Energy Audit Toolkit
Office Equipment

CONTENTS

OVERVIEW

Effective management of your organisation's energy usage makes good business sense. It can produce both environmental and economic benefits and importantly reduce your greenhouse gas emissions. This Energy Audit Toolkit has been developed to assist non-technical or semi-technical energy managers in small to medium organisations:

→ identify actions to improve energy efficiency through the use of a simple but detailed audit checklist; and

→ develop plans for implementing energy efficiency actions.

The checklist contains notes supplying the auditor with further explanation or hints on how to compete the tasks. It should be possible to complete the majority of tasks through simple observation.

This Energy Audit Toolkit has been developed in association with a suite of resource sheets covering a range of topics to assist organisations in achieving energy efficiency. Additional CitySwitch Energy Audit Toolkits are available for hot water, lighting and lighting control.

NEED MORE INFORMATION?

Visit **cityswitch.net.au** for more information or call the CitySwitch Program Manager in your state. Contact details are listed on the website. Additional copies of the suite of CitySwitch Energy Audit Tools can be downloaded from **cityswitch.net.au**

BACKGROUND

Computers, fax machines, printers and photocopiers are indispensable in the modern office. In addition, many kitchen appliances such as microwave ovens, dishwashers, refrigerators and water boilers or urns are now commonplace in office environments and can be classified as office equipment.

The rapid increase in the use of office equipment has seen a steady rise in electricity consumption over the past decade. In a typical office, equipment can account for around 15 percent to 30 percent of total electricity consumption.

The first step to saving energy is to turn equipment off at the machine (and power point if possible) when it is not needed, such as by means of plug-in timers on power outlets. Energy saving features such as 'standby' or 'sleep' modes should also be utilised. 'Energy Smart' office equipment should be considered when purchasing; it is marked with an 'Energy Smart' sticker which shows an energy efficiency rating between one and five.

The motivation and involvement of personnel is an important factor in saving energy used by office equipment. Personnel should be made aware of energy saving features on office equipment, and be reminded and encouraged to use these features as well as to switch equipment off when it is not needed.

Each question in the Energy Audit Checklist has a space where you can write your energy efficiency improvement ideas. You should refer to the explanatory notes when considering what can be done to improve energy efficiency. You may need to take additional notes and attach them to the checklist, or attach other relevant documentation (such as instruction sheets and site plans) in order to support your improvement ideas and completely document your audit.

Remember these are ideas, not decisions. When you have completed the Energy Audit Checklist, select the energy efficiency improvements that are viable and enter them into the Energy Efficiency Action Plan on page 15.

ENERGY AUDIT CHECKLIST

OPERATION AND USE

QUESTION 1: What type of equipment do you have in your office? Please tick the appropriate boxes.

- ☐ Computers   Number ....
- ☐ Photocopiers   Number ....
- ☐ Printers   Number ....
- ☐ Fax machines   Number ....
- ☐ Scanners   Number ....
- ☐ Multifunctional devices* Number ....
- ☐ Refrigerators   Number ....
- ☐ Microwave ovens   Number ....
- ☐ Dishwasher   Number ....
- ☐ Urn   Number ....
- ☐ Water boiler   Number..............
- ☐ Water chiller   Number ....
- ☐ Other: .... Number..............

Improvement ideas and notes: ………………………………………………………………………………………………

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➜ Mark possible unused equipment in the list above. Switch off old and unused equipment until removed from office.

* Multifunctional devices are machines which can do a number of tasks such as print, fax, photocopy and scan.

QUESTION 2: Has the energy saving feature been activated in relevant office equipment to enable its use? Please tick the appropriate columns.

Computers	☐ Yes	☐ No	☐ N/A
Photocopiers	☐ Yes	☐ No	☐ N/A
Printers	☐ Yes	☐ No	☐ N/A
Fax machines	☐ Yes	☐ No	☐ N/A
Scanners	☐ Yes	☐ No	☐ N/A
Multifunctional devices	☐ Yes	☐ No	☐ N/A
Other: ……………………………………	☐ Yes	☐ No	☐ N/A

ENERGY AUDIT CHECKLIST

Improvement ideas and notes: ……………………………………………………………………………………
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➜ Newer office equipment will have energy saving features. These may be in the form of an automatic shutdown, standby or sleep mode, which can be activated when not in use, through software or a push-button. Make sure the equipment supplier or maintenance staff has enabled the use of these features. Older office equipment may not have energy saving options and therefore the purchase of new energy efficient equipment should be considered. NB Screen savers on computer screens do not save energy.

