



SA Government Energy Use Annual Report

2003/04



Government
of South Australia

Contents

Tables	1
Figures	1
Executive Summary	2
1. Introduction	3
1.1 Scope of the Energy Efficiency Action Plan	3
1.2 Energy Efficiency Reference Group	3
1.3 Verification and Reporting Requirements.....	3
1.4 Energy Data Gathering and Reporting (EDGAR)	4
1.5 Reporting Structure used for EDGAR	4
2. Overall Energy Use Performance	5
2.1 Outcomes for 2003-04	5
2.2 Energy Use Trends in Government Buildings	8
2.3 Major Pumping	10
3. Progress by Portfolio	11
3.1 Department of Human Services	12
3.2 Department of Education and Children's Services.....	13
3.3 Department of Justice	14
3.4 Department of Further Education, Employment, Science and Technology	15
3.5 Department for Administrative and Information Services	16
3.6 Department of Transport and Urban Planning	17
3.7 Department of Primary Industries and Resources	18
3.8 Department of Premier and Cabinet	19
3.9 Department of Environment, Conservation and the River Murray	20
3.10 Department of Treasury and Finance	21
3.11 Department of Trade and Economic Development	22
Appendix A - End Use Category Definitions	23
Appendix B - Conversion Factors	25

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Tables

Table 1: Energy use by portfolio	5
Table 2: Energy consumption and greenhouse gas emissions by end use category	6
Table 3: Energy consumption and greenhouse gas emissions by fuel type	8
Table 4: Transport, public transport and, passenger vehicle energy consumption and greenhouse gas emissions by fuel type	8
Table 5: Energy use in government buildings 2000-01 to 2003-04 by portfolio	9
Table B.1 – Measurement Units	25
Table B.2 – Energy Conversion Factors	25

Figures

Figure 1: Energy consumption by end-use category as percentage of total	7
Figure 2: Energy greenhouse gas emissions by end-use category as percentage of total	7
Figure 3: Portfolio contribution to total government building energy use by percentage	10
Figure 4: Five year rolling average for major pumping electricity use	10

Executive Summary

This Annual Government Energy Use Report has been prepared in accordance with the requirements of the **Government Energy Efficiency Action Plan**, particularly Action 5 Verification and Reporting. This report includes across Government energy use and details on performance towards achieving stated energy use reduction targets.

Scope of the Energy Efficiency Action Plan

The Energy Efficiency Action Plan and associated targets apply to all non-commercial agencies. The definition of non-commercial is any agency in the "General Government Sector" of the South Australian budget papers, published annually by the Department of Treasury & Finance.

South Australia's Strategic Plan

South Australia's Strategic Plan was released on 31 March 2004. Under target T3.2 of the Plan, Agencies are required to reduce energy use in Government buildings by 25% within 10 years, measured against a 2000-01 baseline. There is also an interim target to achieve a 15% reduction by 2010. The delivery mechanism for these targets is the Energy Efficiency Action Plan program.

Energy Use in Government Buildings

In pursuit of South Australia's Strategic Plan target T3.2, overall Government energy use in buildings in 2003-04 was 2,538,995GJ, which represents a decrease of 0.34% from the 2000-01 baseline. However, energy use has risen in above the figure reported in 2002-03, when the total energy use was 2.4% below the baseline.

Total Government Energy Use

Overall Government energy use for the financial year 2003-04 was 4,410,023GJ and related greenhouse emissions were approximately 602,000 tonnes of CO₂ equivalent. The portfolio with the greatest energy consumption was Human Services, primarily due to energy use in hospitals and other health services. This portfolio used 1,571,802GJ of energy, which is 35.64% of the total energy use in Government. The portfolio with the second largest energy use was Transport and Urban Planning, including public transport energy consumption, which used 1,531,476GJ of energy, 34.73% of the total Government figure.

Independent Verification of Performance

Under Action 5 of the Action Plan, Independent Verification of Performance is to be provided annually, and 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 for 2003-04 has been completed by consultants KPMG, concluding that energy data provided to Energy SA by the selected portfolios, accounting for over 40% of energy use across Government buildings, can be relied upon.

I. Introduction

The South Australian Government's Energy Efficiency Action Plan, developed in accordance with Module 3.1 of the National Greenhouse Strategy, was launched by the Premier on 3 May 2002. The Action Plan is a comprehensive energy management program for South Australian Government and defines 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.

The Action Plan incorporates South Australia's Strategic Plan target T3.2, which requires a reduction in energy use in Government buildings by 25% within 10 years measured against a 2000-01 baseline. There is also an interim target to achieve a 15% reduction by 2010. The Action Plan is also the foundation program for the energy management priority area of the Greening of Government Operations Framework, launched by the Minister for Administrative Services in October 2003.

1.1 Scope of the Energy Efficiency Action Plan

The Energy Efficiency Action Plan and associated targets apply to all non-commercial Agencies. The definition of non-commercial is any agency in the General Government Sector of the South Australian budget papers, published annually by the Department of Treasury & Finance. Portfolios may choose to include any Agencies not in the General Government sector.

General Government comprises all government departments, offices and other bodies engaged in providing services free of charge or at prices significantly below their cost of production. General Government services include those that are mainly non-market in nature, those that are largely for collective consumption by the community, and those that involve the transfer or redistribution of income. These services are financed mainly through taxes, other compulsory levies and user charges.

A list of the General Government entities is available on the Treasury and Finance web site at <http://www.treasury.sa.gov.au/>.

1.2 Energy Efficiency Reference Group

The Energy Efficiency Reference Group (EERG) was established by Cabinet to oversee the implementation of Action Plan requirements across Government, and is tasked to ensure that Government meets its energy use reduction target. The EERG meets monthly, has representatives of executive management of all portfolios and is co-chaired by the Department of the Premier & Cabinet (Cabinet Office) and PIRSA (Energy SA).

1.3 Verification and Reporting Requirements

An integral component of Energy Efficiency Action Plan is publication of results. By reporting annual energy use and significant energy management initiatives in the agency annual reports there is a public record of energy use and performance against targets. Therefore Action 5 of the Action Plan requires the following reporting and verification activities:

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- Agencies are to report annual energy use against targets, significant energy management initiatives and other achievements against the Action Plan in their annual reports.
 - 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.
 - Independent verification of performance under the Action Plan is to be coordinated annually by Energy SA.

This report is the third SA Government Annual Energy Use Report produced in accordance with the Action Plan's requirements. Its aim is to present an overview of the SA Public Sector's energy use, greenhouse gas emissions and performance against the stated energy use reduction targets. This report will focus primarily on analysis of building energy use but will also include some passenger vehicle and public transport information.

1.4 Energy Data Gathering and Reporting (EDGAR)

Data for the 2000-01 through 2003-04 financial years was collected using inputs from each Government portfolio onto the Energy Data Gathering And Reporting EDGAR (EDGAR) system. EDGAR is an Internet based user interface to a central database system developed by the Commonwealth Government and being used by a number of other jurisdictions across Australia including Australian Capital Territory, New South Wales, Western Australia and Victoria. 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.

