



SA Government Energy Use Annual Report

2004-05



Government
of South Australia

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For further information about this report please contact Jinny Pavanello, Energy Project Analyst, Energy Division on (08) 8226 5699.

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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 term non-commercial agency refers to any agency in the General Government Sector of the South Australian budget papers, published annually by the Department of Treasury and Finance.

South Australia's Strategic Plan

South Australia's Strategic Plan was released on 31 March 2004. Under target T3.2 (Part A) 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

Government building energy use for 2004-05 was 2,494,760GJ. This represents a 3.1% reduction from the 2000-01 baseline of 2,573,516GJ.

Total Government Energy Use

Overall Government energy use incorporating vehicle fleet and public transport usage for the financial year was 4,401,874GJ and related greenhouse gas emissions were approximately 596,500 tonnes. The portfolio with the greatest energy use was Transport and Urban Planning, including public transport energy consumption. This portfolio used 1,549,453GJ, which accounts for 35.2% of the total Government figure. The portfolio with the second largest energy consumption was Health, primarily due to energy use in hospitals, which used 1,389,775GJ, corresponding to 31.6% of the total energy use by Government.

Independent Verification of Performance

Under Action 5 of the Action Plan, Independent Verification of Performance is to be provided annually. The purpose of this requirement is to provide a level of assurance of the accuracy and robustness of the performance being reported by Government. Independent verification of performance in 2004-05 was undertaken by Price Waterhouse Coopers (PWC). The scope of work this year was tightened to be an audit of primary data used to populate energy reports. The modified scope was introduced following the reporting process audits undertaken previously (KPMG in 2003-04 and Ernst & Young in 2002-03), both of which had concluded that reporting processes implemented across Government were credible and reliable. The PWC report for 2004-05 is available at www.energy.sa.gov.au.

I. Introduction

The Premier Mike Rann launched the South Australian Government's Energy Efficiency Action Plan on 3 May 2002. The Action Plan is a comprehensive energy management program for the South Australian Government. It 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 T3.2a, 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 and 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 and Cabinet (Cabinet Office) and the Department for Transport, Energy and Infrastructure (Energy Division).

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:

- 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 Division 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 Division.

This report is the fourth 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 focuses primarily on analysis of building energy use but also includes some passenger vehicle and public transport information.

1.4 Energy Data Gathering and Reporting (EDGAR)

Data for the 2000-01 through 2004-05 financial years was collected using inputs from each Government portfolio onto the Environmental Data Gathering And Reporting (EDGAR) system. EDGAR is an Internet based user interface to a central database system developed by the Commonwealth Government and is used by jurisdictions across Australia. All tables and figures in this report are derived from data stored in EDGAR by all portfolios unless otherwise specified.

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, each agency and portfolio adopting the most convenient reporting method.. It is important to note that the reporting structure used for EDGAR does not necessarily correspond to the portfolio's corporate structure.

1.6 Major Pumping

Water pumping energy use has been reported in previous Annual Energy Use Reports, however, is not specifically required under the Energy Efficiency Action Plan, as SA Water is a Non-Financial Public Corporation and not in the General Government sector. SA Water is a member of the Greenhouse Challenge and reports progress on energy use and associated greenhouse gas emissions on the SA Water web site available at www.sawater.com.au/.

2. Overall Energy Use Performance

2.1 Outcomes for 2004-05

Table 1 provides information on the energy consumption of individual portfolios for 2004-05. These figures include all building and transport energy consumption including public transport. It does not include energy use from either Non-Financial Public Corporations or Public Financial Corporations. Total reported energy consumption for 2004-05 was 4,401,874GJ corresponding to greenhouse gas emissions of approximately 596,500 tonnes. Total expenditure on reported Government energy use was approximately \$104,000,000 for the 2004-05 financial year.

Table 1: Energy use by portfolio

Portfolio	Total Energy Use		Greenhouse emissions	
	GJ	% of SA Government	Tonnes	% total
Transport and Urban Planning	1,549,453	35.20%	146,411	24.54%
Health	1,389,775	31.57%	190,178	31.88%
Education and Childrens Services	476,964	10.84%	91,072	15.27%
Justice	212,887	4.84%	43,452	7.28%
Further Education, Employment, Science and Technology	163,664	3.72%	32,462	5.44%
Families and Communities	162,073	3.68%	22,585	3.79%
Administrative and Information Services	135,893	3.09%	25,106	4.21%
Primary Industries and Resources	128,741	2.92%	16,421	2.75%
Premier and Cabinet	90,061	2.05%	17,355	2.91%
Environment and Conservation and the River Murray	81,468	1.85%	9,010	1.51%
Treasury and Finance	7,057	0.16%	1,884	0.32%
Trade and Economic Development	3,838	0.09%	616	0.10%
Total	4,401,874		596,552	

As shown in Table 1, the portfolio Transport and Urban Planning has the largest energy consumption of all the portfolios due to the energy consumption of public transport recorded under this portfolio. The Health portfolio has the second largest energy consumption of all the portfolios due to the large energy consumption of public hospitals recorded under this portfolio.

The portfolios Health and Families and Communities have reported their energy use as the single portfolio Human Services in previous reports. This separation of portfolios occurred during this financial year following formal separation of the two departments.

The portfolios are listed in order of decreasing energy use, but as Table 1 illustrates the ranking by greenhouse gas emissions would be different. The differences arise on account of the differing greenhouse intensity of the sources of energy used in the different portfolios. As an example, Transport and Urban Planning (DTUP) have the highest energy use, but largely because to the shift in fuel used by buses from diesel to natural gas, the greenhouse intensity of DTUP is among the lowest.

Table 2 provides information on energy consumption and related greenhouse gas emissions by end-use category for the 2004-05 financial year in descending order of energy demand. End use categories enable data reported by agencies to be disaggregated into similar operational types. Appendix A details the end use category definitions.

