
BLUE MOUNTAINS CITY COUNCIL

Cities for Climate Protection Program

MILESTONE 1 SUMMARY REPORT

May 2006



*Prepared by Omega Environmental Pty Ltd
and
Blue Mountains City Council*

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Introduction

During the period September 2005 – April 2006, Omega Environmental Pty Limited conducted an audit of the Blue Mountains City Council's greenhouse gas emissions for the Council (Corporate Sector) and Community ('local government area' or 'LGA') sectors. The audit was carried out as part of the Cities for Climate Protection Program, a government initiative that aims to reduce greenhouse gas emissions from local government operations and the community.

The process involved gathering and interpreting data relating to the consumption and cost of energy for Council, consistent with the requirements of Milestone 1 of the Program. This Report presents the results of the audit process for the Corporate and Community sectors, and includes a forecast inventory for both sectors based on a 'business as usual' scenario to the Year 2010.

The Report also provides Council with recommendations for management related actions to be included in the Milestone 3 Local Action Plan, and for improving the management of its energy data.

Omega Environmental Pty Limited acknowledges the assistance provided by Blue Mountains City Council staff in developing the inventory, with particular thanks to Vanessa Steele, Rosemary Dillon, Ken Phillips, Alan Cattermole, Andrew Pattison, Rebecca Tempest, Gerry Hayes, Graham Smede, David Thurchly, Steven Keszler, Warwick Purdy and Daniel Long. Omega also acknowledges the assistance provided by Marjorie Maydwell at Energy Australia, Rosemary Collisson and Kellie Balgowan at Integral Energy, and Thereasa Patrick at AGL Gas.

NOTE: - This Report provides a summary only of the greenhouse gas emissions inventory data and other Milestone 1 outcomes, and is complemented by the detailed notes provided in the CCP software. Readers should refer to the software for comprehensive explanations of data collection processes, data sources and associated issues.

Measuring Emissions

In this Report, all greenhouse gas emissions are converted to units of carbon dioxide equivalent (CO_{2-e}) so that gases of different strengths can be compared and added together. For example, one unit of methane equals 21 CO_{2-e}.

(Note: '-e' is the notation for 'equivalent').

Community Sector Categorisations

The categorisation of community data into the Residential, Commercial, Industrial, Transport and Waste sectors are based on the Australian and New Zealand Standard Industrial Classification (ANZSIC). ANZSIC provides a standard framework for classifying establishments by industry in official statistics.

The differences between the Commercial and Industrial sectors, as they apply to the Blue Mountains City Council LGA, are best understood by examining the various sub-groups within each sector. This sector break-up and number of employees in each sub-sector group can be found in the default data spreadsheet provided to Council by ICLEI (International Council for Local Environmental Initiatives).

Inclusions of Energy Costs

The energy costs to Council outlined in this Report are *inclusive* of service and supply charges. However, the GST (Goods and Services Tax) component has been excluded.

Recommendations

NOTE: Recommendations presented in this report are based on observations made by Omega during the Milestone 1 project. They are not mandatory, nor will ICLEI require them to be implemented in order to progress through the remaining Milestones of the CCP Program.

Rather, these recommendations are provided to assist Council to better integrate energy management issues into the strategic and operational management processes of the organisation. This will allow for more efficient delivery of energy programs and better financial and environmental outcomes as a result.

Recommendation 1

Target the reduction of energy consumption, and therefore greenhouse gas emissions from Council buildings, with a focus on the Springwood Pool, Katoomba Recreation Centre, Katoomba works Depot, Katoomba Civic Centre and Glenbrook Pool. Initially consider undertaking an energy audit of these facilities to determine the source of greatest energy use.

Recommendation 2

Request energy providers to include more detailed information on all energy bills (such as reference to any relevant sub-meters), and essential information where it is not already provided (such as actual energy consumed by assets).

Alternatively, carry out an energy accounts audit for all Council properties to determine the facilities and infrastructure serviced by each account.

Recommendation 3

Improve the management of energy data through development of a management system to store, analyse and manage energy information. Responsibility for the energy data management system should be assigned to a single employee or authority. Responsibilities would include monitoring energy usage and costs, developing summaries on a periodic basis, providing advice and direction to the energy team, preparing budgets based on tariff rates and past consumption, and taking remedial action for situations of exceptionally high or abnormal consumption patterns. The energy data should be stored in accordance with appropriate backup and document control procedures.

Recommendation 4

Consider developing schematic plans of Council property to include details of the location and service layout of meters, sub-meters (including a reference to meter numbers) and the assets serviced by these meters. Ensure plans include this information as new facilities are built and/or existing facilities are renovated.

If necessary, carry out a 'meter audit' to determine the facilities serviced by each meter and sub-meter.

Recommendation 5

Target the reduction of fuel consumption, and therefore greenhouse gas emissions from Tippers, Compactors, Utes and Wagons within council's fleet operations.

Recommendation 6

Focus on improving the efficiency of street lighting infrastructure as a priority when developing the Local Action Plan for Milestone 3.

Recommendation 7

Consider implementing a system to record the amount of Corporate waste generated on an ongoing basis.

Recommendation 8

Focus on reducing electricity use as a priority when developing measures to reduce greenhouse gas emissions in the Corporate sector.

Recommendation 9

Target the Transportation sector as a priority area for reducing future LGA greenhouse gas emissions.

Recommendation 10

Consider implementing a staff awareness campaign to educate personnel on the importance of improved energy management. This campaign can include training sessions, newsletters and handouts, and promotional material such as posters, stickers and booklets. This campaign can also be extended to include the wider LGA.

Recommendation 11

Consider implementing an Environmental Management System (EMS) or Sustainability Management System (SMS) to assist in integrating energy management into the core business of Council. Development of an EMS to an internationally recognised standard, such as ISO 14001, will greatly assist Council to better manage and promote its energy programs and broader environmental initiatives.

Background

The Cities for Climate Protection Program is a global initiative that assists local government to reduce energy use and greenhouse gas emissions from their own operations and the community. CCP is a program of the International Council for Local Environmental Initiatives (ICLEI) delivered in collaboration with the Australian Greenhouse Office (AGO), an agency of the Australian Government. The CCP Program is based on the achievement of five strategic milestones:

Milestone 1: Conduct an inventory and forecast for Community and Council greenhouse gas emissions

Milestone 2: Establish an emissions reduction goal

Milestone 3: Develop and adopt a Local Action Plan

Milestone 4: Implement the Local Action Plan

Milestone 5: Monitor and report on achievements

Blue Mountains City Council joined the CCP program in April 2005, at which time Council passed a resolution to commit to the strategic Milestone framework. Omega Environmental Pty Limited (Omega) was engaged to develop the initial inventory of greenhouse gas emissions consistent with Milestone 1 of the CCP program.

The chosen baseline year for the Council sector was 2004 (using data from the 2004/2005 financial year) while the Community sector inventory was completed for the year 2001 (based on 2001 Census data). It is important to note that information for some sectors was not available for the baseline year and as a result assumptions were made in preparing totals for the chosen base year. Please refer to explanations and details of calculations which are summarised in the notes sections of the relevant sections in the software and explained in this report.

The inventory development involved collecting energy data from a variety of sources and entering the data into CCP software provided by ICLEI. The sources of greenhouse gas emissions from each sector are:

Corporate Sector

- Buildings
- Vehicle Fleet
- Streetlighting
- Water
- Waste

Community (LGA) Sector

- Residential
- Commercial
- Industrial
- Transport
- Waste

The Milestone 1 inventory provides a 'snapshot' of the current energy consumption and greenhouse gas emissions for the various sectors within the City. Projections to the year 2010 for Community emissions and 2012 for Corporate emissions were calculated based on information provided by ICLEI and discussions with Council staff in relation to planned developments and growth within the City.

Methodology

The project was coordinated by Omega, who worked in close consultation with Council staff throughout.

The project involved the completion of ten steps:

1. All key buildings, fleet, streetlights, water, waste and assets staff were briefed by ICLEI and Omega to advise them of the CCP Program, Milestone 1, and the potential need for them to source data to enter into the inventory.
2. Data was collected as follows (note all data was collected for the period 1 July 2004 to 30 June 2005):
 - a. **BUILDINGS** (e.g. Administration Building, amenities buildings) **AND WATER ASSETS** (e.g. pumps for park irrigation) – 12 months of electricity and gas consumption and cost data for all Council buildings and water infrastructure was provided by Energy Australia, Integral Energy, AGL Gas and Elgas. The data was provided after Council staff provided Omega with account numbers for each asset, which was passed on by Omega as a request to the providers.
 - b. **VEHICLES/FLEET** – 12 months of consumption and cost data was provided by Council's fleet section, who extracted the data from internal computer records. Data was provided for all fleet and vehicles.
 - c. **STREETLIGHTS** – 12 months of streetlighting cost and consumption data for the City was provided by Integral Energy.
 - d. **WASTE** – annual waste tonnages and details of waste types was obtained from Council's waste team. Waste management costs to Council were also collected.
 - e. Other data was collected such as indicator information (e.g. building floor areas).
3. All data was reviewed, formatted correctly for entry into the CCP software, and outstanding data collected. The CCP software serves to both store the raw data, as well as translate the raw data into greenhouse gas emissions.
4. All data was entered into ICLEI's online CCP inventory software.
5. Further outstanding data was collected from staff after the initial data entry was complete and gaps in the inventory identified.