1.5 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 2003-04

Table 1 provides information on the energy consumption of individual portfolios for 2003-04. These figures include all building and transport energy consumption including public transport. It does not include energy use from both Non-Financial Public Corporations and Public Financial Corporations. Total expenditure on reported Government energy use was approximately \$100,200,000 for the 2003-04 financial year.

Table 1: Energy use by portfolio

Portfolio	Total Energy Use		Greenhouse emissions	
	GJ	% of SA Government	Tonnes	% total
Human Services	1,571,802	35.64%	215,509	35.79%
Transport and Urban Planning	1,531,476	34.73%	144,491	24.00%
Education and Childrens Services	483,925	10.97%	92,938	15.43%
Justice	213,282	4.84%	43,014	7.14%
Further Education, Employment, Science and Technology	173,211	3.93%	33,977	5.64%
Administrative and Information Services	151,415	3.43%	27,392	4.55%
Primary Industries and Resources	129,354	2.93%	16,605	2.76%
Environment and Conservation and the River Murray	76,012	1.72%	8,903	1.48%
Premier and Cabinet	66,184	1.50%	16,384	2.72%
Treasury and Finance	6,895	0.16%	1,841	0.31%
Trade and Economic Development	6,467	0.15%	1,054	0.18%
Total	4,410,023		602,133	

Total reported energy consumption for 2003-04 was 4,410,023GJ with related levels of greenhouse gas emissions of approximately 602,100 tonnes. The portfolio Human Services incorporating the current Departments of Health and Families and Communities has the highest energy consumption of all the portfolios due to the energy consumption of public hospitals and healthcare units recorded under this portfolio.

The portfolios Education and Children's Services and Further Education, Employment, Science and Technology have reported their energy use as the single portfolio Education, Training and Employment in previous reports. This separation of portfolios occurred during this financial year. Education and Children's Services includes energy use from kindergartens, primary schools, secondary schools and office buildings. Further Education, Employment, Science and Technology includes energy use from TAFE Institutes and office buildings.

The portfolio Trade and Economic Development was known as Industry and Trade in previous energy reports.

Table 2 provides information on energy consumption and related greenhouse gas emissions by end-use category for the 2003-04 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		Greenhouse emissions	
	GJ	% Total	Tonnes	% total
Hospitals	1,300,544	29.49%	177,837	29.53%
Public Transport	1,235,468	28.02%	91,985	15.28%
Educational facilities	544,724	12.35%	116,043	19.27%
Passenger Vehicles	524,147	11.89%	41,608	6.91%
Office - Tenant Light and Power	129,576	2.94%	34,230	5.68%
Police, Fire and Emergency Services Facilities	105,558	2.39%	23,129	3.84%
Infrastructure - roadways	91,344	2.07%	24,389	4.05%
Other healthcare buildings	77,864	1.77%	15,210	2.53%
Custodial facilities	71,973	1.63%	12,158	2.02%
Office - Central Services	65,738	1.49%	10,598	1.76%
Office buildings - combined services	58,632	1.33%	14,657	2.43%
Public Buildings	55,774	1.26%	14,558	2.42%
Laboratories	47,237	1.07%	7,211	1.20%
Law Courts	29,161	0.66%	6,175	1.03%
Other Buildings	25,501	0.58%	5,441	0.90%
Other Transport	20,070	0.46%	1,590	0.26%
Other Uses	14,079	0.32%	2,233	0.37%
Other health care facilities	12,633	0.29%	3,082	0.51%
Total	4,410,023		602,133	

As Table 2 demonstrates, the largest single end-use category in the 2003-04 financial year was hospitals, which accounted for 29.49% 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 12.35% of the total energy use. The various transport categories account for 40% of all energy use.

Figure 1 shows the six end-use categories responsible for the highest energy use in 2003-04 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

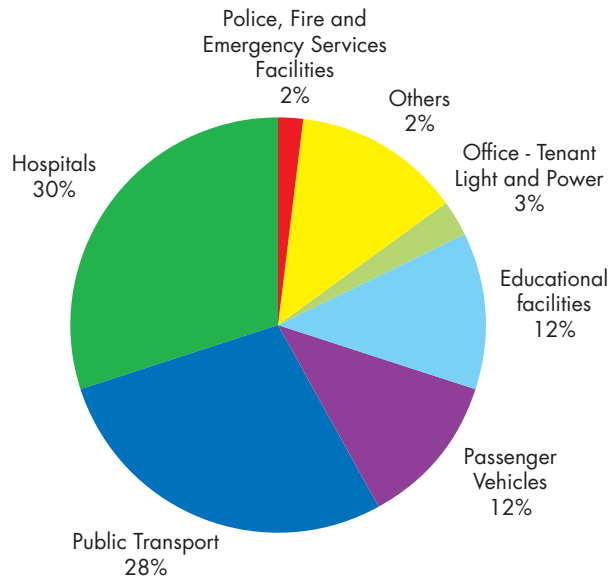
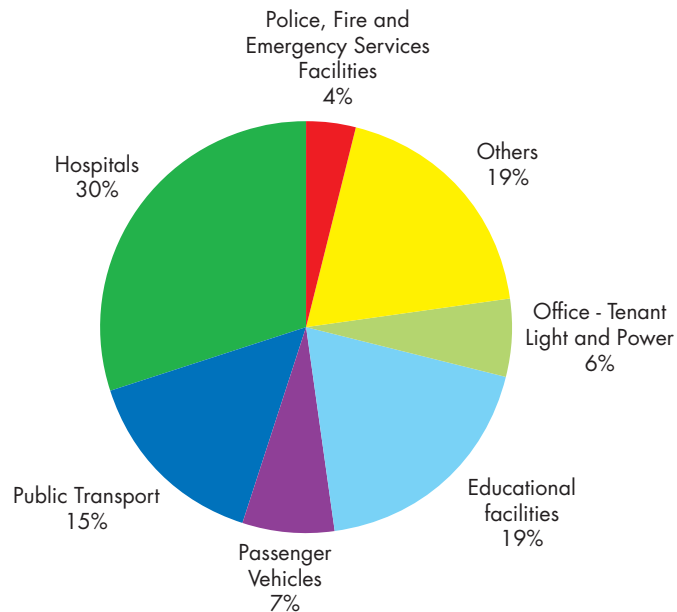


Figure 2 contains the same end-use categories as above but represents greenhouse emissions relating to energy consumption.

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 equal fourth largest user by percentage along with Passenger Vehicles and are equal second largest related to greenhouse gas emissions along with Others. This is most likely due to the high proportion of electricity in education's energy use and the relative greenhouse intensity of electricity compared to other fuel sources.