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

End-use category	Energy Use		Greenhouse emissions	
	GJ	% Total	Tonnes	% total
Public Transport	1,247,241	28.33%	92,746	15.55%
Hospitals	1,203,234	27.33%	167,254	28.04%
Passenger Vehicles	545,484	12.39%	43,103	7.23%
Educational facilities	518,538	11.78%	111,733	18.73%
Other healthcare buildings	150,899	3.43%	22,809	3.82%
Office - Tenant Light and Power	128,507	2.92%	33,837	5.67%
Police, Fire and Emergency Services Facilities	106,281	2.41%	23,699	3.97%
Infrastructure - roadways	95,356	2.17%	25,460	4.27%
Public Buildings	76,047	1.73%	15,203	2.55%
Custodial facilities	71,250	1.62%	12,033	2.02%
Office buildings - combined services	57,463	1.31%	14,582	2.44%
Office - Central Services	56,004	1.27%	9,518	1.60%
Laboratories	47,306	1.07%	7,229	1.21%
Law Courts	27,959	0.64%	5,964	1.00%
Other Buildings	25,226	0.57%	4,623	0.78%
Other Transport	19,031	0.43%	1,508	0.25%
Other health care facilities	13,258	0.30%	3,114	0.52%
Other Uses	12,790	0.29%	2,136	0.36%
Total	4,401,874		596,552	

As Table 2 demonstrates, the largest single end-use category in the 2004-05 financial year was Public Transport, which accounted for 28.3% of the public sector's total energy use. The largest end-use category relating specifically to building energy use is Hospitals, which accounts for 27.3% of the total energy use. The second largest building end-use category is Educational Facilities, which accounts for 11.8% of the total energy use. The remaining transport categories account for 13% of total energy use.

Figure 1 below shows the six end-use categories responsible for the highest energy use in 2004-05 as percentages of total energy use. The Others category is the total of the twelve remaining end-use categories displayed as a percentage of overall energy use.

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

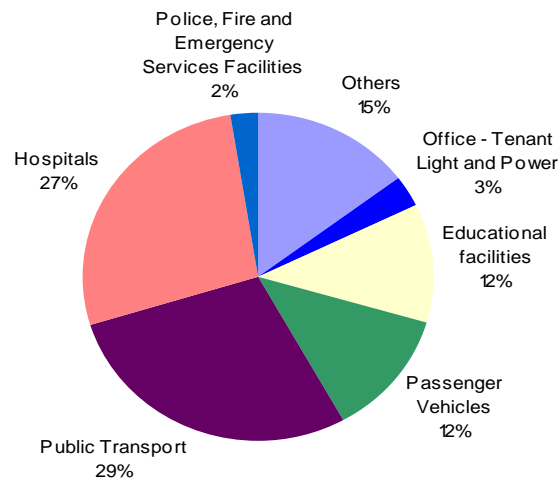
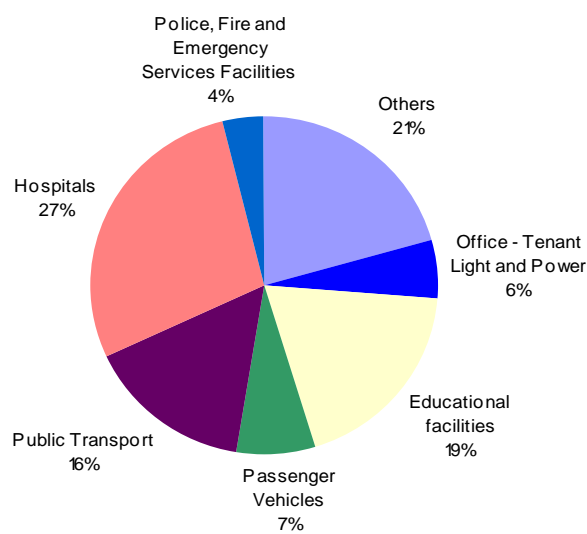


Figure 2 contains the same end-use categories as above but represents greenhouse emissions relating to energy consumption.

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



Public Transport accounts for the largest proportion of energy use whereas Hospitals account for the largest proportion of related greenhouse gas emissions. Educational facilities are equal fourth largest user by percentage along with Passenger Vehicles and are the second largest related to greenhouse gas emissions.

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	1,520,025	34.53%	405,847	68.03%
Natural Gas	1,293,822	29.39%	66,891	11.21%
Automotive Diesel	1,146,764	26.05%	89,677	15.03%
Petrol	305,871	6.95%	24,837	4.16%
LPG	126,323	2.87%	8,599	1.44%
Heating Oil/Fuel Oil	7,642	0.17%	592	0.10%
AVGAS	1,426	0.03%	110	0.02%
Total	4,401,874		596,552	

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	1,140,224	63.53%	88,618	66.90%
Petrol	305,871	17.04%	25,042	18.91%
Natural Gas	302,711	16.87%	15,650	11.82%
LPG	44,440	2.48%	3,035	2.29%
AVGAS	1,426	0.08%	112	0.08%
Total	1,794,674		132,458	

2.2 Vehicle Fleet

Under Action 4 of the Energy Efficiency Action Plan, Government has a target to increase the level of LPG vehicles from 10% to 20% by 2005. Government is well on the way to achieving this target as Table 5 shows that 19% of vehicles in the fleet are alternative fuel vehicles. LPG vehicles comprise the majority of alternative fuel vehicles.

Provided below in Table 5 is a summary of the status of alternative fuel vehicles in the South Australian Government's Passenger and Light Vehicle Fleet in Table 5 below.

Table 5: Status of the alternative fuel vehicles in the South Australian Government's Passenger and Light Commercial Vehicle Fleet as at 30 June 2005

LPG Vehicles	
241	On Order
1469	In Fleet
1897	Sold
Hybrid Vehicles	
0	On Order
15	In Fleet
3	Sold
Sum Alternative Fuel Vehicles	
241	On Order
1484	In Fleet
1900	Sold
7814 Total Vehicles in Fleet	
18.99%	

Source: Fleet SA

In 2004-05, the environmental impact of the South Australian Government's passenger and light commercial motor vehicle fleet was reduced by several initiatives. These include:

- Further uptake of Alternative Fuel vehicles, including Dedicated LPG, Dual Fuel LPG, and Hybrid Petrol Electric vehicles;
- Increase use of Diesel vehicles with computer controlled common rail fuel injection systems;
- Driver Training and Education Program with Eco Driving Principles;
- Awareness campaigns including the annual Vehicle Management Report which details the environmental impacts of Agencies vehicles, environmental page on the Fleet SA Intranet site, Enviro section in the FleetAware newsletter.
- Working closely with the vehicle manufacturers on the development of vapour injected LPG systems for the Commodore and Mitsubishi 380.

The South Australian Government's passenger and light commercial motor vehicle fleet covered a total distance of 132 million kilometres in 2004-05. Fleet SA will continue to work in partnership with the vehicle manufacturers and Government agencies to lessen the energy use and increase the environmental sustainability of the fleet.

2.3 Energy Use Trends in Government Buildings

Energy use in Government buildings reported for the 2004-05 financial year has decreased by 78,756GJ (or 3.1%) 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 fourth year where data is collected under the Energy Efficiency Action Plan program, comparisons have been made between the 2000-01 to 2004-05 financial years.