6. Final data was entered into the software.
7. The inventory was reviewed by ICLEI, and feedback provided.
8. The inventory was adjusted based on feedback from ICLEI.
9. ICLEI conducted a final review of the inventory, and confirmed completion of Milestone 1.
10. Summary data was extracted from the inventory software and entered into this Report.

Some of the tasks outlined above were completed quickly (such as the briefing session), although most required substantial work from Omega and were often subject to delays. In particular, a large amount of data was difficult to obtain due to staff absences or data being simply difficult to source.

Omega also encountered delays in receiving the bulk of electricity consumption and cost data from Integral Energy, who took several months to process the data request. When the data did arrive from the various utilities, much of it was in a format that required substantial 'reworking' for entry into the CCP software.

There was also a large number of gaps in the data received both from external utilities and Council staff, which needed to be followed up and collected by Omega.

Discussion

CORPORATE SECTOR

SUMMARY

2004	Baseline Year
18,367 CO_{2-e}	Greenhouse Emissions (tonnes)
\$2,990,724	Energy cost

The total greenhouse gas emissions for the Blue Mountains City Council for the year 2004 were **18,367 tonnes CO_{2-e}**.

Figure 1 shows the two highest sources of CO_{2-e} emissions were Buildings, accounting for 60 per cent of emissions, and Streetlights, accounting for 22 per cent. Emissions from the operation of the vehicle fleet accounted for 18 per cent of total emissions, while emissions from the Water and Waste sectors accounted for less than 1 per cent of total corporate emissions.

Figure 2 shows the Blue Mountains City Council CO_{2-e} emissions profile for the year 2004 in terms of total CO_{2-e} tonnes produced in each sector.

Figure 3 shows the total cost of providing energy to Council. The total cost of energy for the Corporate sector was \$2,990,724. While the Vehicles sector was not the largest source of emissions, it proved to be the most costly. The total energy cost from the Vehicles sector was \$1,401,649 (47 per cent of total corporate energy costs), followed by Buildings at \$846,910 (28 per cent) and Streetlights at \$738,799 (25 per cent).

Figure 1: Corporate Emissions (CO2 equivalent) for 2004

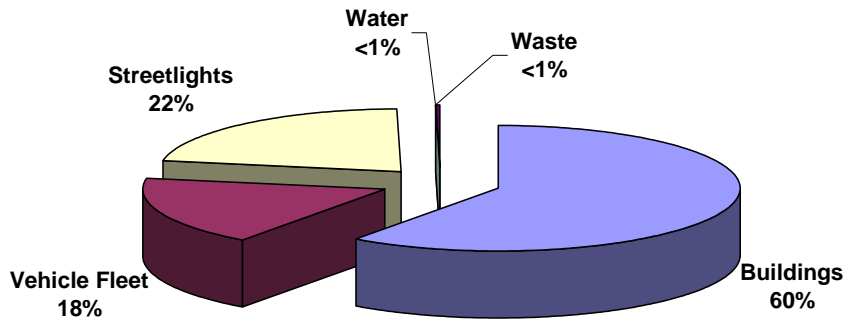


Figure 2: Corporate Emissions (Equivalent CO2 tonnes) for 2004

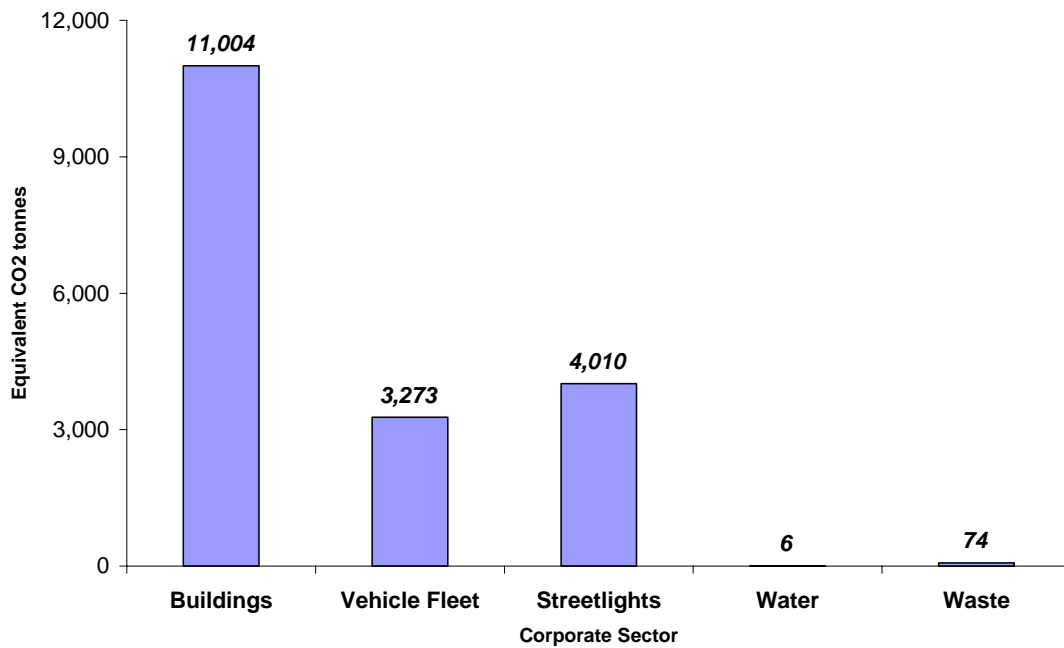
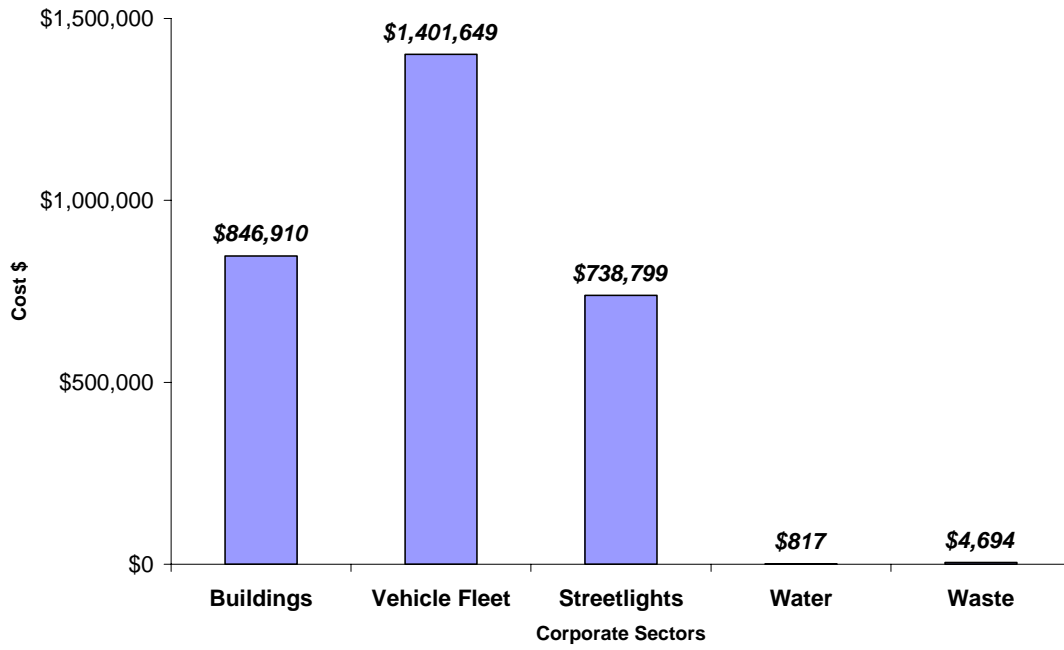


Figure 3: Cost of providing energy to Corporate Sector in 2004



BUILDINGS

2004	Baseline Year
11,004 CO₂-e	Greenhouse Emissions (tonnes)
59.9 per cent	Proportion of total Corporate Sector emissions
\$297,699	Energy cost

Energy data was collected for all Council owned buildings where payments of accounts were the responsibility of Council. A summary of electricity data was provided by Energy Australia and Integral Energy for the period July 2004 to June 2005. Gas data was provided by AGL Gas for the same period.

Council-owned buildings which consumed the most energy (refer Figures 4 and 5) and are therefore the most costly to Council (refer Figure 6) are:

1. Springwood Pool (3,798 CO₂-e tonnes; cost to Council \$250,898)
2. Katoomba Recreation Centre (1,666 CO₂-e tonnes; cost to Council \$93,736)
3. Katoomba Works Depot (897 CO₂-e tonnes; cost to Council \$47,741)
4. Katoomba Civic Centre (591 CO₂-e tonnes; cost to Council \$66,118)
5. Glenbrook Pool (584 CO₂-e tonnes; cost to Council \$83,125)

These five buildings account for 68 per cent of total emissions from the Buildings sector, with the Springwood Pool accounting for over 34 per cent of total Council building emissions, and over 20 per cent of total Council emissions for all sectors.

