

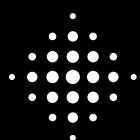


Australian Government

Department of Resources, Energy and Tourism

# FIRST OPPORTUNITIES IN DEPTH: THE SERVICES INDUSTRY A LOOK AT RESULTS FROM 2006–2008

## FOR THE ENERGY EFFICIENCY OPPORTUNITIES PROGRAM



**National Framework**  
for Energy Efficiency

**Energy Efficiency**  
Opportunities

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The report may be downloaded from [www.energyefficiencyopportunities.gov.au](http://www.energyefficiencyopportunities.gov.au).



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# EXECUTIVE SUMMARY

This report provides a detailed picture of the energy use and energy savings potential of businesses in the services industry that are participating in the Australian Government's Energy Efficiency Opportunities program.

Energy Efficiency Opportunities encourages Australia's largest energy-using corporations to identify and implement projects that will save energy, lower their business costs and reduce greenhouse gas emissions.

The first tranche of 199 businesses that registered with the program in 2006 submitted reports on their first energy efficiency assessments in December 2008. An overview and analysis of the reports was published in *First Opportunities: A Look at Results from 2006-08* in March 2010.

The purpose of this new report, *First Opportunities in Depth: the Services Industry*, is to look more closely at the energy use and energy savings at more detailed sub-sector levels within the services industry. It is part of a series of reports that similarly focus on particular industry sectors.

The document examines the energy use and savings data reported by 185 business entities and 25 corporate groups, whose activities were in the services sector.

The services industry data is presented in aggregate and by services industry subdivision. It quantifies the potential benefits of implementing energy savings projects in terms of energy savings, financial benefits and reductions in greenhouse gas emissions.

The information is analysed and presented using the divisions for the services industry set down in the Australian and New Zealand Standard Industry Classification (ANZSIC) system.

The report shows the large energy-using service entities accounted for a relatively low proportion of energy use for Energy Efficiency Opportunities, consuming 2.7 percent of program energy use; however, the businesses identified 3.0 percent of the program's energy savings.

The service businesses reported that they consumed 47.7 petajoules (PJ) of energy in 2007-08 and identified energy savings of 2.06 PJ.

The three largest energy-using industries (ANZSIC division level) were:

- retail trade, which used 20.35 PJ of energy,
- media and telecommunications, consuming 8.59 PJ, and
- rental and real estate (property) services, with 5.42 PJ of energy use.

The three industries identifying the largest energy savings were:

- retail trade, with 1.08PJ of energy savings,
- rental and real estate (property) services, 0.42 PJ, and
- media and telecommunications, at 0.18 PJ.

The service businesses reported they had assessed 35 percent of their energy use, which was lower than the 57 per cent assessment rate reported for the program as a whole and lower than other industry sectors.

The reason for the lower energy use coverage may be because service entities often form a relatively minor component of energy use within corporations that have several large mining and manufacturing operations. This could mean that some entities may not be assessed in the first cycle because their energy use lies within the 20 percent which corporations are not required by legislation to assess.

The assessment of some business entities within the service industries are also being undertaken as part of a wider representative assessment approach. This factor is likely to lead to the service industry's rate of assessment coverage increasing later in the program's life cycle as these representative assessments are completed.

The service businesses identified energy savings totalling 2.06 PJ, with 1.4 PJ of savings in projects that had payback periods of up to four years. The latter 1.4 PJ of identified savings potentially could achieve net financial benefits of \$39.5 million.

While the service entities recorded a relatively low level of energy use assessment, the energy savings they identified represented 12.3 percent of assessed energy, the highest proportion of any industry sector.

The service businesses expected to implement, or had already implemented, almost two-thirds (64 percent) of the energy savings they identified in the less than two year payback category, which was lower than the 70 per cent recorded for the program.

However, in the 2-4 year payback category the businesses reported they would adopt 0.77 PJ of savings, which was higher than 0.63 PJ of savings in the less than two year payback category. This saving was equivalent to around half (49 percent) of the identified savings and was broadly equivalent to the 48 per cent to be implemented for all industries.

In total, the energy savings identified by the 185 business entities in the services industry equated to a potential reduction in greenhouse gas emissions of 518 kilotonnes of carbon dioxide-equivalent (CO<sub>2</sub>-e) per year.

# 1. INTRODUCTION

The Energy Efficiency Opportunities program was set up with the aim to improve the energy efficiency of the country's largest energy users who together account for a major share of national energy use. Their performance is critical to Australia achieving its energy and climate change goals.

The program uses a whole-of-business approach and is designed to break down the many information, organisational and cultural barriers that inhibit the adoption of better energy efficiency practices and projects. It is underpinned by the *Energy Efficiency Opportunities Act 2006*, which came into effect on 1 July 2006.

Energy Efficiency Opportunities requires large energy-using businesses to conduct a detailed assessment of their energy use and to identify and evaluate opportunities to cost-effectively improve their energy efficiency.

Participation in the program is mandatory for corporations using more than 0.5 petajoules of energy per year. Currently over 280 corporations have registered for the program; 199 of these registered in the 2005-06 trigger year and first reported their results at the end of 2008.

