

C21 Ecologically sustainable development

Sustainable schools initiative

The Australian Sustainable Schools Initiative (AuSSI) is a partnership between the Australian Government and States and Territories to help schools achieve a sustainable future. In the ACT, AuSSI is managed by the ACT Department of the Environment, Climate Change, Energy and Water (DECCEW) and is supported by the Department and non-government schools. AuSSI is being implemented in 112 of the 127 ACT schools with 79 out of 83 public and 36 out of 44 non-government schools participating in the program.

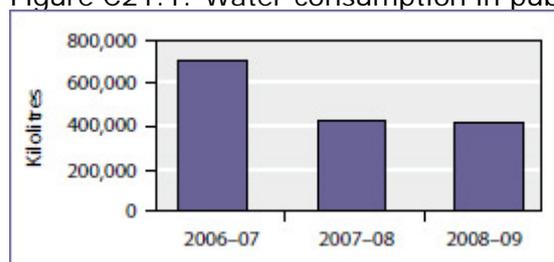
A partnership has been developed between DECCEW and the Department to conduct water audits and provide water efficiency reports to all ACT public schools. Each school is provided with a report recommending water saving initiatives based on the findings.

The Department also works closely with AuSSI ACT to ensure that energy efficiency measures are implemented and encouraged in schools. Both parties are working together to create a sustainability handbook, to allow schools to identify opportunities to implement sustainable practices in their local environment.

Water consumption

Water restrictions in the ACT continued through 2009-10 and also applied to ACT public schools. Public schools worked in collaboration with the Department to achieve a reduction in water consumption during the reporting period. Water consumption data is reported in arrears. Data from 2006-07 to 2008-09 is the latest data available for reporting in this report. There was a significant decline in water consumption in public schools from 2006-07 to 2007-08 with consumption in 2008-09 reducing marginally.

Figure C21.1: Water consumption in public schools, 2006-07 to 2008-09



Source: Schools Capital Works Branch, ACT Department of Education and Training

Water efficiency measures

Over the reporting period, a number of measures were taken to reduce water consumption within school buildings and on school grounds. Measures to improve water efficiency included: installation of rain water tanks that are plumbed into toilets; upgrades to water efficient fixtures and fittings; inclusion of water sensitive design principles; upgrades to toilets and bathrooms using water efficient appliances; and quick rectification of water leaks.

In 2009-10, water audits were undertaken at 15 public schools as part of AuSSI. Audit reports were sent to individual schools for water saving awareness and measures. The Department implemented the recommendations in the audit

reports jointly with schools. The recommendations implemented in schools included: upgrading to efficient toilet and urinal systems, reduced flow and auto shut off taps, replacing taps beyond repair, and upgrading irrigation system controls and components. These recommendations were implemented into existing refurbishment and upgrade projects and targeted school specific needs.

The Department is currently investigating the installation of digital water meters at all schools so that data can be read remotely and integrated with a web-based software program. This will allow a greater ability to monitor water consumption in schools and identify water leaks using the water consumption data recorded out of hours.

Energy consumption

In consultation with DECCEW, the Department has been able to record and report more accurate information on energy consumption. The Department engaged an independent consultant to analyse energy consumption for this report. The results for previous years were also revised to reflect the change in data collection and recording. Like water consumption data, energy consumption data is reported in arrears. Data on energy consumption and carbon dioxide (CO₂) emissions from 2006-07 to 2008-09 are the latest data available.

From 2007-08 to 2008-09, there was a decrease of 1.8 percent (1,923 gigajoules) in total electricity consumption across ACT public schools. Green power has been purchased by the Department through the whole of government electricity supply contract, and comprised 23 percent of total electricity consumed. Green electricity consumption increased by 5.8 percent (1,386 gigajoules) from 2007-08 to 2008-09.

In 2008-09, gas consumption increased slightly by 0.5 percent (470 gigajoules), relative to 2007-08 levels. This can be attributed to a longer heating period, because August 2008 was considerably colder than August 2007.