Table 6: Energy use in government buildings 2000-01 to 2004-05 by portfolio

Portfolio	Energy Use (GJ)					Move from last year	Move from Baseline
	2000/01	2001/02	2002/03	2003/04	2004/05		
Health	1,257,634	1,244,268	1,254,901	1,305,171	1,280,479	-1.89%	1.82%
Education and Childrens Services	369,971	392,699	376,716	404,180	387,683	-4.08%	4.79%
Justice	239,841	232,771	219,515	213,887	212,887	-0.47%	-11.24%
Further Education, Employment, Science and Technology	156,157	174,965	159,192	151,400	143,216	-5.41%	-8.29%
Families and Communities	118,904	111,691	104,792	112,315	111,819	-0.44%	-5.96%
Administrative and Information Services	126,259	134,025	119,367	117,521	103,522	-11.91%	-18.01%
Premier and Cabinet	97,119	87,042	86,280	86,619	81,682	-5.70%	-15.89%
Transport and Urban Planning	74,345	69,827	66,939	68,864	68,347	-0.75%	-8.07%
Primary Industries and Resources	76,522	69,393	67,740	65,449	64,837	-0.94%	-15.27%
Environment and Conservation and the River Murray	45,426	33,837	32,379	31,909	31,592	-0.99%	-30.45%
Treasury and Finance	7,877	8,089	7,643	6,895	7,057	2.35%	-10.41%
Trade and Economic Development	3,461	3,373	3,196	2,835	1,639	-42.19%	-52.64%
Total	2,573,516	2,561,980	2,498,660	2,567,045	2,494,760	-2.82%	-3.06%

There was a decrease in energy use from the baseline year in all portfolios other than Health and Education and Children's Services. Health and Education and Children's Services have achieved reductions in energy use from reported 2003-04 results. Detailed overviews of performance in each portfolio, significant energy management achievements and proposed new initiatives are provided in Chapter 3.

The portfolio that accounts for the largest percentage of building energy use in Government is Health. This particular portfolio is responsible for 51% of public sector building energy use. Education and Children's Services is the next largest user of energy in the Government accounting for 15% of total energy use. Justice, Further Education, Employment, Science and Technology, Families and Communities and Administrative and Information Services, are also large users.

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 an 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.

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 2004-05 Portfolio 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.

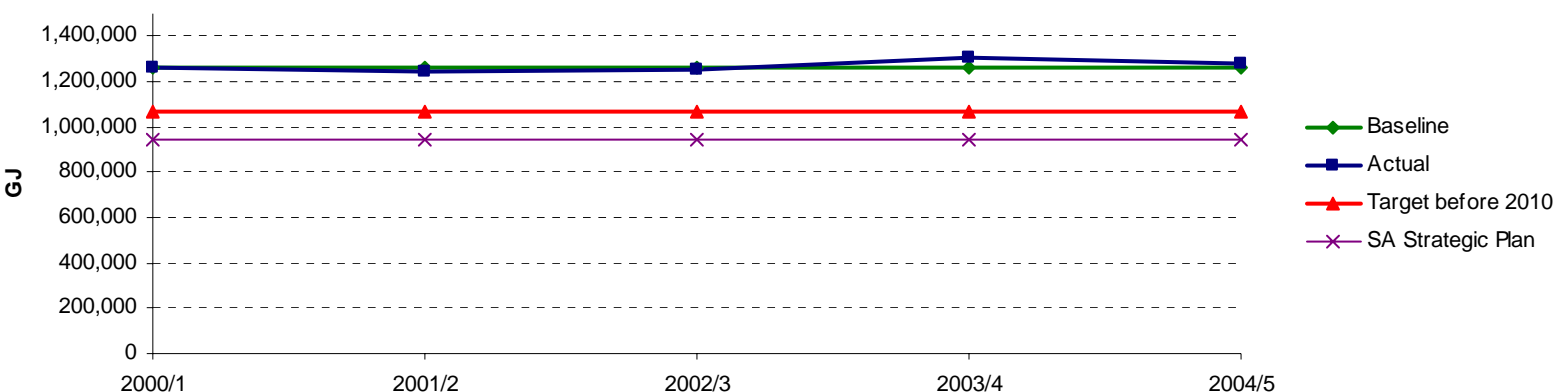
Therefore, only the following are considered to be legitimate circumstances:

- 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 2004-05 has been completed by Price Waterhouse Coopers. The portfolios selected collectively accounted for 45% of the total reported 2004-05 energy use. Spot checks were undertaken for randomly selected sites and reported energy use figures were reconciled with source documentation for the 2004-05 reporting period. Source documentation was either original bills received from energy retailers, electronic summary reports from whole of Government energy contracts or invoices supplied by building owner for leased accommodation. The 2004-05 Independent Verification Report is available on the Energy Division web site at www.energy.sa.gov.au.

3.1 Department of Health



Overview of Performance to 2004-05

Human Services was split into two new departments: Health and Families and Communities. Health includes energy use from public hospitals. Families and Communities energy use mainly relates to buildings and facilities, other than hospitals, which provide child youth and family services, housing services, aboriginal services, intellectually disabled services, and disabled services. During 2004-05, Health's occupied floor area increased by around 2% but the department has managed to make a significant reduction against its reported performance in 2003-04 to be only 1.82% above the baseline 2000-01.

Significant Energy Management Achievements

The Queen Elizabeth Hospital redevelopment team have committed to building a facility that will consume at least 25% less energy than the current facility. This would deliver a 2.8% reduction in total Health building energy use. A further 3-4.5% reduction may be achieved if cogeneration proves to be viable.