MAKE SURE YOU: Consult the information technology (IT), maintenance personnel, operating manual or the supplier if needed.

QUESTION 3: How often is the energy saver option utilised for each type of office equipment when not in use? Please tick the appropriate column.

Equipment Type	Always	Sometimes	Occasionally	Never
Computers	■	■	■	■
Photocopiers	■	■	■	■
Printers	■	■	■	■
Fax machines	■	■	■	■
Scanners	■	■	■	■
Multifunctional devices	■	■	■	■
Other (specify) ……………………………	■	■	■	■

Improvement ideas and notes: ……………………………………………………………………………………
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➜ Energy saving features should always be used when office equipment is not being used during the day – either automatically or manually. Newer computers, photocopiers, printers, fax machines and multifunctional devices will all have some form of energy saving option. Some office equipment can be programmed to automatically utilise energy saving features. Consider the use of timing devices for hot water urns or water boilers to switch them off when not in use.

MAKE SURE YOU: Conduct a staff meeting or survey, and observe employee habits.

QUESTION 4: Is office equipment switched off at the wall at the end of the day where possible?

☐ Yes ☐ No

Improvement ideas and notes: ....

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➜ Office equipment consumes energy if not turned off at the wall. Therefore, it should be turned off at the wall at the end of each day where possible. This includes hot water urns or water boilers in the kitchen. However, some server computers and other office equipment cannot, or should not, be switched off at the wall. Consult the operating manual or relevant personnel prior to switching off any equipment you are unsure about. The equipment may also have switches that are difficult to access.

QUESTION 5: Are computers shutdown where possible, when inactive for longer than 30 minutes?

☐ Yes ☐ No

If no, do they go into 'standby mode' or 'hibernate'? ....

Improvement ideas and notes: ....

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➜ Shut down computers if inactive for longer than 30 minutes. This may seem inconvenient, yet it usually takes only a few minutes to restart if the computer system is working efficiently. For some computers, restart can be programmed to automatically occur when moving the mouse or hitting a key. Most computers will have power settings adjustable for energy efficiency. Some server computers and other office equipment cannot or should not be shut down. Consult the operating manual or relevant personnel prior to shutting down any equipment you are unsure about.

QUESTION 6: Are computer monitors switched off when not in use for longer than 5 minutes (including server computers)?

☐ Yes ☐ No

Improvement ideas and notes: ....

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➜ Computer monitors should be switched off if the computer is not going to be used even for short time periods. Monitors other than flat-screen monitors consume a large portion of the energy used by the computer. They can easily be turned on and off. Server computers should always have their monitor turned off when not in use, which will be the majority of the time. Most computers or the monitors themselves will have power settings adjustable for energy efficiency. Consult the operating manual to see if this is possible.

MAKE SURE YOU: Conduct a staff meeting or survey, and observe employee habits.

ENERGY AUDIT CHECKLIST

QUESTION 7: Are photocopiers switched off at the machine or wall where possible when idle for more than 2 hours?

▢ Yes ▢ No

Improvement ideas and notes: ....
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➡ If the photocopier is rarely used or sits idle for more than 2 hours, it should be switched off at the wall. This may be inconvenient for photocopiers that take a long time to warm up, therefore energy saving features should be utilised instead.

QUESTION 8: Are photocopying tasks predominantly undertaken in batches?

▢ Yes ▢ No

Improvement ideas and notes: ....
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➡ Photocopying tasks should be undertaken in batches wherever practicable to minimise energy consumption. Employees will need to be informed of this requirement.

> **MAKE SURE YOU:** Conduct a staff meeting or survey, and observe employee habits to determine whether the copier is being warmed-up and used excessively.

QUESTION 9: What types of printers do you have? Please tick the appropriate boxes.

