ENERGY ACTION
SA GOVERNMENT

SA Government Energy Use Annual Report

2002/03

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Government of South Australia

Executive Summary

This Annual Government Energy Use Report has been prepared under Action 5: Verification and Reporting from the Government Energy Efficiency Action Plan. As such this report includes agency performance in relation to energy use and also progress in implementing measures identified in the action plan.

Government delivered energy use for the financial year 2002/03 was 4,610,112 GJ and related greenhouse emissions were approximately 699,000 tonnes of CO2 equivalent. The portfolio with the highest energy consumption was Human Services, primarily due to energy use in hospitals and other health services. This portfolio used 1,595,661 GJ of energy, which is 34.61% of the total energy use of Government. The portfolio with the second largest energy use was Transport and Urban Planning, including public transport energy consumption, which used 1,515,692 GJ of energy, 32.88% of the total Government figure.

Hospitals were again the largest end-use category for the 2002/03 financial year, responsible for 1,257,028 GJ and 202,000 tonnes of greenhouse gas emissions. These figures represent 27.27% and 28.90% of the Government totals respectively.

Under the Action Plan, Agencies are required before 2010 to reduce energy use in Government buildings by 15%, compared to 2000/01 levels. Overall Government energy use in buildings decreased by 59,271 GJ (or 2.40%), from 2,487,772 GJ in 2000/01 to 2,428,051 GJ in 2002/03.

Energy use in SA Government buildings was reduced in 9 of the 10 portfolios, including a reduction of almost 46% in the Department for Environment and Conservation and the River Murray, which accounts for 1.4% of the Whole-of-Government total. The portfolio of Education & Children's Services (referred to as DECS, and including Further Education, Employment, Science & Technology) increased their energy use by 3.96% compared to their energy use in the baseline year 2000/01, but their energy use for 2002/03 does represent reduction in usage of 7.95% compared to the previous year (2001/02).

2002/03 was the second year that the Energy Data Gathering And Reporting (EDGAR) software was used to collect data for reporting. EDGAR replaces the previous Government Energy Consumption (GEC) database as the primary source for Government energy use data. Energy usage figure for previous years has been reviewed over the last 12 months and as such there are a number of changes to baseline and 2001/02 figures compared to those that were published in last years Government Energy Use Annual Report.

Under Action 5 of the Plan, Independent Verification of Performance is to be provided annually, which is consistent with Module 3.1 of the National Greenhouse Strategy. The purpose of this requirement is to provide credibility to the performance being reported by Government.

An Independent Verification Report been completed by Ernst & Young, concluding that energy data being reported by three selected Portfolios – accounting for almost 50% of energy use across Government - represent best estimates by those Portfolios of actual energy usage by sites under their control, and therefore can be relied upon.

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1. Introduction

The primary mechanism through which Australia's greenhouse targets defined in the Kyoto Protocol are to be met is the National Greenhouse Strategy (NGS). The Commonwealth and all State and Territory Governments developed the NGS jointly. It was endorsed by State Cabinet in July 1998 and released by the Commonwealth Government in November 1998.

Measure 3.1 of the NGS relates to reducing greenhouse gas emissions associated with government operations through improving energy efficiency. In relation to this measure, Cabinet required the development of an Action Plan that addresses the energy use in the operation of its building assets, office equipment and vehicle fleet.

The Premier launched the SA Government's Energy Efficiency Action Plan (EEAP) on 3 May 2002 and announced reduction targets for energy use in buildings of 15 per cent from 2000/01 levels before 2010. The Plan defines basic energy efficiency measures for new Government buildings and major refurbishments, incorporates energy efficiency practices into maintenance programs and procurement policies and addresses energy use in the vehicle fleet.

This report falls under Action 5 of the EEAP: Verification and Reporting and meets the specific action of:

An annual Government Energy Use report is to be prepared and published by Energy SA and is to include Agency Performance and Action Plan Progress

This report is the second to be compiled under the scope of the Action Plan and to use data provided by Portfolios through the Energy Data Gathering And Reporting (EDGAR) system.

The aim of this report is to present in a clear and simple fashion an overview of the SA Public Sector's energy use and related greenhouse gas emissions. This report will focus primarily on analysis of building energy use but will also include some passenger vehicle and Public Transport information.

1.1 EDGAR

Data for the 2000/01, 2001/02 and, 2002/03 financial years was collected using EDGAR (Energy Data Gathering And Reporting). EDGAR provides an internet based user interface to a central database system. It has been developed for the Commonwealth Department of Industry, Tourism and Resources and is also being used by the Australian Capital Territory, New South Wales, Western Australia and Victoria. EDGAR replaces the Government Energy Consumption (GEC) database, a centralised system that had been managed by Energy SA since the late 1980's. The new system was introduced because the GEC program was obsolete and EDGAR provides agencies with a convenient and flexible means of reporting energy use.

A small number of modifications to customise EDGAR were made due to basic differences between Commonwealth and State Government operations and different policy requirements.

The modifications made to adapt EDGAR for SA included:

- Adding new end use categories for Police, Fire and Emergency Services, Health Care Facilities, Educational Facilities and Custodial Facilities, which are not applicable to the Commonwealth.

- Normalisation factors (such as staff number) were not made mandatory. Reporting requirements under the Action Plan do not require the use of normalisation factors. In future this may be added to the existing reporting requirements.

- A new contact role for Energy Efficiency Reference Group Members was added.

All tables and figures in this report are derived from data stored in EDGAR by all portfolios, unless otherwise stated. Data in EDGAR is updated until the beginning of the drafting of this report and therefore may be different to figures previously published.

1.2 Reporting Structure used for EDGAR

Individual portfolios chose the reporting structure that would be used for EDGAR. Some portfolios reported at an agency level while others simply reported as a portfolio. The reporting structure differed between portfolios due to the varying ways of capturing energy use data and whatever was the most convenient reporting method for each portfolio.

It is important to note that the reporting structure used for EDGAR is not necessarily the same as the portfolio's corporate structure.

2. Overall Energy Use Performance

2.1 Outcomes for 2002/03

Table 1 provides information on the energy consumption of individual portfolios for 2002/03. These figures include all building and transport energy consumption including public transport. It does not include energy use from commercial public trading enterprises such as SA Water.

Total expenditure on reported Government energy use was approximately $101,000,000 for the 2002/03 financial year.

Table 1: Energy use by portfolio

Portfolio	Total Energy Use GJ	% of SA Government	Greenhouse emissions Tonnes	% total
Human Services	1,595,661	34.61%	254,000	36.34%
Transport and Urban Planning	1,515,692	32.88%	151,000	21.60%
Education, Training and Employment	606,159	13.15%	135,000	19.31%
Justice	479,062	10.39%	79,000	11.30%
Administrative and Information Services	155,885	3.38%	35,000	5.01%
Primary Industries and Resources	134,602	2.92%	20,000	2.86%
Environment and Conservation and the River Murray	63,437	1.38%	8,000	1.14%
Premier and Cabinet	43,572	0.95%	13,000	1.86%
Business, Manufacturing and Trade	8,399	0.18%	1,000	0.14%
Treasury and Finance	7,643	0.17%	3,000	0.43%
Total	**4,610,112**		**699,000**	

Total reported energy consumption for 2002/03 was 4,610,112 GJ with related levels of greenhouse gas emissions of approximately 699,000 tonnes. The portfolio Human Services has the highest energy consumption of all the portfolios due to the energy consumption of public hospitals and healthcare units recorded under this portfolio.