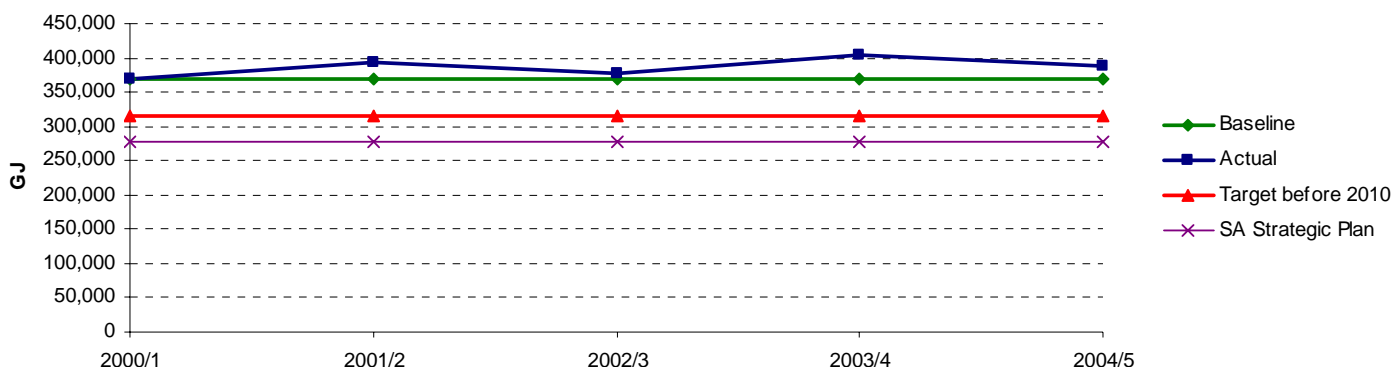
Construction of the mental health facilities at the Flinders Medical Centre and Repatriation General Hospital has commenced. These facilities will deliver the equivalent of a five star energy performance standard. Innovations include solar hot water, high efficiency glazing, high efficiency air conditioning solution including an economy cycle, extensive use of best practice passive design techniques, including extensive provision of access to natural light, high efficiency lighting fixtures, automated lighting controls, heat recovery, low flow plumbing fixtures to reduce hot water energy consumption and provision of state of the art building management systems that will assist in minimising energy use in these facilities while maintaining user comfort.

Three large gas boosted solar hot water systems have been installed in regional hospitals and each site is expected to reduce energy use by 7%.

Proposed New Initiatives in 2005-06

Australian Building Greenhouse Rating energy ratings will be performed for all leased corporate office space.

3.2 Department of Education and Children's Services



Overview of Performance to 2004-05

The Department of Education and Children's Services has achieved a 4.46% reduction against its reported performance in 2003-04 and is now only 4.79% over the 2000-01 baseline.

Significant Energy Management Achievements

DECS in association with DAIS has identified a schedule of works for mandatory preventative maintenance. Examples of the works undertaken include replacement of fluorescent lighting and the fitting of movement sensors on lighting installations, replacement of air conditioning filters, replacement of hot water services with solar hot water systems and installing energy rated appliances for air conditioning and heating.

Ecologically Sustainable Development (ESD) principles are incorporated in all DECS Major Capital works Projects to maximise the use of natural light and ventilation and to reduce building energy consumption. All buildings and refurbishments are required to comply with ESD Guide Note jointly prepared by DECS and DAIS. Examples of schools where ESD refits have been conducted include Kilparrin SA School for the Vision Impaired, Victor Harbor Special Education Centre and Port Elliot Primary School.

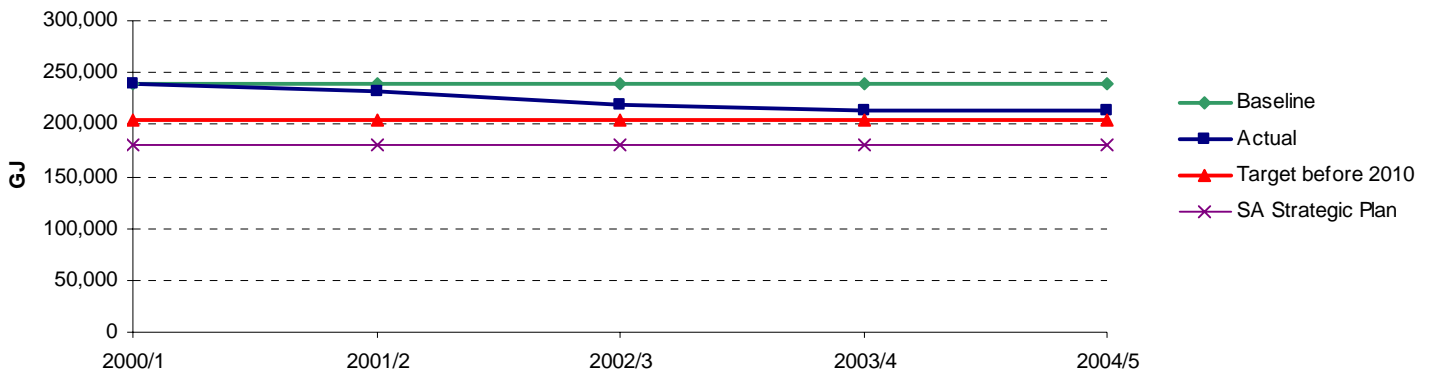
In 2003, the SA Solar School Program was initiated. The \$1.25 million program is intended to provide around 50 schools and preschools the opportunity to harness the sun's energy. The South Australian Strategic Plan has indicated that the program will be extended to 250 schools by 2014. As at the end of 2004-05, 57 sites had installed solar generation systems. The Solar Schools Program provides a "Hands on" learning for students about the operation and benefits of solar energy through science programs. Data is generated by the system and fed into a computer which provides minute by minute information on the status of the electricity being generated and as well as historical data for comparative purposes. Lesson plans have been developed by DECS to support curriculum initiatives.

A group chaired by the Director, Infrastructure and Management Services has been formed to discuss and implement priority energy saving and sustainability strategies in the central office.

Proposed New Initiatives in 2005-06

The SA Solar Schools Program will be further promoted. Over 90 schools will have systems installed and operational by June 2006. Energy audits of high-energy usage sites will be undertaken. Major Works Projects will include trials with gas powered mechanical plant.

3.3 Department of Justice



Overview of Performance to 2004-05

Justice made revisions to increase previously reported data for 2000-01 through to 2003-04 for certain emergency services facilities. Revisions to add energy data previously not reported for all reporting periods and site transfers were made for certain end use categories. Justice has achieved an energy use reduction of 11.3% below the baseline, which indicates little or no movement from 2003-04 reported performance.

