

South Australian Government Annual Energy Efficiency Report

2007 - 08



Government of South Australia

Department for Transport,
Energy and Infrastructure

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Executive Summary

The *South Australian Government Annual Energy Efficiency Report 2007-08* has been prepared in accordance with the verification and reporting requirements of the *South Australian Government 2002 Energy Efficiency Action Plan*. The *Annual Energy Efficiency Report* specifically reports on the Government's progress towards South Australia's Strategic Plan target, 3.13: *Improve the energy efficiency of Government buildings by 25 per cent from 2000-01 levels by 2014*.

Performance of Government Building Energy Efficiency

Since 2000-01, the South Australian Government has achieved a 10.0 per cent overall energy efficiency improvement in its (owned and leased) buildings. This is 40 per cent of the way towards achieving South Australia's Strategic Plan target 3.13 (SASP T3.13).

There are currently 13 portfolios, comprising all agencies of Government, which report energy consumption and business measures. Portfolios reported individual improvements in energy efficiency (since 2000-01) ranging between 3.9 per cent and 50.5 per cent.

Generally speaking these energy efficiency improvements can be attributed to portfolios changing their premises to more energy efficient buildings, undertaking building upgrades or refurbishments, and their capacity to expand their output of services, people or space without a significant effect on their total energy consumption.

The extent to which the results of individual portfolios influenced the overall Government target was a function of the portfolios' percentage of total Government energy consumption.

Other Reporting Changes 2007-08

The previous *Annual Energy Efficiency Report 2006-07* reported an overall energy efficiency improvement of 8.77 per cent. Since that report was prepared, some agencies have incorporated new entities or sites which were not reported on previously, altered their reporting structures and corrected errors in energy and business measure data.

When the 2006-07 progress is re-calculated using this revised information it equates to a 6.3 per cent improvement in efficiency at that time.

1. Introduction

The South Australian Government Annual Energy Efficiency Report 2007-08 has been prepared in accordance with the Verification and Reporting requirements of the 2002 **Government Energy Efficiency Action Plan**. This report is the seventh in the series of South Australian Government Annual Energy Use reports, although the report has been renamed the South Australian Government Annual Energy Efficiency Report to reflect the changes in the South Australia's Strategic Plan (SASP) in 2007.

This report relates to SASP target 3.13, which is to “*Improve the energy efficiency of Government buildings by 25 per cent from 2000-01 levels by 2014.*” This target replaces the former *T3.2a: Reduce energy consumption in government buildings by 25 per cent within 10 years (2014)* in the updated version of SASP released in February 2007.

1.1 Scope of the Strategic Plan target

As per the guidelines of the Energy Efficiency Action Plan, Government buildings under SASP T3.13 include 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 (DTF). A list of the South Australian Government Controlled Entities is available on the Treasury and Finance web site at www.treasury.sa.gov.au.

For the purposes of this report, the following portfolios are included:

- Department of Health (Health);
- Department of Education and Children's Services (DECS);
- Department of Justice (Justice);
- Department of Further Education, Employment, Science and Technology (DFEEST);
- Department for Families and Communities (DFC);
- Department of the Premier and Cabinet (DPC);
- Department for Transport, Energy and Infrastructure (DTEI);
- Primary Industries and Resources SA (PIRSA);
- Department for Environment and Heritage (DEH);
- Department of Water, Land, Biodiversity and Conservation (DWLBC);
- Environment Protection Authority (EPA);
- Department of Treasury and Finance (DTF); and
- Department for Trade and Economic Development (DTED).

1.2 Energy Efficiency Reference Group

The Energy Efficiency Reference Group (EERG) was established by Cabinet to oversee the implementation of SASP T3.13 across Government, via the Energy Efficiency Action Plan. The EERG meets monthly, with representatives from senior management from all portfolios. It is co-chaired by DPC, Cabinet Office and DTEI, Energy Division.

1.3 Verification and Reporting Requirements

An integral component of the Energy Efficiency Action Plan is reporting and publishing results. By reporting energy efficiency improvements and significant energy management initiatives in the agency annual reports there is a public record of performance against the SASP target.

An Independent Verification exercise is undertaken annually by a third party to provide assurance concerning the accuracy and robustness of the performance being reported by Government. Ernst and Young undertook independent verification of performance in 2007-08.

In 2007-08, as part of the independent verification exercise, Ernst and Young verified the accuracy and identified the weaknesses in energy consumption and business measure data reported by portfolios. The 2007-08 Independent Verification Report is available publicly at <http://www.dtei.sa.gov.au/energy/>.

1.4 Information Availability

As 2006-07 was the first time that portfolios were required to report against the new energy efficiency target, there was a significant process of additional information collection and end-use category rationalisation within the portfolios.

In 2006-07 not all the necessary information was available, particularly information concerning business measures at the site level. While progress has been made in this respect, there are still a few sites for which data is incomplete.

2. Government Energy Efficiency Performance

2.1 Introduction

Determining the South Australian Government's energy efficiency performance in its buildings required weighting and aggregating the performance of all portfolios according to their proportion of total government building energy consumption. The process for assessing portfolios' energy efficiency performance was agreed by the EERG in February 2007. Details can be found in Appendix C.

For the purposes of monitoring the progress of SASP T3.13, a 'Government building' is defined as a building in which public sector employees work, or where Government administered services and activities are either partly or completely carried out (in the general Government sector). Government buildings do not include infrastructure such as water pumps or air monitoring stations, and these are therefore not included in the measurement of SASP T3.13.

2.2 Business Measures

The calculation of energy efficiency improvement in South Australian Government portfolios requires the use of business measures.

Business measures are measures of, or proxies for, agency's output. For example, subject to data availability, a hospital might record its activity in terms of occupied patient bed days or a school might count FTE students. In some cases a proxy might be used, such as the area occupied by an agency or staff numbers. This is on the basis that there is a correlation between the number of people employed in an agency or the area it occupies and its output.

In this way, an energy efficiency improvement could be said to have occurred if an agency increased its building floor area or its staffing levels without an equivalent increase in its energy use.

For example, Agency A occupied a building of 2,000 m² (business measure value) and used 15,000 Giga-Joules (GJ) of energy in the 2007-08 year. As a result, the energy efficiency performance of the building is:

$$15,000/2,000 = 7.5 \text{ GJ per m}^2 \text{ or } 7,500 \text{ MJ per m}^2$$

If the same calculation is undertaken for 2000-01, energy efficiency improvement can be determined. Where the energy use per area was higher in the base year than in 2007-08, energy efficiency has improved.

Business measures used by agencies to calculate progress towards SASP T3.13 in the 2007-08 year include:

- Number of people (staff) occupying the building (occupancy);
- Area occupied by an agency (m²); and
- Number of buildings.

Additional business measures reported on OSCAR by some portfolios (in addition to area or occupancy measures) that were not used in the calculation of SASP T3.13 include:

- Number of occupied bed days (i.e. in hospitals);
- Number of visitors (i.e. in public buildings); and
- Number of full time equivalent employees (FTE's);

Further information on the calculation of energy efficiency improvement is provided in Appendix C, including the business measures used by individual agencies, which are displayed in Table C2 in Appendix C.

2.2.1 Selection of Business Measures for Inclusion in SASP T3.13

In some cases, agencies reported on more than one business measure for each end-use category. For the purposes of this report, the business measure that reflected, as closely as possible, improvements in energy efficiency was selected.

It is worth noting that if different business measures were used to calculate the energy efficiency of an agency, such as number of students instead of area in an educational facility, the agency's, and possibly the whole of Government efficiency improvement figure may be different.

2.3 End-use Categories

For the purposes of reporting on the OSCAR online system, agencies were required to allocate their chosen business measure to a specific end-use category. End-use categories define the type of business, or activity, undertaken within agencies which consume energy. End-use categories enable data reported by portfolios to be disaggregated into similar operational types. This allows the comparison of identical end-use categories across Government portfolios.

The following end-use categories that are covered under SASP T3.13 were used by agencies for 2000-01 and 2007-08 reporting on:

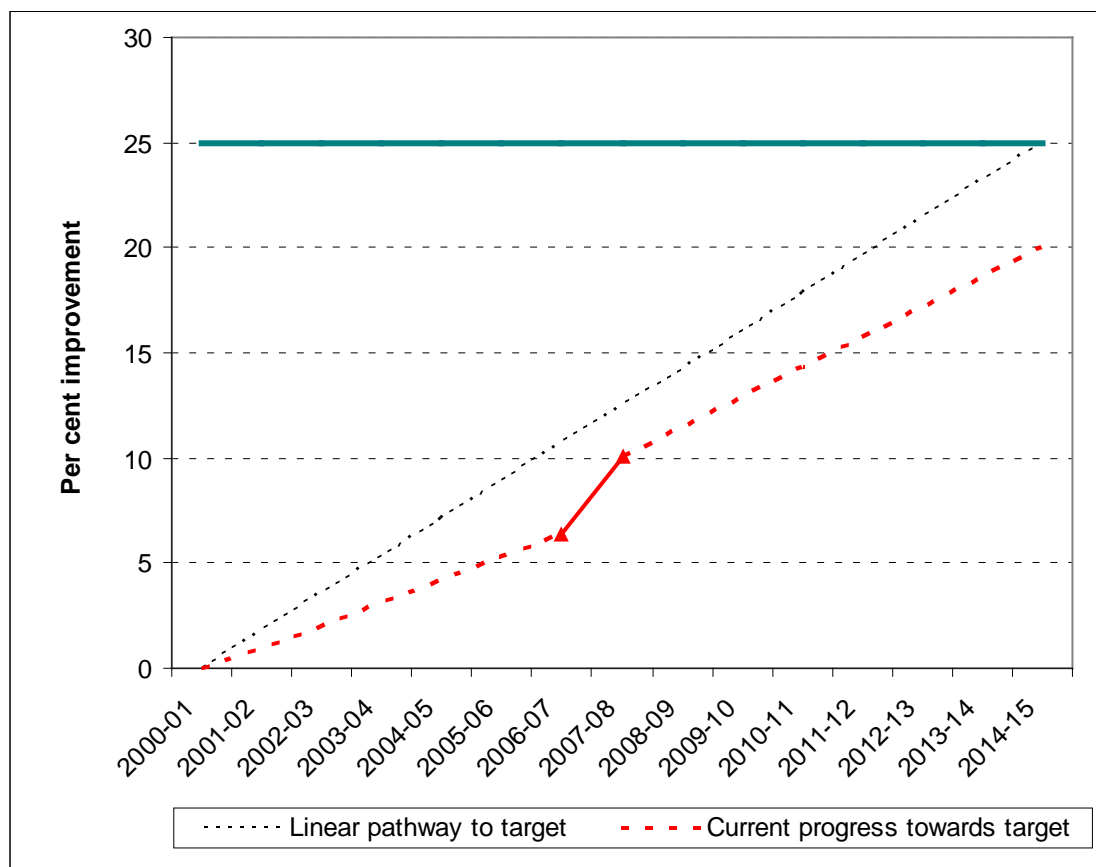
- Custodial Facilities
- Educational Facilities
- Hospitals
- Laboratories
- Law Courts
- Office Buildings Combined Services
- Office Central Services
- Office Tenant Light and Power
- Other Buildings
- Other Healthcare Buildings
- Other Healthcare Facilities
- Police, Fire and Emergency Services
- Public Buildings

While SASP T3.13 relates to energy efficiency, not greenhouse emissions, these are also of interest. Greenhouse emissions resulting both directly and indirectly from energy consumption in Government buildings are reported in Appendix D of the report.

2.4 Whole of Government Performance

In 2007-08, the energy efficiency of South Australian Government buildings had improved by 10.0 per cent from 2000-01. Figure 2.4 shows this progress is slightly behind a linear pathway towards SASP T3:13¹, which would require a 12.5 per cent improvement.

Figure 2.4: Whole of Government Performance



The *Annual Energy Efficiency Report 2006-07* reported an improvement of 8.77 per cent, however when the 2006-07 progress is re-calculated using revised information it equates to a 6.3 per cent improvement in efficiency at that time and is reflected in the graph above.

Between 2000-01 and 2006-07, energy efficiency was estimated to be improving at an average rate of 1.1 per cent per annum¹. The stepped increase towards the SASP target during 2007-08, to 10.0 per cent was primarily due to significant energy efficiency measures undertaken in the Health, DECS and DFEEST portfolios. This increase changes the average forward progress to 1.4 per cent per annum. If improvements in energy efficiency continue at this rate, the SASP target will not be achieved by 2014.

It is worth noting that SASP T3.13 is unlikely to be achieved via a linear pathway, particularly due to the increasing incremental cost of upgrading facilities as they become more efficient. Smaller and lower cost energy efficient solutions are likely to be utilised first, leaving the larger, more substantial (and more expensive) projects until later.

¹ Please note that no business measure data was collected for the intervening years 2000-01 to 2006-07. The linear pathway was determined theoretically, and the current progress line only used 2000-01, 2006-07 and 2007-08 data.