Table 2 provides information on energy consumption and related greenhouse gas emissions by end-use category for the 2002/03 financial year in descending order of energy demand.

Table 2: Energy consumption and greenhouse gas emissions by end use category

End-use category	Energy Use GJ	% Total	Greenhouse emissions Tonnes	% total
Hospitals	1,257,028	27.27%	202,000	28.90%
Public Transport	1,224,585	26.56%	92,000	13.16%
Passenger Vehicles	814,652	17.67%	64,000	9.16%
Educational facilities	490,747	10.65%	122,000	17.45%
Office - Tenant Light and Power	137,873	2.99%	45,000	6.44%
Police, Fire and Emergency Services Facilities	113,013	2.45%	32,000	4.58%
Infrastructure - roadways	86,538	1.88%	28,000	4.01%
Health care facilities	72,215	1.57%	18,000	2.58%
Custodial facilities	69,136	1.50%	15,000	2.15%
Office - Central Services	62,759	1.36%	13,000	1.86%
Office buildings - combined services	57,979	1.26%	19,000	2.72%
Laboratories	50,013	1.08%	10,000	1.43%
Other Uses	49,241	1.07%	13,000	1.86%
Public Buildings	43,485	0.94%	14,000	2.00%
Law Courts	28,666	0.62%	8,000	1.14%
Other Buildings	11,423	0.25%	1,000	0.14%
Other Transport	40,760	0.88%	3,000	0.43%
Total	**4,610,112**		**699,000**	

As Table 2 demonstrates, the largest single end-use category in the 2002/03 financial year was hospitals, which accounted for 27.27% of the public sector's total energy use. The second largest end-use category relating specifically to building energy use is "Educational Facilities", which accounts for 10.65% of the total energy use. The various transport categories account for 45% of all energy use.

Figure 1 shows the six end-use categories responsible for the highest energy use in 2002/03 as percentages of total energy use. The "Others" category is the total of the eleven remaining end-use categories displayed as a percentage of overall energy use.

Figure 1: Energy consumption by end-use category as percentage of total

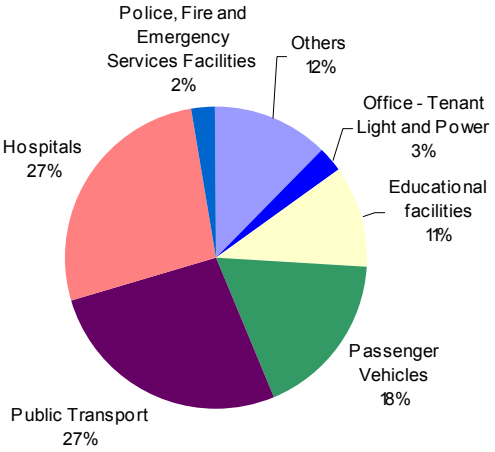
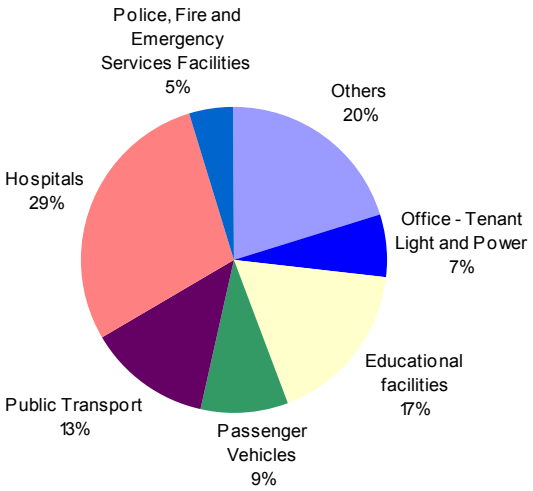


Figure 2 contains the same end-use categories as above but represents greenhouse gas emissions relating to energy consumption.

Figure 2: Energy greenhouse gas emissions by end-use category as percentage of total



Hospitals account for the largest proportion of energy use and related greenhouse gas emissions. Educational facilities are the fifth largest user of energy by percentage but are the third largest related

to greenhouse gas emissions. This is due to high proportion of electricity in education's energy use and the relative greenhouse intensity of electricity compared to other fuel sources.

Table 3 provides detail on the energy use and related greenhouse gas emissions from the various fuel types. Table 4 lists energy use and greenhouse gas emissions by fuel type specific to transport functions.

Table 3: Energy consumption and greenhouse gas emissions by fuel type

	Energy use		Greenhouse emissions	
Fuel Type	**GJ**	**% total**	**Tonnes**	**%total**
Electricity	1,480,371	32.11%	487,000	69.67%
Natural Gas	1,249,173	27.10%	65,000	9.30%
Automotive Diesel	1,205,186	26.14%	94,000	13.45%
Petrol	539,007	11.69%	43,000	6.15%
LPG	122,431	2.66%	8,000	1.14%
Heating Oil/Fuel Oil	10,806	0.23%	2,000	0.29%
AVGAS	3,137	0.07%	0	0.00%
Total	**4,610,112**		**699,000**	

Table 4: Transport, public transport and, passenger vehicle energy consumption and greenhouse gas emissions by fuel type

	Energy Use		Greenhouse emissions	
Fuel Type	**GJ**	**% total**	**Tonnes**	**% total**
Automotive Diesel	1,205,186	58.10%	94,000	61.04%
Petrol	539,007	25.98%	43,000	27.92%
Natural Gas	291,768	14.06%	15,000	9.74%
LPG	35,362	1.70%	2,000	1.30%
AVGAS	3,137	0.15%	0	0.00%
Total	**2,074,460**		**154,000**	

2.2 Energy Use Trends in Government

As this is the second year where data collected through the EDGAR system has been used, most of the comparison will be concerned with 2000/01, 2001/02 and, 2002/03 financial years. As this system is used into the future the range of available data will increase allowing for more detailed trend analysis.

Under the Action Plan, Agencies are required to reduce energy use in Government buildings by 15% before the year 2010. The base year against which this target has been set is the 2000/2001 financial year. All portfolios (covering non-commercial agencies) recorded their energy use for 2002/2003 in EDGAR during September 2003.

Energy use in Government buildings decreased by 59,271 GJ (or 2.40%) between 2000/2001 and 2002/03. This is broken down by portfolio in Table 5 below.