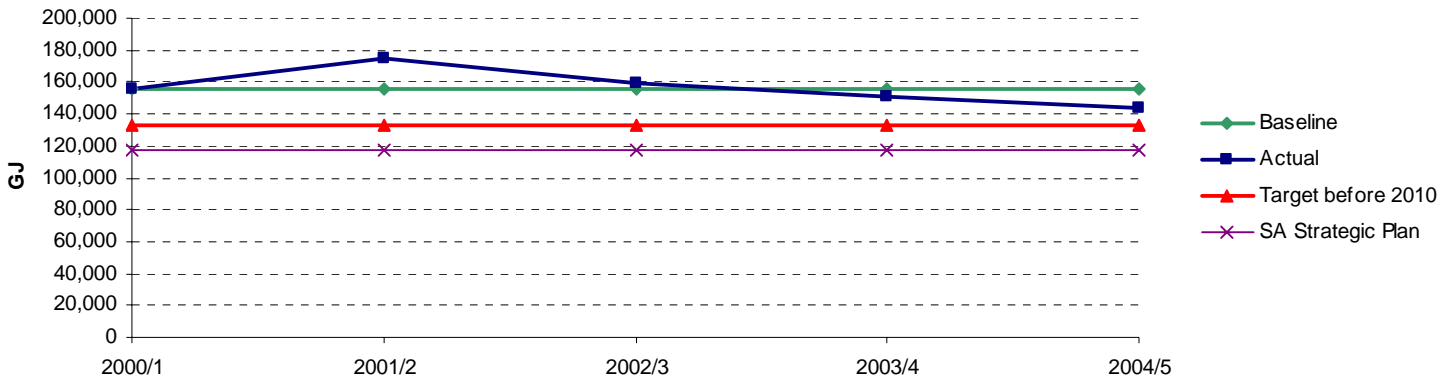
Significant Energy Management Achievements

Energy audits were undertaken at all SA Police major sites. SA Metropolitan Fire Service has continued to upgrade lift control systems. The Adelaide Youth Court has installed a new building management system. The following measures have been implemented by many agencies: timers and sensor switches were installed in certain low use lighting areas, buildings were fitted with low energy lighting systems and de-lamping occurred where possible and some petrol vehicles were replaced with LPG and diesel vehicles.

Proposed New Initiatives in 2005-06

The Justice portfolio is undertaking four initiatives: implementation of some recommendations of energy audits conducted in 2004-05, replacement of energy inefficient light fixtures with low energy consuming ones, de-lamping where applicable and the continuation of a petrol vehicles replacement program.

3.4 Department of Further Education, Employment, Science and Technology



Overview of Performance to 2004-05

The Department of Further Education, Employment, Science and Technology is currently 8% below the baseline. This is an additional 5% reduction from 2003-04.

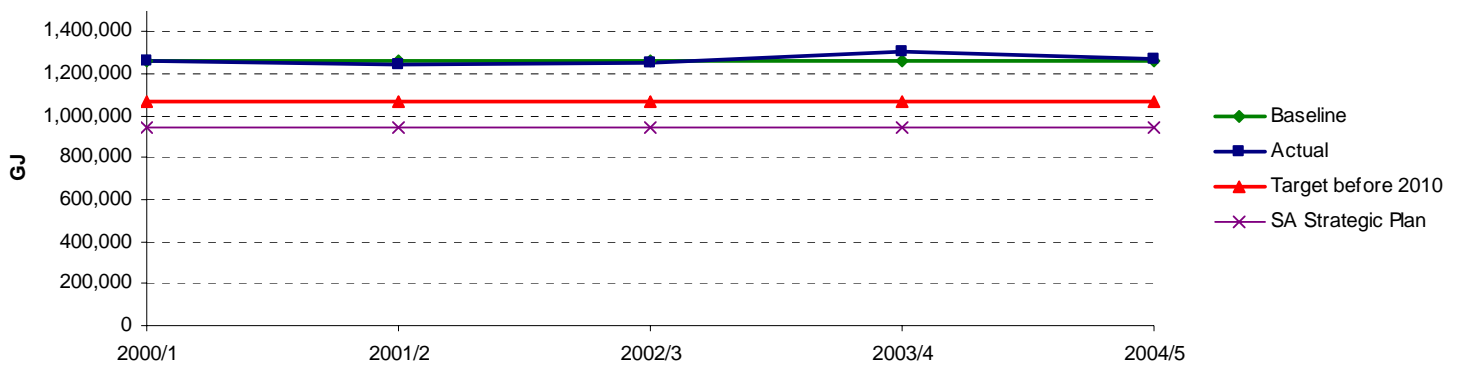
Significant Energy Management Achievements

The Regency Park cogeneration plant has undergone a major overhaul. Old air conditioning services have been replaced with optimised efficiency units at Tea Tree Gully, Adelaide and Noarlunga campuses. The Tea Tree Gully campus has also received a lighting upgrade that includes the installation of motion sensors.

Proposed New Initiatives in 2005-06

An Energy Efficiency Steering Group with an executive sponsor will be established. The DFEEST Energy Efficiency Action Plan 2005-06 will incorporate a communication strategy to assist in the dissemination of energy efficiency information. Energy audits will be undertaken in up to 10 large facilities, leading to the identification of energy efficiency opportunities at those sites.

3.5 Department for Families and Communities



Overview of Performance to 2004-05

Human Services was split into two new departments: Health and Families and Communities. Health includes energy use from public hospitals. Families and Communities energy use mainly comprises of buildings and facilities, other than hospitals, which provide child youth and family services, housing services, Aboriginal services, intellectually disabled services, and disabled services. Families and Communities has so far achieved a 6% reduction from the baseline.

Significant Energy Management Achievements

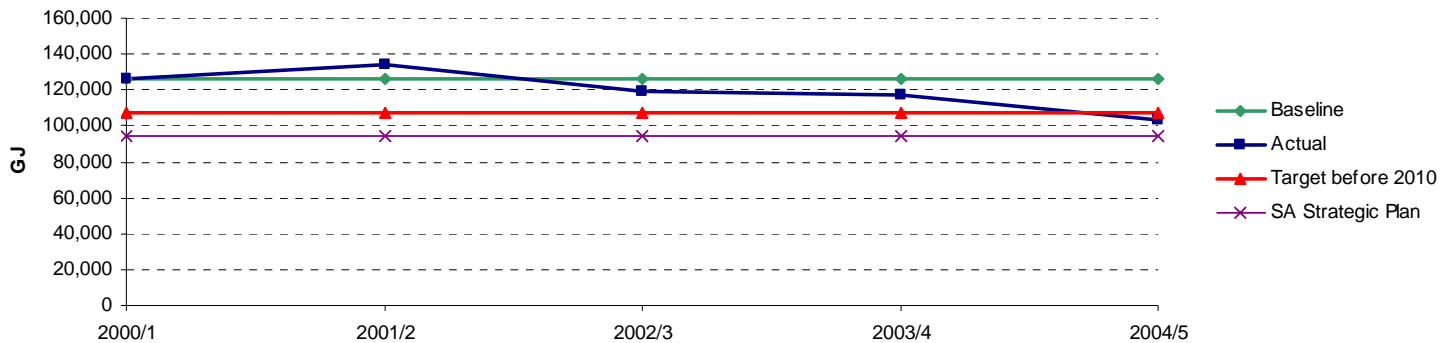
The portfolio has established systems and strategies for the ongoing gathering and reporting of energy data.