For example, the achievement of SASP T3.13 is likely to be contingent on the successful implementation of a number of large projects within the Health portfolio, such as the re-developments at the Queen Elizabeth Hospital, the Lyell McEwin Hospital, and the Flinders Medical Centre. Importantly, the new Marjorie Jackson-Nelson Hospital is expected to be fully operational in 2016, two years after the current end date for the SASP T3:13. This may have an effect on the capacity for the South Australian Government to achieve the 25 per cent improvement target by 2014.

Coverage of Government Building Energy Use

More than 99 per cent of the South Australian Governments' known building energy consumption in 2007-08 has been captured in this report. Many portfolios were able to collect both building energy use and business measure data for 100 per cent of their identified sites, while some could not.

This year, areas where energy and business measure information were identified as being incomplete included preschools within the DECS portfolio and some sites occupied by PIRSA. Progress has been made in both areas, although coverage is not yet complete.

Data collection has been an issue to date with preschools due to differing bill payment processes for some sites. In 2007-08, 11 per cent of pre-school sites were reported on, whereas none were reported in 2000-01.

Since last year's report, PIRSA identified that the West Beach Trust, a large consumer of PIRSA's energy, was primarily used for lighting parks, the golf course at West Beach and boat ramps. As a result this entity was re-categorised to 'other uses' and omitted from inclusion in SASP T3:13.

3. Energy Efficiency Performance by Portfolio

3.1 Portfolio Performance

This section reports on progress made by each portfolio. Table 3.1 and Figure 3.1 list portfolios in the order of their individual energy efficiency improvement.

The percentage of portfolio contribution to SASP T3:13 (Column C) was calculated by multiplying the portfolio's proportion of total government energy consumption (Column B) by their individual energy efficiency improvement (Column A).

Table 3.1: 2007-08 Individual Portfolio Progress towards the 25 per cent Improvement Target

Portfolios	Per cent Individual Energy Efficiency Improvement (A)	Portfolio proportion of total SA Government energy use (B)	Per cent Portfolio contribution to SASP T3:13 - 2007-08 (C)
Transport, Energy and Infrastructure	3.9	7.0	0.3
Education and Children's Services (high schools, primary schools, some pre-schools)	4.3	15.0	0.6
Justice	9.7	9.0	0.9
Health	11.2	52.0	5.8
Primary Industries and Resources SA	9.2	3.0	0.3
Further Education, Employment, Science and Technology	11.2	6.0	0.7
Premier and Cabinet	11.9	4.0	0.5
Trade and Economic Development	19.0	0.0	0.1
Families and Communities	19.0	3.0	0.0
Environment Protection Authority	25.1	0.0	0.5
Treasury and Finance	39.9	0.5	0.0
Environment and Heritage	47.7	0.5	0.3
Water, Land and Biodiversity Conservation	50.5	0.0	0.1
TOTAL SA GOVERNMENT		100.0	10.0

The Health portfolio is the largest consumer of building energy use in the South Australian Government, using more than 50 per cent of the Government's energy. As a result, an 11.2 per cent energy efficiency improvement in the Health portfolio has contributed 5.8 per cent (of the 10.0 per cent) energy efficiency improvement across government.

The other large energy consuming agencies include DECS, Justice and DTEI.

Figure 3.1: SA Government Energy Efficiency Improvement and Target Contribution 2000-01 to 2007-08

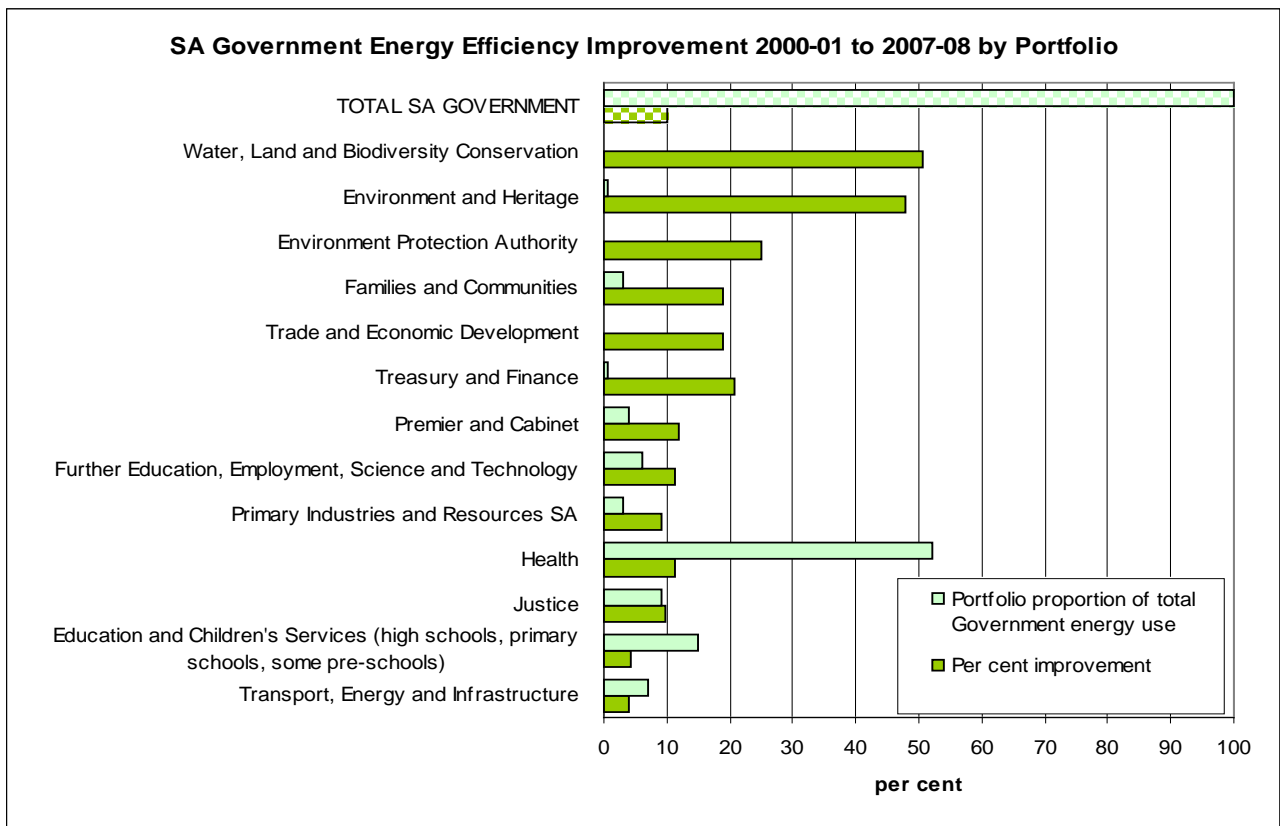


Figure 3.1 demonstrates that three portfolios, DEH, DWLBC, and EPA achieved more than a 25 per cent improvement in building energy efficiency.

A more detailed overview of each of the portfolio's energy efficiency performance and their planned initiatives are provided in Chapter 4, Portfolio Progress 2000-01 to 2007-08.

Baseline Revisions

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

The need to revise baselines between portfolios has been acknowledged as an important requirement under this program. The 2002-03 Independent Verification Report contained a recommendation that a standard procedure be developed and implemented by the EERG for this purpose.

Under this procedure, which was developed by the EERG, 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.

Baseline changes are available where:

- Change occurs in portfolio structure (and particular sites must be transferred from one portfolio to another);
- A site was previously excluded from reported data or is a new site or entity; and
- Data for a site previously reported was either an estimate or reported incorrectly and actual data is now available.

Where a portfolio has made a modification to its baseline energy use data in the 2007-08 financial year, a brief explanation is provided in its overview.

Changes to the 2006-07 Energy Efficiency Results

The energy efficiency target was measured for the first time in 2006-07. This involved a significant data collection process of both energy consumption and business measures. Since last year, agencies have undertaken a review of their data and reporting procedures to improve on the information they previously provided. As a result, the energy efficiency figures reported in the 2006-07 report have been recalculated as per the table below.

Table 3.2: 2006-07 Individual Portfolio Progress towards the 25 per cent Improvement Target

Portfolios	2006-07 Per cent Individual Energy Efficiency Improvement	2006-07 Portfolio proportion of total SA Government energy use	Per cent Portfolio contribution to SASP T3:13 - 2006-07
Transport, Energy and Infrastructure	3.8	6.7	0.3
Education and Children's Services (high schools, primary schools, some pre-schools)	-2.9	15.0	-0.4
Justice	9.4	9.0	0.8
Health	7.6	51.9	3.9
Primary Industries and Resources SA	13.4	2.5	0.3
Further Education, Employment, Science and Technology	-1.0	6.9	-0.1
Premier and Cabinet	13.9	3.9	0.5
Trade and Economic Development	13.7	0.5	0.1
Families and Communities	18.3	0.1	0.0
Environment Protection Authority	19.3	2.6	0.5
Treasury and Finance	21.1	0.1	0.0
Environment and Heritage	37.0	0.8	0.3
Water, Land and Biodiversity Conservation	53.7	0.1	0.0
TOTAL SA GOVERNMENT		100.0	6.3

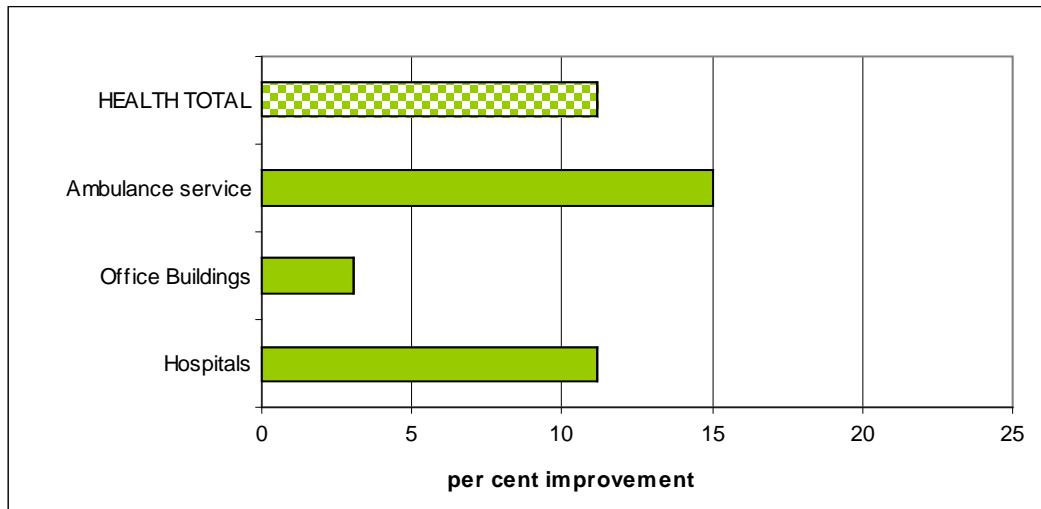
The revised figure can be attributed to a reduction in the individual energy efficiency of the Health portfolio (from 12.5 per cent to 7.6 per cent). In addition, in 2006-07 DFEEST reported an energy efficiency reduction of -2.6 per cent; this is now revised to -1.0 per cent.

4. Portfolio Progress 2000-01 to 2007-08

Chapter four presents the energy efficiency performance of each portfolio between 2000-01 and 2007-08.

4.1 Department of Health

Figure 4.1: Health Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

Health is a very large consumer of gas and electricity, accounting for 52.1 per cent of all building energy consumed by the South Australian Government. As a result, Health is a key portfolio in achieving SASP T3:13. The improvement is based on calculations using area (m^2) as the business measure.

Between 2000-01 and 2007-08, Health achieved an 11.2 per cent improvement in building energy efficiency. This equates to a 5.8 per cent improvement in Government's overall energy efficiency. Hospitals, which constitute more than 95 per cent of the Health portfolio's energy consumption, expanded their occupied space by nearly 138,000 m^2 between 2000-01 and 2007-08, while increasing their consumption of energy by a much lower proportion. This resulted in a decrease in the energy consumption in hospitals per square meter from 1315 MJ/m^2 to 1168 MJ/m^2 , and an overall efficiency improvement of 11.2 per cent.

The other business measures used for hospitals were Occupied Bed Days and Full Time Equivalent (FTE) employees. If calculated by reference to these measures, energy efficiency gains would be 9.4 per cent improvement for occupied bed days, and a 18.5 per cent improvement for FTEs (both since 2000-01).

Changes in Baseline and/or Subsequent Years' Energy Use

Health increased its baseline data from 1,262,384 GJ to 1,263,800 GJ due to the discovery of 29 small sites that had not been reported on previously and two sites that had been reported incorrectly in 2006-07.

In 2007-08 Metropolitan Domiciliary Care was transferred from Health to the DFC.

