

H&P GREEN OFFICE GUIDE

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1. GENERAL

Why go green?

There are some very good reasons for making our office an energy-efficient, environmentally friendly place. First, buying and using energy-efficient equipment saves money. It can provide enormous savings in electricity use alone, saving up to \$180 per 1,000 kilowatt-hours of energy and cutting up to 80% off your electricity bill. It can also cut 20–30% off our air-conditioning bills because we are reducing the amount of heat that our equipment generates and that needs to be cooled. Paper costs can be almost halved simply by printing double-sided, and we can save \$100 on toner and \$30 on ink by refilling our printer and toner cartridges. We also save on waste disposal costs because the amount of waste we generate is reduced.

Second, the environmental benefits of using energy-efficient equipment are tremendous. By reducing the electricity we use you are reducing air and water pollution from power stations and saving a tone of greenhouse gas for each 1,000 kilowatt-hour of electricity we save. Refilling, reusing and recycling the materials we use reduce the amount of waste and pollution we generate.

In addition, making equipment from recycled metals, plastics and other materials saves at least two kilograms of greenhouse gas per kilogram of product. Using recycled paper saves trees. Every 100 reams of recycled office paper that is printed double-sided saves two trees, more than a tone of greenhouse gas and almost a cubic meter of landfill space compared to 100 reams of paper that is not recycled or printed double-sided.

Third, by making our office a “green” we will involve our staff in doing something for the environment. Knowing that their actions can really make a difference will enhance a natural motivation to act in an environmentally responsible way.

An energy-efficient, environmentally friendly place reduces air and water pollution, keeps more trees in the ground and involves your staff in doing something good for the environment.

2. INSTRUCTIONS ON HOW TO GO GREEN

2.1. WHEN USING COMPUTERS AND MONITORS



Desktop computers generally draw about 40 to 50 watts when in use. Monitors usually use 50 to 100 watts, with lower values becoming more common. This is lower than the values that are usually shown on product nameplates and data sheets because the maximum likely consumption is usually given and not the average.

The power needed to light up a screen varies according to the area of the screen. That means that moving from a 15-inch to a 17-inch screen at constant efficiency will generally increase your power demand by about 30%. However, because inefficiencies vary markedly between models, some 17-inch screens use less energy than some 15-inch screens.

An audit of more than 600 computers and monitors at the University of New South Wales revealed:

- the average computer used 49 watts when fully on, 29 watts when asleep, and 2 watts when switched off. (These numbers reduce to 0 if the equipment is switched off at the power point, rather than just at the off button on the equipment)
- the average monitor used 60 watts when fully on, 6.5 watts in deep sleep, and 1 watt when switched off.

What to do?

- switch them off outside working hours.
- you can also switch off the monitor if a computer is being used as a server and the monitor is not required
- switch off your computer whenever you are away from your desk for an hour or more or for whatever shorter time you find convenient

- **think twice before printing electronic documents, particularly drafts and emails**
- investigate using floppy, zip and compact disks or tape instead of paper filing systems
- optimise electronic communication methods including email, forms and transactions. This reduces the financial and environmental costs of paper manufacture and supply, imaging, and transporting hard copy documents by mail or courier
- reduce margin settings and type sizes on your computer so that the printer uses less paper. Common default settings for computers are 12 point type and 3.175 cm (1.25 inch) left and right hand margins. Using 11 point type and 2.54 cm (1 inch) left hand margins and 1.27 cm (0.5 inch) right hand margins can increase the amount of information you can fit on a page by up to 27% and save paper. This still allows ample margins for binding and hardcopy filing.
- switch off computers and monitors when you're not using them or consider buying a laptop instead.
- consider buying a laptop, since a laptop is much more energy- and materials-efficient than a desktop computer and monitor
- consider buying LCD-type flat screens for desktop computers, as they are more energy- and space-efficient than standard monitors.

2.2. WHEN USING PHOTOCOPIERS



What to do?