A Greening Reference Group has been established and will provide policy procedures and guidelines to agencies to reduce energy consumption. In May 2005, a portfolio wide Greening Program was launched.

Proposed New Initiatives in 2005-06

There will be a further integration of energy efficiency, water conservation and waste management data information systems and programs to target building energy use reductions. The Department is undertaking a major in-house initiative to green the Department fleet. When complete this initiative will result in a better than 25% reduction in carbon dioxide emissions, on a cost neutral basis. This will be achieved by replacing up to 50% of the passenger fleet with Toyota Hybrid Prius (petrol-electric) vehicles and the remainder of the passenger fleet with Liquefied Petroleum Gas (LPG) fuelled vehicles.

3.6 Department for Administrative and Information Services



Overview of Performance to 2004-05

The Department for Administrative and Information Services has transferred the Department of Aboriginal Affairs and Reconciliation to the Department of Premier and Cabinet for all reporting periods. Revisions to add energy data previously not reported for all reporting periods were made for certain end use categories. Overall the portfolio is 18% below the baseline and has exceeded the 15% interim target by 2010.

Significant Energy Management Achievements

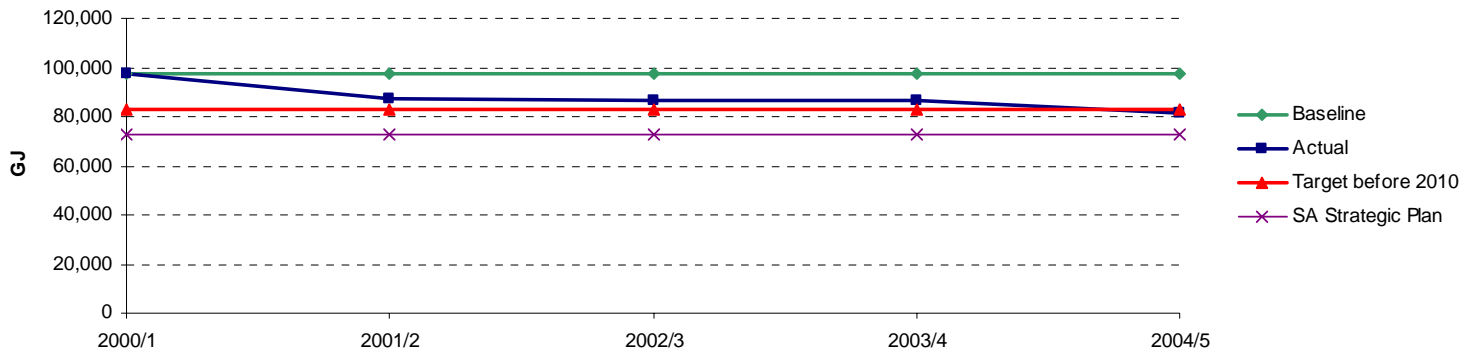
Tenancy achievements: Increasing the use of energy efficient office equipment and the utilisation of energy star rated appliances. All new and refurbished accommodation will include energy efficiency measures and use of environmentally sustainable products. Energy audits have been completed in all major consuming tenancies. The Australian Building Greenhouse Rating tool is used when assessing office interiors to assist in highlighting areas to reduce energy use.

Building owner achievements: Appraisals of energy costs for the twelve months after building refurbishment have been completed to comply with Energy Efficiency Action Plan requirements. A number of sites have undergone upgrades to air conditioning systems and lighting, which have incorporated energy reduction initiatives. Wakefield House has installed a new Building Management System with associated lighting and air conditioning management systems. The Department is continuing energy use audits of government owned buildings and implementation of strategies to achieve energy use targets. Energy management techniques continue to be incorporated in major owned building refurbishments such as the Education Centre. REM is currently implementing works identified in the Adelaide Building Tune-Ups Project that have been identified to improve the building's energy ratings and reduce base building energy and water use.

Proposed New Initiatives in 2005-06

An Environmentally Sustainable Development (ESD) implementation plan is being applied to all DAIS owned buildings. Further strategies are being developed for the existing building stock and tenancies. The number of alternative fuelled vehicles to continue to increase.

3.7 Department of Premier and Cabinet



Overview of Performance to 2004-05

The Department of Premier and Cabinet has gained the Department of Aboriginal Affairs and Reconciliation from the Department for Administrative and Information Services for all reporting periods. Revisions to add energy data previously not reported for all reporting periods were made for certain end use categories. The portfolio is 15.89% below the baseline and has exceeded the 15% interim target by 2010.

Significant Energy Management Achievements

Solar panels have been installed at the State Library of South Australia. The panels are connected to the building management system to allow reporting and a sub meter has been installed to quantify savings.

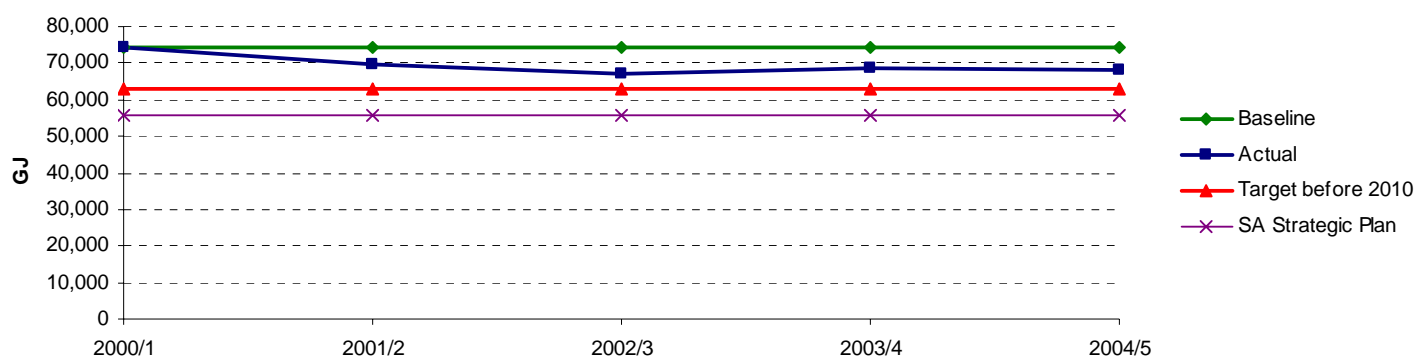
The Shaw Method of Air Conditioning was implemented at the Art Gallery of SA at the end of the 2003-04 financial years. This innovative project involved the installation of a new purpose designed dehumidification coil to in the outside air stream, implementation of a new controls strategy and re-configuration of chilled water header arrangement to improve chilled water flow temperature and return water mixing. The results of this project were realised in 2004-05 financial year with the further reduction of gas and electricity consumption for the site.