Table 5: Energy use in government buildings for 2000/01 and 2001/02 by portfolio

Portfolio	Energy Use (GJ) 2000/01	2001/02	2002/03	Move from last year	Move from Baseline
Human Services	1,398,417	1,369,644	1,382,799	0.96%	-1.12%
Education, Trainig and Employment	485,090	547,831	504,298	-7.95%	3.96%
Justice	238,429	235,896	223,064	-5.44%	-6.44%
Administrative and Infromation Services	120,676	128,159	113,890	-11.13%	-5.62%
Primary Industries and Resources	76,522	69,393	70,697	1.88%	-7.61%
Transport and Urban Planing	71,168	66,646	63,741	-4.36%	-10.44%
Premier and Cabinet	50,934	41,670	39,636	-4.88%	-22.18%
Environment and Conservation and the River Murray	35,198	24,048	19,087	-20.63%	-45.77%
Treasury and Finance	7,877	8,089	7,643	-5.51%	-2.97%
Business, Manufacturing and Trade	3,461	3,373	3,196	-5.25%	-7.66%
Total	**2,487,772**	**2,494,749**	**2,428,051**	**-2.67%**	**-2.40%**

As can be seen in Table 5, there was a decrease in energy use from the baseline year in all portfolios other than DETE. There was a decrease in energy use of 1.12% in the largest portfolio, Human Services, whose facilities account for over 50% of total energy use in SA Government buildings.

A portion of the growth, since the baseline year, in the DETE portfolio's energy use is likely to be attributable to its asset renewal program. Under this program many existing schools are being up-graded with reverse-cycle air conditioning services to meet both community expectations and legislative requirements.

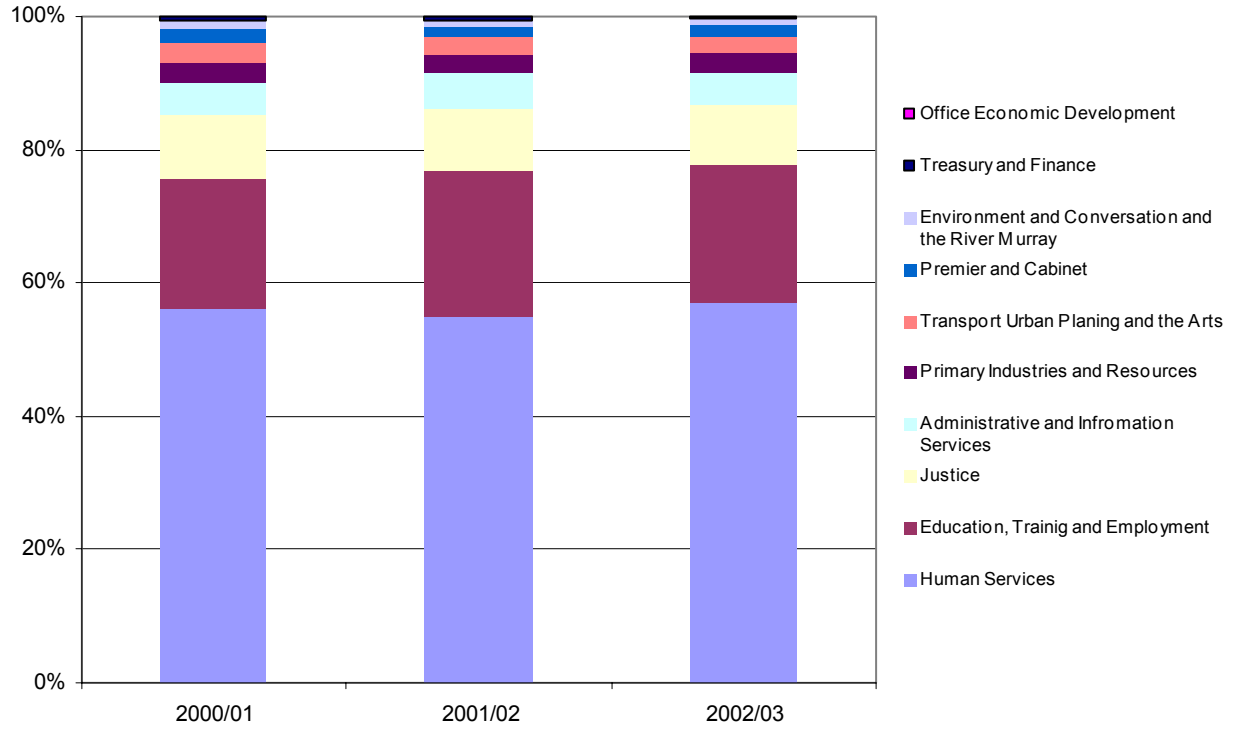
In addition to the above, the former Government's DECS-Tech program that aims to achieve a standard of one personal computer per five students in every school is increasing the number of IT systems in DETE assets. DETE has however been able to reduce its energy use by 7.95% over the last 12 months.

The Department of Environment, Conservation & River Murray (DECRM) reduced its energy use by 21% since 2001/02 and almost 46% in total since 2000/01. The majority of the portfolio's energy use occurs at the Botanic Gardens Complex. DECRM advised that heating levels were reduced at the Bi-Centennial Conservatorium during 2001/02, thus contributing to the large reduction.

The energy use reduction target at present is absolute and not normalised against any other factor such as floor area, number of students, hospital beds etc. Clearly there is potential for weather and other productivity indicators to influence energy use, which could, in turn, have an impact on Government's ability to achieve the 15% target.

Figure 3 displays the percentage make up by portfolio of the total energy use in government. Data is represented for the 2000/01, 2001/02 and, 2002/03 financial years. As demonstrated in the graph there has been no significant change in the portfolio contributions to over all energy use between 2000/01 and 2002/03.

Figure 3: Portfolio contribution to total government building energy use by percentage



The portfolio that accounts for the largest percentage of building energy use in Government is Human Services. This particular portfolio is responsible for 57 percent of public sector building energy use, with the majority of the energy used in provision of health services.

Education, Training and Employment is the next largest user of energy in the Government accounting for 21 percent of total energy use. Approximately 95 percent of this energy use is attributable to educational facilities such as primary and secondary schools and TAFE institutes.

Justice, Administrative and Information Services and, Primary Industries and Resources, responsible for approximately 9, 5 and, 3 percent respectively, dominate the remaining 22 percent of Government energy use.

The remaining 5 percent of Government building energy use is related to the operations of; Transport and Urban Planning, Environment and Conservation and the River Murray, Treasury and Finance, Office of Economic Development and, Premier and Cabinet.

Table 6 includes energy consumption for each end-use category for the financial years 2000/01 to 2002/03. It also includes the percentage changes from the baseline year and 2001/02.