Figure 4: Greenhouse Gas Emissions (tonnes CO2 equivalent) for Top 10 energy consuming Council buildings for 2004

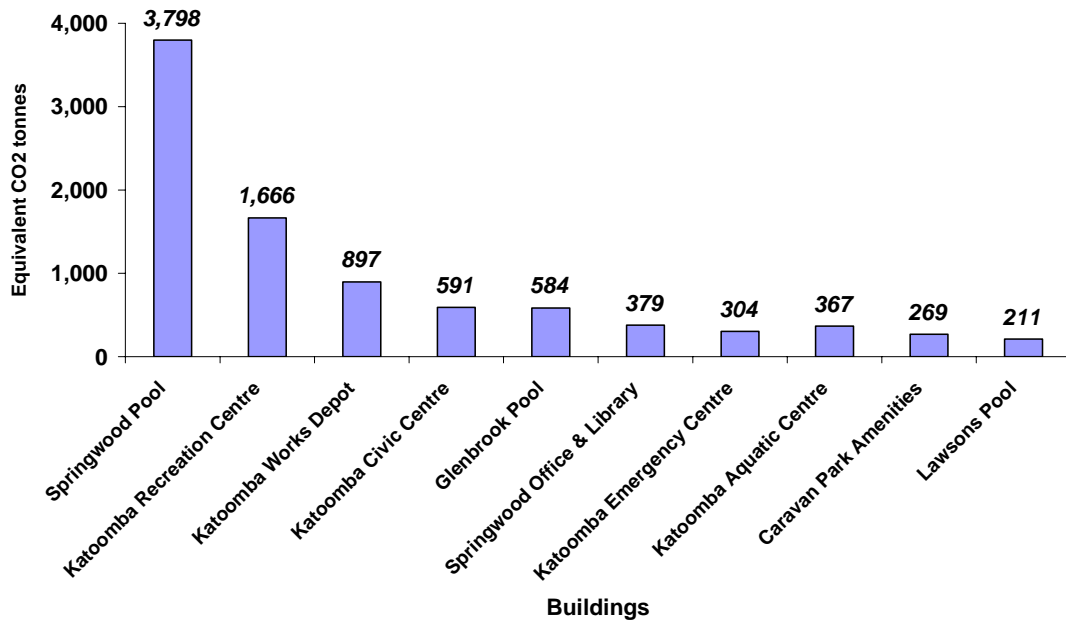


Figure 5: Greenhouse Gas Emissions (% CO2) for top 10 energy consuming Council buildings for 2004

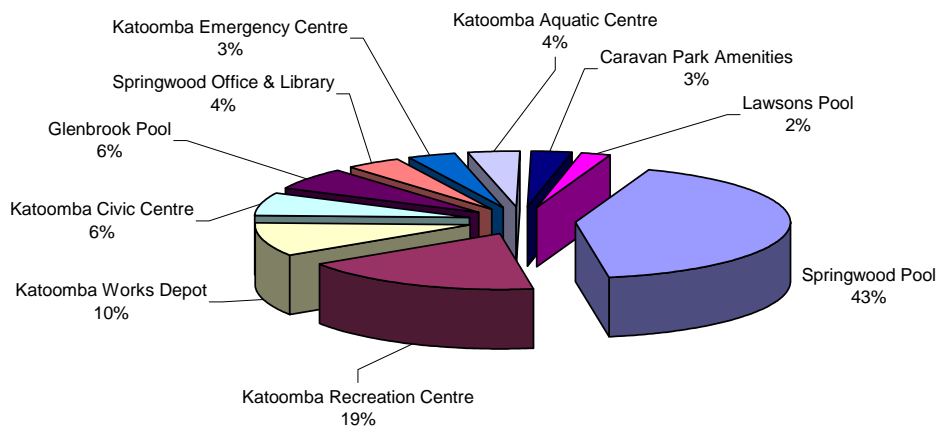
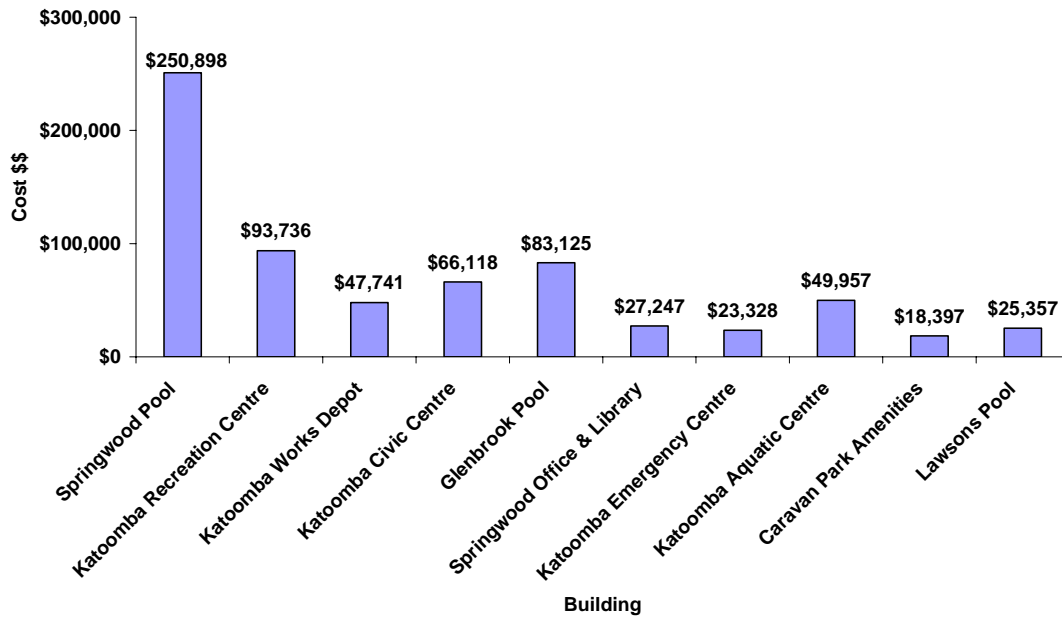


Figure 6: Cost to Council for Energy Provision to top 10 Council Buildings in 2004



Issue

Emissions resulting from energy use at Council buildings account for 60 per cent of total Corporate emissions. In particular, the Springwood Pool, Katoomba Recreation Centre, Katoomba Works Depot, Katoomba Civic Centre and Glenbrook Pool emit the majority of greenhouse gases.

Recommendation 1

Target the reduction of energy consumption, and therefore greenhouse gas emissions from Council buildings, with a focus on the Springwood Pool, Katoomba Recreation Centre, Katoomba works Depot, Katoomba Civic Centre and Glenbrook Pool. Initially consider undertaking an energy audit of these facilities to determine the source of greatest energy use.

Issue

Although electricity data was sourced directly from Energy Australia and Integral Energy, the summary provided to Council contained no detail of electricity meters where more than one facility was being serviced by the same meter. This made it difficult to allocate accounts to the appropriate sectors. In general, any allocations between different users of the one meter were provided by the accounts department within Council who are responsible for billing them for their portion of the account.

Recommendation 2

Request energy providers to include more detailed information on all energy bills (such as reference to any relevant sub-meters), and essential information where it is not already provided (such as actual energy consumed by assets).

Alternatively, carry out an energy accounts audit for all Council properties to determine the facilities and infrastructure serviced by each account.

Issue

Council does not record energy consumption and associated costs. Details relating to energy consumption were sourced directly from Energy Australia and Integral Energy, while gas data was sourced directly from AGL.

Recommendation 3

Improve the management of energy data through development of a management system to store, analyse and manage energy information. Responsibility for the energy data management system should be assigned to a single employee or authority. Responsibilities would include monitoring energy usage and costs, developing summaries on a periodic basis, providing advice and direction to the energy team, preparing budgets based on tariff rates and past consumption, and taking remedial action for situations of exceptionally high or abnormal consumption patterns. The energy data should be stored in accordance with appropriate backup and document control procedures.

Issue

Schematic plans for buildings identifying the location of meters and meter numbers were not available for Council facilities. This information is important when identifying what meters are connected to what facility. Sometimes buildings/facilities share meters and consumption must be estimated for the building/facility, or not taken into account at all. Blue Mountains City Council has several accounts that fall into this category. If submeters do exist, Council should identify which submeter services which facility and ensure submeters are monitored regularly.

Floor area of Council buildings was calculated from existing building plans and was only available for a few buildings. In future, copies of building plans should be made available for all new/redeveloped buildings. These plans could also be used as a base to include information about meters and submeters.

Recommendation 4

Consider developing schematic plans of Council property to include details of the location and service layout of meters, sub-meters (including a reference to meter numbers) and the assets serviced by these meters. Ensure plans include this information as new facilities are built and/or existing facilities are renovated.

If necessary, carry out a 'meter audit' to determine the facilities serviced by each meter and sub-meter.

VEHICLES

2004	Baseline Year
3,273 CO₂-e	Greenhouse Emissions (tonnes)
17.8 per cent	Proportion of total Corporate Sector emissions
\$1,401,649	Energy cost

Information on fuel consumption was derived from internal Council records provided by Council staff.

The greatest energy consuming and cost groups to Council are the Tipplers, Compactors, Utes and Wagons groups, accounting for 19 per cent, 18 per cent, 17 per cent and 16 per cent respectively of total emissions for the vehicle fleet (refer Figure 7, 8 and 9).