Other initiatives introduced in previous years, such as the variable speed fans and carbon dioxide monitors at the Art Gallery of South Australia and the solar panels installations at the Art Gallery of South Australia and the South Australian Museum have also contributed to the energy savings.

Proposed New Initiatives in 2005-06

A Sustainability Plan will be developed which will reflect the key areas under the Greening of Government Operations (GoGO). This will include reviewing major energy users such as the Art Gallery of South Australia to further reduce energy consumption.

3.8 Department of Transport and Urban Planning²



Overview of Performance to 2004-05

There were no changes in any reporting period for this portfolio, which has achieved a position of 8.07% below the baseline.

Significant Energy Management Achievements

Phase Two of the Energy Performance Contract at the Walkerville Building is now under way. The air conditioning system will be upgraded and a cogeneration plant will be installed. The commissioning of the cogeneration plant will enable the building to be almost self-sufficient for electricity supply. [Phase One was a lighting upgrade.] The combined benefits from Phases One and Two are expected to achieve yearly savings of around 8,000GJ and 2,600 tonnes of carbon dioxide. The Walkerville Building is expected to deliver at least a 4.5 star Australian Building Greenhouse Rating.

On 16 February 2005 the Minister announced that all metropolitan trains and diesel buses (with a combined use of 22 million litres of diesel annually) would operate using 5% biodiesel (B5) from 1 March, with the figure to be increased progressively to 20% (B20). By replacing approximately 4 million litres of petroleum diesel annually, biodiesel use will result in a net reduction of 10,000 tonnes of carbon dioxide, which equates to the greenhouse emissions originating from about 700 households.

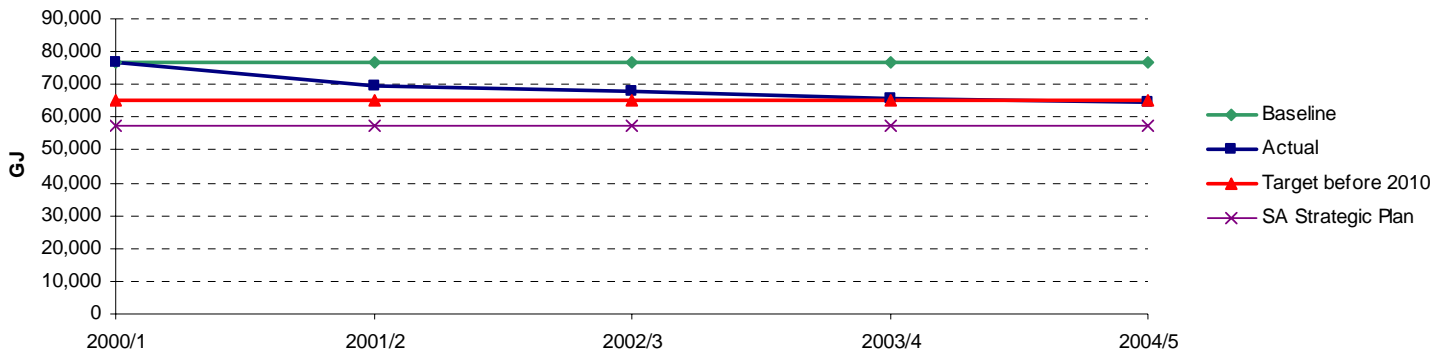
Together with the extensive use of Compressed Natural Gas (CNG) in buses, and the increased use of Ultra Low Sulphur Diesel (ULSD), this will make the SA public transport fleet the cleanest in Australia and the largest user of biodiesel for public transport.

Proposed New Initiatives in 2005-06

The biodiesel initiative for metropolitan trains and diesel buses will continue to work towards the progressive increase to B20.

² The Department of Transport and Urban Planning is now known as the Department for Transport, Energy and Infrastructure. This portfolio transfer came into effect on 1 July 2005. The report relates to 2004-05 performance, which is why the Department of Transport and Urban Planning has been used throughout this report.

3.9 Department of Primary Industries and Resources



Overview of Performance to 2004-05

There were no changes in any reporting period for this portfolio, which has achieved a position of 15.3% below the baseline, already below the 15% interim target by 2010.

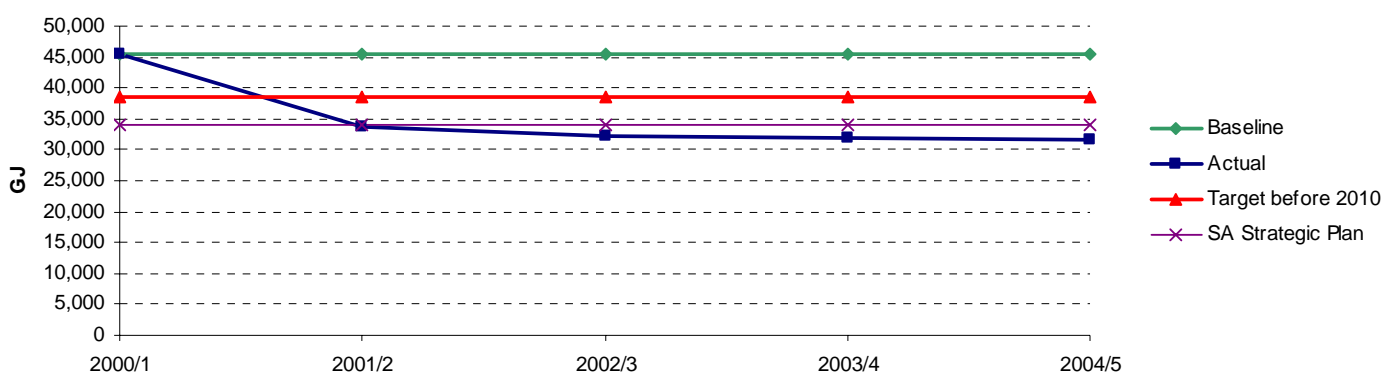
Significant Energy Management Achievements

As part of the new fitouts for the Mount Gambier and Coober Pedy offices energy saving initiatives have been integrated into the capital works programs.