Table 6: End-use category energy consumption by financial year including transport categories

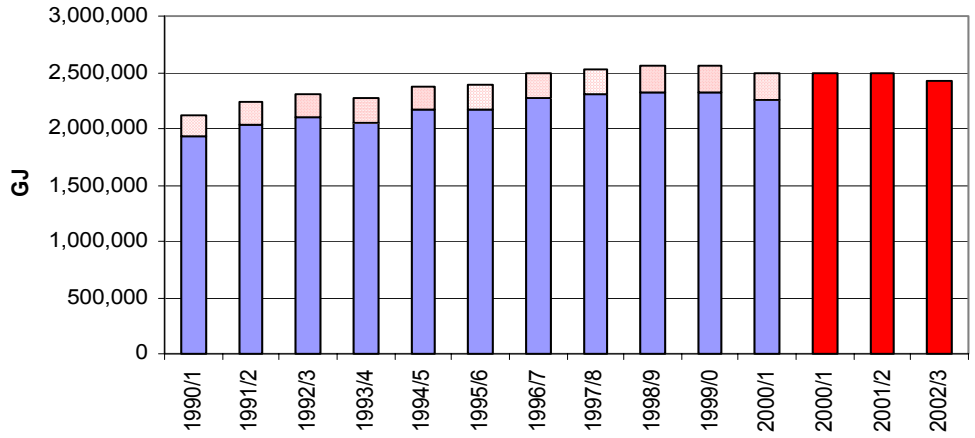
	Energy use (GJ)				
End-use category	**2000/01**	**2001/02**	**2002/03**	**Move from last year**	**Move from Baseline**
Hospitals	1,268,980	1,237,400	1,257,028	1.59%	-0.94%
Public Transport	1,120,168	1,175,440	1,224,585	4.18%	9.32%
Passenger Vehicles	871,994	844,235	814,652	-3.50%	-6.58%
Educational facilities	461,851	530,433	490,747	-7.48%	6.26%
Office - Tenant Light and Power	170,208	164,118	137,873	-15.99%	-19.00%
Police, Fire and Emergency Services Facilities	117,017	117,965	113,013	-4.20%	-3.42%
Infrastructure - roadways	97,842	97,222	86,538	-10.99%	-11.55%
Health Care Facilities	73,577	78,689	72,215	-8.23%	-1.85%
Custodial facilities	70,095	69,841	69,136	-1.01%	-1.37%
Office - Central Services	69,660	72,999	62,759	-14.03%	-9.91%
Office buildings - combined services	66,569	59,319	57,979	-2.26%	-12.90%
Laboratories	52,011	46,951	50,013	6.52%	-3.84%
Other Uses	38,913	51,638	49,241	-4.64%	26.54%
Public Buildings	54,403	45,004	43,485	-3.38%	-20.07%
Law Courts	35,789	32,327	28,666	-11.32%	-19.90%
Other Buildings	13,895	5,988	11,423	90.77%	-17.79%
Other Transport	39,910	38,994	40,760	4.53%	2.13%
Total	**4,622,882**	**4,668,563**	**4,610,112**	**-1.25%**	**-0.28%**

While there is an overall, reduction in energy-use from 2000/01 to 2002/03, the percentage change for each end-use category varies significantly. This may be due in part to the progressive refinement of asset registers over the past 12 months.

The five largest end-use categories, Hospitals, Public Transport, Passenger Vehicles, Educational facilities and, Office – Tenant Light and Power have had changes of –0.94%, 9.32%, -6.58%, 6.26% and –19.00% respectively.

Figure 4 is a graphical representation of the building energy use data contained in the Government Energy Consumption (GEC) database, from 1990/01, and the data contained in EDGAR. The solid blue sections represent GEC data while the solid red sections represent EDGAR data. The financial year 2000/01 has been represented twice to give a comparison between the results obtained from GEC and EDGAR for a same year.

Figure 4: GEC building energy use data vs EDGAR building energy use data



As can be seen in the graph, data from EDGAR gives a significantly higher result than that obtained from data stored in the GEC database. The thatched sections of the graph represent estimates of

energy use that would not have been included in the results obtained using GEC data. These estimates are based on the percentage difference between EDGAR and GEC results for 2000/01.

Differences in results from the two systems may be attributed to a number of reasons. GEC contains only direct-billed electricity and gas usage for buildings; it does not contain information on charges made for leased premises where the property manager bills the tenant. GEC is restricted to capturing electricity and gas data sourced directly from AGL and Origin. Any site not identified as Government property and undertakings outsourced to private operators were not always captured by GEC.

This demonstrates that having the individual portfolios conduct detailed reviews of their asset registry's to determine their baseline data, and having a data gathering system that is flexible, contributes to a more complete set of data than was previously possible.

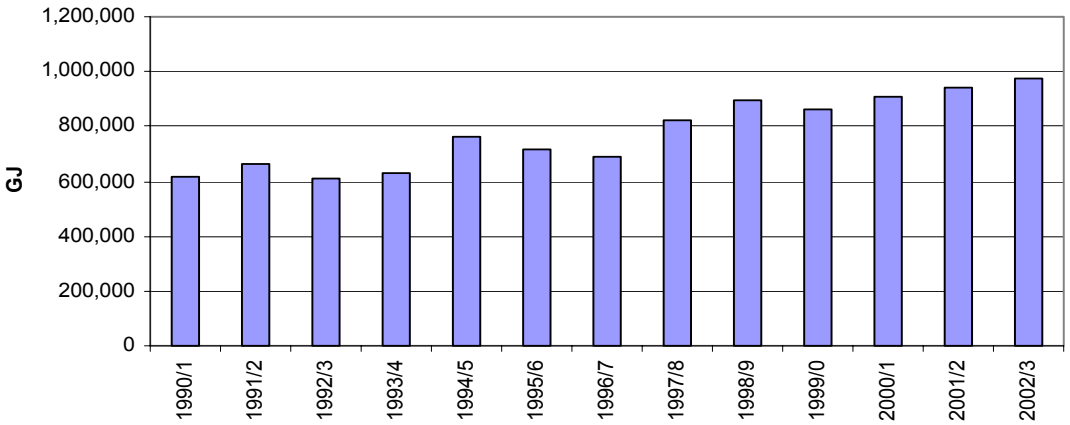
2.3 Major Pumping

A significant amount of electricity is used in the pumping of water from the River Murray to Adelaide and country regions, from Whyalla to the upper South East.

Water-pumping energy use is not specifically reported under the Energy Efficiency Action Plan as the scope of the program does not include SA Water, which is a commercial public trading enterprise. Despite this SA Water has provided the data contained in Figure 5, which provides an interesting overview of energy use in this sector.

Electricity use for major pumping can be affected by seasonal climatic conditions and therefore can vary significantly from one year to the next. For this reason Figure 5 provides a graphic of the five-year running average, in order to identify any underlying trend. The figures indicate an increase of 58% in electricity use for major pumping percent over the last 12 years.

Figure 5: Five year rolling average for major pumping electricity use

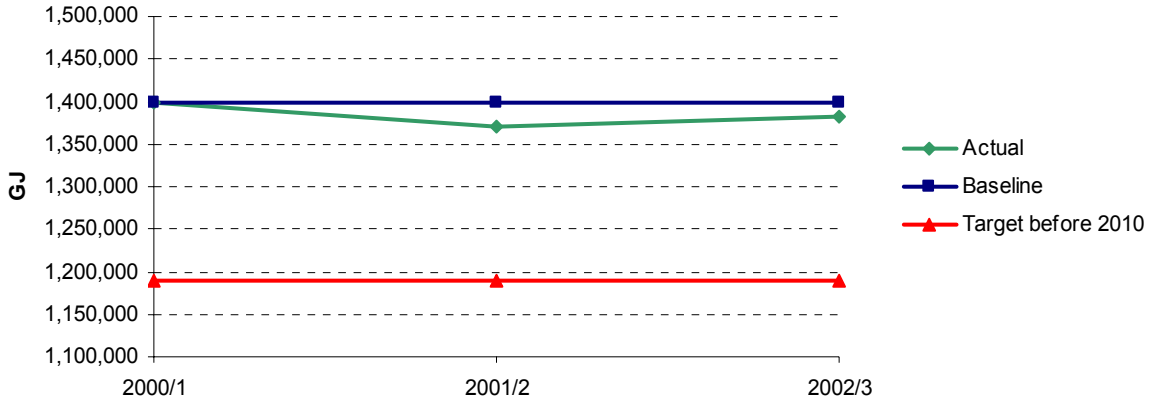


Source: Government Energy Consumption database and SA Water

3. Progress to Building Energy Use Targets & Key Achievements

The following information has been provided by the Energy Efficiency Reference Group (EERG) members of each portfolio, based on the information presented in their individual 2002/3 Annual Reports. EERG has been focussed more on data and process-related activities until now. Project-related activity is expected to increase in the next year.