Significant Energy Management Achievements

- Solar Hot Water (SHW) was installed at nine country hospitals during 2007-08, with a further four country hospitals to have SHW installed in early 2008-09. When complete, more than two thirds of all country and regional health units will have SHW installed. SHW typically reduces a hospital's energy use by approximately five to nine per cent. Within the metropolitan area the Repatriation General Hospital and Lyell McEwin Hospital Service have very large SHW services installed. Flinders Medical Centre (FMC) will have the largest SHW service installed in South Australia operational by late 2008 at a cost of \$2.1 million.
- During 2007-08 physical works commenced at FMC on both the New South Wing and on the central energy plant upgrade. When the \$153 million FMC redevelopment is complete in 2012 it is anticipated the site's energy efficiency use will be improved by approximately 25 per cent.
- A major lighting upgrade for the SA Pathology's Frome Road complex continued to be implemented during 2007-08 and is scheduled to be completed by the end of the 2008 calendar year. When completed, the lighting upgrade, which includes a combination of various lighting and lighting control technologies, is forecast to reduce lighting energy consumption in this facility by an estimated 60 per cent.

Proposed New Initiatives in 2008-09 and Beyond

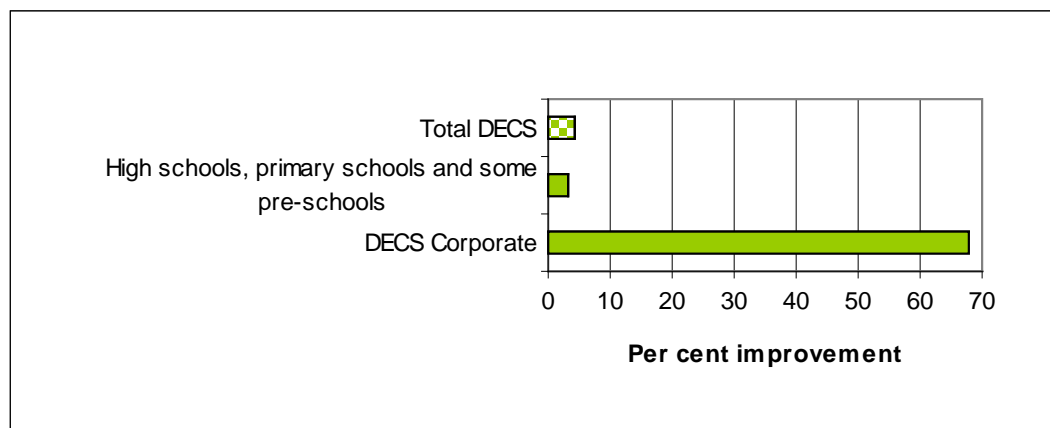
- The primary strategy to improve SA Health's energy efficiency is to ensure energy efficiency is a high level target for all major redevelopments and refurbishments. Ambitious energy targets have been established for the three major metropolitan redevelopments (Lyell McEwin Hospital, The Queen Elizabeth Hospital and Flinders Medical Centre). Cumulatively these sites accounted for 28 per cent of SA Health's baseline energy use; full achievement of the energy efficiency targets established for these sites would improve SA Health energy efficiency by a further 7 per cent by 2014. Achieving SASP T3:13 for the Portfolio is highly contingent on these major redevelopments achieving the ambitious energy efficiency target that have been established.
- A total of \$600,000 has been allocated from the SA Health 2008-09 Compliance Program for energy and water saving projects which is to be allocated on dollar-for-dollar basis (with additional funding to be provided by Health Units), bringing the total value of initiatives to \$1.2 million. If successful during 2008-09, consideration will be given to allocating additional dedicated funds in future years for energy and water savings initiatives.
- Current specifications for both the Marion and Elizabeth GP Plus Centres call for facilities that achieve a 5 Star Plus Environmental rating as measured by the Greenstar Office tool. Initial estimates are that a 5 Star rating would likely see facilities with an average energy intensity of 650-800 MJ/m² per annum; which is around half the energy intensity of the average square metre of health space in 2000-01 (1,360 MJ/m² per annum). As such GP Plus facilities should assist in achieving SASP T3.13.
- In addition there are a range of other initiatives currently funded or likely to be achieved as part of other redevelopment projects (such as the Glenside redevelopment, the GP Plus projects and the major upgrades at Berri, Ceduna and Whyalla) that will likely deliver further energy efficiency gain across the Health portfolio. These projects are likely to deliver under a 2-3 per cent improvement in the SA Health energy efficiency performance.

For SA Health to be able to deliver its proportional contribution to achieving SASP T3.13 funding of other additional energy efficiency opportunities will likely be required. Identified projects of significance in this regard are:

- Energy Performance Contracts (EPC): Capital funding of EPC initiatives at major SA Health facilities that do not have redevelopments currently programmed, (Modbury, Women's and Children's Hospital, Repatriation General Hospital and Hampstead Rehabilitation Centre) should be considered. Anecdotal evidence, coupled with interstate experience and engineering studies suggest that these sites are likely to have energy efficiency opportunities available, that would likely be capable of reducing the Health Portfolios energy consumption by an estimated 25,000 GJ per annum.
- Solar Hot Water (SHW): Further funding to install SHW at one third of SA Health hospitals that do not currently have SHW services installed or planned for installation has potential to deliver large energy efficiency gains with a simple payback in the order of 7-8 years.
- The Royal Adelaide Hospital (RAH) (which currently consumes 22 per cent of SA Health energy use) will cease to be operational in 2016 and its replacement facility, the Marjorie Jackson Nelson Hospital, is targeting to consume less than half the energy currently consumed by the RAH and in addition, to provide 15 per cent of the sites supply from self-generated renewable power. If this ambitious target is achieved, this one project alone will improve SA Health's energy efficiency by approximately 11 per cent. This step change in the Portfolio's energy efficiency will not be delivered until 2016; two years after the target date established for SASP target T 3.13.

4.2 Department of Education and Children's Services

Figure 4.2: DECS Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

DECS experienced an improvement in its building energy efficiency of 4.3 per cent between 2000-01 and 2007-08. As can be observed in Figure 4.2, this is primarily a result of an improvement in school (primary and secondary) building energy efficiency, which constitutes approximately 97 per cent of the portfolio's energy consumption.

In previous years DECS has been unable to report energy consumption in pre-schools due to complexities with billing procedures. In 2007-08, a total of 23 (11 per cent) of preschools were included in reporting.

Changes in Baseline and/or Subsequent Years' Energy Use

Changes were made to the baseline and subsequent years' energy use due to incorrect school's information reported in previous years.

Significant Energy Management Achievements

Key initiatives implemented by DECS during 2007-08 included:

- Green School Grants - Funding of \$1 million was included in the 2007-08 Capital Program to support the Green School Grants Initiative with 75 per cent dedicated to energy efficiency upgrades which include energy auditing, retrofitting and planning. The Minister for Education approved an additional allocation of \$2 million for Green School Grants with 75 per cent also dedicated to energy efficiency upgrades. Total funding geared toward energy efficiency measures totalled approximately \$2.25 million;

Funds will be used to provide energy audits, management plans and retrofitting services to schools. Grants will support Level 1, Level 2 and 'walk through' Energy Audits using AS/NZS 3698. Funding will also be used to undertake and implement specific infrastructure actions recommended from the audit. Sites will also be assisted with preparation of an energy management plan addressing behaviour change measures;

Charles Campbell Secondary School and Spotless Facility Management Services have proposed a trial of a 'load shedding' system at the school to control peak electrical loads. An on-site computer based control system is proposed to control the operation of the air

conditioner compressors. Joint funding for the project will be provided by ETSA and the school. The trial, if successful, may lead to installations of the system within other schools;

Retrofitting and energy efficiency trials have been undertaken at Christies Beach High School and Richmond Primary School. The sites were selected from a suite of 80 large sites identified in the Energy Scoping Study as 'average' in terms of energy efficiency indicators. The trials consist of a number of installations and monitoring of a range of technological solutions including the installation of timers, various light replacements and de-lamping, installation of occupancy sensors and time delay switches;

- The DECS Asset Services website www.decs.sa.gov.au/assetservices has been updated and provides a range of fact sheets on energy and water saving concepts and energy and irrigation audit reports undertaken at DECS sites; and
- The Australian Sustainable Schools initiative – South Australia (AuSSI-SA) is a joint DEH and DECS initiative. The AUSSI – SA Program is funded by the Commonwealth Department of the Environment, Water, Heritage and the Arts and South Australian Natural Resource Management Boards.

Other Sustainability Initiatives

- Renewable Energy - Solar panels were installed within 111 schools under the South Australian Solar Schools Program. Each solar installation saves approximately 3000 kWh of electricity annually, reducing the school's purchased energy. Installations are integrated into each site's curriculum.

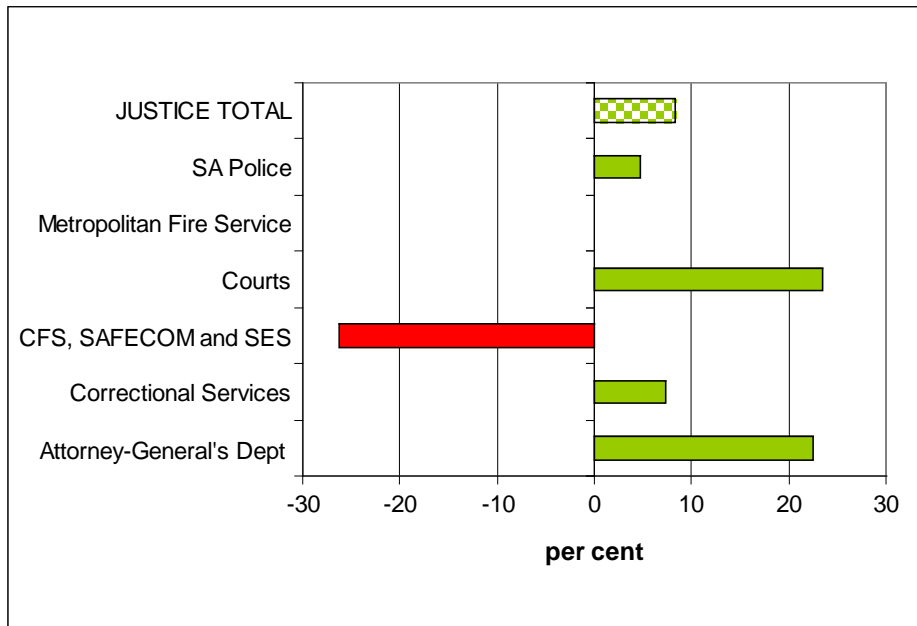
Proposed New Initiatives in 2008-09

The following initiatives are planned for 2008-09:

- DECS Central Office Energy and Water Management Trial - A retrofitting trial has been proposed and will commence in 2008-09. The trial will involve assessing lux levels, de-lamping or upgrading light fittings, installing timers and sensors in meeting rooms and offices, and developing recommendations to review appliances and equipment numbers and usage. Flush and tap restrictors and dual flush mechanisms will also be installed;
- Following the realignment and creation of DECS District Offices, energy consumption will be closely monitored against targets;
- Communication - A Hints and Tips e-newsletter will be regularly distributed to DECS Central Office staff, district and site staff to communicate relevant up to date information, policies, procedures and events regarding energy, water, and waste management, sustainability and other environmental initiatives to DECS staff and students;
- Ecologically Sustainable Development in Schools Policy - DECS Capital Works program intends to include PV panels as part of the briefs for major works during 2008-09;
- DECS will continue to monitor and identify methods of improving energy efficiency across its offices and sites and assist sites in the management of energy efficiency targets and educational initiatives; and
- DECS will be seeking funding of \$50,000 from the Federal Government for PV panels, \$20,000 of which must be spent on the panels themselves, the other \$30,000 on a range of environmental improvements including energy efficiency measures.

4.3 Department of Justice

Figure 4.3: Justice Building Energy Efficiency Improvement 2000-01 to 2007-08



NB: CFS= Country Fire Service, SAFECOM = SA Fire and Emergency Services Commission, SES = State Emergency Service

Overview of Performance to 2007-08

The Justice Portfolio improved its building energy efficiency performance by 9.7 per cent between 2000-01 and 2007-08. The Justice Portfolio constitutes 9.2 per cent of the South Australian Government's total building energy use. Most of the portfolio's energy is consumed within the SA Police and Correctional Services agencies.

The CFS, SAFECOM and SES experienced a collective deterioration in energy efficiency of 27.9 per cent from 2000-01. This deterioration can be explained by SAFECOM's facility redevelopment program. The program replaces very basic structures used for the CFS/SES with modern buildings that bring with them a higher energy component.

Changes in Baseline and/or Subsequent Years' Energy Use

Justice amended its 2000-01 and 2006-07 Metropolitan Fire Service business measure data from 58,946 m² to 28,506 m² and 34,166 m² respectively due to an earlier reporting error. SA Police's baseline energy consumption data was also amended from 92,874 GJ to 91,874 GJ respectively due to a reporting error.

Significant Energy Management Achievements

Justice energy efficiency improvement initiatives carried out in 2007-08 include:

- An energy audit completed at the Adelaide Youth Court;
- The installation of power factor correction equipment at the Sir Samuel Way Court Building;
- Purchase of solar hot water services for MFS sites;
- Installation of power shutdown systems following alarm calls at all new sites;

- Improvements to air conditioning at MFS' Beulah Pk station;
- Installation of T5 lights and dimmers and an upgrade of the chiller plant at the offices of the Liquor and Gambling Commission, Police Complaints Authority and the Ombudsman; and
- Installation of energy efficient LED exit lights at the Adelaide Youth Court.