Table 3 provides details 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

Fuel Type	Energy use		Greenhouse emissions	
	GJ	% total	Tonnes	%total
Electricity	1,547,742	35.01%	413,248	68.63%
Natural Gas	1,295,769	29.38%	66,991	11.13%
Automotive Diesel	1,135,632	25.75%	88,262	14.66%
Petrol	291,830	6.62%	23,893	3.97%
LPG	128,472	2.91%	8,917	1.48%
Heating Oil/Fuel Oil	8,989	0.20%	699	0.12%
AVGAS	1,590	0.04%	125	0.02%
Total	4,410,023		602,133	

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

Fuel Type	Energy Use		Greenhouse emissions	
	GJ	% total	Tonnes	% total
Automotive Diesel	1,127,571	63.99%	87,635	67.44%
Petrol	291,830	16.56%	23,893	18.39%
Natural Gas	297,594	16.89%	15,386	11.84%
LPG	41,478	2.35%	2,905	2.24%
AVGAS	3,619	0.21%	125	0.01%
Total	1,762,092		129,943	

2.2 Energy Use Trends in Government Buildings

Energy use in Government buildings reported for the 2003-04 financial year has decreased by 8,787GJ (or 0.34%) against the baseline 2000-01. This is broken down by portfolio in Table 5 below. Under the Energy Efficiency Action Plan, Agencies are required to reduce energy use in Government buildings by 15% before the year 2010, en route to achieving South Australia's Strategic Plan target of a 25% reduction within 10 years. The base year against which this target has been set is the 2000-01 financial year¹.

As this is the third year where data collected through the EDGAR system under the Energy Efficiency Action Plan program, comparisons have been made between the 2000-01, 2001-02, 2002-03 and, 2003-04 financial years. The range of available data will increase in future allowing for more detailed trend analysis.

¹ Baselines can be adjusted in legitimate circumstances according to specific procedures developed by the EERG.

Legitimate circumstances are limited to:

- Where change occurs in portfolio structure (and particular sites must be transferred from one portfolio to another)
- Where a site was previously excluded from reported data
- Where data for a site previously reported was an estimate and actual data is now available

Agencies are not able to revise baselines due to changes in operational characteristics, such as staff number changes, and productivity (service-level) fluctuations, or acquisition or disposal of sites. Untenanted sites, a change in tenancy or size of floor space occupied are also not recognised as legitimate circumstances to warrant changes.

Table 5: Energy use in government buildings 2000-01 to 2003-04 by portfolio

Portfolio	Energy Use (GJ)				Move from Baseline
	2000/01	2001/02	2002/03	2003/04	
Human Services	1,374,371	1,355,417	1,358,961	1,417,170	3.11%
Education and Childrens Services	369,971	392,699	376,716	404,180	9.25%
Justice	240,450	232,166	218,910	213,282	-11.30%
Further Education, Employment, Science and Technology	156,157	174,965	159,192	151,400	-3.05%
Administrative and Information Services	126,158	133,598	119,298	117,094	-7.18%
Transport and Urban Planing	74,345	69,827	66,939	68,864	-7.37%
Primary Industries and Resources	76,522	69,393	67,740	65,449	-14.47%
Premier and Cabinet	74,742	65,153	64,692	61,271	-18.02%
Environment and Conservation and the River Murray	43,728	32,701	31,092	30,555	-30.12%
Treasury and Finance	7,877	8,089	7,643	6,895	-12.47%
Trade and Economic Development	3,461	3,373	3,196	2,835	-18.09%
Total	2,547,782	2,537,381	2,474,379	2,538,995	-0.34%

The portfolio that accounts for the largest percentage of building energy use in Government is Human Services. This particular portfolio is responsible for 55% of public sector building energy use, with the majority of the energy used in provision of health services.

Education and Children's Services is the next largest user of energy in the Government accounting for 15% of total energy use. Approximately 98 % of this energy use is attributable to educational facilities such as primary and secondary schools. The portfolios of Justice, Further Education, Employment, Science and Technology and Administrative and Information Services, are responsible for approximately 10, 6 and, 4% respectively, and dominate the remaining 20% of Government energy use.

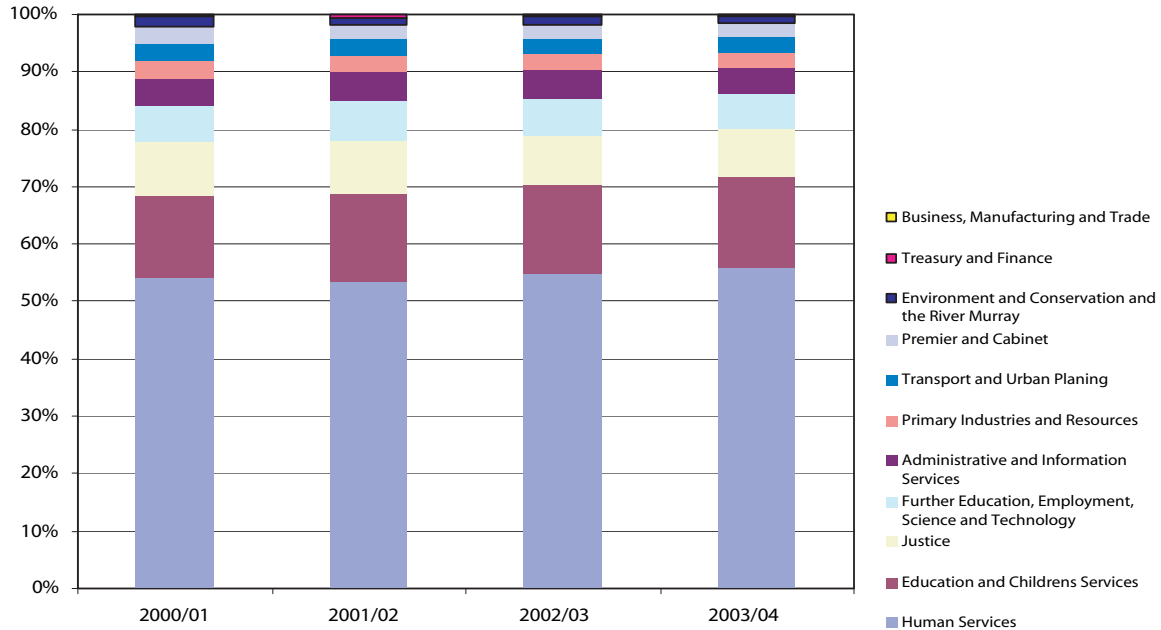
The remaining 10% of Government building energy use is related to the operations of: Primary Industries and Resources, Transport and Urban Planning, Premier and Cabinet, Environment and Conservation and the River Murray, Treasury and Finance and Trade and Economic Development.

As can be seen in Table 5 above, there was a decrease in energy use from the baseline year in all portfolios other than Human Services and Education and Children's Services. Detailed overviews of performance in each portfolio, significant energy management achievements and proposed new initiatives are provided in Chapter 3.

Government energy use performance is expressed as absolute and not normalised against any other factor such as floor area, number of staff, students, hospital beds etc, however the potential for these factors to have an impact on Government's performance against the stated energy use reduction targets is acknowledged.

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, 2002-03 and 2003-04 financial years. As demonstrated in the graph there has been no significant change in the portfolio contributions to over all energy use in these years.