Corporations must use the program's assessment framework to assess their energy use and identify energy savings opportunities. The framework takes a whole-of-business approach to energy efficiency, addressing many of the factors that influence energy use across the business.

Corporations report to both the public and to government on the results of their energy efficiency assessments and the opportunities that exist for projects with a financial payback of up to four years. Corporations voluntarily reported opportunities identified with a payback of over four years, which have been included in this analysis.

The reports must detail the opportunities they have identified to save energy, quantify the energy savings the opportunities could deliver and state the corporation's business response to the opportunities.

As corporate structures vary, the legislation mandates that the controlling corporation of a corporate group registers with the program. That corporation is then responsible for the energy use and reporting for all its major business entities, including subsidiaries, joint ventures, partnerships, business units, sites and activities.

In their first reports to government, the 199 corporations reported data for 1099 separate entities. Of these, 185 business entities were involved in services activity; this report presents the data submitted by these services entities.

The corporations outlined their level of energy use, the proportion of assessed energy and the energy savings opportunities that they identified through their first assessments. They also reported on the potential energy savings, financial benefits and reductions in greenhouse gas emissions that could accrue from implementing the energy savings opportunities that had a financial payback of up to four years.

Energy Efficiency Opportunities operates in five-year assessment cycles. During the first five-year cycle, corporations must assess 80 percent of their total energy use and all sites that use more than 0.5 PJ of energy per year. In the second cycle, corporations will assess 90 percent of their total energy use.

Corporations with a 2005-06 trigger year must take the following five steps during the program's first cycle of 2006 to 2011;



**Step 1.** Determine whether the corporation has to participate in the program, i.e. whether it used more than 0.5 PJ of energy within the trigger year of 2005-06.

**Step 2.** Register within nine months of the trigger year, by March 2007.

**Step 3.** Prepare and submit an assessment and reporting schedule by December 2007

**Step 4.** Conduct first energy efficiency assessments of each key division, activity or business unit by June 2008 or within two years of the trigger year.

**Step 5.** Report on assessment outcomes and business response by December 2008.

The legislation also has provision for verification to ensure that corporations have undertaken an assessment to the standard required and reported accurately on the results of the assessment. Verification started in 2010.

The aim of this document is to give an in-depth profile of the energy use and savings potential of Australia's important top energy users.

It should be read in conjunction with the main *First Opportunities* report, which describes the program in detail, lists the participating corporations, details the methodology used to analyse the data, and provides examples of energy savings opportunities. It can be found at the program website: [www.energyefficiencyopportunities.gov.au](http://www.energyefficiencyopportunities.gov.au)

## 1.1. THE SERVICES INDUSTRY AND ENERGY EFFICIENCY OPPORTUNITIES

The service industries within Australia undertake diverse activities, from operating retail, hotel and banking operations to administration and health services. They are less energy intensive than other industry sectors, accounting for just 2.7 percent of energy use for the Energy Efficiency Opportunities program.

Typically, corporations from the services sector participate in the program because they operate within commercial buildings and have large or numerous sites. This includes supermarket and department store chains, major banks, hotel groups, universities, fast food companies, health services, and sports and recreation centres.

Most of the energy use for the services industry derives from the use of electricity for lighting, heating, cooling and air conditioning and also the use of petrol and diesel fuel for company fleets.

The ANZSIC system classifies services according to the following divisions:

- wholesale trade
- retail trade
- accommodation and food services
- information, media and telecommunications (in this report referred to as media and telecommunications)
- financial and insurance services (in this report referred to as finance and insurance)
- rental, hiring and real estate services (in this report referred to as rental and real estate)
- professional, scientific and technical services
- administrative and support services
- public administration and safety
- education and training
- health care and social assistance
- arts and recreation services
- other services.

The results for the divisions underlined in the above list have been explicitly covered in this report. However, to protect commercial-in-confidence information, eight service-based divisions have been combined into one industry category called 'other' services. The 'other' category includes the following ANZSIC divisions, in descending order of energy use:

- wholesale trade
- accommodation and food services
- professional, scientific and technical services
- administrative and support services
- public administration and safety
- health care and social assistance
- arts and recreation services
- other services.

## 2. ENERGY USE

The 185 entities undertaking service-based activity within the program consumed 47.73 PJ of energy in 2007-08, representing 2.7 percent of program energy use.

The four largest energy-using ANZSIC divisions within the services industry (Table 1) were retail trade, followed by media and telecommunications, rental and real estate services, and finance and insurance.

Retail trade was by far the largest energy-using services industry, accounting for 42.6 percent of the energy used by the entire services sector. The 22 retail trade entities used 20.35 PJ of energy in 2007-08.

Supermarkets and department stores contributed the bulk of energy use within the retail trade industry, followed by hardware stores and food retailing.