Other Sustainability Initiatives

- Continued replacement of single flush cisterns with dual flush units in the Samuel Way Building; and
- The installation of solar panels and a power factor correction unit installed at the MFS Wakefield St station.

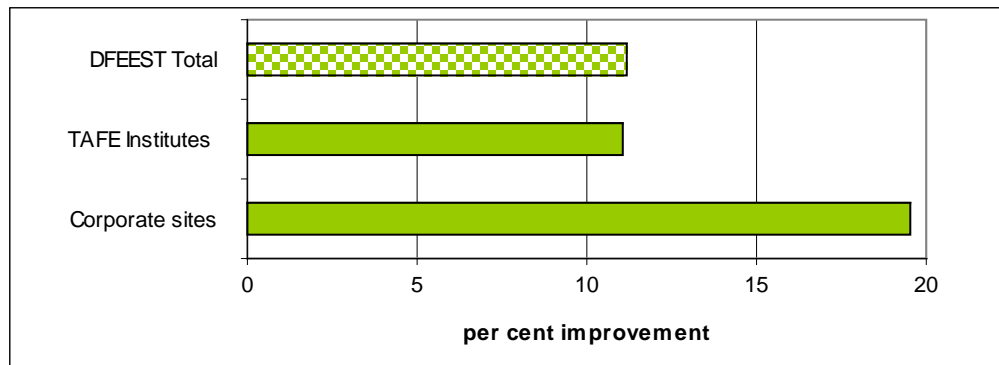
Proposed New Initiatives in 2008-09

The following energy efficiency improvement initiatives are planned for sites in the Justice Portfolio in the 2007-08 year:

- Additional solar panels to be installed at the MFS Wakefield St station;
- Investigating implementing outcomes from the energy audit at the Adelaide Youth Court;
- Installing Power Factor Correction in SAPOL's Communications Building;
- An energy audit of Forensic Science South Australia and the Youth Court;
- Lighting upgrades, de-lamping and replacing existing lights with T5s;
- Upgrades during retrofits to building maintenance, lighting, hot water and air conditioning systems;
- Increasing the numbers of staff per square metre; and
- Increasing the Attorney-General's Department head office by 0.5 of an Australian Green Building Rating star to 3.5 star by replacing lights with T5s, improving the building maintenance and upgrading the hot water and air conditioning systems.

4.4 Department of Further Education, Employment, Science and Technology

Figure 4.4: DFEEST Building Energy Efficiency improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

DFEEST reported an improvement of 11.2 per cent in its energy efficiency improvement between 2000-01 and 2007-08. This is a result of an 11.1 per cent improvement at TAFE SA sites, which consume approximately 98 per cent of DFEEST's energy. As DFEEST consumes 6.20 per cent of the South Australian Government's energy, it resulted in a contribution of 0.69 per cent to the whole of the South Australian Government's efficiency improvement. This is a significant improvement from last year's report, where DFEEST reported a small decline in energy efficiency.

This improvement is partly attributed to the review of Building Management Systems (BMS) across all TAFE Campuses, resulting in all TAFE institutes consuming less energy in 2007-08 than in 2006-07.

Changes in Baseline and/or Subsequent Years' Energy Use

DFEEST revised its structure on OSCAR and added a new site.

Significant Energy Management Achievements

Key achievements undertaken in the 2007-08 year include:

- A review of BMS systems at TAFE Campuses to ensure they are running at their most efficient, reducing unnecessary energy usage during after hours operations;
- A review of the hours of operation of ZIP hot water systems within the City Central tenancy has reduced their operation from being on continuously to operating 12 hours a day, 5 days a week;
- The Renewable Energy Centre based at Regency TAFE Campus was opened in August 2007. This centre is a practical approach to sustainable energy use for our students to gain practical first hand experience on new technologies supporting sustainability. The centre has solar and wind power generation capabilities, which provide power to the centre's operations. It has also delivered electricity to the grid;
- The new state of the art Veterinary & Applied Science Centre at the TAFE Gilles Plains Campus was jointly opened in early 2008 incorporating the latest energy efficient lighting system including smart sensors for their lighting operations; and

- A similar lighting system has also been incorporated in the refurbishment of Dental Services located at Gilles Plains TAFE Campus.

Other sustainability initiatives

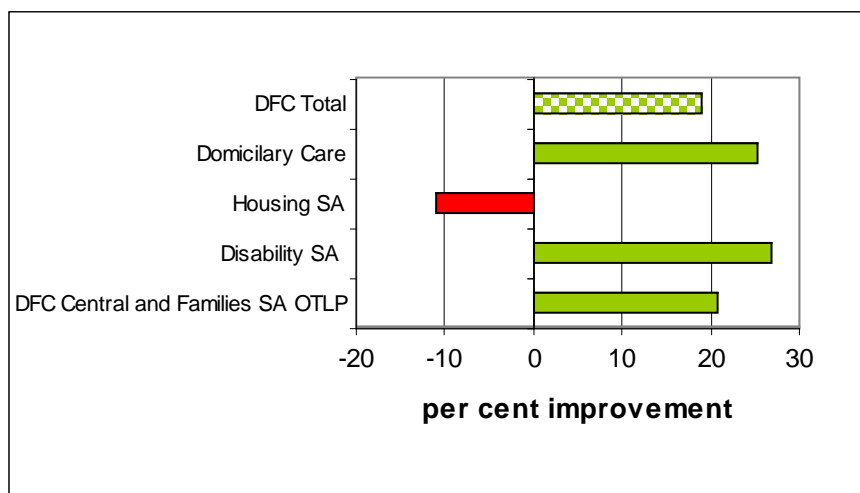
- Staff across the department are becoming more aware of the environmental and financial cost of energy, and are responding positively to message regarding energy efficiency.
- Regency TAFE has a cogeneration unit that is currently offline. This unit when operating can increase the institute's natural gas usage and save on electricity usage.
- City Central; this is the first year of full occupation of City Central, which has enabled a 22.7 per cent savings in energy usage and a 19.8 per cent increase in energy efficiency in its first full year of operation when compared to the last full year of our 4 previous sites.

Proposed New Initiatives in 2008-09

- Victor Harbor TAFE redevelopment will include solar panels and water tanks.
- A regional centre will be established in Whyalla to support industry and organisations in the region to develop an integrated and environmentally sustainable approach to the provision of energy, water and other infrastructure and resources in the Upper Spencer Gulf.
- Continuous rollout across DFEEST's Information and Communications Technology operations of energy efficient thin screen or LCD screen computer monitors will replace the old style high energy intensive CRT type computer monitors.

4.5 Department for Families and Communities

Figure 4.5: DFC Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

DFC achieved an overall building energy efficiency improvement of 19.0 per cent between 2000-01 and 2007-08. Around 45 per cent of DFC's energy was consumed by Disability SA, which achieved a 26 per cent energy efficiency improvement. Housing SA reported an -11.1 per cent reduction in energy efficiency, which was partly attributed to Housing SA leasing a number of office accommodation buildings that are energy inefficient. It is planned to take steps to rectify this situation by implementing green energy efficient programs in those areas.

Overall, DFC consumed 2.7 per cent of the South Australian Government's energy consumption, contributing 0.5 per cent to the whole of government efficiency improvement.

Changes in Baseline and/or Subsequent Years' Energy Use

During 2007-08, Metropolitan Domiciliary care was integrated into DFC and renamed Domiciliary Care SA. Domiciliary Care, transferred from Health, was a major contributor to the portfolio's overall improvement with an energy efficiency improvement of 25.4 per cent. In addition, DFC amended its baseline year energy consumption from 62,331 GJ to 68,809 GJ as a result of the agency transfer.

Significant Energy Management Achievements

During 2007-08, DFC implemented a number of programs designed to further improve energy efficiency within the portfolio. These include:

- Completion of Stage 1 of the print Device Consolidation Program to reduce the number of print devices within DFC. To date an estimated 82 devices have been reduced in Riverside building, on the floors that DFC occupies. This is an energy saving of 27 per cent per annum;
- Implementation of the Energy Information and Data Gathering System (EIDGS) which tracks energy usage within DFC;
- Extension of the Green Pilot Program to provide real examples for staff to follow in energy efficiencies, water consumption, waste management, travel and fleet, and green procurement;

- Use of the Greening Column in the DFC weekly on-line newsletter to update staff on greening issues;
- Building a 5 star, Green star Connected Service Centre office building in Mt Gambier, this is expected to be fully operational by August 2009;
- Work has been done to change staff work behaviours and staff practices to incorporate energy efficiency and greening cultural change. For example, a 'Turn the Light Off' campaign, switching your personal computer off at the power point before leaving the office at night, and saving energy by reducing water consumption at work;
- Working with Facility managers and DFC Building Management to improve energy efficiency in DFC sites that have been identified as consuming more than 160 MWh of energy per annum. An energy plan has been formatted for this purpose; and
- Highgate Centre, Disability SA commenced Print Device Consolidation in July 2008. The Centre reduced from 90 print devices to 35 print devices a consolidation of approximately 64 per cent. Over a 5 year period this will result in a reduction of recurrent and capital costs of \$300,000. The rationalisation of print devices has a number of benefits, there is a reduction in energy consumption, a reduction in consumables and a reduction in waste costs through double sided paper usage, procurement cost benefits, and selecting the correct equipment for the area and or office.

Other Sustainability Initiatives

- Regarding travel and fleet management, DFC has approximately 135 hybrid electric vehicles, and the remaining fleet is dual fuelled. At the end of May 2008 the State Government had approximately 252 Hybrid vehicles in its fleet, of which 135 were based within DFC.

Proposed New Initiatives in 2008-09

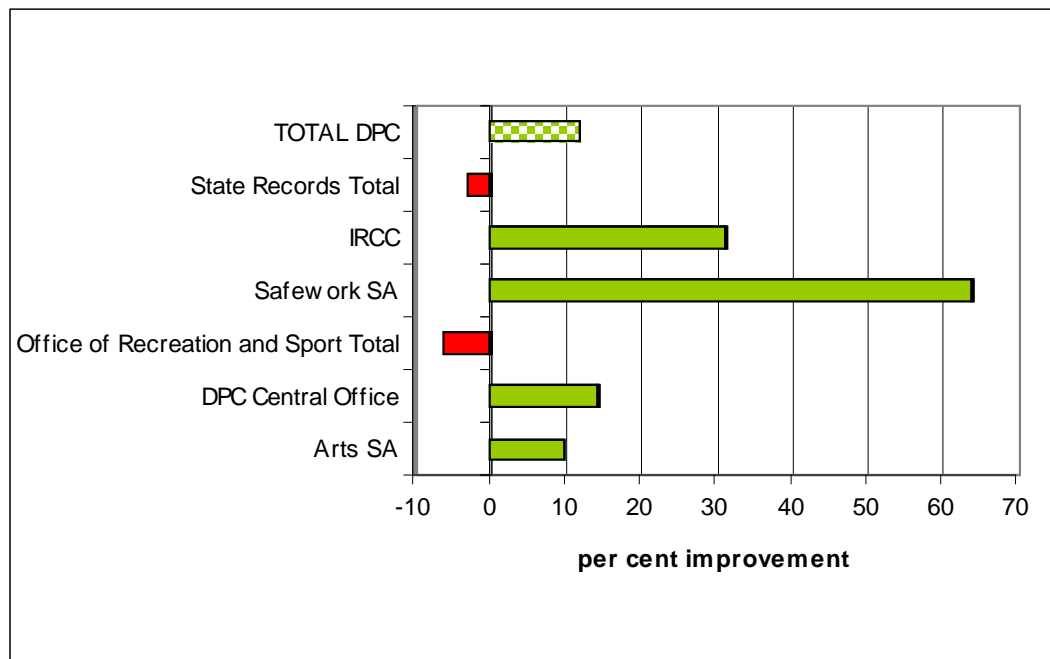
The following initiatives are planned for 2008-09:

- Stage 2 of the Print Device Consolidation Program will further reduce print devices within Riverside building from 318 devices to 96 devices. This will save approximately \$183,000 in recurrent and capital costs per annum and around \$1 million dollars over five years. Given the overall savings that can be generated, the Print Device Consolidation Program is planned for expansion throughout Disability SA, Housing SA, and Domiciliary Care. Consultation with Families SA will occur regarding the program;
- Given the energy and cost savings that can be achieved by the use of LPG, it is planned to set a target of 90 per cent usage of LPG within DFC, and continue to reach a target of 200 Hybrids within the DFC passenger fleet;
- Extend the Green Pilot Program to other areas of DFC;
- Further work to be undertaken to implement a culture change in staff work behaviours and work practices to incorporate energy efficiencies and greening principles in making DFC a carbon neutral department;
- Continue working with Facility managers and DFC Building Services to reduce energy consumption in sites that have been identified as consuming more than 160 MWh per Annum;
- Continue to use the Energy Information and Data gathering System (EIDGS) to track energy usage within DFC and provide feedback to offices and sites on energy use;

- Continue to use the greening Column to inform and update staff on energy use; and
- DFC will continue with the above energy efficiency programs during 2008-09 as well as identifying any new energy efficiency innovations that will be helpful to achieving the stated targets and goals or going beyond them.