3.1 Department of Human Services

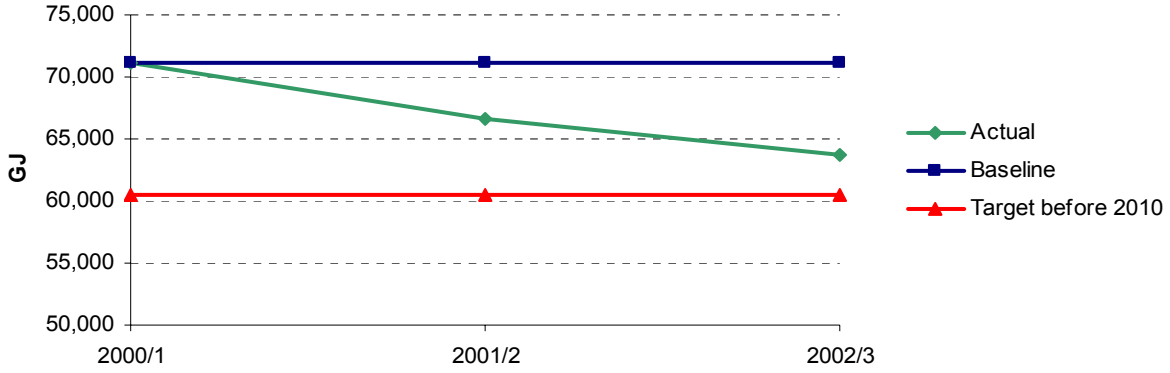


During 2002/03 and continuing on in 2003/04, Human Services in conjunction with a number of agencies is actively investigating a number of potentially major alternative energy generation options for metropolitan acute care hospitals (solar thermal cogeneration and conventional gas fired cogeneration) for their technical and economic feasibility.

The first stage of the Lyell McEwin redevelopment will progressively become operational during 2003-04. The project team set the ambitious task of creating a facility that consumes less than 912 MJ per M2 per annum – this is 25% less consumption than would be expected with a business as usual approach. The effectiveness of the project team in achieving this target will be monitored over the next twelve months and any learnings fed back into other major redevelopments occurring within the DHS portfolio.

As part of the whole-of-government electricity contract, during 2002-03 AGL assisted various hospitals to firm up selected recommendations from previous energy audits. A number of projects including lighting upgrades and modification to airconditioning systems will be undertaken in 2003-04 as result of this work.

3.2 Department of Transport and Urban Planning



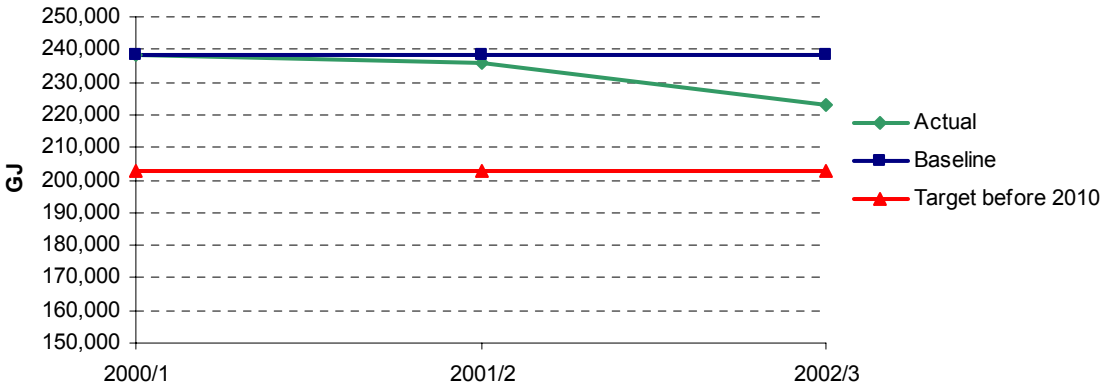
Transport SA is the first government agency to pilot an Energy Performance Contract (EPC). The EPC has focussed on Heating, Ventilation and Air Conditioning, lighting, Building Management System and water at the Walkerville Headquarters building. The EPC has a guaranteed reduction in greenhouse gas emissions of over 1,000 tonnes per annum.

Transport SA has received funding of $3 million for the 2003/04 financial year and $3.1 million for the 2004/05 year to undertake a full traffic signal lantern replacement program. The Light Emitting Diode (LED) technology, which forms the basis of the replacement program, allows sustainable cost savings to be achieved by reducing energy consumption by 80% and reducing greenhouse gases by 8% or 3,700 tonnes per annum.

Transport SA has entered into a 5-year contract for the supply and delivery of 169 buses comprising a mix of diesel (41 buses) and CNG (128 buses). Diesel buses are being introduced progressively to meet environmental targets during the contract's life (ie Euro 3 (2002) and Euro 4 (2006) Standards).

Posters and stickers on saving energy and promoting energy awareness were distributed to all agencies comprising the portfolio. An operational traffic light display showing the difference between the old traffic lantern and the new LED lanterns was set up for Energy Action Week 2002.

3.3 Department of Justice



Light levels were tested in some Attorney-General's buildings and unnecessary lights removed to reduce energy consumption. An Eco Light system that cuts the energy consumption of the lights was installed in some buildings.

Liquid Crystal Display monitors for computers began to be purchased in place of Cathode Ray Tube monitors that saved at least 15% in energy usage.

Timing devices were installed on electrical equipment, such as printers, photocopiers and hot water taps, to ensure they only operated when staff were in the building.

A 24 hour Police operational group was relocated in the Police Headquarters Building from a centrally air conditioned location to a location served by local air conditioning, resulting in a 90% reduction in the areas requiring heating or cooling after hours. 65 Police patrol vehicles were fitted with the more aerodynamic light bars to reduce fuel consumption.