- make sure you need a printed copy before you photocopy the document
- turn the photocopier off at the power point at the end of the working day and during periods of inactivity. If the machine is in a very humid environment, this may not work well. In that case, the options are to turn the photocopier off at the machine and not the power point, or turn the heating elements back on for some time before copying at the start of the working day
- set low power and off mode default times to the lowest available settings that suit your purposes
- copy double-sided whenever you can

- use paper with the highest recycled content the manufacturer or supplier will recommend for your printer
- use recycled or refilled toner and ink cartridges
- where possible communicate by email instead of paper.
- reducing the number of printed copies you make by communicating through circulation lists, notice boards and email and storing the information communicated on floppy, zip and compact disks
- reducing the number of sheets needed to print a given amount of information by using double-sided copying, reducing two pages to fit on one sheet, and loading paper already printed on one side into an extra paper supply bin.

2.3. WHEN USING PRINTERS



Laser printers use similar technology to photocopiers, so their energy consumption is similar to that of small photocopiers. Inkjet or modern dot matrix printers can provide very high print quality but they are slower than laser printers. Whilst inkjet printers are often cheaper than laser printers, the cost of buying new ink cartridges may make them more expensive in the long run. You can cut down the cost and their environmental impact by refilling the inkjet cartridges—either through commercial refillers or do-it-yourself kits. Cartridges can often be refilled four or five times while maintaining acceptable print quality. Many companies now recycle laser cartridges too. Long-life cartridges that are usually cheaper to use per page are also available.

What to do?

Before you print, think about whether you really need a printed copy. Whenever possible, communicate by email instead. For those documents you do need to print, here are some energy and paper saving tips:

- turn off the printer when you're not using it and at the end of the working day (make sure no-one else wants to use it first, particularly if it's part of a network)
- set sleep mode default times to the lowest available setting that is convenient for your needs

- print double-sided whenever you can
- use the Print Preview function to check layout and style instead of printing
- adjust your margins and type size to fit more on the page
- use paper with the highest recycled content the manufacturer or supplier recommends for your printer
- use ink and toner saving settings
- recycle or refill toner and ink cartridges
- choose a printer that can print double-sided.

2.4. WHEN USING FAX MACHINES



Most people still leave their fax machines on all the time. However, if you rarely receive faxes outside working hours, consider switching them off after hours to save energy. In the case of larger offices with many fax machines, energy can be saved by turning off some machines after hours and diverting calls to one or a few machines. Fax machines are mostly inactive so it is important to choose one with a low standby energy rating.

What to do?

- if you have many fax machines, divert calls to a few units after hours and turn the rest off
- set sleep mode default times to the lowest available setting
- fill the paper bin/cartridge with paper that is already printed on one side
- adjust your margins and type size to fit more on the page
- use ink and toner saving settings
- recycle and refill toner and ink cartridges.

2.5. WHEN USING AIR-CONDITIONING



In medium to large offices, the number of people and presence of equipment and lights all generate extra heat. This adds to the load the cooling cycle of air-conditioning systems has to deal with. That's why even in Australia's coolest cities it takes more energy to cool office blocks over a year than it does to heat them. Estimating the air-conditioning energy savings due to efficient office equipment is complicated by two factors. Firstly, air-conditioners typically produce two to three units of cooling for every unit of electricity consumed (that is, their coefficient of performance or "COP" is between two and three). So, to remove a kilowatt-hour of heat energy requires between a third and a half a kilowatt-hour of electrical energy.

Secondly, in cold weather the heat from office equipment may help heat the building, saving on heating from other sources. However, this is a relatively minor effect. Once these factors are accounted for, air-conditioning savings from using more efficient office equipment usually bring an extra 20–30% saving in energy costs and greenhouse gas emissions. That is, if an efficient copier saves 1,000 kilowatt hours a year (saving about \$150 and generating a tone less greenhouse gas), additional savings will be up to \$45 on air-conditioning costs and 300 kg of greenhouse gas emissions.