Figure 7: Greenhouse Gas Emissions (Equivalent CO2 tonnes) from Corporate Vehicles for Top 10 vehicle categories in 2004

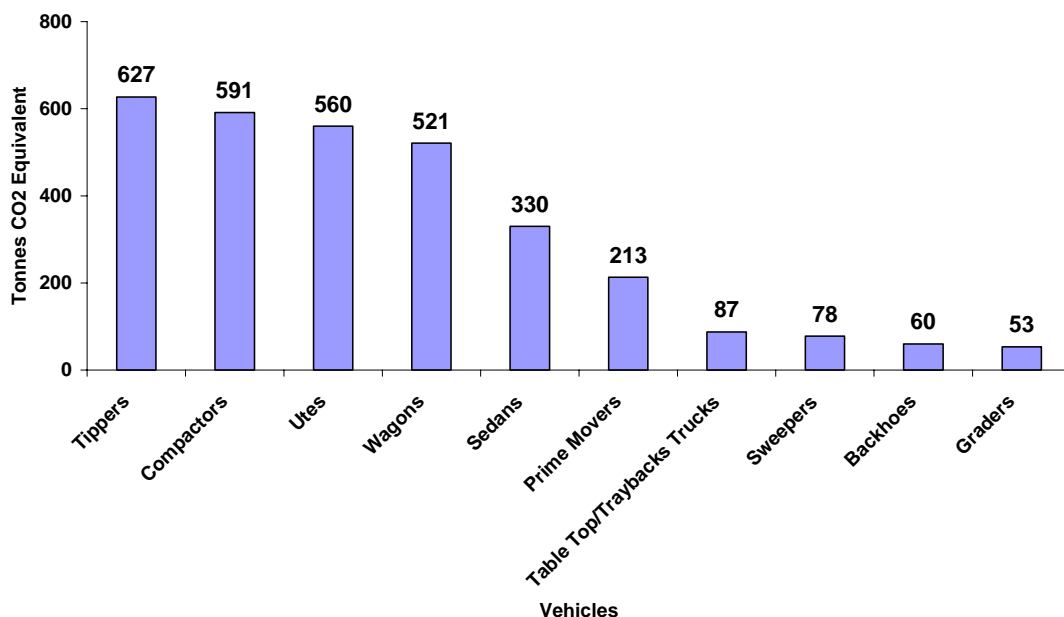


Figure 8: Greenhouse Gas Emissions (% CO2 Equivalent) from Corporate Vehicles for Top 10 Vehicle categories in 2004

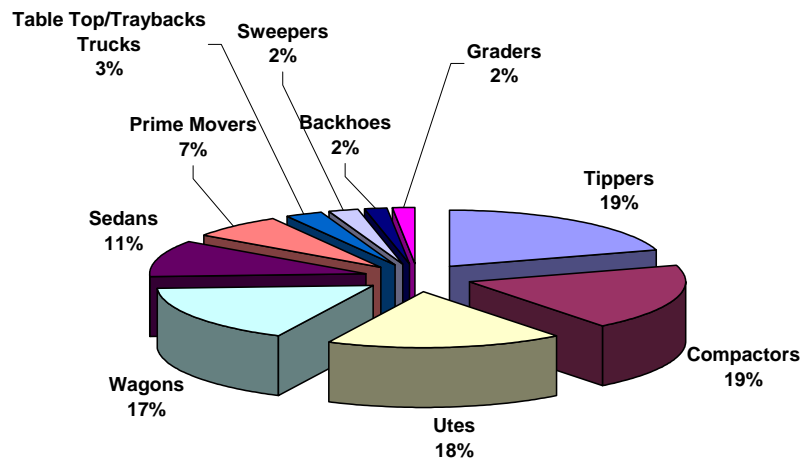
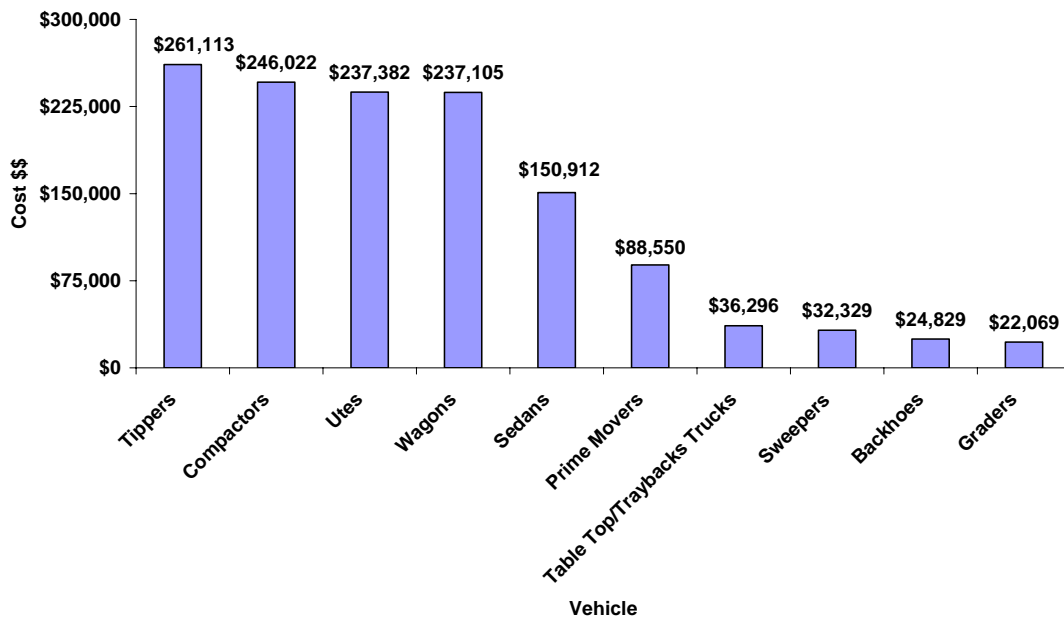


Figure 9: Cost to Council for Energy (Fuel) Provision to Council Vehicles for Top 10 Vehicle categories in 2004



Issue

Emissions from fuel consumption associated with the use of Tipplers, Compactors, Utes and Wagons were a significant contributor to overall Corporate emissions.

Recommendation 5

Target the reduction of fuel consumption, and therefore greenhouse gas emissions from Tipplers, Compactors, Utes and Wagons within council's fleet operations.

STREETLIGHTING

2004	Baseline Year
4,010 CO₂-e	Greenhouse Emissions (tonnes)
21.8 per cent	Proportion of total Corporate Sector emissions
\$738,799	Energy cost

The street lighting sector includes energy consumption of park lights, carpark lights, floodlighting and streetlighting. Details for energy consumption and associated costs were obtained from Energy Australia and Integral Energy.

Emissions generated from general public street lighting for the City accounted for 92 per cent of the total street lighting sector emissions (refer Figure 10 and 11). The total cost for provision of energy to Council for street lighting was \$712,007 (refer Figure 12).

Figure 10: Greenhouse Gas Emissions (tonnes CO2 equivalent) for Top 10 Streetlighting accounts for 2004

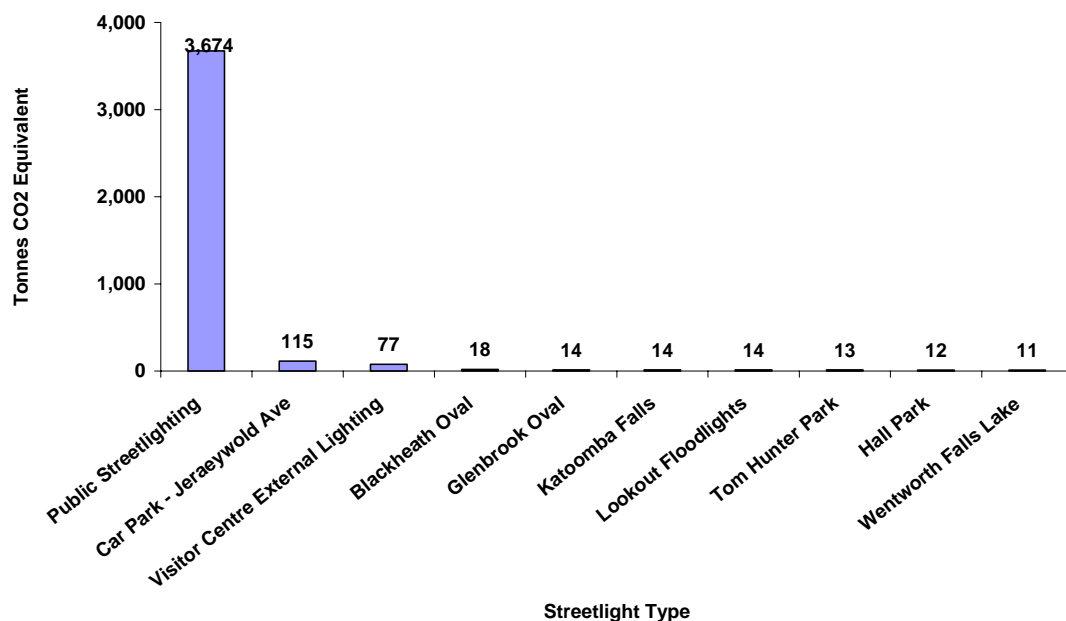


Figure 11: Greenhouse Gas Emissions (% CO2) from Top 10 Streetlighting accounts in 2004