4.6 Department of the Premier and Cabinet

Figure 4.6: DPC Building Energy Efficiency Improvement 2000-01 to 2007-08 in buildings consuming more than 500 GJ of energy per annum.



Overview of Performance to 2007-08

DPC achieved an overall energy efficiency improvement of 11.9 per cent in their owned and leased buildings between 2000-01 and 2007-08, using area as the business measure. This improvement is largely attributed to the 9.8 per cent improvement in Arts SA, which constitutes approximately 91 per cent of DPC's energy use. As a consumer of 4.1 per cent of the South Australian Government's energy use, this improvement contributed 0.5 per cent to the South Australian Government's overall energy efficiency target.

Energy use for 2007-08 was 3 per cent higher than for 2006-07, although there were significant variations across the portfolio:

- energy use for DPC Central Offices was down by 3 per cent. This is mainly due to the consolidation of several offices across the CBD into the State Administration Centre;
- energy use for the North Terrace cultural institutions increased by 2 per cent, attributed to increased air conditioning demands over the extended hot summer; and
- energy use for the Adelaide Festival Centre Trust increased marginally, but was offset by a 9 per cent increase in patronage.

Energy use at the sports stadiums (Hindmarsh Soccer Stadium, The Superdrome and SANTOS Athletics Stadium) was up by 16 per cent, following an increased use of these facilities, and upgrades to hospitality services at the Hindmarsh Stadium, during 2008.

Energy efficiency per visitor has improved substantially in most Arts locations. The best example is the 61 per cent improvement in energy use per visitor in the State Library, down from 61MJ/visitor in 2000-01 to 24 MJ/visitor in 2007-08. This is due to a significant decrease in energy consumption following the renovations in 2002 and a significant increase in visitors.

The Art Gallery has also improved from 41 MJ/visitor in 2000-01 to 27 MJ/visitor in 2007-08; a 34 per cent increase in energy efficiency.

Of the leased accommodation, DPC Central Offices achieved a reduction from 271 MJ/m² to 255 MJ/m², and DPC Operational Units achieved a reduction from 345 MJ/m² to 228 MJ/m².

Changes in Baseline and/or Subsequent Years' Energy Use

DPC established energy consumption and business measure records for the State Records division for the 2000-01 year as a result of finding area data and average site energy consumption at Netley, where State Records was originally located. Level 6 Chesser House, 97 Grenfell Street, Adelaide was transferred from DEH as a result of changes in tenancies. As a result, the DPC baseline was amended from 107,221 GJ to 108,643 GJ to reflect these changes.

Significant Energy Management Achievements

Key initiatives include:

- Mechanical designs for the air-conditioning upgrade in the Elder and Melrose Wings of the Art Gallery were prepared during the year. A consultant was appointed for the lighting component. Site works will commence late in 2008-09. This project is expected to lead to significant improvements in energy efficiency by 2011. Monitoring was completed to track changes in energy use over the different seasons;
- Energy audits were undertaken at Hindmarsh Stadium, SA Museum and the State Records store at Gepps Cross. Potentially significant savings were identified at the Hindmarsh Stadium and these will be considered in 2008-09 by the Office for Recreation and Sport;
- De-lamping was undertaken on levels 13 and 16 of the State Administration Centre, resulting in a 15-20 per cent reduction in energy use on these floors in the last three months of the financial year;
- The department further rationalised its office accommodation in the CBD, with several smaller units being brought into the State Administration Centre. Refurbishments were undertaken to more closely meet the required standards of area per staff member and to improve the energy efficiency of lighting; and
- During the year, the Sustainable Office-based Printing Policy was introduced which included a standard of one printing device per 10 staff in office areas. A number of offices rationalised printers and photocopiers by introducing multi-function devices.

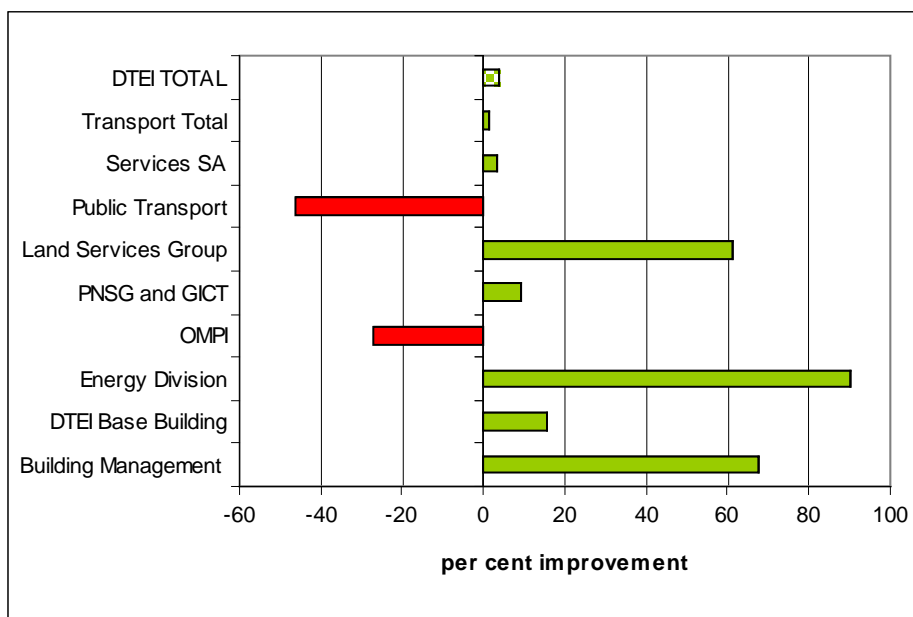
Proposed New Initiatives in 2008-09

In 2008-09 an energy audit will be undertaken at the Adelaide Festival Centre. The centre is the single biggest energy user of the portfolio, making up 29 per cent of the energy consumed in 2007-08. A number of the recommendations from the 2007-08 energy audit in the SA Museum will be implemented.

A range of minor projects to reduce energy use in the State Administration Centre will be undertaken, including de-lamping on leased floors, installing movement detectors and the introduction of shorter standby and hibernation times for computers. The process of consolidating leased accommodation within the Adelaide CBD will continue resulting in reduced overall energy use for offices.

4.7 Department for Transport, Energy and Infrastructure

Figure 4.7: DTEI Building Energy Efficiency Improvement 2000-01 to 2007-08



GICT = Government Information Communication Technology, PNSG = Parliamentary Network Support Group, OMPI = Office of Major Projects and Infrastructure.

Overview of Performance to 2007-08

DTEI improved its overall building energy efficiency by 3.9 per cent between 2000-01 and 2007-08. This department consumes 6.8 per cent of South Australian Government's energy use, contributing 0.3 per cent towards the overall South Australian Government energy efficiency improvement. The Energy Division reported the largest improvement since 2000-01 with 90.4 per cent, as a result of it occupying the 8th floor of the 5 star, Green star office building in Waymouth Street. The Office of Major Projects and Infrastructure (OMPI) declined by 26.9 per cent due to an increase in staff numbers and the increased use of energy prior to the launch of projects. Public Transport declined by 46.1 per cent from the baseline, which is consistent with the 2006-07 report. It is anticipated that Public Transport energy consumption will reduce in the future due to the consolidation of a number of staff into one level in Roma Mitchell House instead of being spread across two levels.

Changes in Baseline and/or Subsequent Years' Energy Use

Baseline data was amended as a result of the discovery of building energy use consumption in GICT which previously reported by DAIS as 'operations' energy use. As a result, 2000-01 energy consumption has been revised from 2,980 GJ to 6,163 GJ and 2006-07 energy consumption has been revised from 3,394 GJ to 5,574 GJ in order to incorporate the missing 'operations' data.

Significant Energy Management Achievements

Key initiatives implemented by DTEI during 2007-08 included:

- Developing a standard form of 'Green Lease' and other strategies to reduce demand for government office space and related resources. DTEI negotiated major leases for government tenants at numerous CBD locations designed to achieve energy savings by requiring owners to provide base building energy efficiency measures in the buildings and tenant fit-outs;
- Encouraging agencies to manage energy, water and waste more efficiently. Energy audits were completed on five government owned buildings. Energy and water savings initiatives were incorporated in the program to replace and provide government employee housing;
- Investigating and identifying an appropriate suite of environmental rating tools for application to existing commercial government owned office buildings;
- Incorporating energy and water efficient measures in major building project procurement practices. These include the use of green star design tools to complement application of DTEI's ecological sustainable development guide note for 'Planning, Design and Delivery', as well as the inclusion of a range of environmental criteria in the capital works procurement and review process;
- Maintaining and replacing major plant in eight government buildings, incorporating energy efficiency components; and
- A Green IT Policy which has resulted in Communication and Technology (ICT) suppliers being required to provide Energy (Star) Rating compliant hardware on the:
 - desktop and in the server room;
 - liquid crystal display (LCD) screens being purchased;
 - personal computers (PCs) being programmed to switch off at night;
 - printers being programmed to default to double sided printing; and
 - all printer consumables being recycled.

Other Sustainability Initiatives

- Greening of the DTEI vehicle fleet through the use of lower emissions fuels. DTEI has 10 hybrid and 306 low-emission fuelled cars (LPG, high efficiency diesel) in its light vehicle fleet, reducing greenhouse gas emissions by an average of 120 tonnes and saving over \$450 000 in fuel costs per annum. Forty-three per cent of the fleet were using low emission fuels at June 2008, positioning the department well to exceed the Premier's target of converting 50 per cent of government cars to lower emission fuels by 2010. To assist in achieving this target, DTEI changed its light vehicle policy during the year to further promote and convert as many light vehicles as possible to low-emission fuelled;
- Greening of the public transport bus fleet by:
 - The use of compressed natural gas to power approximately 27 per cent of buses within the Adelaide Metro fleet. Twenty new buses with diesel engines to Euro3 standard and 20 new buses with diesel engines to Euro4 standard have been added to the fleet. These buses significantly reduce emissions and, for example, emit one eighteenth as many particles, compared to the pre-Euro spec engines they replaced; and
 - Ultra-low sulphur diesel mixed with five per cent biodiesel is used in the majority of the diesel fleet of buses. Two depots with approximately 80 buses are using B20 (20 per cent) biodiesel'.

- Undertaking a video conferencing trial which is saving \$2,000-\$3,000 per meeting in avoided travelling costs and lost time, while also reducing fuel use;
- Continuing the operation of the Green Transporter, a shuttle bus service that operates between the department's Walkerville and city sites. In 2007-08, it was used by 25,585 people, representing an increase of 3.3 per cent over 2006-07 and a significant reduction in car and taxi trips by employees;
- Encouraging increased use of public transport through the Adelaide Metro Workplace program, providing information, ticket incentives and Metroticket sales at 28 participating public and private organisations;
- A change to the use of a minimum 50 per cent recycled content A4 paper; and
- A review of the procurement process to identify opportunities for environmental outcomes from procurement activities.

Proposed New Initiatives in 2008-09

The following initiatives are planned for 2008-09:

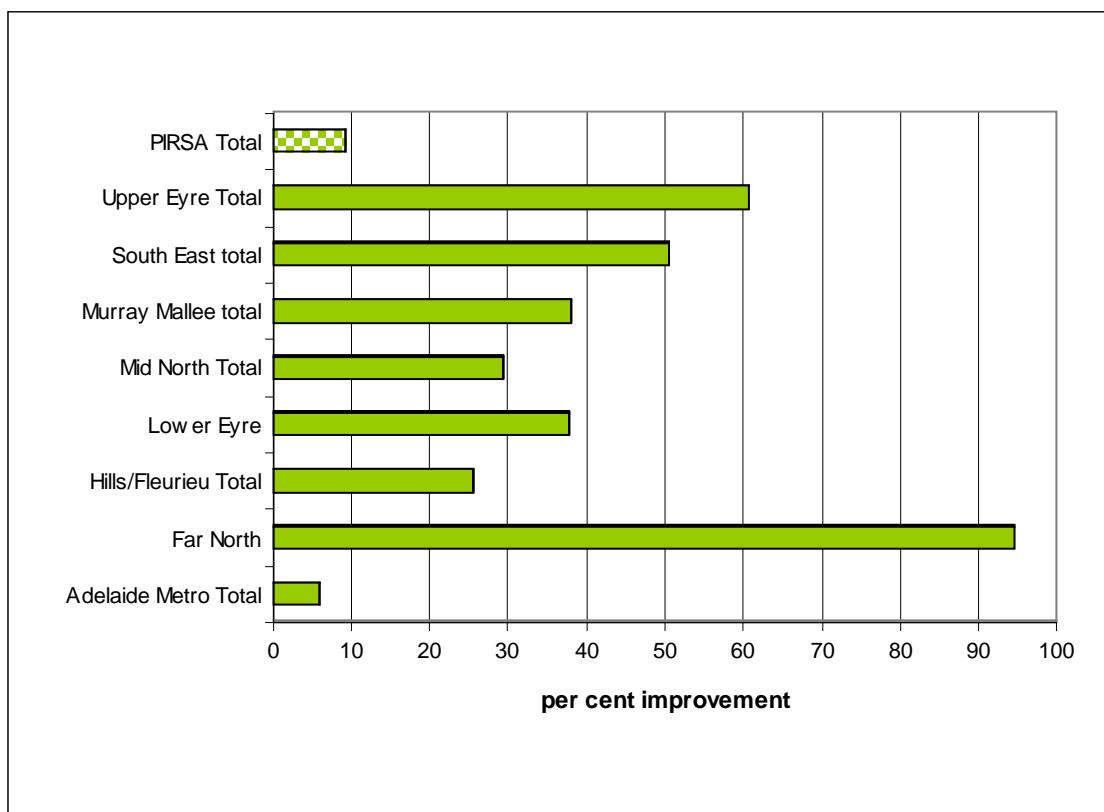
- DTEI's leadership commitment under "Tackling Climate Change: South Australia's Greenhouse Strategy" requires improvement in the "Use sustainable practices (including energy efficiency) during all stages of government building procurement processes"; and
- DTEI's Office Accommodation group is upgrading a number of sites with energy efficient equipment as part of its maintenance and upgrade program. A review of regional offices is also being undertaken to identify opportunities to implement a tune-up program.

