



SCHOOL POLICY - USE OF HEATERS & AIR CONDITIONERS

RATIONALE

Heating and air conditioning (HAC) are essential in most settings to ensure a pleasant, comfortable and safe environment. In Australia, 70% of energy usage and 63% of greenhouse gas emissions are estimated to be contributable to heating and cooling. HAC typically accounts for 40% - 50 %of the total energy bill.

Significant energy saving design and equipment opportunities are available when constructing new buildings, but several possibilities to improve heating and cooling performance can also be achieved in existing systems.

Did you know?

1. By leaving a door open, up to 50 percent of HAC energy costs can be wasted.
2. Every one degree temperature decrease in summer will increase energy use by 10 percent.
3. Every one degree temperature increase in winter will increase energy use by 15 percent.

IMPLEMENTATION

The responsible use of HAC is everyone's responsibility. Teachers and parents should ensure that students understand the implications and benefits of making informed choices, and adopting different behaviours and approaches to energy use.

Energy Saving Recommendations for All Classrooms – Staff and student actions

- **Put the remote control in a safe place**
The remote control is not wall mounted, and should be stored in a place where it can easily be used if required.
- **Use HAC only when and where necessary.**
Air conditioners should not be used unless the ambient room temperature reaches 28°C.
- **Adjust the temperature for each season**
Classroom air conditioners should be set to **24°C in summer** and heaters to **20°C in winter**. Additional heating or cooling results in energy wastage.
- **Turn off HAC systems when not in use.**
Ensure HAC systems are turned off when the building is unoccupied, for example overnight and during weekends.
- **Ensure doors and windows are closed when appropriate.**
Be aware of the implications and benefits of adopting different behaviours and initiatives.

- **Use fans.**
Temperature, humidity, and air movement all affect the comfort of a room. Therefore, the use of fans can reduce the need for air conditioning.
- **Avoid peak demand periods.**
By adjusting workplace schedules and reducing energy use during peak demand periods, savings can be made on air conditioning, lighting and other electricity use.
- **Proper filter maintenance will help avoid energy wastage and overwork of equipment.**
HAC filters will be maintained or changed on a regular basis as recommended by the manufacturer.
- **Maintain the system.**
All HAC equipment will be maintained on a regular basis, to ensure efficient operation and reliability. Proper maintenance can save up to 10 percent of space conditioning energy usage.
- **Use timers.**
Air conditioning and heating hours can be reduced by using switches and timers ensuring all HAC systems are turned off at certain times.
- **Avoid unnecessary lighting.**
Turning off lights in unused areas may not only result in lower electricity usage but also in less heat being emitted, saving on air conditioning running costs.

Long Term – School Council Actions

- **Avoid over sizing.**
Over sizing HAC equipment will result in unnecessary investment as well as operation costs. Ensure a proper and well configured system is in place.
- **Insulate buildings.**
By insulating roof spaces, ceilings, walls and pipes, loss of heat during the winter and gain of heat during the summer can be reduced, mitigating the need for heating and cooling.
- **Avoid losses through windows.** As much as 40 percent of the heat lost during the winter and up to 50 percent of unwanted heat gain during the summer is through windows.
 - The use of shades, drapes, blinds and tinting can be used to prevent solar entry and air conditioning loss during the summer. Keep drapes and shades open during winter days to allow the sun to warm the building and closed during night to prevent possible draught and heat loss.
 - The use of double-glazing windows can dramatically reduce heat loss during winter and also the amount of heat entering during the summer period.
- **Ensure hot as well as cold air ducts are insulated and do not leak.**
- **Install a thermostat.**
Programmable thermostats can be used to automate HAC systems. The thermostat ensures the HAC system turns on and off when required, thus avoiding heating or cooling unoccupied space, which is the case with older type thermostats that control the system based on

temperature. This inexpensive investment can save HAC related energy costs by as much as 30 percent.

- **Ensure use of energy efficient systems.**

When replacing HAC systems, consider high-efficiency units. By replacing fan and pump motors and other equipment with premium efficiency models, as much as 35 - 45 percent can be saved on the annual investment. Modern high efficiency HAC systems use up to 40 percent less energy than older systems.

- **Consider variable speed drives.**

By installing variable speed drives (VSDs) on air conditioning fans, the speed of the fan motors can be controlled to match the amount of air needed to be moved throughout your building and therefore reduce energy use and operation costs if the compressor powers down accordingly. VSDs can save 30 - 40 percent on the investment annually.

- **Install economisers.**

Energy can be saved during days when the outside temperature is lower than the inside temperature by using economisers. These take fresh air from the outside for cooling rather than using refrigeration equipment to cool recirculated air.

- **Implement an energy management system.**

Energy management systems can be useful when the air conditioning system is too complex to control with timers or thermostats. The system allows for the use of different cooling temperatures for different zones, optimum equipment start and stop times etc. Energy management systems can save 30 to 40 percent on annual investment.

- **Invest in green energy.**

Choosing accredited green energy, from environmentally friendly sources, may reduce the school's environmental footprint.

Benefits

An optimised and correctly working HAC system will increase staff and student comfort levels, work performance, financial and environmental benefits.

Cost Benefits

The above mentioned actions can result in significant cost benefits in terms of reduced or avoided:

- energy consumption and running costs
- maintenance costs for HAC equipment
- HAC replacement costs due to reduced operating life.

Environmental Benefits

The associated environmental benefits may include:

- resource conservation from avoided maintenance and repairs
- avoided emissions, including greenhouse gases, through energy conservation.

Useful references

Australian Government – Department of Environment, Water, Heritage and the Arts:
Greenhouse Challenge Plus

www.environment.gov.au/settlements/challenge/publications

Australian Government – Department of Resources, Energy and Tourism

www.eex.gov.au/eexhomepage/smeenergymanagement

Australian Government – Department of Resources, Energy and Tourism

www.eex.gov.au/technologies/heatingventilationandairconditioning.asp

Flex Your Power

www.fypower.org/com/tools/energy_tips_results.html?tips=HAC

Government of Western Australia – Sustainable Energy Development Office

www.sedo.energy.wa.gov.au

Sustainability Victoria

www.sv.sustainability.vic.gov.au/manufacturing/sustainable_manufacturing

US Department of Energy - Energy Efficiency and Renewable Energy

www.eere.energy.gov

U.S. Government - Small Business Guide to Energy Efficiency

www.business.gov/guides/environment/energy-efficiency/index.html

Ratification

This policy was ratified by the School Council on **Monday, 22 February, 2014**

Signature of School Council President: Lisa Watson (*Signature provided*)

Signed: _____ Date: _____