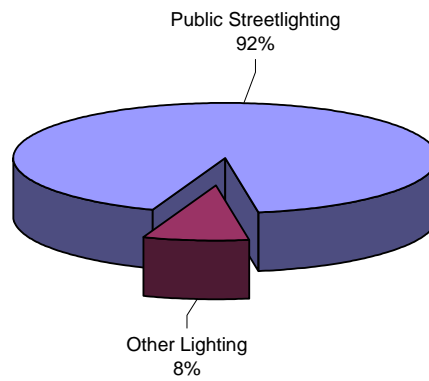
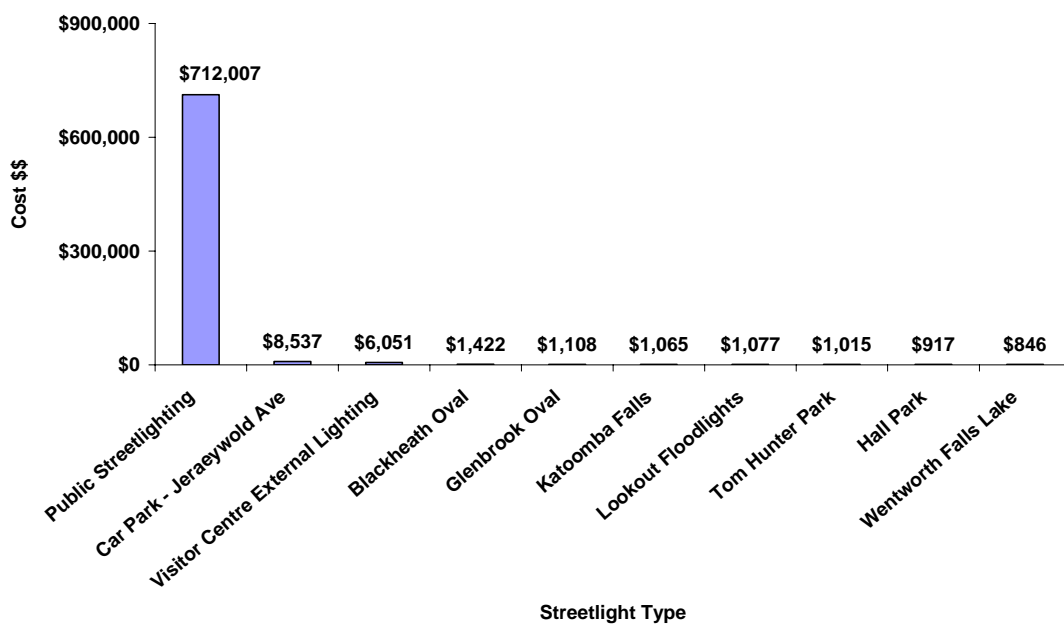


Figure 12: Cost to Council for Energy Provision of Top 10 Streetlighting accounts in 2004



Issue

Emissions associated with street lighting account for 22 per cent of the greenhouse gas emissions produced by the Corporate sector.

Recommendation 6

Focus on improving the efficiency of street lighting infrastructure as a priority when developing the Local Action Plan for Milestone 3.

WATER

2004	Baseline Year
6 CO₂-e	Greenhouse Emissions (tonnes)
< 1 per cent	Proportion of total Corporate Sector emissions
\$817	Energy cost

The water component of the Council sector includes energy used by equipment involved in the pumping of water within Council owned and/or operated facilities.

Emissions data for the Water sector is presented in Figures 13 and 14, with associated costs provided in Figure 15. Emissions associated with water pumping at Peter Carroll Field contribute 4 CO₂^{-e} tonnes to the corporate emissions inventory, at a cost of \$500 per annum.

Figure 13: Greenhouse Gas Emissions (tonnes CO2 equivalent) from Water Facilities for 2004

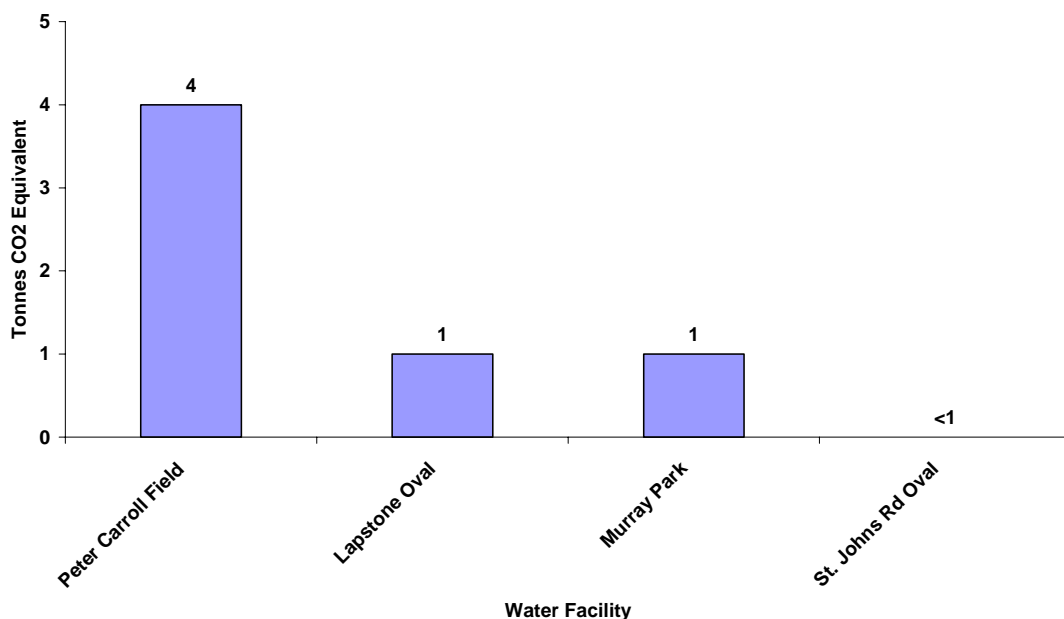


Figure 14: Greenhouse Gas Emissions (% CO₂) from Water Facilities in 2004

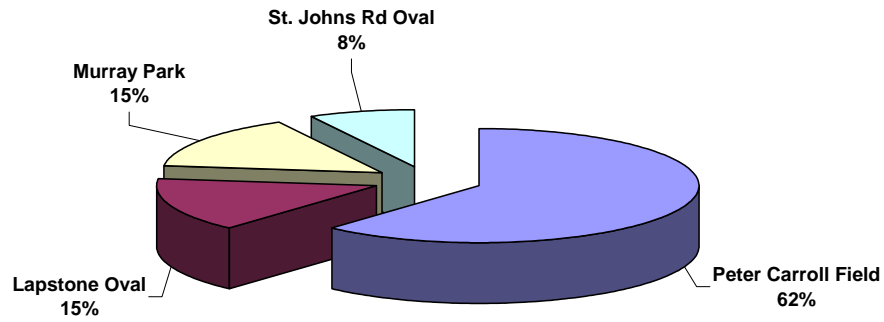
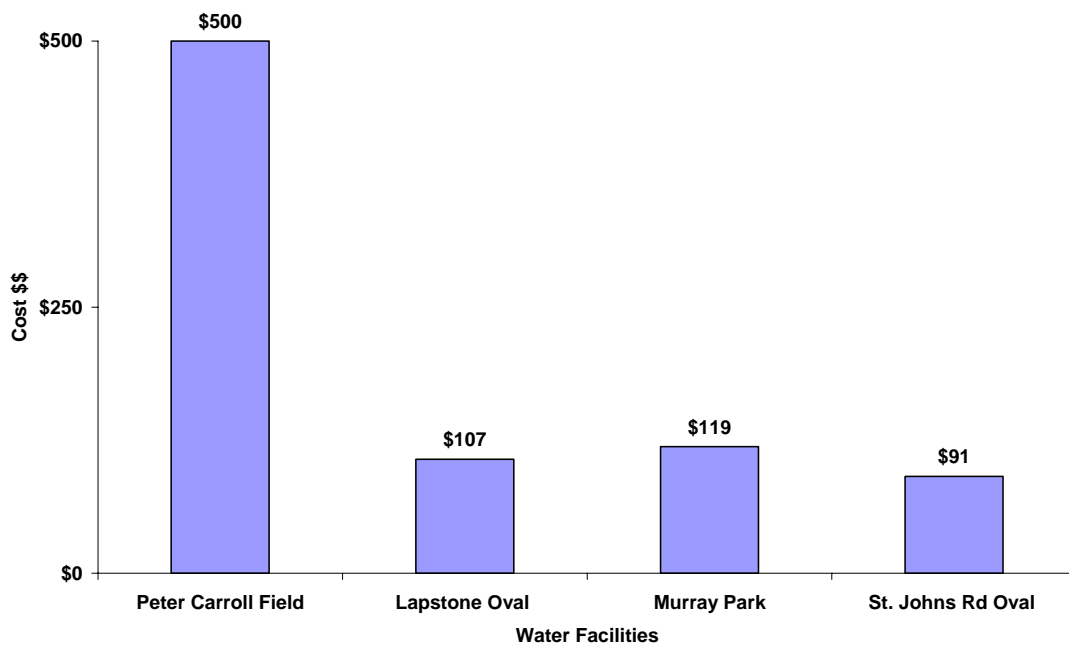


Figure 15: Cost to Council for Energy Provision to Water Facilities during 2004



Issue

Schematic plans for Council parks identifying the location of meters and meter numbers were not available. This information is important when identifying what meters are connected to what bore. There are many parks that have floodlights and car park floodlighting; and buildings connected to the same meter. However, accounts were identified into each sector according to the account name or if it was a shared account; the service with the highest consumption was used to allocate that account into the appropriate sector.