▢ Laser   Number ....
▢ Inkjet   Number..............
▢ Dot matrix   Number..............
▢ High-end colour*   Number..............
▢ Other: .... Number..............

Improvement ideas and notes: ....
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➡ Where high quality and quick printing is not required, inkjet or dot matrix printers should be used where available, as they use less energy during printing and standby mode.

* *High-end colour printers include thermal wax transfer, colour laser and high-end laser-quality printers.*

> **MAKE SURE YOU:** Consult operating manuals, IT or maintenance personnel, or the supplier.

QUESTION 10: Are printers switched off at the machine or wall where possible when idle for more than 2 hours?

☐ Yes ☐ No

Improvement ideas and notes: ....
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➜ If a printer sits idle for more than 2 hours, it should be switched off at the wall. This may be inconvenient when photocopiers that take a long time to warm up are used for printing, therefore energy saving features should be utilised instead.

> **MAKE SURE YOU:** Conduct a staff meeting or survey, and observe employee habits.

QUESTION 11: Is the print preview option on the computer always used before printing to identify errors in documents and eliminate reprinting?

☐ Yes ☐ No

Improvement ideas and notes: ....
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➜ The print preview option should always be utilised before undertaking any printing job to avoid unnecessary printing and therefore energy consumption.

> **MAKE SURE YOU:** Conduct a staff meeting or survey, and observe employee habits.

QUESTION 12: Is double sided printing (duplex printing) and draft black and white printing undertaken when possible?

☐ Yes ☐ No

Improvement ideas and notes: ....
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➜ Double sided (duplex) and draft black and white printing should be undertaken whenever possible. This will save paper and lessen the time the printer is in use, therefore reducing the energy consumption of the printer. This applies particularly to draft documents, internet print-outs and internal documents.

> **MAKE SURE YOU:** Conduct a staff meeting or survey, and observe employee habits.

QUESTION 13: What types of facsimile (fax) machines do you have? Please tick the appropriate boxes.

▢ Laser

▢ Inkjet

▢ Thermal

▢ Other ....

▢ None

Improvement ideas and notes: ……………………………………………………………………………………………
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➜ Thermal and inkjet fax machines consume less energy in standby mode than laser fax machines. However, paper for a thermal fax machine is expensive and not recyclable.

MAKE SURE YOU: Consult the operating manual, maintenance personnel or the supplier.

QUESTION 14: How many facsimile machines remain turned on overnight?

Number: ....

Improvement ideas and notes: ……………………………………………………………………………………………
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➜ Consider leaving only one fax machine turned on overnight, diverting all faxes to this machine.

MAKE SURE YOU: Consult maintenance or security personnel or night-staff.

QUESTION 15: Are ink and toner saving settings utilised in the facsimile machines where possible to reduce printing time and energy use?

▢ Yes ▢ No

Improvement ideas and notes: ……………………………………………………………………………………………
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➜ Most modern facsimile machines have ink and toner saving settings. These should be utilised in all fax machines to reduce energy consumption.

MAKE SURE YOU: Consult the operating manual or maintenance personnel.

QUESTION 16: Are scanners switched off at the wall when not in use?

▢ Yes ▢ No

Improvement ideas and notes: ....

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➡ If scanners are rarely used they should be turned off at the wall.

MAKE SURE YOU: Conduct a staff meeting or survey, and observe employee habits.

QUESTION 17: What type of water heating equipment do you have in the kitchen and lunchroom? Please tick the appropriate boxes.

▢ Kettle

▢ Urn

▢ Water boiler (wall mounted)

▢ Instant water heater

▢ Other: ....

▢ None

Improvement ideas and notes: ....

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➡ Consider the use of a kettle rather than large urn if employee numbers are small. Also, ensure that the size of the water boiler or urn suits the number of employees in your organisation. Use timing devices that switch off the appliance when not in use.

QUESTION 18: Where is the refrigerator positioned? Please tick the appropriate box below.

▢ Out of direct sunlight

▢ Clear of the wall

▢ Away from heat sources

▢ Other: ....

▢ Not applicable (no refrigerator)

Improvement ideas and notes: ....