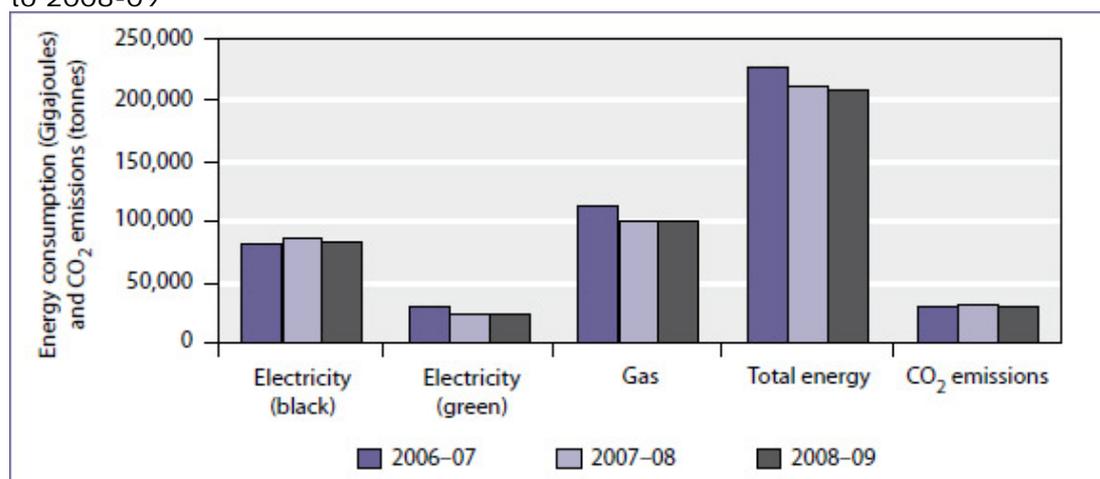
Consumption of black electricity and gas contributes to the carbon footprint for public schools (Table C21.1). Total CO₂ emissions decreased by three percent (944 tonnes) from 2007-08 to 2008-09. Total CO₂ emissions per student (based on 38,280 students according to the February 2009 school census) in 2008-09 were 809 kilograms, compared with 835 kilograms in 2007-08 (based on 38,230 students as per the February 2008 census), thus decreasing by three percent from 2007-08 to 2008-09.

Table C21.1: Energy consumption and CO₂ emissions in public schools, 2006-07 to 2008-09

	2006-07		2007-08		2008-09	
	Consumption (gigajoules)	CO ₂ emissions	Consumption (gigajoules)	CO ₂ emissions	Consumption (gigajoules)	CO ₂ emissions
Electricity (black)	80,429	23,682	85,862	25,282	82,553	24,307
Electricity (green)	31,442	0	23,741	0	25,127	0
Total electricity	111,871	23,682	109,603	25,282	107,680	24,307
Gas	112,853	7,448	100,523	6,635	100,993	6,666
Total	224,724	31,130	210,126	31,917	208,673	30,973

Source: Schools Capital Works Branch, ACT Department of Education and Training

Figure C21.2: Energy consumption and CO₂ emissions in public schools, 2006-07 to 2008-09



Source: Schools Capital Works Branch, ACT Department of Education and Training

Energy efficiency measures

The *ACT Climate Change Strategy 2007-2025* requires schools to be carbon neutral by 2017, which presents significant challenges and opportunities. To accurately measure progress towards this goal, the Department started a program to undertake energy audits on all public schools, to assess priority areas to reduce energy consumption. These audits started in October 2009 and are due to be completed by December 2010.

Environmentally sustainable design (ESD) guidelines have been implemented to assist schools with the management of energy in their buildings. All new schools and significant capital works projects have been designed to incorporate sustainable principles. All of the Building the Education Revolution projects have been reviewed by an ESD consultant to incorporate best practice principles into their designs. The designs for Gungahlin College, P-10 school in Kambah and Harrison Secondary School all aim to achieve a 5 Green Star design rating from the Green Building Council of Australia.

The Department commenced the Solar Schools program in August 2009. The program aims to install photovoltaic (solar power) systems at all public schools over the next four years with the first system installed in June 2010. This program will help reduce CO₂ emissions significantly, guarantee an ongoing source of income and provide schools with educational opportunities to learn about their energy production and consumption.

Office-based sustainability

The information on a range of sustainability indicators for 2009-10 from four central office sites (Braddon, Stirling, Fyshwick and Higgins) is given in Table C21.2. It does not include non-office (school) data.

The information in the table has been calculated using data provided by ActewAGL, ACT Department of Land and Property Services, SITA Environmental Solutions, sgfleet, Rhodium Asset Solutions, Recall, Thies Services, Cleanaway and Corporate Express. The details for 'Office greenhouse gas emissions' and 'Transport greenhouse gas emissions' have been calculated with the assistance of the DECCEW.