Recommendation 4

Consider developing schematic plans of Council property to include details of the location and service layout of meters, sub-meters (including a reference to meter numbers) and the assets serviced by these meters. Ensure plans include this information as new facilities are built and/or existing facilities are renovated.

If necessary, carry out a 'meter audit' to determine the facilities serviced by each meter and sub-meter.

WASTE

2004	Baseline Year
74 CO₂-e	Greenhouse Emissions (tonnes)
< 1 per cent	(Proportion of total Corporate Sector emissions)

Issue

Although Corporate Waste data was obtained from waste audit information provided by Council's waste management staff, data regarding the waste generated from Council operations is not being recorded on an ongoing basis.

Recommendation 7

Consider implementing a system to record the amount of Corporate waste generated on an ongoing basis.

CORPORATE SECTOR SUMMARY

The main source of greenhouse gas emissions from the Council is electricity, accounting for 75 per cent of total Council sector emissions (refer Figure 16), with a total cost to Council of \$1,336,079 (refer Figure 17).

Figure 16: Corporate Energy Sources (% CO2 Equivalent) in 2004

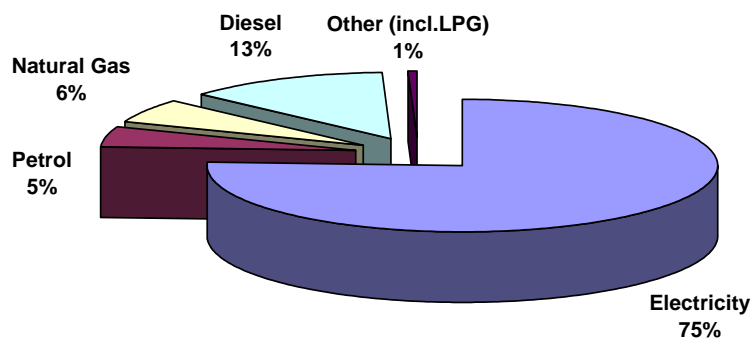
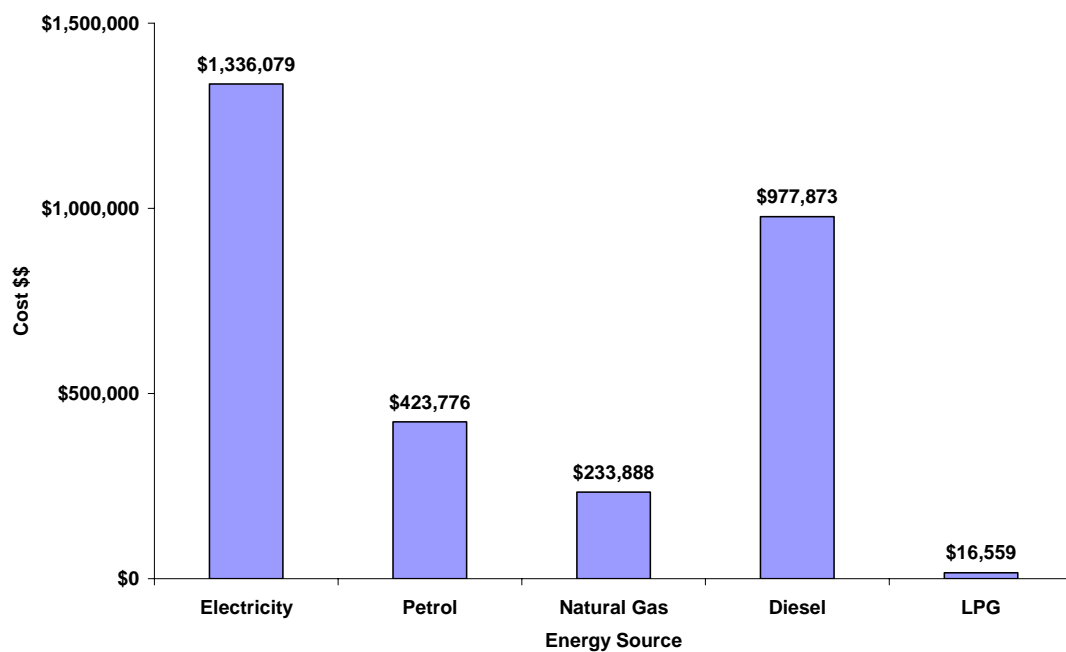


Figure 17: Cost relating to Corporate Energy Sources in 2004



Issue

Electricity consumption is by far the major source of greenhouse gas emissions at the Blue Mountains City Council.

Recommendation 8

Focus on reducing electricity use as a priority when developing measures to reduce greenhouse gas emissions in the Corporate sector.

COMMUNITY SECTOR (LGA)

SUMMARY

2001	Baseline Year
800,374 CO₂-e	Greenhouse Emissions (tonnes)

The total greenhouse gas emission for the Blue Mountains City Council LGA for 2001 was **800,374 CO₂-e tonnes**.

Figures 18 and 19 shows the Blue Mountains City Council Community CO₂-e emissions profile for 2001.

Emissions from the Residential sector account for 44 per cent of total emissions, followed by the Transportation sector at 22 per cent and Commercial sector at 18 per cent (refer Figure 18 and 19).

Figure 18: Community (LGA) Greenhouse Emissions (% CO2 Equivalent) for 2001

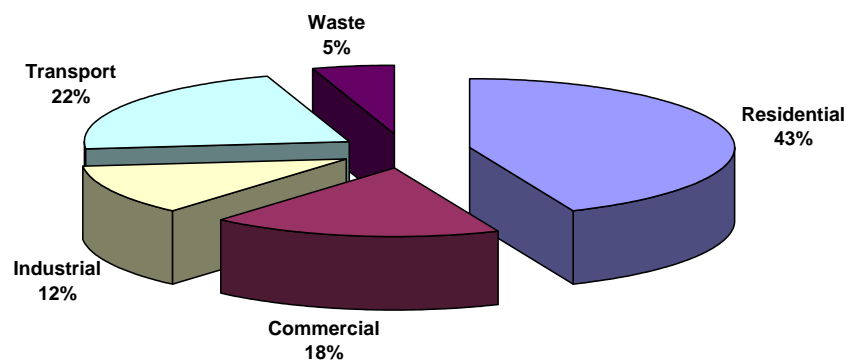
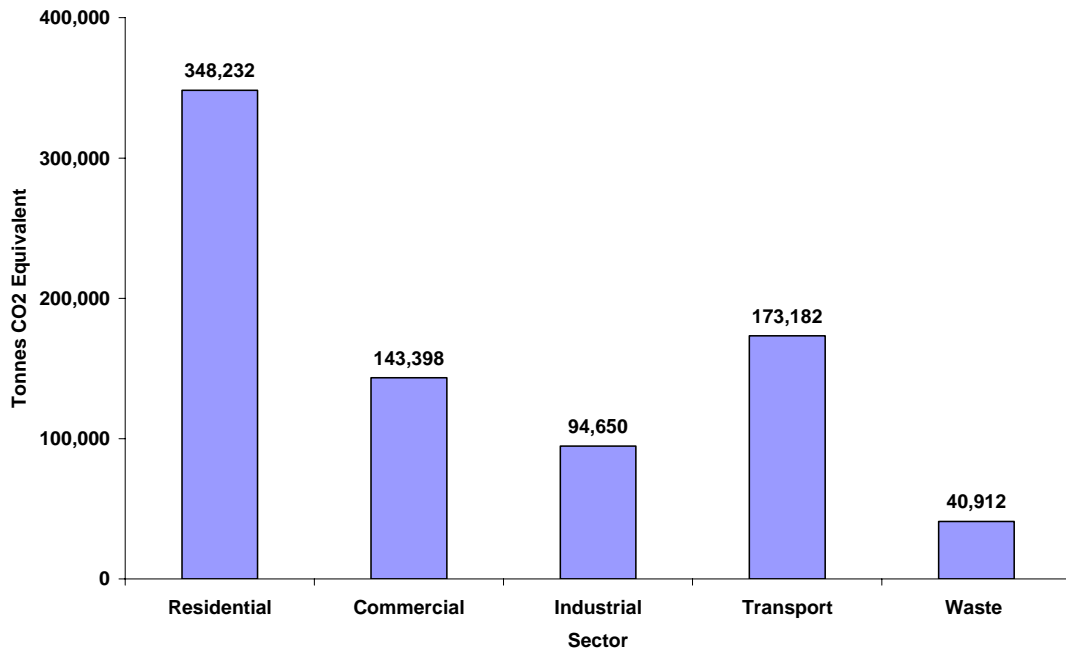


Figure 19: Community Sector (LGA) Summary (tonnes CO2 Equivalent) for 2001



RESIDENTIAL

2001	<i>Baseline Year</i>
348,232 CO_{2-e}	<i>Greenhouse Emissions (tonnes)</i>
43.5 per cent	<i>Proportion of total Community Sector emissions</i>

Emissions from the Residential sector were calculated using ABS (Australian Bureau of Statistics) data provided by ICLEI in the form of a Community Default Data spreadsheet. Emissions sources included electricity, natural gas and LPG.