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➔ The refrigerator's size should suit your needs. It should be positioned out of direct sunlight and away from heat sources in a well-ventilated area to maximise energy efficiency. There should be space between the refrigerator coils and the wall to assist ventilation and cooling. Coils and freezers should be regularly cleaned to ensure the refrigerator is working efficiently.

MAKE SURE YOU: Visit the area several times during the day as the sun changes position.

QUESTION 19: Have all employees received training regarding the use of energy saving features on relevant office equipment?

☐ Yes ☐ No

Improvement ideas and notes: ……………………………………………………………………………………………
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➔ Relevant employees should understand how to use energy saving features on all office equipment to ensure maximum use.

MAKE SURE YOU: Consult the training coordinator or training records and ask employees. Energy efficiency may have been covered under induction, on-the-job or environmental training.

QUESTION 20: Have all employees received training regarding the importance of switching off office equipment, when possible, to maximise energy efficiency?

☐ Yes ☐ No

Improvement ideas and notes: ……………………………………………………………………………………………
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MAKE SURE YOU: Consult the training coordinator or training records and ask employees. Energy efficiency may have been covered under induction, on-the-job or environmental training.

QUESTION 21: Is there signage clearly displayed near office equipment reminding users how to be energy efficient with the equipment?

☐ Yes ☐ No

Improvement ideas and notes: ....
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➡ Reminder signs to switch equipment off at the end of the day, and information about how to use energy saving features, should be clearly displayed near or on office equipment, ensuring maximum energy efficiency.

MAINTENANCE

QUESTION 22: Is all office equipment maintained and serviced according to the manufacturer's instructions to ensure efficient operation?

☐ Yes ☐ No

Improvement ideas and notes: ....
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➡ All office equipment should be maintained and serviced according to manufacturer's instructions to ensure it is working properly and efficiently.

MAKE SURE YOU: Consult maintenance or engineering personnel and operating manuals.

QUESTION 23: In what time frame are repairs to office equipment undertaken? Please tick the appropriate box below.

☐ Within 24 hours

☐ Within a week

☐ Within a month

☐ Greater than a month

Improvement ideas and notes: ....
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➡ Repairs to office equipment should be undertaken as soon as possible to ensure maximum energy efficiency is achieved. Office equipment unable to be used (e.g. broken) should be switched off at the wall.

MAKE SURE YOU: Consult maintenance or engineering personnel, asset management or the defect system.

ENERGY AUDIT CHECKLIST

PURCHASING

QUESTION 24: Is energy efficiency considered when purchasing new office equipment?

☐ Yes ☐ No

Improvement ideas and notes: ………
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➜ Energy efficiency should be considered when purchasing new office equipment. Although the most energy efficient equipment may be more expensive, it will save money over the long term if used correctly. A multifunctional device may be more energy efficient for your office than buying separate pieces of office equipment. Equipment marked with the 'energy star' has a 1 to 5 stars rating indicating its energy efficiency.

MAKE SURE YOU: Consult purchasing procedures, policies or guidelines, or the equipment salesperson.

ENERGY EFFICIENCY ACTION PLAN

GOALS FOR ENERGY EFFICIENT OFFICE EQUIPMENT

List your energy efficiency goals with reference to your 'improvement ideas and notes' on the Checklist pages. Be specific where possible taking into account technical, financial and operational inputs. Goals should be measurable where practical.

Example: 'Reduce the energy use for office equipment by 10 percent compared to last year's consumption.'

NO.	GOAL

Note: As an alternative to using this action plan, you can also enter your energy efficiency actions as objectives and targets in an environmental management system, as a work order in your maintenance management system, or in another process that ensures nominated personnel complete the actions.

ENERGY EFFICIENCY ACTION PLAN

ACTION STEPS TO BE TAKEN

List the specific actions needed to implement each of your energy efficiency goals. Ensure you nominate the person responsible where relevant.

GOAL NO.	ACTION	DUE DATE	DATE COMPLETED

Please photocopy this form if additional action steps are required.

Page: …………of …………

RESOURCES

Visit **cityswitch.net.au** for more information or call the CitySwitch Program Manager in your state. Contact details are listed on the website. The suite of Energy Audit Tools along with a range of tenant energy efficiency resources can be downloaded from the CitySwitch website.