Table C21.2: Information on office-based sustainability indicators as at 30 June 2010

	Indicator as at 30 June	Unit	2009-101	
	General			
A	Occupancy – office staff full-time equivalent (FTE)	Numeric (FTE)	354.4	
	Occupancy – total staff FTE (including non-office)	Numeric (FTE)	4652.8	
B	Area office space – net lettable area	Square metres (m ²)	7,206	
	Area non-office space – net lettable office area	Square metres (m ²)		
	Stationary energy use			
	Electricity use (total) ²	Kilowatt hours		
X	Electricity use (office)	Kilowatt hours	1,472,507	
Y	Renewable energy use (green power)	Kilowatt hours	211,995	
	Percentage of renewable energy used (Y/X x 100)	Percentage	14.4	
	Gas use (total) ²	Megajoules		
	Gas use (office)	Megajoules	3,442,342	
C	Total office energy use ³	Megajoules	8,743,367	
	Intensities (office)			
	Energy intensity per office FTE (C/A)	Megajoules/FTE	24,671	
	Energy intensity per square metre (C/B)	Megajoules/m ²	1,213	
	Transport energy		Office	Other⁴
D	Total number of vehicles ²	Numeric	33	
	Transport fuel (petrol)	Kilolitres	27	
	Transport fuel (diesel)	Kilolitres	2	
	Transport fuel (liquefied petroleum gas)	Kilolitres	0	
	Transport fuel (compressed natural gas)	Kilolitres	0	
	Transport fuel (aviation)	Kilolitres	0	
E	Total transport energy use	Gigajoules	970	
	Water consumption			
	Water use (total) ²	Kilolitres		
F	Water use (office)	Kilolitres	114,302	
	Intensities (office)			
	Water use per office FTE (F/A)	Kilolitres/FTE	323	
	Water use per square metre floor area (F/B)	Kilolitres/m ²	16	
	Waste			
	Reams of paper purchased	Reams	11,114	
	Recycled content of paper purchased	Percentage	98%	
	Estimate of general waste (based on bins collected)	Litres	400,500	
	Estimate of comingled material recycled (based on bins collected)	Litres	5,000	
	Estimate of waste paper recycled (based on bins collected)	Litres	177,480	
	Estimate of secure paper recycled (based on bins collected)	Litres	79,200	
	Office greenhouse gas emissions⁵			
	Direct greenhouse gas emissions (scope 1)	Tonnes CO ₂ -e	176.6	
	Indirect greenhouse gas emissions (scope 2)	Tonnes CO ₂ -e	1,156.4	
	Other indirect greenhouse gas emissions (scope 3)	Tonnes CO ₂ -e	209.9	
G	Total office greenhouse gas emissions (all)	Tonnes CO ₂ -e	1,542.9	

	Indicator as at 30 June	Unit	2009-101
	scopes)		
	Transport greenhouse gas emissions⁵		
	Direct greenhouse gas emissions (scope 1)	Tonnes CO2-e	76.1
	Indirect greenhouse gas emissions (scope 2)	Tonnes CO2-e	n/a
	Other indirect greenhouse gas emissions (scope 3)	Tonnes CO2-e	5.8
H	Total transport greenhouse gas emissions (all scopes)	Tonnes CO2-e	81.9
	Greenhouse gas intensities		
	Office greenhouse gas emissions per person (G/A)	Tonnes CO2-e/FTE	4.4
	Office emissions per square metre (G/B)	2	0.21
	Transport greenhouse gas emissions per person (H/A)	Tonnes CO2-e/FTE	0.23

Source: Corporate Support Section, ACT Department of Education and Training
Notes:

1. Improvements in 2009-10 to sustainability measurement, monitoring and reporting techniques do not allow for comparable 2008-09 results.
 2. The complexity of 'total' Department sites includes 83 schools and co-mingled office spaces (at Lyons and Maribyrnong primary schools). The Department is developing improved systems for future reporting of 'total' usage and/or consumption measures.
 3. Where total energy use was required as a measure of overall office energy consumption, the electricity use (in kilowatts was converted to megajoules) and added to gas use for 2009-10.
 4. Reference to sites 'other' than office, does not include schools. In the Department's context 'other' is interpreted as off-site office locations and/or units. For 2009-10, other sites have not been identified.
 5. Calculated from the information entered into Online System for Comprehensive Activity Reporting.
- n/a not applicable.

For more information contact

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