For about a quarter of the year, the building will be ventilated naturally and people will be able to open their windows if they wish. During this time there will be no heating or cooling at all, creating a 75% reduction in cooling energy. The cooling plant, which will be used in hot weather, will be 20% smaller than conventional plants and will save an estimated \$100,000 in capital costs. Overall, it is anticipated that the total annual energy bill for this building will be about 70% less than for a typical commercial building of the same size—a saving of about \$50,000 a year. Building owners and tenants can be assisted to reduce energy use, energy costs and greenhouse gas emissions through the Building Greenhouse

2.6. WHEN USING PAPER



Based on paper use of 80 sheets per day, using ordinary office paper would cost around \$240 each year. Efficient paper use, reuse of paper printed on one side, purchase of premium recycled paper and recycling of all paper no longer needed could cut this by 70%, saving around \$170 on annual paper costs. Annual greenhouse gas emissions from paper use would be reduced from around 700 kilograms to less than 50 kilograms.

3. CRASH TIPS

3.1. OVERALL ADVICE

Measures that we could try to undertake:

1. Purchasing of recycled paper
2. Minimizing the use of air conditioners
3. Continuing to print double sided as much as possible
4. Printing documents only if it really needed - think twice before we print
5. Using ink and toner saving settings
6. Buying recycled cartage
7. Using ink and toner saving settings
8. Considering buying LCD-type flat screens for desktop computers
9. Considering buying laptops since it is much more energy and materials efficient
10. Switch off the monitor if a computer is being used as a server
11. Switch off the computer whenever we are away from our desks for an hour or more
10. Turning off the printer when we're not using it

3.2. DATA TO TRACK

In order to keep track and collect data on our impact on the environment, the following data should be tracked:

Data tracking	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Electricity consumption												
Garbage bags												
Paper												
Recycled toners												

4. PROJECTS TO BE IMPLEMENTED BY H&P GROUP

4.1. QUIZ

The employees will be asked to answer to the short quiz on ecological issues prepared by one person. The answers will be sent to that one person who will officially announce the employee with the best score after one month. That person is to be given an award for the **GREENEST WORKER.**



4.2. GO GREEN AT HOME & AT WORK

One person will prepare tips on how to go green at home and at work (this document contains those tips) and this will be communicated to the employees in a form of interesting PPT with a lot of pictures, funny comics etc.

4.3. MESSAGE IN OUR MAILS

H&P proposes to write ecology messages at the end of our mails:

- Think twice before you print this
- Consider lowering electric power consumption
- Let's go green! etc.

Also, we might prepare a H&P logo with some ecological sign or some other sort of sign or a logo that can be attached to this message.

4.4. GREEN PHOTO AND GREEN STORY PROJECT

This project will include entire H&P Group and it will consist of the following options that each employee can chose:

- Employees will be asked to send a short story (two-five sentences) or how they can contribute to greener environment (both/either at home or at work). For example: Whenever I leave the office for a meeting, I switch my computer off....or



Example of the text + the photo of an employee that wrote it.

- Also, employees will be asked to send short story on ecology and nature that can be downloaded from the Internet. The topic should be impact of climate changes on some animal or plant species, or environment at large.

CLIMATE OF PAPUA

Michael L. Prentice and Geoffrey S. Hope

Climatic Setting of Papua

Papua is the western half of an equatorial island that is the northern extension of the Australian continental plate, together forming a barrier that blocks the flow of surface water from the western Pacific to the Indian Ocean. As a result, surface waters transported across the Pacific and so the warmest on the planet pile up in the western Pacific north of Papua as the vast Western Pacific Warm Pool (WPWP) (Figure 2.3.1). The WPWP is the single largest heat source to the global atmospheric circulation on the planet. To the south of Papua is the shallow epicontinental Arafura Sea which permits only slight water transfer between the oceans and also has high surface temperatures. Although no point in Papua is more than 250 km from the sea, the island is effectively divided in two by a ESE-WNW trending mountain cordillera that exceeds 3,500 m above sea level (asl) in Papua and reaches 5,000 m asl in the highest peak, Mt. Jaya. This pattern is repeated in the west by a lower chain of mountains in the Vogelkop peninsula.

- The third option will be to send GREEN photo that can present the nature in its best, or the person doing something for the nature, or picture of the local company that is polluting the environment etc.



The idea is that the project lasts for three months after which we can prepare a word document with all these materials appropriately illustrated with pictures of our employees or some other. This material can be printed afterwards, upload on our website or included into our CR report.