DTEI is also proposing the following initiatives for 2008-09:

- DTEI is reviewing Government's Project Implementation Process (PIP) for major building projects and identifying opportunities to further enhance the existing suite of environmental considerations. These already include environmental criteria for the pre-qualification of professional service contractors and building contractors, application of an ESD Guide Note for 'Planning, Design and Delivery' in concert with the use of Green Star design rating tools where available, and a design review process at the end of each step in the process; and
- DTEI's Facilities Management Contract group is working to reinforce the leverage and provisions presented by the South Australian Government's \$100 million annual expenditure through the across Government Facilities Management Arrangement by encouraging agency participation through contract governance arrangements and highlighting Key Performance Indicators that deal with environmental services. The contract provisions include environmental services consistent with the GoGO Framework and in particular support initiatives enabling more efficient management of energy, water and waste.

4.8 Primary Industries and Resources SA

Figure 4.8: PIRSA Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

Figure 4.8 demonstrates the relative energy efficiency improvements within PIRSA's regional agencies. Overall, PIRSA achieved a 9.2 per cent energy efficiency improvement in its buildings between 2000-01 and 2007-08. The portfolio consumes three per cent of the South Australian Government's energy consumption, contributing 0.3 per cent to the whole of government efficiency improvement.

Changes in Baseline and/or Subsequent Years' Energy Use

PIRSA underwent a process of data reclassification into the most appropriate end-use categories in late 2007, to enable consistency over reporting periods. It also amended its baseline year energy consumption to 75,904 GJ due to identification and reclassification of some sites.

Significant Energy Management Achievements

PIRSA undertook the following energy efficiency measure in the 2007-08 year:

- An energy audit of PIRSA sites consuming more than 150,000 kWh a year was completed in 2007-08. From this audit energy reduction plans will be developed for each site.

Proposed New Initiatives in 2008-09

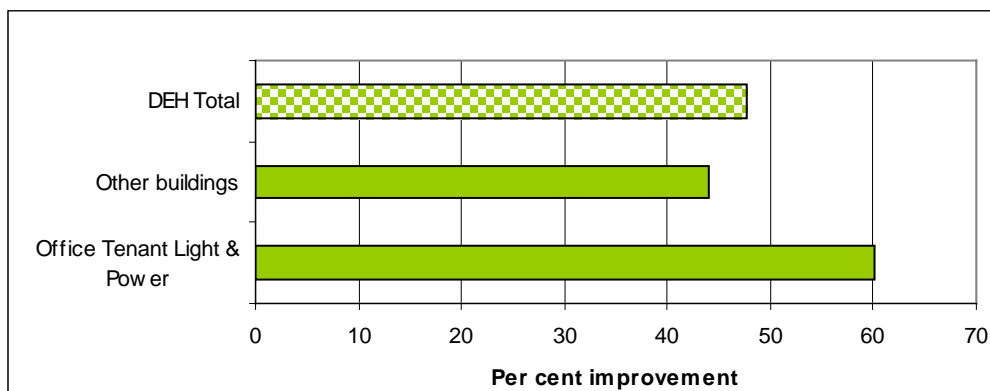
The major initiatives planned for 2008-09 include:

- Lighting within PIRSA tenancies at 101 Grenfell Street are proposed to be replaced with energy efficient T5 lighting following finalisation of new lease arrangements;

- A 'Green and Groovy Trail' awareness session is to be held off-site at the Waite Campus – SARDI Plant Research Centre. The session will highlight the problems with high end consumption, the global impact Carbon emissions have on the environment and raise staff awareness about energy consumption; and
- PIRSA intends to register all sites onto a single contract established by DTEI Contract Services team and further clarify meter and business measures.

4.9 Department for Environment and Heritage

Figure 4.9: DEH Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

DEH achieved an overall building energy efficiency improvement of 47.8 per cent between 2000-01 and 2007-08. Energy consumption in DEH's 'Other Buildings' category has decreased, with usage falling by 19 per cent in the last 12 months. This decrease is directly attributable to the reduction in diesel usage in generators as a result of the installation of Remote Area Power Systems.

Changes in Baseline and/or Subsequent Years' Energy Use

The base year of 15,849 GJ was reduced by 293 GJ to 15,556 GJ following the transfer of Level 6 Chesser house to DPC. All intervening years to 2007-08 were also amended.

Significant Energy Management Achievements

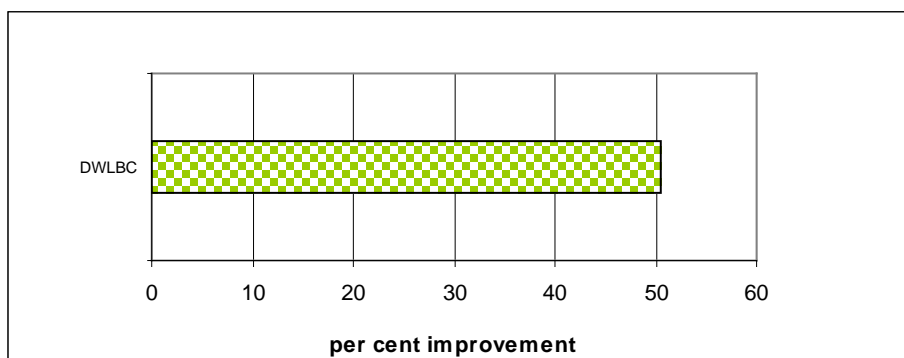
- DEH undertook the following energy efficiency measure in the 2007-08 year: Energy Audits have been completed for the top six energy usage sites and projects identified have been considered for inclusion in future programs.

Proposed New Initiatives in 2008-09

- Funding has been approved for expenditure in 2008-09 to undertake investigations into Remote Area Power Systems at various remote sites; and
- Funding has been approved for expenditure in 2008-09 to undertake a lighting retrofit on floors one and two at 1 Richmond Road, Keswick (approximately 3,000 m²).

4.10 Department of Water, Land, Biodiversity and Conservation

Figure 4.10: DWLBC Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

Department of Water, Land, Biodiversity and Conservation (DWLBC) achieved an overall building energy efficiency improvement of 50.5 per cent between 2000-01 and 2007-08. DWLBC is a small consumer of Government energy and contributed 0.05 per cent to the Government's overall energy efficiency improvement.

Changes in Baseline and/or Subsequent Years' Energy Use

Consumption increased slightly in 2007-08 due to the Stirling site not being reported previously and the new leases at 150 Grenfell Street and 211 Victoria Square (part year).

Significant Energy Management Achievements

DWLBC undertook the following energy efficiency measure in the 2007-08 year:

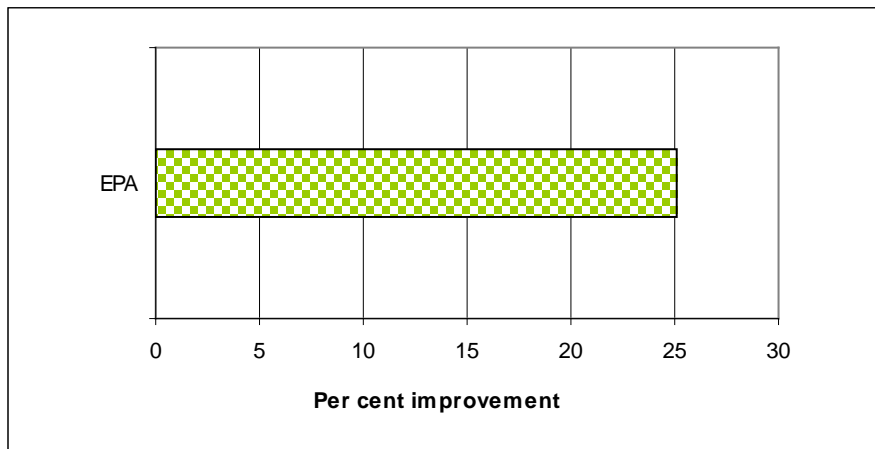
- The existing lighting to Levels 1 and 11 25 Grenfell Street has been replaced with energy efficient Light Eco T5 fittings reducing the energy consumption and cost of energy. The savings have been estimated at 31 per cent the project has a payback period of 3 years.

Proposed New Initiatives in 2008-09

- Energy audits of all owned accommodation sites will be completed and costed in 2008-09.

4.11 Environment Protection Authority

Figure 4.11: EPA Building Energy Efficiency 2000-01 to 2007-08



Overview of Performance to 2007-08

The EPA achieved a portfolio-wide 25.1 per cent building energy efficiency improvement between 2000-01 and 2007-08. EPA is small consumer of Government's energy use.

Changes in Baseline and/or Subsequent Years' Energy Use

The base year business measure data for Kent Town and Stirling sites were reported incorrectly in 2006-07. Corrections included increasing Kent Town from 632 m² to 804 m² and increasing the data for Stirling from 0 m² to 294 m² and SA Water house from 2000-01 to 2006-07. This amended the baseline from 1608 GJ to 1694 GJ. EPA also discovered an anomaly in their energy data in SA Water house, which needed to be amended from 2004-05 to 2006-07.

Significant Energy Management Achievements

The EPA undertook the following energy efficiency improvements in the 2007-08 year:

- Completed its transition from CRT Computer Screens to more energy efficient screens; and
- Secured funding for a move to new accommodation which has been accredited as six star rated building by the Green Building Council of Australia. This will assist to significantly reduce the EPA's current office and lighting energy consumption.

Proposed New Initiatives in 2008-09

The EPA will move to its new accommodation in February or March 2009. This move is anticipated to reduce energy consumption due to its six star infrastructure and building design and also its five star rated internal fit out. Specific aspects that will assist in meeting our reduction in energy consumption are:

- A veil on the western façade of the building to reduce solar loads while still retaining views and daylight;
- High performance glazing to north, south and east facades;
- Displacement ventilation system using raised floor – this gives individual control to occupants and reduces churn costs;

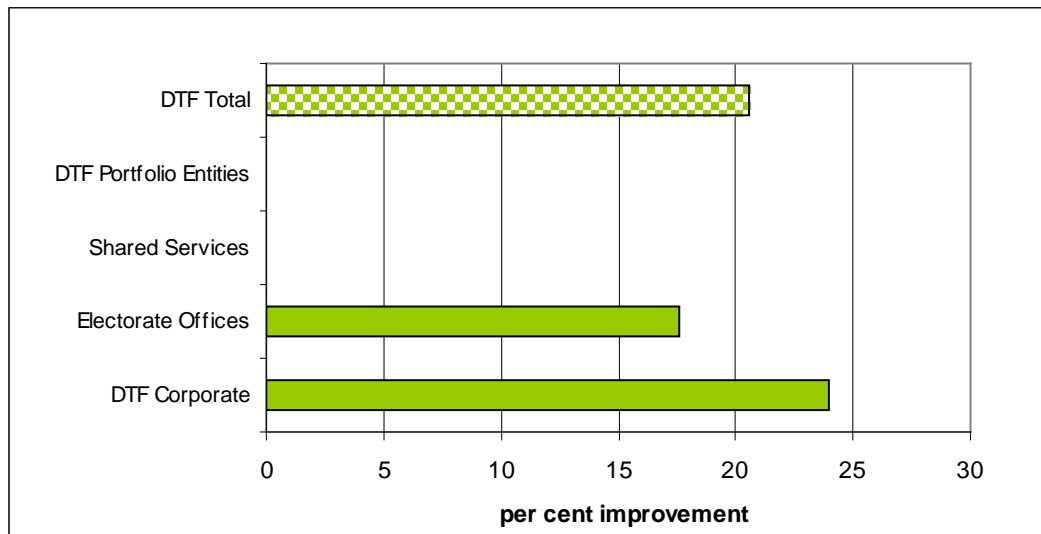
- Full height atrium to allow natural light into the heart of the building;
- Energy efficient lighting system with automatic dimming control, light switching zones not to exceed 100 m²;
- Development of a tenant Guide which will provide EPA staff with guidance on how to gain maximum benefit from the fit out and continue to manage and reduce the EPA's ongoing environmental impact;
- Selection of energy efficient office equipment. Fridges will be 5 star rated and will be reduced from our current 9 to 5; and
- Printers and photocopiers will also be reduced from 43 to 17 by creating printer and photocopier utility hub rooms.