COMMERCIAL

2001	<i>Baseline Year</i>
143,398 CO_{2-e}	<i>Greenhouse Emissions (tonnes)</i>
17.9 per cent	<i>Proportion of total Community Sector emissions</i>

Emissions in the Commercial sector were determined using ABS data provided by ICLEI in the form of a Community Default Data spreadsheet. Calculations were performed using an ABS Business Register listing the number of employees in organisations registered in the LGA, complemented by ABARE (Australian Bureau of Agriculture and Resource Economics) data. Commercial sector fuel sources included electricity, natural gas & LPG/propane.

INDUSTRIAL

2001	<i>Baseline Year</i>
94,650 CO_{2-e}	<i>Greenhouse Emissions (tonnes)</i>
11.8 per cent	<i>Proportion of total Community Sector emissions</i>

Emissions in the Industrial sector were determined using ABS data provided by ICLEI in the form of a Community Default Data spreadsheet. Calculations were performed using the ABS Business Register listing the number of

employees in organisations registered in the LGA and ABARE data. Industrial fuel sources include electricity, natural gas, heavy fuel oil, LPG, diesel, kerosene/burning oil, charcoal, anthracite and coke.

TRANSPORT

2001	<i>Baseline Year</i>
173,182 CO₂-e	<i>Greenhouse Emissions (tonnes)</i>
21.6 per cent	<i>Proportion of total Community Sector emissions</i>

Transport data was calculated from per Capita State based averages for Vehicle Kilometres Travelled (VKT) multiplied by the population of the City. The percentage breakdown by vehicle type considered only passenger vehicles, light commercial vehicles, trucks and public transport and was calculated using default data provided by ICLEI in the form of a Community Default Data spreadsheet.

WASTE

2001	<i>Baseline Year</i>
40,912 CO₂-e	<i>Greenhouse Emissions (tonnes)</i>
5.1 per cent	<i>Proportion of total Community Sector emissions</i>

Waste data (total tonnes of waste to landfill and percentage breakup) was provided by Council staff.

CORPORATE SECTOR - FORECAST to 2010 **from 2004**

Forecast emissions for the Corporate sector are expected to remain relatively stable between the base and forecast years, with an overall reduction of two per cent from 18,367 tonnes CO₂^{-e} in 2004 to 17,995 tonnes CO₂^{-e} in 2012, assuming a 'business as usual' scenario (refer Figure 20).

The cost of providing energy to the Council sector will reduce by four per cent from \$2,992,869 per annum in 2004 to \$2,867,798 per annum in 2012 (refer Figure 21).

Figure 22 shows the Greenhouse Gas emissions profile for the Council sector for the baseline year (2004) with projections to the year 2012. All sectors are expected to remain relatively stable.

The small variation between base and forecast year emissions is due to little change being anticipated in energy consumption within council properties, complemented by the removal of several Council owned properties that previously consumed electricity and gas (such as toilet blocks).

Figure 20: Total Corporate Greenhouse Gas Emissions (tonnes CO₂ Equivalent) for 2004 and 2012

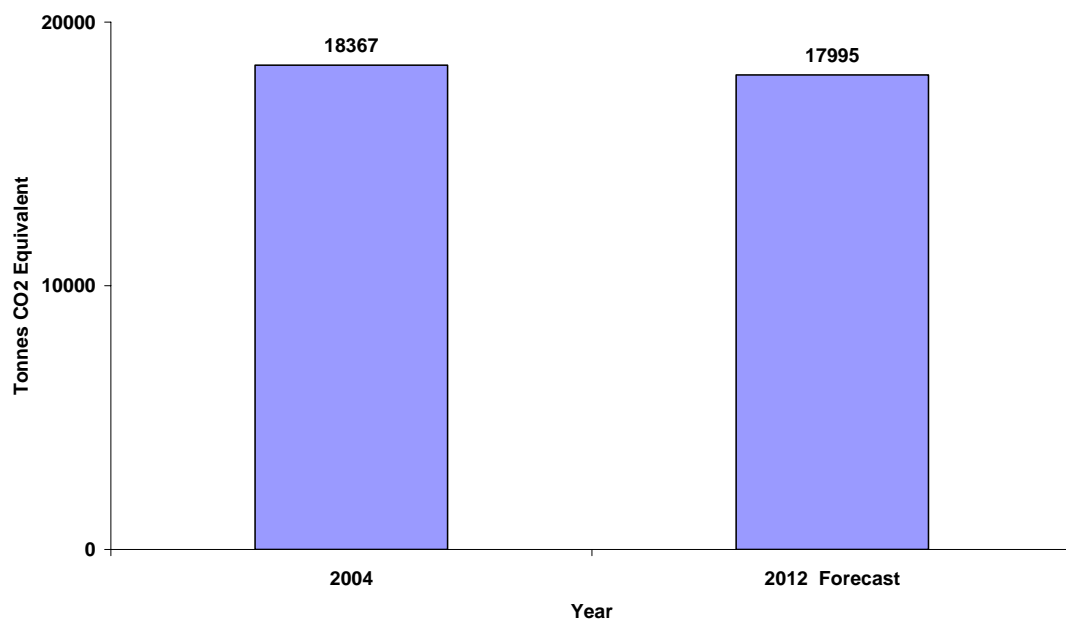


Figure 21: Total Cost of Energy Provision to Corporate Facilities for 2004 and Forecast to 2012

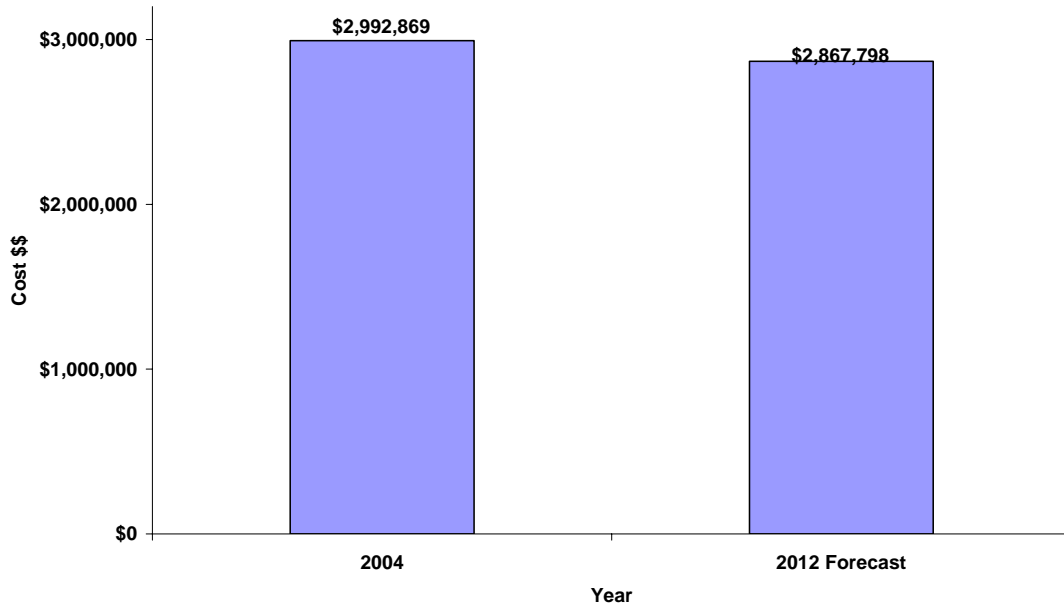


Figure 22: Corporate Emissions (tonnes CO2 Equivalent) for 2004 and Forecast to 2012