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

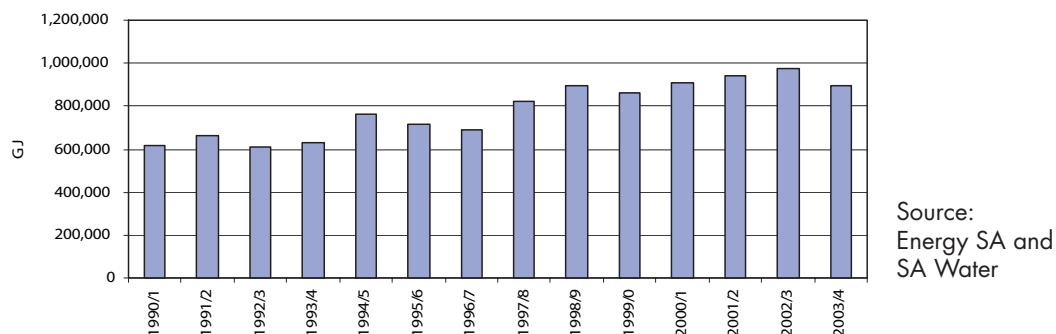


2.3 Major Pumping

Water-pumping energy use is not specifically reported under the Energy Efficiency Action Plan as SA Water a Non-Financial Public Corporation and not in the General Government sector. Despite this SA Water has provided the data contained in Figure 4, which provides an interesting overview of energy use in this sector.

A significant amount of electricity (equivalent to approximately 35% of total energy use in all Government buildings) is used in the pumping of water from the River Murray to Adelaide and country regions, from Whyalla to the upper South East. 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 4 provides a graphic of the five-year running average, in order to identify any underlying trend. The figures indicate an increase of 47% in electricity use for major pumping over the last 12 years. SA Water used less energy in 2003-04, largely due to good rainfall in local catchments and water conservation efforts, helping to reduce major pumping operations.

Figure 4: Five year rolling average for major pumping electricity use



3. Progress by Portfolio

Progress made by portfolio is now presented using information provided by Energy Efficiency Reference Group (EERG) members, which was based on the details reported in individual 2003-04 Annual Reports.

Baseline Revisions

The need to revise Baselines between portfolios has been acknowledged as an important requirement under this program, and in the 2002-03 Independent Verification Report consultants Ernst & Young recommended that a standard procedure be developed and implemented by the Energy Efficiency Reference Group for this purpose.

Where modifications have been made to Baseline energy use data, a brief explanation is provided. Baselines and subsequent years' energy figures are revised to incorporate sites that were excluded from previous years' reporting due to noted omissions, incorrect or inaccurate data.

Baselines and subsequent years' energy figures are not revised due to changes in operational characteristics, such as staff number changes, and productivity (service-level) fluctuations, or acquisition or disposal of sites. It is acknowledged that portfolio structures change over time and therefore the portfolio baseline and subsequent years' energy figures will need to be revised to represent the structure of the portfolio for the given reporting period. Untenanted sites, a change in tenancy or size of floor space occupied are also not recognised as legitimate circumstances to warrant changes to baselines and subsequent years' energy figures. Site acquisition, disposal or redevelopment (i.e. increased floor area) are not considered legitimate.

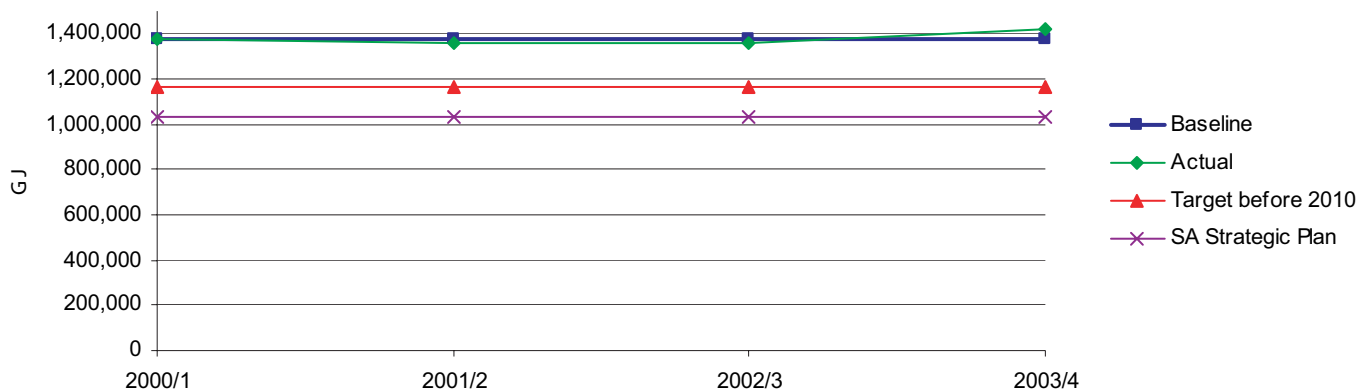
Therefore, only the following are considered to be legitimate circumstances:

- Site transfer (to/from another portfolio)
- Existing site previously excluded from reported data and
- Revision to previously reported data

Independent Verification of Performance

Under Action 5 of the Action Plan, Independent Verification of Performance is provided annually. The purpose of this requirement is to provide credibility to the performance being reported by Government. An Independent Verification Report for 2003-04 has been completed by consultants KPMG, concluding that energy data provided to Energy SA by the selected portfolios – accounting for over 40% of energy use across Government buildings - can be relied upon.

3.1 Department of Human Services



Overview of Performance to 2003-04

Human Services¹ has commissioned a number of new facilities and substantially increased the floor area of a number of existing facilities in the period between 2000-01 and 2003-04. Estimates suggest that floor area has increased by around 10% during the preceding three years.

Human Services has gained SA Ambulance from the Justice portfolio for all reporting periods. Human Services made revisions to ensure that reported energy data was included in the appropriate end use categories for all reporting periods. Revisions to add energy data previously not reported for all reporting periods were made for certain end use categories.

Significant Energy Management Achievements

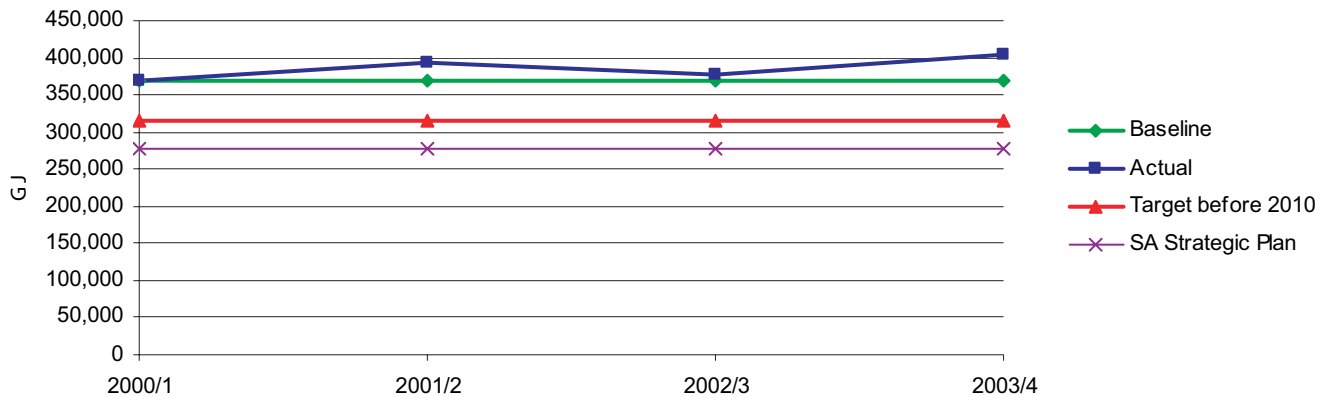
During 2002-03 and 2003-04 the Repatriation General Hospital (RGH) implemented a number of projects that have resulted in a 19% reduction in gas consumption and a 5% reduction in electricity consumption in 2003-04. Key initiatives included the progressive installation of a large solar hot water system that when completed in 2004-05 is expected to reduce the RGH's gas consumption by 50%. A lighting control system, eco-light, was installed during 2003-04 that reduces energy consumption from fluorescent lights by approximately 20%.