It is anticipated that per person the energy consumption will be reduced not only due to the new building efficiency but also as the space per person in the new accommodation will meet the current Government Office Accommodation Committee requirements therefore the EPA will be occupying less space.

The on-going review of the vehicle fleet, which will be done through our newly implemented Fleet Management system, will allow the EPA to change the vehicle mix and size as vehicle leases come to an end. EPA is currently changing one vehicle from an unleaded petrol to an energy efficient Toyota Prius.

4.12 Department of Treasury and Finance

Figure 4.12: DTF Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

DTF achieved a 20.6 per cent improvement in building energy efficiency between 2000-01 and 2007-08. DTF consumes 0.5 per cent of the South Australian Government's energy and contributed 0.6 per cent to the whole of Government's efficiency improvement.

Changes in Baseline and/or Subsequent Years' Energy Use

Shared Services was established in DTF in 2007-08 and the 'Portfolio Entities' category was added to the agency's structure. Portfolio Entities represents the Motor Accident Commission, Funds SA, TRACsa, the Independent Gambling Authority and the Essential Service Commission of South Australia.

As this was the first time both Shared Services and Portfolio Entities have been reported, they registered a zero improvement from the base year (which is the same as 2007-08 data). The data within the State Procurement and Support Operations entity, as reported in last year's report, was incorporated into the DTF Corporate entity.

Business reporting was changed from occupancy to area to provide a more consistent and measurable approach to reporting.

Significant Energy Management Achievements

DTF undertook the following energy efficiency measures in the 2007-08 year:

- Negotiated office accommodation leases to include T5 lighting;
- Converting offices / conference / meeting rooms back to sensor operated lights;
- Continual rollout of Strategic Accommodation Plan to incorporate a more efficient open plan office layout;
- Continual rollout of multi-functional devices and the reduction of printers; and
- Continual rollout of flat screen monitors to replace CRT monitors.

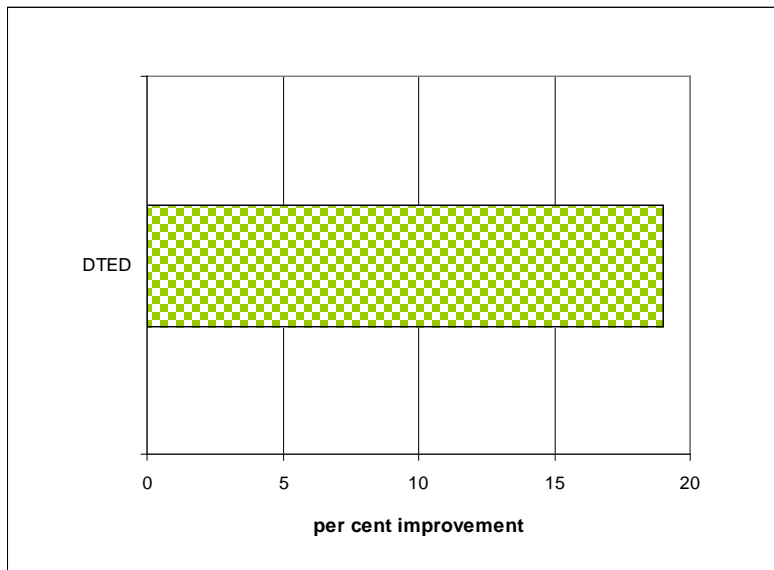
Proposed New Initiatives in 2008-09

The major initiatives planned for the 2007-08 year include:

- Engaging Spotless Property and Facilities in accordance with the whole of government Facilities Management Contract to undertake an Environmental Initiatives Project within the State Administration Centre. Upon receipt of the recommendations from this Project, DTF will address the recommendations with DTEI as building owner/manager. Recommendations will aim to address potential energy savings through de-lamping, T8 LED lighting, meeting room sensor lighting and open area sensor lighting;
- Continue to convert offices / conference / meeting rooms back to sensor operated lights;
- Continue de-lamping of floors where appropriate; and
- Shared Services South Australia will continue to expand into new tenancies and will continue the rollout of its Strategic Accommodation Plan to incorporate a more efficient open plan office layout, maximise the use of natural light and adopt energy efficient measures prior to occupation.

4.13 Department of Trade and Economic Development

Figure 4.13: DTED Building Energy Efficiency Improvement 2000-01 to 2007-08



Overview of Performance to 2007-08

DTED achieved a 19 per cent improvement in its building energy efficiency between 2000-01 and 2007-08 and contributed 0.01 per cent to the whole of government's efficiency improvement.

Changes in Baseline and/or Subsequent Years' Energy Use

Nil

Significant Energy Management Achievements

The following achievement was made in the 2007-08 year:

- The purchase of environmentally responsible office products and services and high energy rated electrical goods.

Other Sustainability Initiatives

- The purchases of dual fuel vehicles for the department's pool of motor vehicles as opportunities arise.

Proposed New Initiatives from 2008-09

DTED will be undertaking the following building energy efficiency initiatives in coming years:

- Continue to educate staff to participate in energy saving initiatives both at work and at home (in line with DTED Greening of Government Operations Action Plan);
- Seek the provision of "green" options for energy saving initiatives in the new lease from 2010 (DTED is constrained by current fit-out until the end of its lease on 31 December 2009); and
- The DTED is also implementing initiatives to increase 'green' travel.

Appendix A - End-use Category Definitions

Office Buildings – Tenant Light and Power

This category covers energy used for tenant operations in buildings where the 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.

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 within facilities that cannot be classified as a building, such as water pumps and air monitoring stations. These facilities are not within the scope of SASP T3:13.

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 South Australian 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
Mega-Joule	MJ	energy	10 ⁶ joules
Giga-Joule	GJ	energy	10 ⁹ joules
Peta-Joule	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 Giga-Joules, multiply by	CO ₂ Intensity kg/GJ
Electricity (scope 2*)	kilowatt hour	kWh	0.0036	233 kg
Natural Gas	Giga-Joule	GJ	1	51.2 kg
LPG	Kilo-litre	kL	0.257	59.6 kg
Heating Oil	Kilo-litre	kL	0.373	68.8 kg
Fuel Oil	Kilo-litre	kL	0.373	72.9 kg
Automotive Diesel	Kilo-litre	kL	0.386	69.2 kg
Petrol	Kilo-litre	kL	0.342	67 kg
AVGAS	Kilo-litre	kL	0.331	66.7 kg
GreenPower	kilowatt hour	kWh	0.0036	0
Bio-diesel	Kilo-litre	kL		0.6 kg

* Scope 2 Electricity emissions refers to indirect emissions from the generation of the electricity (or steam or heating/cooling) purchased and consumed by the reporting organisation.

Source: National Greenhouse Accounts (NGA) Factors, released by the Department of Climate Change, November 2008.

Appendix C – Calculation of Energy Efficiency

C.1 – Energy Efficiency Measurements

The 2007 update of South Australia's Strategic Plan included a change in the target to which this report relates. Whereas before the Government sought to reduce its energy use, now it seeks to improve the energy efficiency of its buildings. To calculate progress in this requires the use of an energy efficiency index.

Defining an index to measure changes in energy efficiency is a complex task. To begin with, energy efficiency can be defined in a number of ways. For example, many people would consider energy efficiency to be the total increase or decrease in energy usage across an organisation, however, this does not allow for organisational growth and increasing service levels.

As a consequence, organisations often use energy intensity measures to monitor their energy efficiency targets. Energy intensity is defined as the ratio of energy consumption to some measure of demand for energy services.

This document uses energy intensity measures to account for changes in the Government's energy usage while taking into consideration changes in service levels (eg expanding health and education services). Energy usage is reported as a proportion against 'business measures' such as area and number of employees. These measures are taken as indicators of output.

A number of methodologies exist for the creation of an index to track and analyse changes in energy efficiencies which accommodate the different business measures used by sub-groups of an organisation.

This report uses a 'component based energy intensity' calculation whereby the energy efficiency contribution of each sub-group in government is weighted against the proportion of energy the sub-group consumed. These weighted figures are added to obtain departmental or whole of government figures. Section C.2 provides a stepped example for these calculations. It is worth noting that component based calculations are influenced by adjustments to the data reporting structure.

An alternative approach may be to examine the 'aggregate energy intensity' for those sub-groups which use the same business measure. This involves dividing the total energy use of all sub-groups by the total business measure (eg area). Section C.3 provides more details on this calculation. Aggregated intensities, however, still require weighting to accommodate different business measures, and they do not allow for analysis of different sub-groups (such as departments) within an organisation.

DTEI is continuing to investigate methodologies and indexes that are used to collate energy efficiency measures.

C.2 - Calculating a Component Based Energy Efficiency Improvement

Portfolio energy efficiency performance in 2007-08 was calculated through the following processes.

1. Obtain the amount of energy used per business measure (ie area) for both 2000-01 and 2007-08:

The energy consumed per business measure (BM) was calculated automatically by the OSCAR online system, when agencies entered the value of their business measure into their portfolio's site. These figures were then downloaded by the Energy Division and entered into a spreadsheet. The energy used per business measure is as follows:

$$\frac{[\text{Agency A Energy Use in 2000-01 or 2007-08}]}{[\text{Agency A Business Measure in 2000-01 or 2007-08}]} = \text{Number of MJ used per BM (i.e. per m}^2\text{) for 2000-01 or 2007-08}$$

For example (Agency A) in 2000-01:

$$\frac{1500 \text{ MJ}}{500 \text{ m}^2} = 3 \text{ MJ per m}^2$$

Agency A in 2007-08:

$$\frac{1450 \text{ MJ}}{700 \text{ m}^2} = 2.1 \text{ MJ per m}^2$$

2. Calculate energy efficiency improvement for each agency:

Energy efficiency improvement for each agency within each portfolio is calculated by the following formula, using the figures in the example above:

$$\frac{[3] - [2.1]}{[3]} = 0.3$$

Then:

$$\text{Multiply } 0.3 \text{ by } 100 = 30 \text{ per cent agency energy efficiency improvement}$$

3. Calculate energy efficiency improvement for each portfolio:

The energy efficiency improvement of each portfolio is calculated by adding together each agency's energy efficiency improvement in proportion to its total for the portfolio:

$$\frac{\text{Agency A energy use}}{\text{Total portfolio energy use}} \text{ multiplied by } \text{per cent Agency A efficiency improvement}$$

+

$$\frac{\text{Agency B energy use}}{\text{Total portfolio energy use}} \text{ multiplied by } \text{per cent Agency B efficiency improvement}$$

= total portfolio energy efficiency improvement.

4. Calculate portfolio's impact on whole of government energy efficiency improvement

The contribution each portfolio made to the whole of government energy efficiency improvement target was calculated by weighting each portfolio's efficiency improvement by its share of South Australian Government energy use.

Ensuring this is done in percentage terms will enable meaningful aggregation to occur regardless of the differing business measures used by portfolios in each end-use category. This is shown in Table 1 for three portfolios using fictional numbers.

Table C.1: Government Energy Efficiency Improvement Measurement

	Portfolio A	Portfolio B	Portfolio C
Per cent of total SA Government energy use	50 per cent	15 per cent	10 per cent
Per cent individual efficiency improvement	10 per cent	20 per cent	10 per cent
Per cent contribution to Target	5 per cent	3 per cent	1 per cent
Target (weighted energy efficiency improvement)	9 per cent		

The first row of Table 1 shows the share of total energy consumption by each portfolio. The second row Individual Efficiency Improvement shows the energy use reductions in percentages.

The third row contribution to target is simply the first row of Table 1 multiplied by the second eg for Portfolio B: 15 per cent x 20 per cent = 3 per cent.

Finally, SASP T3:13 (weighted energy efficiency improvement) is the sum of the third row. This example shows a nine per cent improvement in energy efficiency is obtained across the three portfolios.

C.3 - Calculating the Aggregate Energy Efficiency Improvement

Currently, agencies within Government are reporting against only three different business measures, these being area, number of buildings, and number of employees. Table C.2 below provides aggregated whole of Government data against these three business measures.

The aggregate energy efficiency figures below are calculated by summing all energy consumption within Government organisations and dividing by the sum of the common business measure.

A whole of government figure is derived by weighting the efficiency improvements by 2007-08 energy consumption and adding the proportions together.