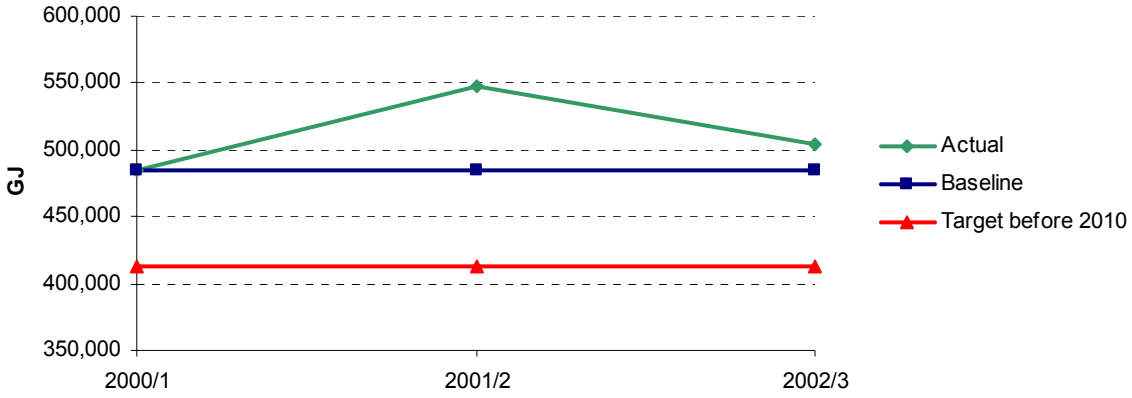
Energy audits of the Adelaide Magistrates Court and Sir Samuel Way Building lead to the subsequent installation of energy saving devices including:

- Room sensors to turn off lighting and air conditioning in unoccupied courts.
- Automated control of public lighting to court waiting areas and the car park exhaust fan to ensure they only operated when needed.

Justice agencies participated in Energy Managers Network meetings to encourage the sharing of information and bulk purchasing of goods and services.

A pro forma energy efficiency action plan was developed for use by all Justice agencies and provided to other agencies on request.

3.4 Department of Education & Children's Services



An "Energy Matters" newsletter is published once per term across DECS and includes communication on issues relating to the Action Plan. An energy column is also published fortnightly in "X-press" newspaper.

A Major Capital Works ESD guideline has been established. DECS' central office in Flinders Street, is currently undergoing major refurbishment with the air conditioning and electrical systems that service the building being upgraded.

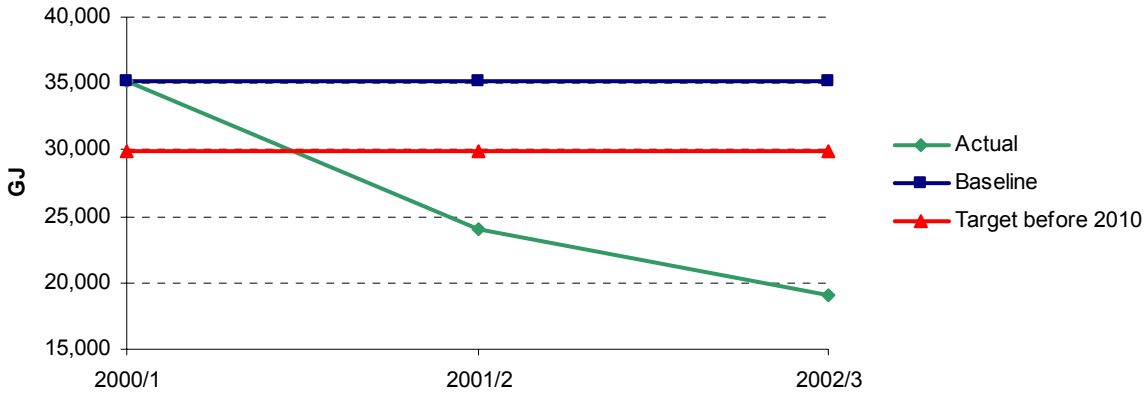
On-going implementation of the Schools Energy Program aims to conserve energy resources through active environmental stewardship.

A working committee has been formed between DECS and Energy SA with the intention of reviewing future opportunities for expanding and enhancing the "Schools Energy Program" for preschools and schools.

The SA Solar Schools program supports the use of alternative forms of energy and creates an understanding and acceptance of a range of energy technologies combined with ESD values. On March 5th 2003, the Premier, Hon Mike Rann MP and the Minister for Education and Children's Services, Hon Trish White MP announced program funding of $1.25 million. This will enable around 50 schools and preschools to harness energy from the sun.

DECS provides an ESD project fund with an annual $1 million budget as a contribution towards the implementation of ESD initiatives in schools and children's centres. There were 15 successful sustainable energy (photovoltaics) and 2 energy conservation initiatives.

3.5 Department of Environment, Conservation & the River Murray



The Environment & Conversation Portfolio Energy Efficiency Task Force was formalised in 2002/03 with the purpose of overseeing the development of the energy baseline for the portfolio, energy efficiency projects within the portfolio and development of policies and strategies on energy efficiency across the portfolio.

During Energy Action Week 2002, a joint statement from portfolio Chief Executives badged "Is Your Office Equipment Getting Enough Sleep?" was issued to all staff. The joint statement was accompanied by four energy efficiency messages – Energy Bites – produced to demonstrate how individual staff and work sites could utilise the energy saving options of office equipment.

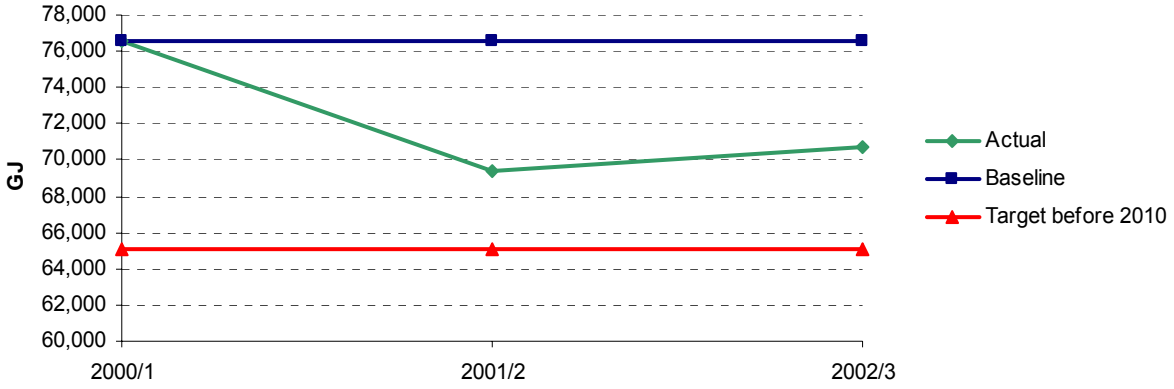
Energy audits were undertaken at sites demonstrated to be the highest energy users across the portfolio (Chesser House, Botanic Gardens and SA Water House). The audits recommended strategies to increase energy efficiency and will form the basis for future initiatives.

A Strategic Accommodation Plan for the Environment and Conservation Portfolio was established and endorsed during the year. Key within the strategy is the ongoing consolidation of portfolio accommodation to maximise energy efficiency.

A trial was held in Chesser House of Light Eco, which are low energy starters for fluorescent lights. This product is intended to reduce the energy required to start and operate fluorescent lights. It is expected that the Light Eco system will be expanded to other sites where possible.

DECRM is continuing to implement the policy requirement that all new long-term lease vehicles from Fleet SA are to be either dual fuel or single LPG fuel systems, where such factory fitted systems were available.