Proposed New Initiatives

During 2003-04 Human Services undertook extensive investigations into the feasibility of installing a large gas fired cogeneration plant at the Royal Adelaide Hospital (RAH). Investigations suggest that a cogeneration plant is feasible and will enhance the security of supply at RAH. Cogeneration has the potential to make a significant contribution towards meeting the portfolio's building energy use reduction target. During 2003-04 three energy audits were performed at Glenside, Hampstead Centre and James Nash House. The recommendations from the audits are currently being evaluated for implementation.

¹ Human Services incorporates the current Departments of Health and Families and Communities.

3.2 Department of Education and Children's Services



Overview of Performance to 2003-04

The Department of Education Training and Employment was split into two new departments: Education and Children's Services and Further Education, Employment, Science and Technology. Education and Children's Services includes energy use from kindergartens, primary schools, secondary schools and office buildings. The Department of Education and Children's Services is the second largest portfolio and has increased its energy usage by 9.25%. Continued installation of Heating Ventilation and Air Conditioning (HVAC) systems in schools to deliver the DECS Fresh Air Policy is believed to be putting upward pressure on DECS energy use.

Significant Energy Management Achievements

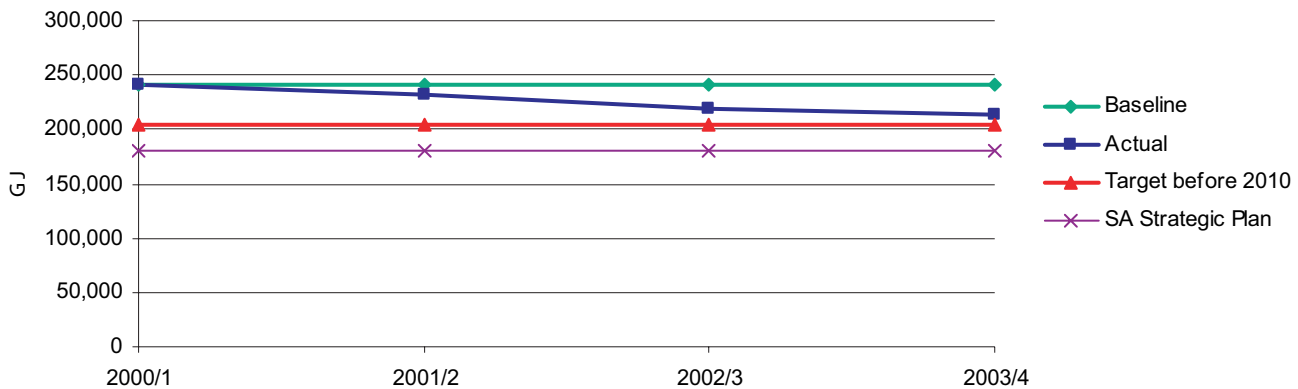
All new buildings are being designed and constructed in compliance with Action 2.1 of the Energy Efficiency Action Plan. Examples undertaken include the Australian Science and Mathematics School and the Mawson Lakes School. DECS has completed various major works projects to achieve the Asset Management Strategy benchmark requirements of capacity, condition and suitability. Examples include the Mawson Lakes School, Kilparrin School/Townsend House and Loxton High School.

The SA Solar Schools program supports the use of alternative energy forms and creates an understanding and acceptance of a range of energy technologies combined with ESD values. South Australia's Strategic Plan has indicated that the program will be extended from 50 to 250 schools by 2014. In 2003-04, the first 25 schools were selected as part of the Round One rollout. The Round One rollout is now complete and sites have been selected for Round Two.

Proposed New Initiatives

DECS in association with DAIS has identified a schedule of works for mandatory preventative maintenance required to be undertaken across all DECS sites in order to comply with current legislation and ensure optimum operations of existing mechanical plant and equipment. This is in line with Action 2.3 of the Energy Efficiency Action Plan.

3.3 Department of Justice



Overview of Performance to 2003-04

Justice has transferred SA Ambulance to Human Services for all reporting periods. Revisions to increase previously reported data for 2000-01, 2001-02 and 2002-03 were made for certain correctional facilities and office buildings. Revisions to add energy data previously not reported for all reporting periods were made for certain end use categories, and a successful position of 11.3% below the baseline has been achieved.

Significant Energy Management Achievements

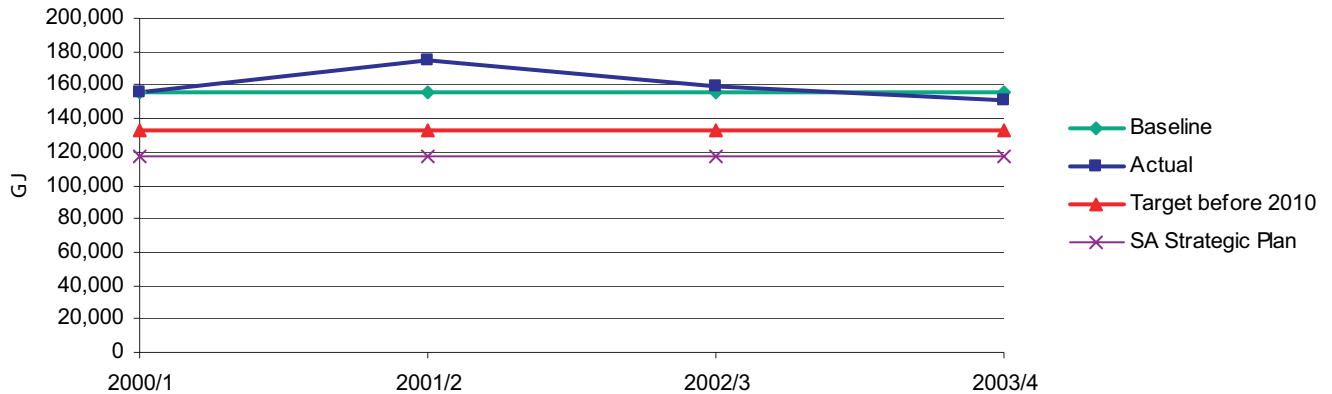
Major energy consuming buildings across the Justice portfolio were audited to ascertain the most effective ways of reducing energy. The following measures have been implemented by many agencies: installing movement detector controls for lighting and supplementary air conditioners in meeting rooms, installing timers to photocopiers, large printers and shredders, replacing lighting with more efficient lights, de-lamping in some areas and installing eco-light systems, air conditioning upgrades and reprogramming boiling water systems so they do not run after business hours.