Table C.2: Aggregated Whole of Government Data

	2000-01			2006-07				2007-08			
	Total Energy Use (GJ)	Total Business Measures	Aggregate Energy Efficiency	Total Energy Use (GJ)	Total Business Measure	Aggregate Energy Efficiency	Per cent Energy Efficiency Improvement	Total Energy Use (GJ)	Total Business Measure	Aggregate Energy Efficiency	Per cent Energy Efficiency Improvement
Area	2,328,817	4,497,628	518	2,316,226	4,685,558	494	4.53	2,249,325	4,809,318	468	9.67
Buildings	92,368	37	2,496,423	89,795	42	2,137,968	14.36	88,350	42	2,103,560	15.74
Occupancy	98,061	6,763	14,500	94,347	8,410	11,218	22.63	92,021	8,509	10,815	25.42
Total Aggregated Energy Efficiency (weighted by 2006-07 energy consumption)							5.57	(weighted by 2007-08 energy consumption)			10.49

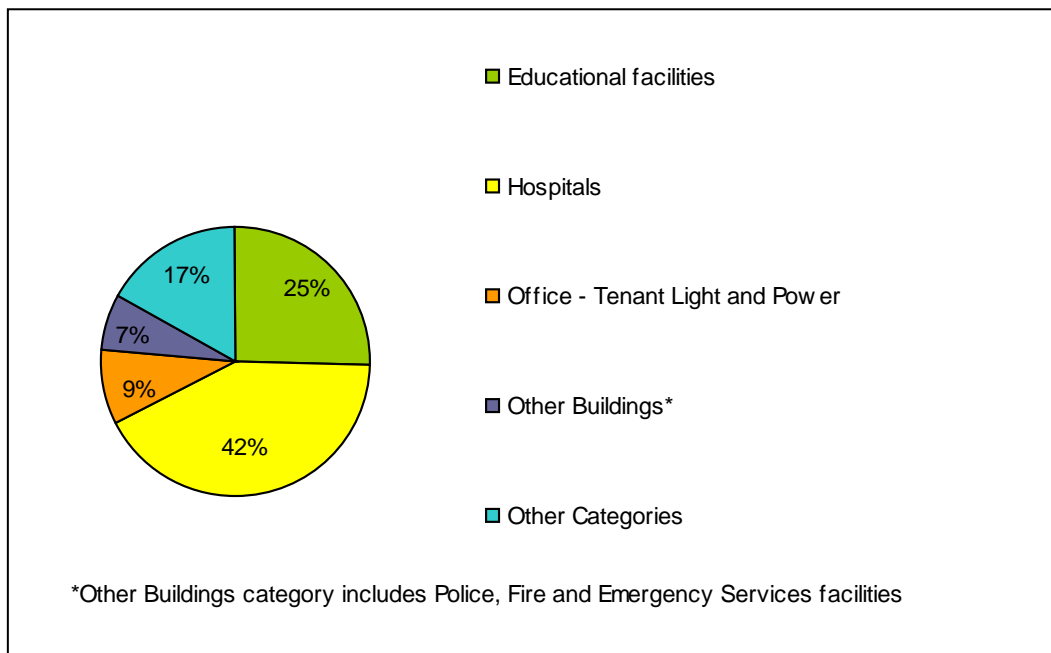
It is worth noting that unless each component is weighted equally, an aggregate energy intensity figure will differ from component based energy intensity, due to data structural effects.

The 5.57 per cent energy efficiency improvement for 2006-07 differs from that reported in the 2006-07 Annual Energy Efficiency Report (7.27 per cent) due to changes in baseline data, issues with previously reported data and the inclusion of new sites not previously reported.

Appendix D: Greenhouse gas emissions

The figures and tables below report on the South Australian Government's Greenhouse Gas emissions. This information is also held on the Online System for Comprehensive Activity Reporting (OSCAR).

Figure D.1: Energy Greenhouse Gas Emissions 2007-08 (scope one + scope two²) by End-Use Category - as Percentage of Total



Please note that 'Other Categories' represents emissions from operations in the following end-use categories: Custodial facilities; Educational facilities; Laboratories; Law Courts; Office - Central Services; Office buildings - combined services; Other healthcare buildings; and Public Buildings. Each of these categories represents between one percent and four per cent of emissions from the South Australian Government.

Emissions reported here are the sum of scope one and scope two emissions.

² Scope 1 and 2 emissions are defined in the Glossary section on page 51

The South Australian Government was responsible for emitting 406,145 tonnes of CO₂ in the 2007-08 year, compared to 354,992 tonnes in 2001. Table D.2 shows emissions by end-use category and Table D.3 by Portfolio/Agency.

Table D.1: SA Government emissions (scope one and two) from buildings by end-use category 2000-01 to 2007-08

End-use category	2001 (tonnes)	2002 (tonnes)	2003 (tonnes)	2004 (tonnes)	2005 (tonnes)	2006 (tonnes)	2007 (tonnes)	2008 (tonnes)	All Reporting Periods
Custodial facilities	10,653	9,613	9,762	9,733	9,640	10,654	11,463	11,754	83,273
Educational facilities	84,079	86,060	84,474	91,056	87,730	93,808	104,307	102,408	733,921
Hospitals	141,452	138,062	142,582	148,326	147,049	157,030	170,962	170,108	1,215,572
Laboratories	7,244	6,308	7,077	6,702	6,608	7,417	7,376	7,620	56,353
Law Courts	6,078	5,332	4,885	4,853	4,684	5,052	5,847	5,595	42,326
Office - Central Services	15,059	11,486	10,803	11,099	10,258	10,975	16,681	16,535	102,896
Office - Tenant Light and Power	39,831	35,029	29,196	31,169	31,681	34,956	37,437	37,351	276,651
Office buildings - combined services	6,566	5,677	2,281	5,156	4,772	5,352	5,688	5,329	40,821
Other Buildings	21,640	23,721	24,752	22,111	21,947	23,560	27,303	27,919	192,950
Other healthcare buildings	7,651	7,600	6,351	6,220	6,974	7,396	7,513	6,361	56,067
Public Buildings	14,739	13,487	13,456	12,894	12,236	13,362	14,720	15,165	110,057
All Categories	354,992	342,375	335,619	349,319	343,579	369,562	409,297	406,145	2,910,887

Table D.2: SA Government emissions (scope one and two) from buildings by Portfolio or agency 2000-01 to 2007-08

Portfolio/Agency	2001 (tonnes)	2002 (tonnes)	2003 (tonnes)	2004 (tonnes)	2005 (tonnes)	2006 (tonnes)	2007 (tonnes)	2008 (tonnes)	All Reporting Periods*
Education and Children's Services	63,865	63,669	62,092	67,940	65,830	69,286	77,062	75,911	545,654
Environment Protection Agency	349	308	336	308	314	313	344	328	2,601
Environment and Heritage	4,327	3,175	3,132	3,163	2,959	2,924	3,165	3,028	25,871
Water, Land and Biodiversity Conservation	374	374	411	485	463	492	528	597	3,725
Families and Communities	14,174	14,123	12,874	12,743	13,529	15,623	15,440	15,397	113,906
Further Education, Employment, Science and Technology	25,601	26,574	25,774	25,352	24,377	27,379	30,218	28,470	213,745
Health	144,261	140,757	145,406	151,138	149,851	160,016	174,545	173,721	1,239,694
Justice	38,565	37,776	38,065	35,023	35,215	37,813	42,144	42,526	307,126
Premier and Cabinet	17,817	16,427	15,942	15,339	14,887	16,104	17,693	18,067	132,274
Primary Industries and Resources	10,534	9,447	10,000	9,371	9,253	10,430	10,348	10,505	79,889
Trade and Economic Development	713	695	658	584	338	319	296	273	3,876
Transport, Energy and Infrastructure	31,539	26,844	18,802	25,440	24,157	26,246	34,499	34,055	221,583
Treasury and Finance	2,873	2,206	2,127	2,433	2,406	2,617	3,015	3,267	20,943
Total	354,992	342,375	335,619	349,319	343,579	369,562	409,297	406,145	2,910,887

The latest emission factors, published as the National Greenhouse Accounts (NGA) factors, have been updated in OSCAR and are used to calculate the figures in Tables D.1 and D.2. For more information about the latest emission factors, please visit the Department of Climate Change website at www.climatechange.gov.au/workbook/index.html.

The South Australian Government used 2,429,698 GJ in the 2007-08 year, compared to 2,518,625 GJ in 2001. Table D.3 shows GJ use by end-use category and Table D.4 by Portfolio/Agency.

Table D.3: SA Government energy use from buildings by end-use category 2000-01 to 2007-08

End-use Category	2001 (GJ)	2002 (GJ)	2003 (GJ)	2004 (GJ)	2005 (GJ)	2006 (GJ)	2007 (GJ)	2008 (GJ)	All Reporting Periods
Custodial facilities	77,095	69,841	69,136	71,973	71,250	75,248	73,476	75,040	583,059
Educational facilities	502468	529670	520582	544585	519211	526446	533954	502169	4,179,085
Hospitals	1,250,165	1,233,288	1,244,459	1,292,979	1,278,775	1,276,882	1,281,675	1,247,767	10,105,990
Laboratories	58,489	52,700	52,591	51,735	51,279	53,637	50,183	53,236	423,850
Law Courts	36,841	33,555	28,666	29,161	27,959	29,096	30,246	28,898	244,422
Office - Central Services	92,454	75,113	71,798	76,572	67,189	69,791	89,795	88,435	631,147
Office - Tenant Light and Power	193,784	172,201	142,209	152,264	155,363	160,868	159,922	158,179	1,294,790
Office buildings - combined services	35,906	30,116	13,626	27,701	25,374	26,413	26,201	25,600	210,937
Other Buildings	141,385	144,053	140,299	131,683	131,394	125,762	138,058	136,286	1,088,920
Other healthcare buildings	37,142	36,895	30,832	30,192	33,853	33,789	31,840	26,895	261,438
Public Buildings	93,541	87,104	86,704	87,560	80,426	85,640	85,047	87,194	693,216
Total	2,518,625	2,464,536	2,400,903	2,496,405	2,442,072	2,463,570	2,500,395	2,429,698	19,716,850

Table D.4: South Australian Government energy use from buildings by Portfolio or agency 2000-01 to 2007-08

Portfolio/Agency	2001 (GJ)	2002 (GJ)	2003 (GJ)	2004 (GJ)	2005 (GJ)	2006 (GJ)	2007 (GJ)	2008 (GJ)	All Reporting Periods
Education and Children's Services	369,973	372,643	376,547	404,041	387,528	376,138	374,357	360,397	3,021,624
Environment Protection Agency	1,694	1,497	1,633	1,493	1,525	1,432	1,459	1,385	12,118
Environment and Heritage	32,121	20,567	20,997	20,389	21,455	14,551	19,193	16,560	165,833
Water, Land and Biodiversity Conservation	1,815	1,815	1,997	2,356	2,249	2,246	2,238	2,524	17,240
Families and Communities	68,809	68,562	62,499	61,859	65,673	71,372	65,434	65,100	529,308
Further Education, Employment, Science and Technology	158,646	177,336	160,497	151,399	144,043	163,359	172,196	150,114	1,277,590
Health	1,263,800	1,246,371	1,258,165	1,306,626	1,292,378	1,290,523	1,296,859	1,263,041	10,217,763
Justice	244,035	238,437	224,516	218,889	217,889	222,514	225,784	224,367	1,816,431
Premier and Cabinet	108,645	101,527	98,921	99,556	93,439	98,284	97,720	99,606	797,698
Primary Industries and Resources	75,928	69,554	68,499	66,347	65,777	68,280	63,754	66,031	544,170
Trade and Economic Development	3,461	3,373	3,196	2,835	1,639	1,456	1,257	1,154	18,371
Transport, Energy and Infrastructure	176,398	152,145	113,109	148,804	136,798	141,459	167,369	165,607	1,201,689
Treasury and Finance	13,946	10,709	10,327	11,811	11,679	11,956	12,775	13,812	97,015
Total	2,518,625	2,464,536	2,400,903	2,496,405	2,442,072	2,463,570	2,500,395	2,429,698	19,716,850

Glossary

T5 Lighting: an energy efficient fluorescent alternative to conventional fluorescent lighting. T5 is simply a collective term for a narrow-diameter fluorescent light tube.

Eco Lighting: a system that can be installed to reduce the energy used by the existing fluorescent lighting.

BMS: a Building Management System. Building Management Systems are used in buildings for automatic monitoring and control of services such as lighting, plumbing, fire services, heating and air conditioning systems. The term refers to a system that uses sensors, controls and activators.

ESD: Environmentally Sustainable Design. ESD incorporates sustainability principles around the use of energy, water, waste, building materials and other aspects into the design of a building.

Scope one emissions³: Direct (or point-source) emissions where carbon dioxide equivalent (CO₂-e) is measured from the point of emission release (ie fuel use, energy use, manufacturing process activity, mining activity, on-site waste disposal, etc).

Scope two emissions³: Indirect emissions from the generation of the electricity (or steam or heating/cooling) purchased and consumed by the reporting organisation.

³ Adapted from the National Greenhouse Accounts Factors released by the Department of Climate Change, January 2008.