3.6 Department of Primary Industries & Resources



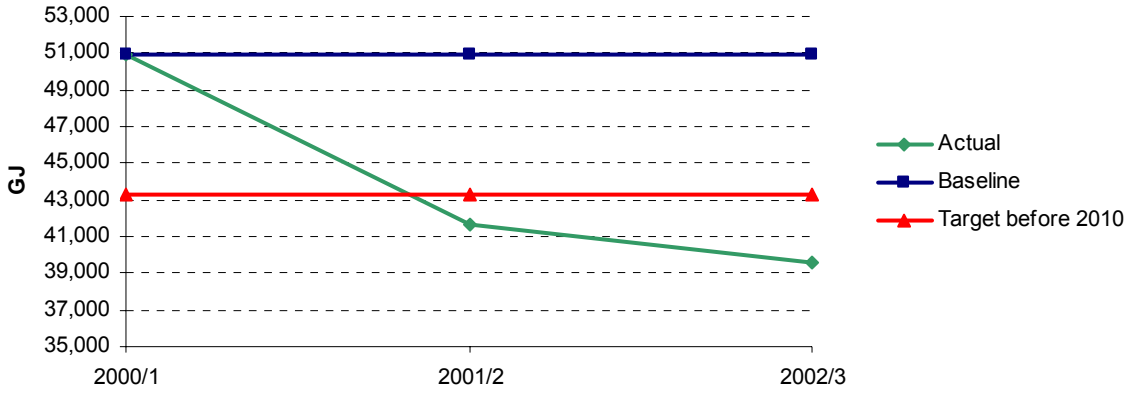
PIRSA has implemented an Energy Management Communication Strategy aimed at improving staff awareness and behaviour on energy related issues. As part of the strategy, launch packs were distributed to PIRSA sites containing site consumption data, promotional materials and a letter of endorsement from the Chief Executive. Energy Management seminars were presented to PIRSA staff at metropolitan and regional sites and a PIRSA energy newsletter "Watts the Buzz?" was distributed to staff.

25 engineering hours allocated under the Government Retail Electricity Contract were used for AGL to undertake a detailed study of the compressed air system at the SARDI Plant Research Centre. This study provided recommendations for reducing energy consumption within the system.

A review of PIRSA's vehicle fleet has been completed and a number of recommendations have been implemented to realise opportunities for fuel usage efficiencies.

As part of its Triple Bottom Line reporting, PIRSA will be reviewing its procurement policy to incorporate energy saving measures.

3.7 Department of Premier & Cabinet



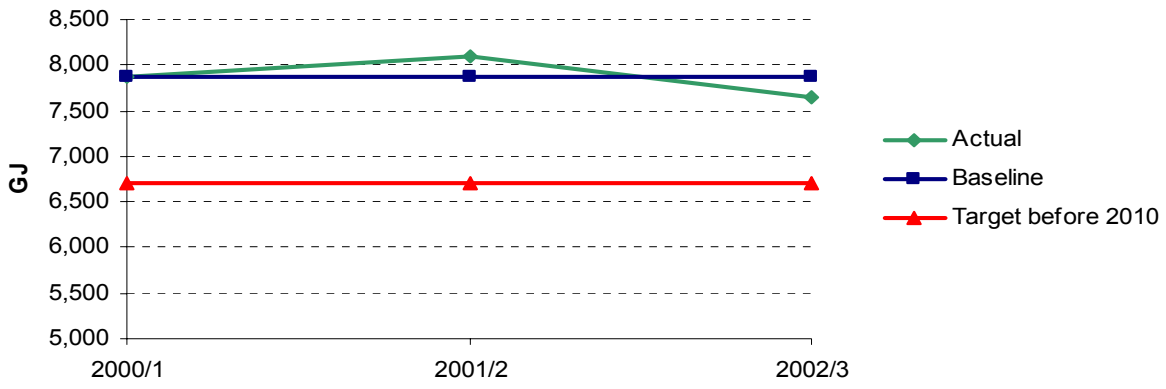
The DPC Energy Efficiency Action Plan is divided into two distinct areas: Arts SA and its associated agencies, and the balance of the department. Arts SA has responsibility for the Art Gallery of South Australia, Artlab Australia, Carrick Hill, Plain Central Services, the South Australian Museum, and the State Library of South Australia, all of which need to provide facilities for the public. The balance of the department leases its accommodation and manages the way in which it uses light and power by changing the way staff consume energy.

One of the major initiatives within the Action Plan is to increase staff awareness as to how they can contribute towards saving departmental energy and so, an energy awareness program has been established. Some of the other achievements from the DPC Energy Efficiency Action Plan over the past year have been:

- Solar panels have been installed at the Art Gallery of South Australia and the South Australian Museum
- LCD monitors, which use two thirds less energy than cathode ray tube monitors, have been introduced throughout most of the department
- Smart meters were set up at various sites within the North Terrace Cultural Precinct, enabling energy consumption data to be obtained via the internet
- The time that the general lighting is activated in the morning the State Administration Centre, has been changed to 7.30 a.m. thereby saving 6 hours per week in energy (DPC leases 6 floors in the State Administration Building)
- Air-conditioning is shut down in Arts SA's central office on public holidays
- Automated reminder note to staff to switch off equipment upon leaving the office, developed and implemented throughout DPC IT network
- Lighting surveys have been performed in many areas and excess fluoro tubes removed

The full effects of many of the above initiatives will be recognised in the coming financial year.

3.8 Department of Treasury & Finance

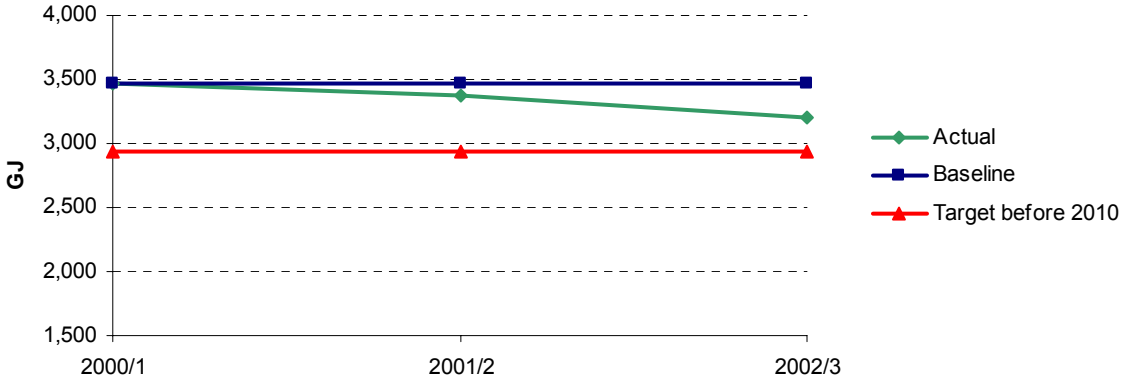


During the year a number of energy management actions were undertaken by the Department of Treasury and Finance.

A review of the energy use data for the 2000/01 and 2001/02 financial years was undertaken. An Energy Efficiency Action Plan for the department was launched during the year, which was developed in consultation with the Department of Premier and Cabinet, the major co-tenant of the State Administration Centre (SAC).