Some agencies such as the Courts Administration Authority distributed regular energy bulletins to staff to raise awareness and communicate new initiatives. SA Police has reviewed its use of dedicated LPG motor vehicles to determine energy saved and associated running costs. SA Metropolitan Fire Service has upgraded lift control systems.

Proposed New Initiatives

The Justice portfolio is undertaking three new initiatives in 2004-05: Energy Audits in SA Police buildings; expansion of Building Management Systems in Courts Administration Authority facilities and an program of introducing static dimming to lighting systems in Correctional Services facilities.

3.4 Department of Further Education, Employment, Science and Technology



Overview of Performance to 2003-04

The Department of Education Training and Employment (DETE) was split into two new departments: Education and Children's Services and Further Education, Employment, Science and Technology (DFEEST). DFEEST includes energy use from TAFE Institutes and office buildings. Energy use for the portfolio is currently 3% below the baseline figure.

Significant Energy Management Achievements

Energy management improvements resulting from energy audits include:

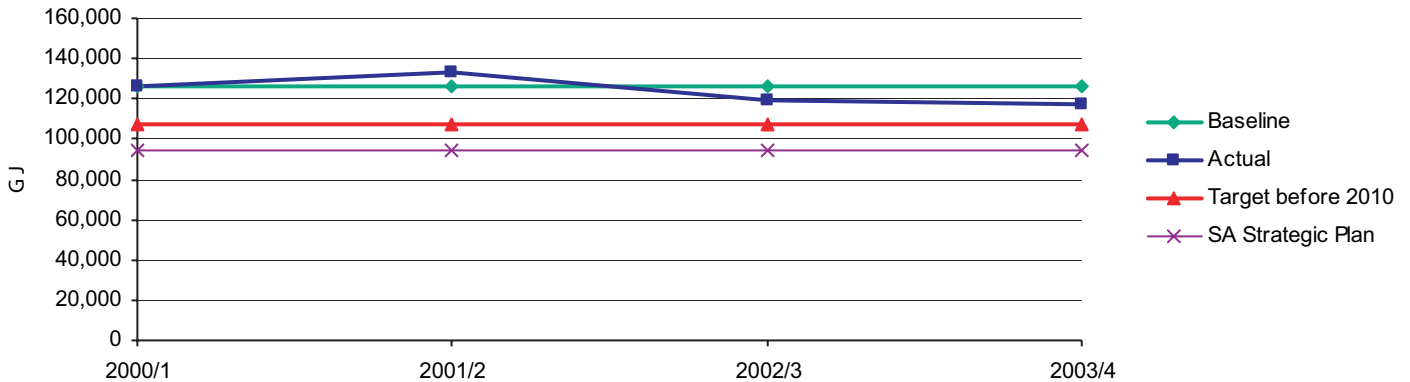
- Alterations to the energy management system at the Adelaide Currie St Campus to reduce running time of approximately 50 air handling units by 8-10 hours per week.
- Low cost measures adopted at Noarlunga campus including turning off atrium lights during daylight, later summer starting times for heating and cooling and manual operation of a boiler to better match supply and demand thereby reducing energy usage.
- Improvements at Gilles Plains include holiday loadings and adjustments to temperature settings through the BMS, lighting upgrades, external shading and window tinting and lighting upgrade across the Institute.

Proposed New Initiatives

A program to replace major air conditioning systems in TAFE Institutes that will have energy improvement benefits including:

- Upgrade of the main thermal plant room at Regency Campus will result in a reduction of 250 tonne of CO₂ and \$30,000 in power costs.
- A co-generation plant at Regency that will reduce electricity costs by \$110,000 annually once it comes on line.

3.5 Department for Administrative and Information Services



Overview of Performance to 2003-04

Administrative and Information Services (DAIS) has gained Public Sector Workforce Relations from the Premier and Cabinet portfolio for all reporting periods. Overall the portfolio is 7.18% below the baseline.

Significant Energy Management Achievements

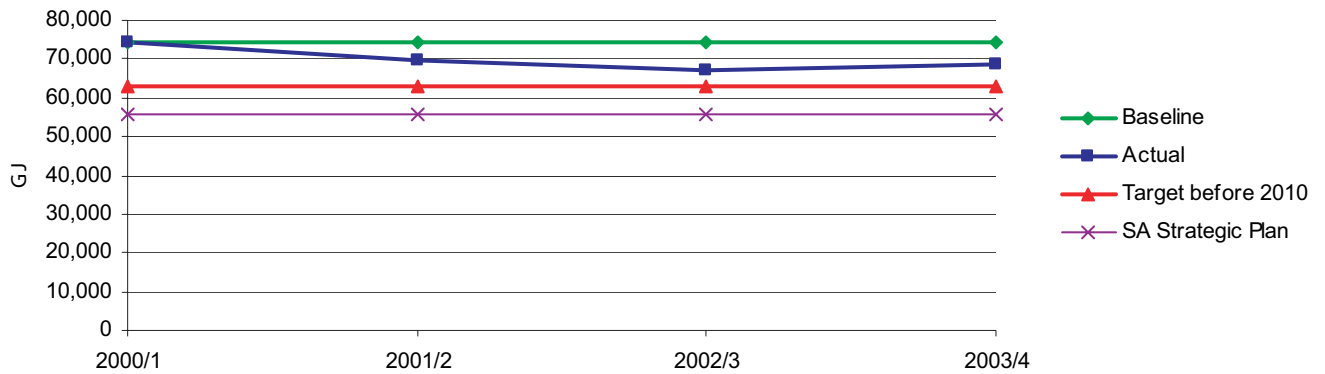
Tenancy achievements: Energy audits are being undertaken on all major energy consuming tenancies. A Staff energy use awareness campaign is underway as instigated by the DAIS Environmental committee. More low energy consuming office equipment is being used in daily operations. Energy efficiency is now a brief requirement to all designers in the development of new or refurbished fitout solutions.

Building owner achievements: 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 between the State Government and the Adelaide City Council. REM has committed three buildings to the project. REM is waiting for Greenhouse Ratings to be issued for these buildings and it is intended that works recommended to improve the ratings will be implemented once they are identified.

Proposed New Initiatives

Implementation of recommendations from energy audits previously undertaken over owned buildings. Government ICT Services initiatives: Inclusion of energy efficiency criteria into the across government hardware contract.

3.6 Department of Transport and Urban Planning



Overview of Performance to 2003-04

Transport and Urban Planning made revisions to ensure that reported energy data was included in the appropriate end use categories for all reporting periods. Revisions to add energy data previously not reported for all reporting periods were made for certain end use categories. This has meant that portfolio energy use increased slightly in 2003-04, notwithstanding its position 7.37% below the baseline.