Proposed New Initiatives in 2005-06

PIRSA is to occupy level 13 at 25 Grenfell Street in early 2006. As part of the design and documentation phase for the new fitout for this floor full consideration is being given to energy saving initiatives. Inspections of PIRSA regional sites will be again undertaken within the next financial year to identify works or processes to further reduce energy consumption.

3.10 Department of Environment, Conservation and the River Murray



Overview of Performance to 2004-05

The Department of Environment, Conservation and the River Murray made revisions to increase previously reported data for all reporting periods. 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 30.5%, which is already below South Australia's Strategic Plan target.

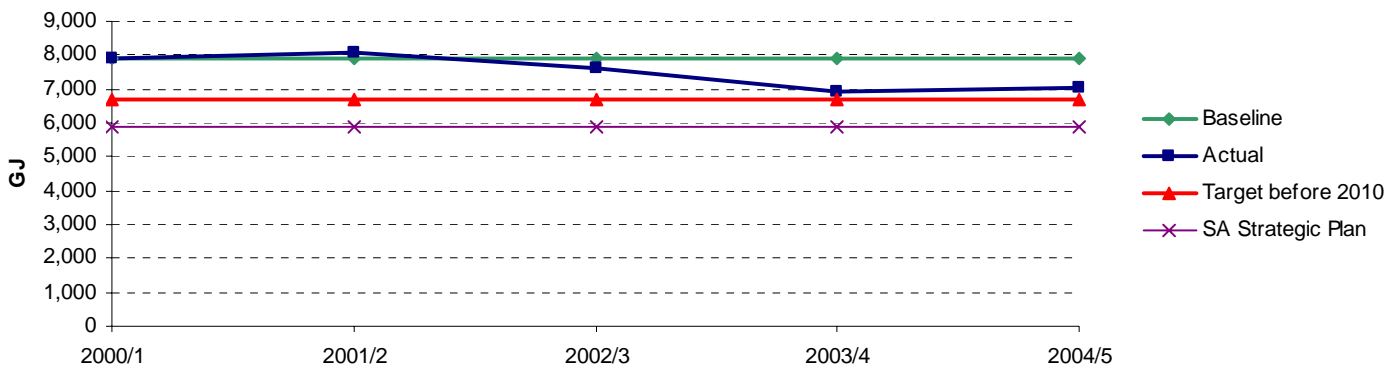
Significant Energy Management Achievements

Audits have been undertaken at a number of remote regional National Parks to improve energy use. The Kelly Hill Caves have replaced incandescent and paraflood lights with fibre optic lighting. This is expected to save up to 7.4kW per hour of operation and around 16 tonnes of carbon dioxide each year.

Proposed New Initiatives in 2005-06

Consideration will be given to installing similar fibre optic lighting systems in other cave sites such as Naracoorte and Tantanoola, based on the success of the Kelly Hills Caves. Paney Station, the headquarters site in the Gawler Ranges National Park will be undergoing major refurbishment. This will include the installation of a tracking solar array system to be the principal electricity source, supplemented by the existing wind power capacity.

3.11 Department of Treasury and Finance



Overview of Performance to 2004-05

There were no changes in any reporting period for this portfolio, which has achieved a reduction of 10.4% below the baseline, which is less than 2003-04 reported performance of 12.5%.

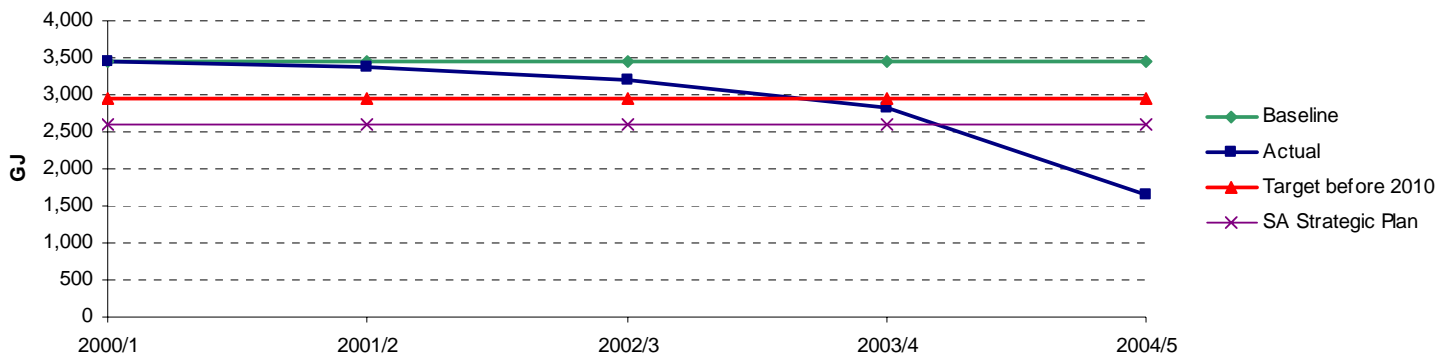
Significant Energy Management Achievements

There has been a consolidation of the majority of office accommodation into the State Administration Centre. The feasibility for replacing cathode ray tube (CRT) screens with flat screens has been evaluated. A review of the departmental Energy Action Plan 2002-04 has been completed. A Greening of Government Operations (GoGO) Implementation Committee was established, with energy management incorporated into its terms of reference.

Proposed New Initiatives in 2005-06

Finalise and implement a GoGO Action plan, incorporating planned energy initiatives. In conjunction with Real Estate Management and other tenants in the State Administration Centre, investigate options for improved lighting systems.

3.12 Department of Trade and Economic Development



Overview of Performance to 2004-05

There were no changes in any reporting period for this portfolio, which has achieved an overall reduction of 52.6%, which is over double South Australia’s Strategic Plan target.

Significant Energy Management Achievements

During the year the department underwent significant restructuring which resulted in the rationalisation of sites. As part of its energy reduction strategy, the department replaced cathode ray tube (CRT) monitors with liquid crystal display (LCD) flat screens for all staff. The department takes into consideration, energy star ratings and life cycle operating costs as part of its assessment process for the purchase of office machinery. The recycling of paper, bottles, drink containers and used printer and copier toner cartridges continues.

Proposed New Initiatives in 2005-06

Terrace Towers will be installing the following items: daylight sensors to turn off lights automatically when natural light is sufficient, motion sensors in all enclosed spaces and new generation T5 luminaries with dimming devices. These measures are expected to achieve further energy savings.

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