The automatic lighting times for the SAC were changed in order to improve the building's energy efficiency. Staff in several branches of the Department were provided with energy awareness sessions and information on energy efficiency was provided to all staff through the Intranet.

3.9 Business, Manufacturing and Trade

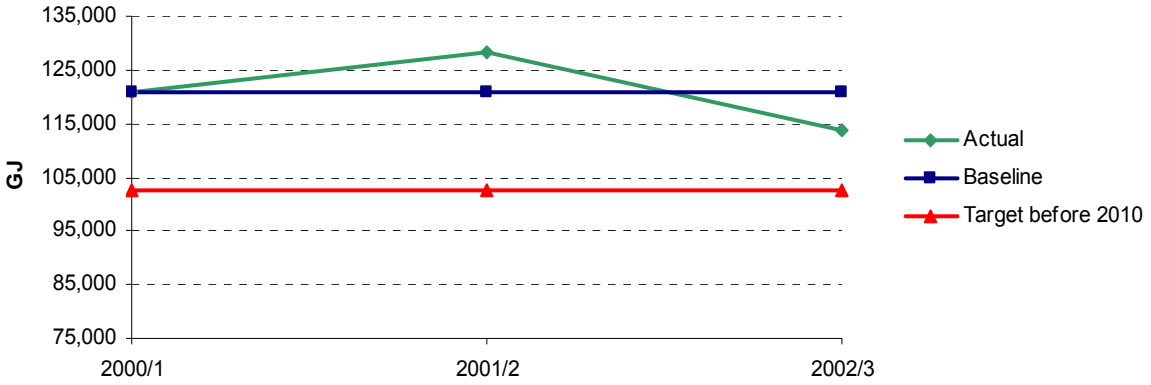


The focus during 2002-03 has been on the development of a database that will accurately record all departmental energy use.

The department implemented a pilot trial for energy-efficient lighting, which has resulted in savings in energy use for an equivalent level of illumination.

The department will move towards having 20% of all new agency fleet cars having dual fuel and drivers are strongly encouraged to use LPG.

3.10 Department for Administrative & Information Services



DAIS has reviewed building owner baseline energy usage data and is further developing capabilities for recording and reporting actual energy consumption for tenant and building owner usage via the Real Estate Management (REM) division's replacement property management system introduced in July 2003.

DAIS is an active contributor to the Adelaide Building Tune-Ups Project, which aims to improve the environmental performance of 10 CBD office buildings primarily through operational changes. The Project focuses on base building energy and water consumption for which building owners have direct cost responsibilities. It is a partnership initiative between the State Government and the Adelaide City Council. REM has committed 3 buildings to the project.

Energy consumption audits of government owned buildings and implementation of strategies to achieve target energy consumption reductions are continuing as well as incorporating energy management techniques in major owned building refurbishments (eg Education Centre). Appraisals of energy costs for the 12 months after building refurbishment are also being undertaken.

Current metering arrangements are being reviewed and the viability of installing additional metering to specifically separate building owner consumption in owned buildings is being examined.

Another program is the installing of Building Management Systems to owned buildings (eg Wakefield House) with associated lighting and air conditioning management systems.

A further program is the incorporating of energy efficiency measures in cleaning contracts as they come up for renewal including zero waste and cleaning during office hours to reduce after hours energy consumption.

Appendix A - End Use Category Definitions

Office Buildings – Tenant Light and Power

This category covers energy used for tenant operations in buildings whose primary function is office space. It includes tenancy lighting, office equipment, supplementary air conditioners, boiling water units etc. Additional building factors that contribute to higher energy consumption, such as computer server rooms, or localised areas of extended operating hours, are not separated from office consumption. Agencies also do not report on a building-by-building basis but on the aggregate performance of their entire building estate.

Office Buildings – Central Services

This category covers energy used for services in office buildings common to all tenants. It includes building air conditioning, lifts, security and lobby lights, domestic hot water etc.

Laboratories

This category covers all energy use in buildings that, as their primary function, are used as laboratories and research facilities.

Other Buildings

The energy performance of buildings not reported elsewhere is included in the Other Buildings category. These buildings range from simple storage sheds through to radio transmitters.

Passenger Vehicles

This category includes the energy consumption of passenger cars, light commercial vehicles and mini buses.

Other Transport

The energy consumption of all forms of transport, other than Passenger Vehicles, is reported in this category. Energy used for general public transport such as trains and buses is1` not included.

Law Courts

The Law Courts category includes all types of court facilities, whether a relatively small space in a larger building or a specialised building.

Public Buildings

This category includes energy consumed in buildings whose primary function is to be visited by the public in significant numbers. Typical buildings in this category are public libraries, museums or art galleries. Frequently, there is a requirement to maintain close control of internal environmental conditions on a 24-hour basis in these buildings.

Other Uses

This category includes the energy consumption of facilities that do not fit into any of the other categories.

Office Buildings – Combined Services

This category relates to the energy consumed in office buildings where tenant services and central services consumption can not be separated. This is often the case for smaller office buildings.

Educational Facilities

The Educational Facilities category includes all types of educational facilities from schools to TAFE Institutes.

Custodial Facilities

The Custodial Facilities category includes all types of custodial facilities for adults or juveniles.

Infrastructure – Roadways

This category includes energy consumption for street lighting, traffic lights and other facilities in the road network that are the direct responsibility of a Government agency.

Public Transport

This category covers the energy consumption in vehicles and infrastructure used primarily for conveying the public, including trains, trams, buses, ferries and their operating stations. It is intended for the agencies responsible for the *operation* of the public transport system, rather than the energy consumed by individual *users* of the public transport system.

Hospitals

This category covers the energy consumption in buildings and facilities primarily used as hospitals and in the delivery of health care services.

Police, Fire and Emergency Services Facilities

This category covers the energy consumption in buildings and facilities primarily used as police, fire and emergency services facilities such as police stations, fire stations and ambulance stations.

Appendix B - Conversion Factors

Table B.1 – Measurement Units

Unit	Abbreviation	Measures	Equals
Megajoule	MJ	energy	10^6 joules
Gigajoule	GJ	energy	10^9 joules
Petajoules	PJ	energy	10^{15} joules
Metre	m	length	
Kilogram	kg	mass	
Tonne	t	mass	1000 kg
Litre	L	volume	0.001m^3

Table B.2 – Energy Conversion Factors

Energy Type	Typical Measured Units	Abbreviation	To convert to Gigajoules, multiply by	CO_2 Intensity kg/GJ
Electricity	kilowatt hour	kWh	0.0036	329.0
Natural Gas	megajoule	MJ	0.001	51.7
Natural Gas	cubic metre	m^3	0.039 approximate	51.7
LPG (Liquefied Petroleum Gas)	tonnes	T	50	67.1
LPG	litre	L	0.0257	68.2
LPG	kilogram	kg	0.0496	67.1
Heating Oil/ Fuel Oil	litre	L	0.0373	77.4
Automotive Diesel	litre	L	0.0386	78.1
Petrol	litre	L	0.0342	80.3
AVGAS	litre	L	0.0331	77.2
Greenpower	kilowatt hour	kWh	0.0036	0