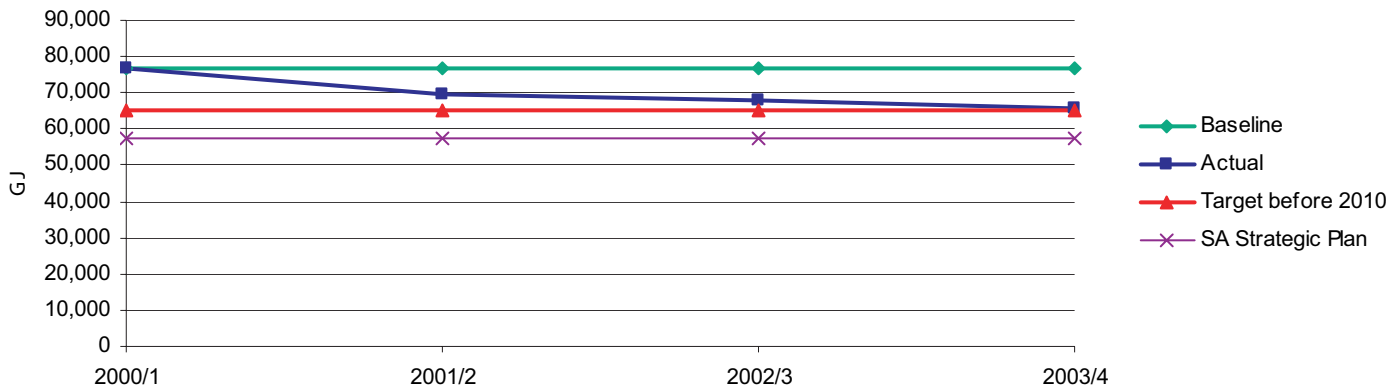
Significant Energy Management Achievements

An Energy Performance Contract (EPC) was completed in the Walkerville building in June 2004. The EPC has focused on lighting, the Building Management System and water management. The EPC will ensure guaranteed energy savings equating to approximately \$180,000 per year (30% reduction in cost) and guaranteed reductions in greenhouse gas emissions of approximately 1,000 tonnes per annum (25% reduction).

Proposed New Initiatives

Transport SA has received funding of \$3 million for the 2003-04 financial year to undertake its traffic signal lantern replacement program with Light Emitting Diode (LEM) technology. 242 signal sites have been upgraded resulting in an energy reduction of approximately 1,500,000 kWh and approximately 1,700 tonnes of greenhouse gas emissions. Energy audits were conducted at Oaklands Park, Port Augusta, Crystal Brook and Norwood. Recommendations included fresh air cycles to four of the largest air conditioners, replacement of lamps with new tri-phosphor lamps, changes to air conditioning time switch controls and Building Management Systems programmed to take account of holiday periods and daylight savings.

3.7 Department of Primary Industries and Resources



Overview of Performance to 2003-04

Primary Industries and Resources South Australia (PIRSA) made a revision to decrease previously reported incorrect data for 2002-03. The portfolio is almost 15% below its baseline levels of consumption, very close to the interim target for 2010.

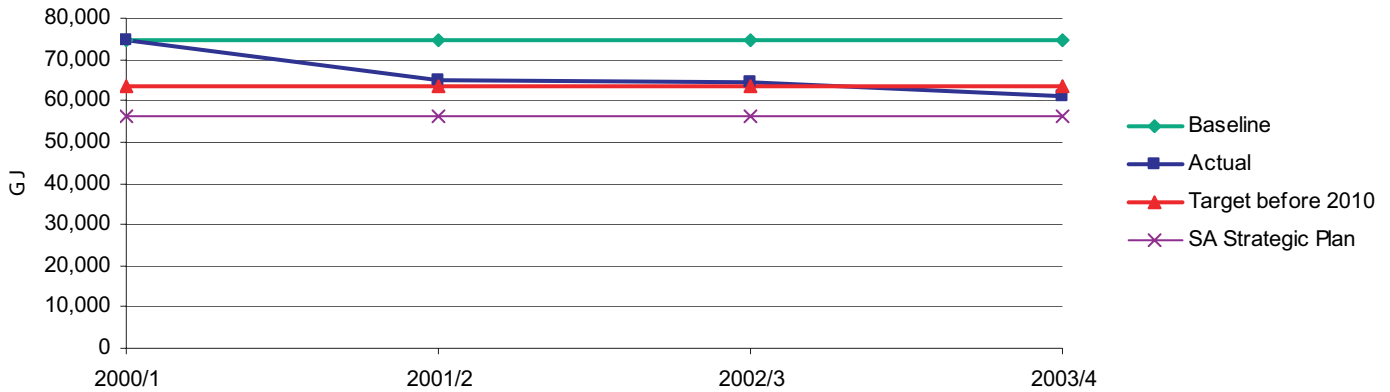
Significant Energy Management Achievements

Significant capital was invested in a range of initiatives throughout the year including the installation of energy saving lighting devices at 25 Grenfell Street, rewiring of light circuits at 101 Grenfell Street to minimise usage of office lighting and the replacement of 213 personal computer monitors with energy efficient flat screens. A review was also conducted on electricity metering at 25 and 101 Grenfell Street to ensure results of energy saving initiatives are reflected in actual consumption levels for the portfolio. In addition, a network of PIRSA officers was established to promote energy saving measures within their respective areas to further enhance the outcomes of the capital initiatives.

Proposed New Initiatives

PIRSA is proposing to investigate the installation of energy monitoring devices at CBD tenancies, and as part of the design and documentation phase for the new fitout at Mt Gambier, full consideration will be given to energy saving initiatives.

3.8 Department of Premier and Cabinet



Overview of Performance to 2003-04

Premier and Cabinet has transferred Public Sector Workforce Relations to Administrative and Information Services for all reporting periods. Premier and Cabinet made revisions to increase previously reported data for 2002-03 for certain end use categories. Revisions to add energy data previously not reported for all reporting periods were made for certain end use categories. There was an 18.5% reduction in energy use within the portfolio's non-Arts sites, from the previous year. This is attributed to investments in more energy efficient equipment such as computer flat screens as well as commitment by staff to be more energy efficient.

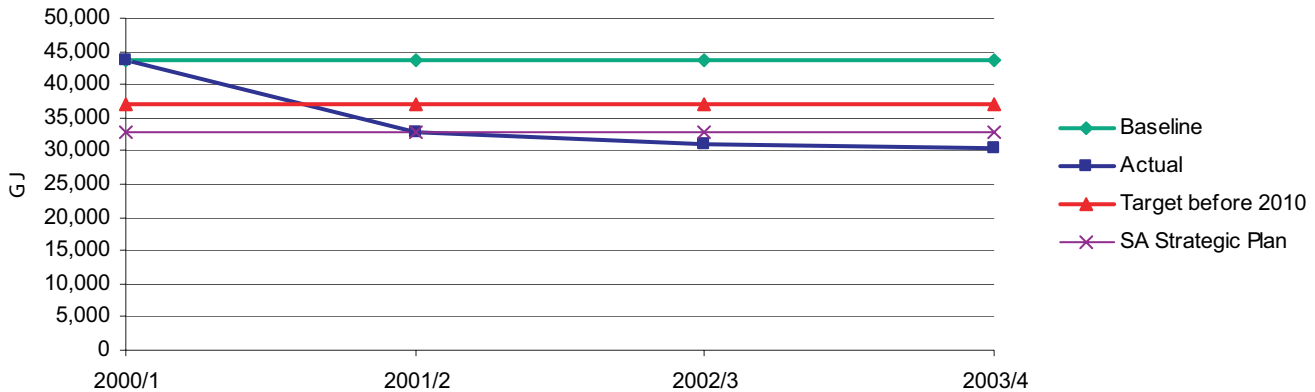
Significant Energy Management Achievements

Savings have been achieved as a result of initiatives focused on reducing energy use in the high use facilities on the North Terrace Precinct. In July 2003, variable speed fans were installed in the Art Gallery of South Australia and have achieved energy savings of 23% as compared to the previous year. Other initiatives introduced in previous years, such as the solar panels installation at the Art Gallery of South Australia and the South Australian Museum have also contributed to the energy savings.

