33	2346.00	1824.67
Charge Rate	$ 0.081	$ 0.156	$ 0.265	Charge Rate	$ 0.081	$ 0.156	$ 0.265
Charge	$ 37.17	$ 36.60	$ 48.35	Charge	$ 148.69	$ 146.39	$ 193.41
TOTAL Annual BILL			**$ 122.12**	**TOTAL Annual BILL**			**$ 488.50**

* Hours - Weekends and Holidays calculated as 52 weekends plus 8 public holidays

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As the table shows, good choices can mean savings in energy.

Note: Some vendors do not offer a digital handset option so you may not have a choice except to use IP handsets. So if you are looking at phone system upgrades you may want to include this and certainly power ratings for handsets in your list of product support specifications.

Remote Teleworking

Using teleworking technologies is not only cost efficient for companies, but it also lowers their day to day carbon footprint – mainly due to the reduction in travel. It also allows for a greater focus on family because with less travel time, employees get to enjoy more time in their own communities and with family members. Remote Teleworking also provides the opportunity to reduce energy consumption if office space is reduced. This is because typically large commercial buildings use more energy per user than in a home environment.

Video Conferencing

Save your people travelling by using Video conferencing. This technology has dramatically changed the way people do business – especially in the health sector where rural and remote medical staff can carry out frequent consultations and increase health outcomes.

Video conferencing will not change your office energy requirements but from a societal point of view dramatically reduces carbon footprint by reducing travel.

Cloud Computing

Cloud Computing refers to the ability to outsource all your IT needs to an internet based facility. All access to your applications is via internet and allows users to be highly mobile, largely removing IT shackles that are typical for small growing businesses.

Cloud Computing works by having data is stored in a proper data centre which means, providers of this type of service offer the security of data availability and regular backup – a necessity for small businesses when a server crashes or fire wipes out the office. Statistics indicate that many businesses would not survive in such cases as they have never backed up data or even when they do, they have never tried to restore data and find the backup fail!

From the perspective of this whitepaper on Energy Efficiency, what is important is that Cloud Computing allows businesses to unshackle themselves from energy hungry back-end office servers and easily relocate, grow or shrink application resources.

Let's look at an example of energy usage using a mid tier HP Proliant ML 310 G5 Server (typical in SME business). From the machine specification I will assume a normal power consumption of 250 Watts and as nobody turns off servers, it will be in operation 24x7x256. On that basis, the following calculation applies:

Table 4 – Cloud or Server Computing

Consumption Factors	**Power Consumption (kWh)**	**Hours per year**	**Annual Power Consumptions (kWh)**
Total Power Consumption Calculation	0.25	8760	2190
Hours - Weekends and Holidays*	2504		
Tarrif Type	Off Peak Hours	Shoulder Hours	Peak Hours
Daily Business Hours Tarrif Split**	0.333	0.375	0.292
Business Hours Tarrif Split**	All Off Peak		
Calculated Hours Per Tarrif	4589.33	2346.00	1824.67
Charge Rate	$92.93	$91.49	$120.88
TOTAL ANNUAL BILL			**$305.31**

* Hours - Weekends and Holidays calculated as 52 weekends plus 8 public holidays
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Based on the above calculation, you could save $25 per month on electricity consumption plus reduced demand in air conditioning related consumption to offset the heating effect of the server (could be up to 30% of the server bill!)

Note: You could say that moving your server to a Cloud Computing data centre doesn't really save society this energy and that's partly true. However, data centres use virtualisation technologies that could provide 5 companies the same facility using the same hardware.

Education

Get your staff thinking about energy in the office. This is not about you saving money, it is about everybody thinking about their behaviour and changing it for everybody's benefit.

Use every opportunity to communicate to staff the need for being conservative and where appropriate, put reminders on bulletin boards and the like – Don't let it slip and make sure YOU set a good example!

Can you rethink your business a little or consider how technology may help?

Examples include:

- All of the above discussed items – add them all up and they become substantial

- What if you used a solar power cell on your building? Perhaps you could reduce consumption during peak and shoulder hours and if your business has a turnover of less than $2 million per annum and your order before 31 December 2009, you can claim tax deduction of 50% of the costs of a system

- The same applies for hot water if your business depends on hot water – this is an item that can be approved under the Energy Efficiency for Small Business Program

- The Federal Government has programs for Renewable Energy Certificates – suppliers of renewable energy systems will buy these REC's from you or you can keep them which encourages industry investment in renewable energy (a separate discussion) this may not be useful for business today as (to my knowledge) it only applies to residential premises but no doubt will be extended to business in the future

- How about changing the working hours for non-sales or service staff to encourage back end operations e.g. 8AM to 4PM rather than 9AM to 5PM or better still encourage staff to use teleworking – less people in the office may allow you to reduce your floor space

- Work with the landlord and other tenants to encourage development of energy efficient opportunities or move to an energy friendly building – they are becoming more common and plans are underway for mandatory reporting

Energy Provider Options

If your drivers are more inclined towards a renewable energy world, look for providers of green energy for a list of accredited suppliers.

For more information or consultation, please contact GlobileNet on 1300 723 753 or email sales@globilenet.com or visit us at www.globilenet.com