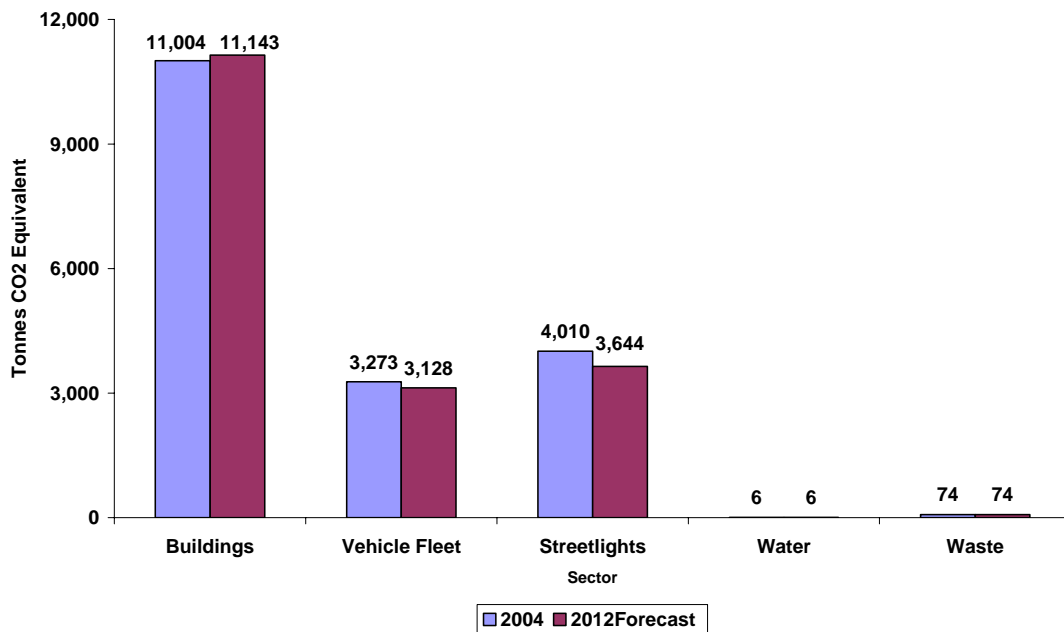
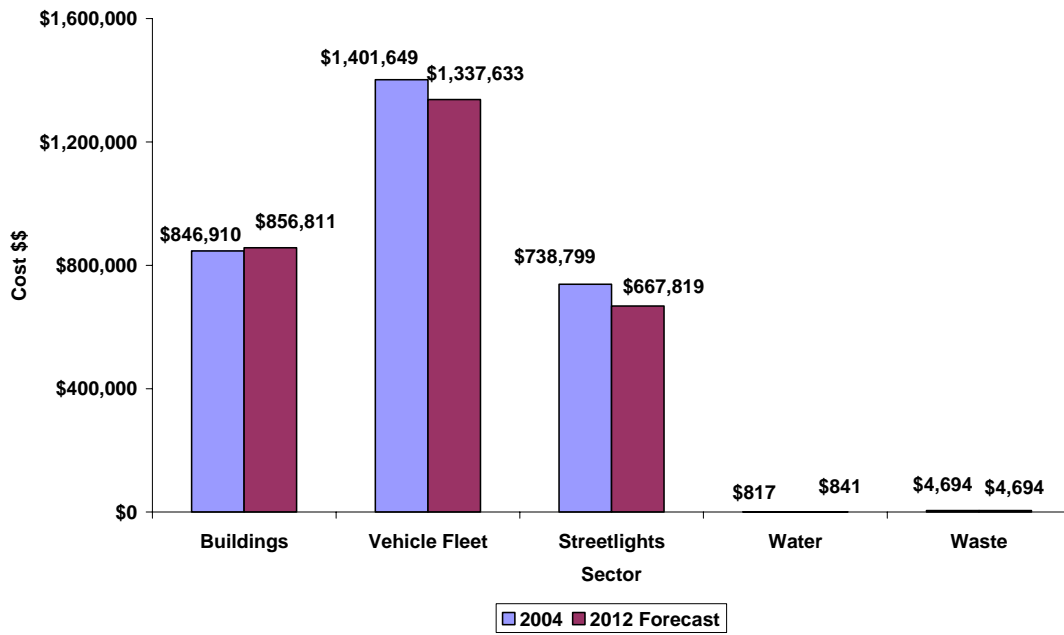


Figure 23: Cost of Providing Energy to Corporate Sector for 2004 and Forecast to 2012



COMMUNITY (LGA) SECTOR - FORECAST TO 2010 FROM 2001

The level of greenhouse gas emissions have been projected from the baseline year 2001 to the forecast year 2010 adopting a 'business as usual' scenario. Emissions in the LGA sector are expected to increase by approximately eight per cent from 800,374 tonnes CO₂^e to 868,047 tonnes CO₂^e as shown in Figure 24.

Figure 25 shows the community emissions profile forecast to the year 2010.

Emissions in all sectors are projected to remain relatively stable, with only the Transportation sector experiencing a significant increase in emissions of over 40 per cent from the base year, as an increasing number of residents commute to work in the City from Blue Mountains locations.

Figure 24: Total Community Greenhouse Emissions (tonnes CO₂ Equivalent) for 2001 and Forecast to 2010

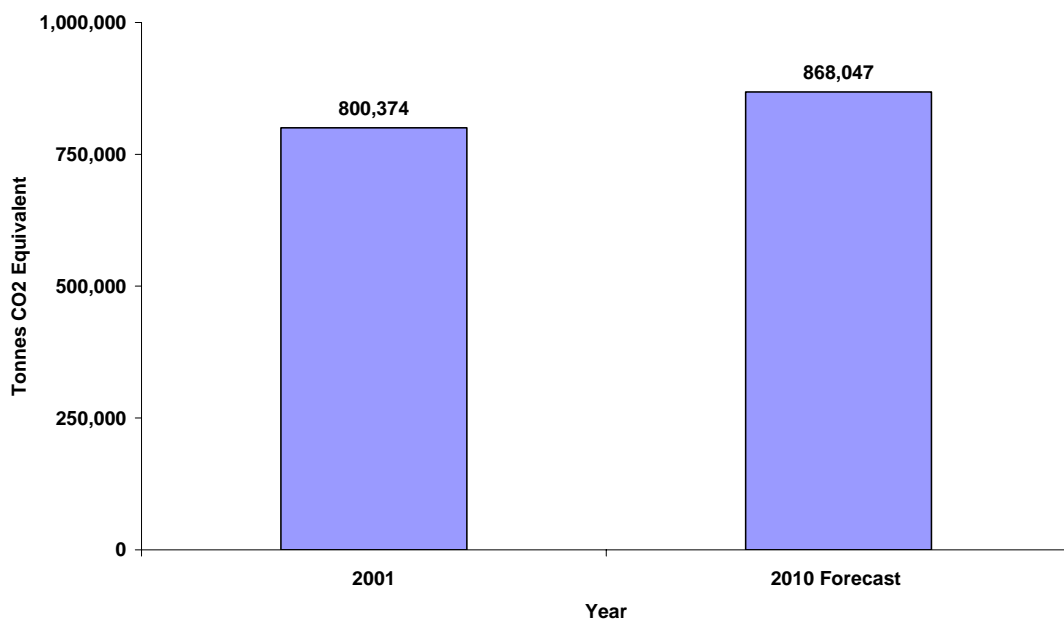
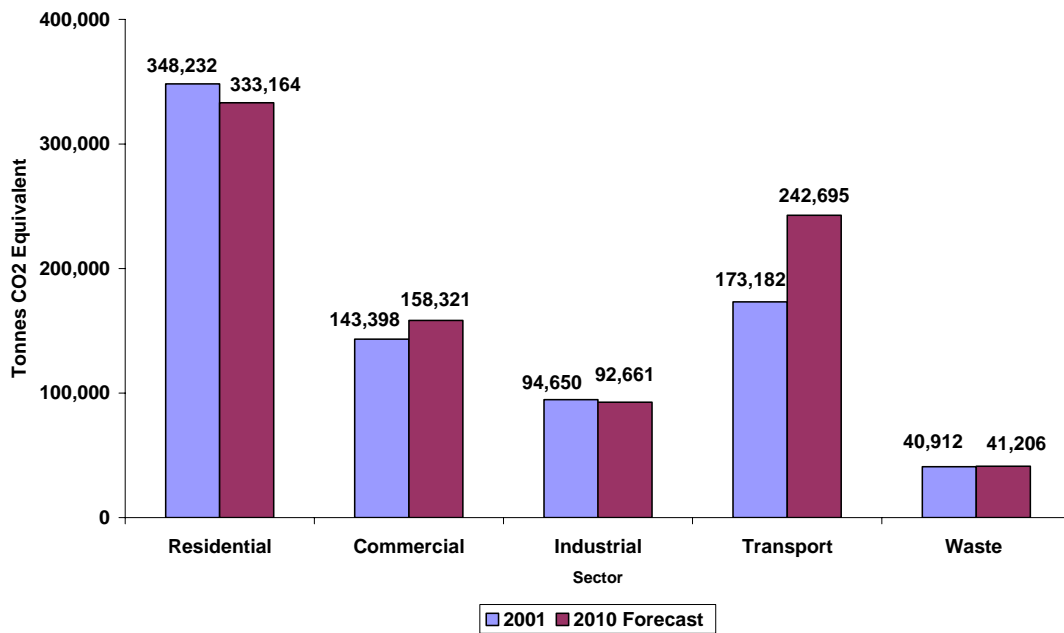


Figure 25: Community Greenhouse Emissions (tonnes CO2 Equivalent) in 2001 and Forecast to 2010



Issue

Transport Sector emissions expected to increase by 40 per cent by 2010.

Recommendation 9

Target the Transportation sector as a priority area for reducing future LGA greenhouse gas emissions.

GENERAL RECOMMENDATIONS

Recommendation 10

Consider implementing a staff awareness campaign to educate personnel on the importance of improved energy management. This campaign can include training sessions, newsletters and handouts, and promotional material such as posters, stickers and booklets. This campaign can also be extended to include the wider LGA.

Recommendation 11

Consider implementing an Environmental Management System (EMS) or Sustainability Management System (SMS) to assist in integrating energy management into the core business of Council. Development of an EMS to an internationally recognised standard, such as ISO 14001, will greatly assist Council to better manage and promote its energy programs and broader environmental initiatives