Proposed New Initiatives

The Art Gallery of South Australia is currently retrofitting its air conditioning system so that humid outdoor air can be pre-cooled for dehumidification utilising the "Shaw" method.

3.9 Department of Environment, Conservation and the River Murray



Overview of Performance to 2003-04

Environment, Conservation and the River Murray made revisions to increase previously reported data for 2000-01, 2001-02 and 2002-03 for certain end use categories. Revisions to add energy data previously not reported for all reporting periods were made for certain end use categories. The portfolio is currently showing an overall reduction of 30.12%, which is already below South Australia's Strategic Plan target.

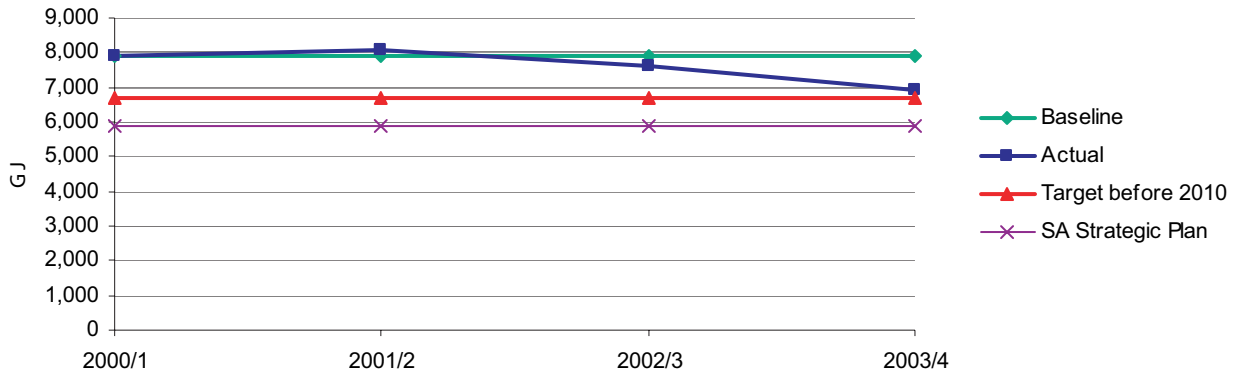
Significant Energy Management Achievements

Existing office accommodation at Port Augusta and Port Lincoln was refurbished replacing existing light banks with energy efficient T5 luminaries with electronic ballasts. This should result in energy consumption at these sites decreasing by around 25%. In addition to this, staff personal computer monitors in both offices have been replaced with flat screens that use about 50% less energy than the old cathode ray models. These new monitors also produce around 75% less heat and this will lower the air conditioning load creating further energy savings.

Proposed New Initiatives

The Department for Water, Land, Biodiversity and Conservation have approved a Strategic Facility Plan identifying consolidation opportunities, which will result in energy savings by better space utilisation and adopting the latest Ecologically Sustainable Development principles for both new and refurbished accommodation. A "Green Team" has been established and will have particular emphasis on reducing energy consumption.

3.10 Department of Treasury and Finance



Overview of Performance to 2003-04

There were no changes in any reporting period for this portfolio, which has achieved a position 12.47% below the baseline and is ahead of schedule to achieve the 15% interim target by 2010.

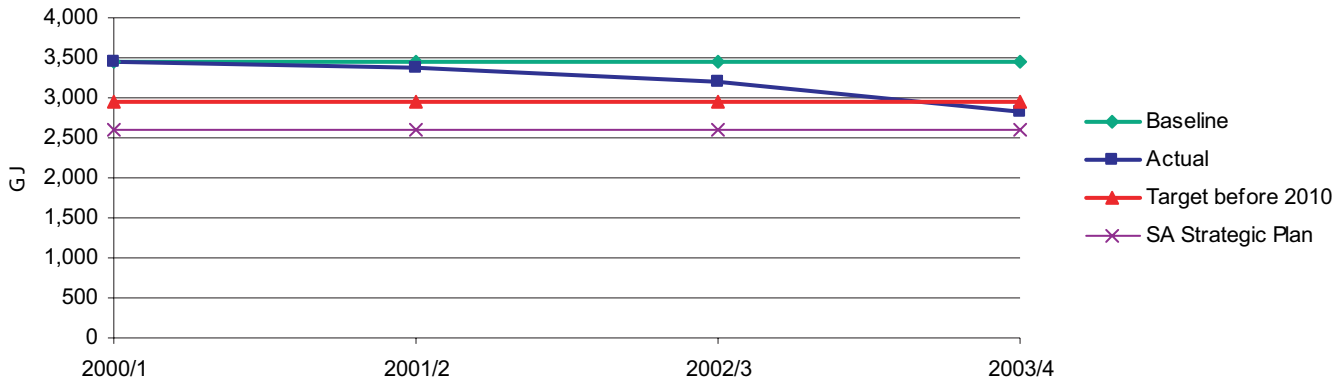
Significant Energy Management Achievements

During the 2003-04 year the change in automatic lighting times for the State Administration Centre was fully implemented. Other energy management initiatives included undertaking a trial of timers to automatically turn off printers and photocopiers outside of normal working hours, providing information to staff on energy saving initiatives for both work and home and investigating options for reducing the power consumption of computer equipment.

Proposed New Initiatives

The Department has started a major accommodation rationalisation program that is expected to result in reduced energy use over the next couple of years.

3.11 Department of Trade and Economic Development



Overview of Performance to 2003-04

There were no changes in any reporting period for this portfolio, which has achieved a position 18.09% below the baseline, already below the 15% interim target by 2010.

Significant Energy Management Achievements

During the year the department underwent significant restructuring which resulted in the closure of sites at Woodville, South Terrace and Fullarton Road, Eastwood. The department has now consolidated all of its operations to 178 North Terrace. No specific new energy efficiency initiatives were implemented during the year, due to the focus on the restructure and significant downsizing of the department.

Proposed New Initiatives

Due to performance in excess of required reductions, no new initiatives are proposed for 2004-05.

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 is 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.

Other Health Care Buildings

This category covers the energy consumption in buildings and facilities other than hospitals such as community health centres.

Other Health Care Facilities

This category covers the energy consumption for major consumers of energy such as linen services and stand-alone food 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
Petajoule	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	267.0
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	67.2
LPG	litre	L	0.0257	68.3
LPG	kilogram	kg	0.0496	67.2
Heating Oil/Fuel Oil	litre	L	0.0373	77.5
Automotive Diesel	litre	L	0.0386	78.2
Petrol	litre	L	0.0342	81.2
AVGAS	litre	L	0.0331	77.2
Greenpower	kilowatt hour	kWh	0.0036	0

Source: Australian Greenhouse Office, Factors and Methods Workbook Version 4 – August 2004