**Table 1: Total energy use by service industry 2007-08**

Service industry division	Entities	Total energy use (PJ)	Share of service industry energy use (%)
Retail trade	22	20.35	42.6
Media and telecommunications	23	8.59	18.0
Finance and insurance	31	3.81	8.0
Rental and real estate	33	5.42	11.4
Education and training	11	1.27	2.7
Other services	65	8.29	17.4
<b>Total services</b>	<b>185</b>	<b>47.73</b>	<b>100.0</b>

Media and telecommunications was the second largest energy-using service industry, with 23 entities reporting 8.59 PJ of energy use. This was equivalent to 18 percent of energy use for the total services industry.

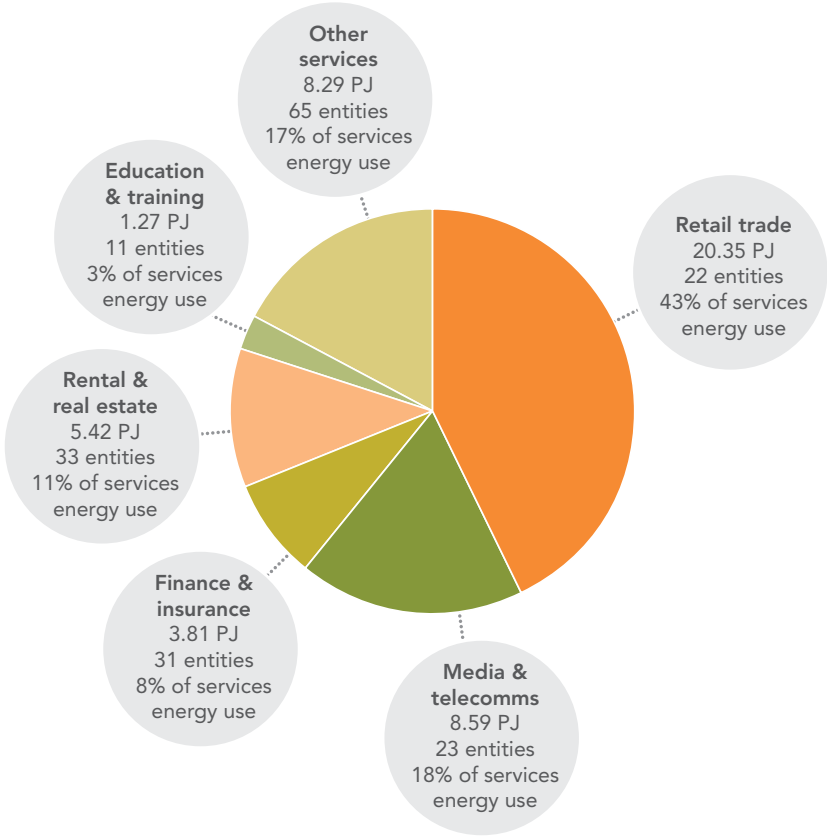
Real estate services accounted for the third largest share of energy use, with 33 entities reporting 5.42 PJ of energy use. They accounted for 11.4 percent of energy use for the services sector.

The 31 entities in the finance and insurance division reported 3.81 PJ of energy use, equivalent to 8.0 percent of energy use for the total services industry.

The 11 education and training entities reported 1.27 PJ of energy use, accounting for 2.7 percent of energy use for the services sector.

The 65 entities that were combined into the 'other' services division used 8.29 PJ of energy, which was equivalent to 17.4 percent of total services sector energy use. These energy use data are presented graphically in Figure 1.

Figure 1: Energy use by service industry 2007-08



### 3. LEVEL OF ENERGY USE ASSESSED

About a third, or 35 percent, of energy use had been assessed across the service industries operating within the program by the end of the first reporting period in June 2008.

A total of 38 entities had assessed 100 percent of their energy use; another 30 entities had assessed part of their operations. The energy use of a further 117 entities was yet to be assessed, representing nearly two-thirds of all service entities.

Under program regulations, corporations are required to assess 80 percent of the energy use across the corporate group in the first assessment cycle and 100 percent of energy use at sites using more than 0.5 PJ per year. Corporations that registered in 2006 have until 30 June 2011 to meet this requirement.

However, because service entities also form a relatively minor component of energy use within corporations that have several large mining and manufacturing operations, some entities may not be assessed in the first cycle because their energy use lies within the 20 percent which corporations are not required by legislation to assess.

Anecdotal evidence also suggests that due to the nature of their businesses, the services companies are undertaking their assessments and implementing projects on a representative basis before rolling out to the rest of their business.

Table 2 shows energy use, assessed energy use and the percentage of energy assessed by each service industry.

**Table 2: Assessed energy use as a proportion of total participants' energy use by service industry**

Service industry division	Energy use (PJ)	Assessed energy use (PJ)	Assessment coverage (%)	Share of total assessed energy use for the sector (%)
Retail trade	20.35	9.09	44.6	54.4
Media and telecommunications	8.59	1.91	22.2	11.4
Finance and insurance	3.81	0.66	17.3	3.9
Rental and real estate	5.42	1.85	34.1	11.1
Education and training	1.27	0.94	73.8	5.6
Other services	8.29	2.28	27.5	13.6
<b>Total services</b>	<b>47.73</b>	<b>16.72</b>	<b>35.0</b>	<b>100.0</b>

The three largest energy-using service industries had also achieved the greatest percentages of assessed energy.

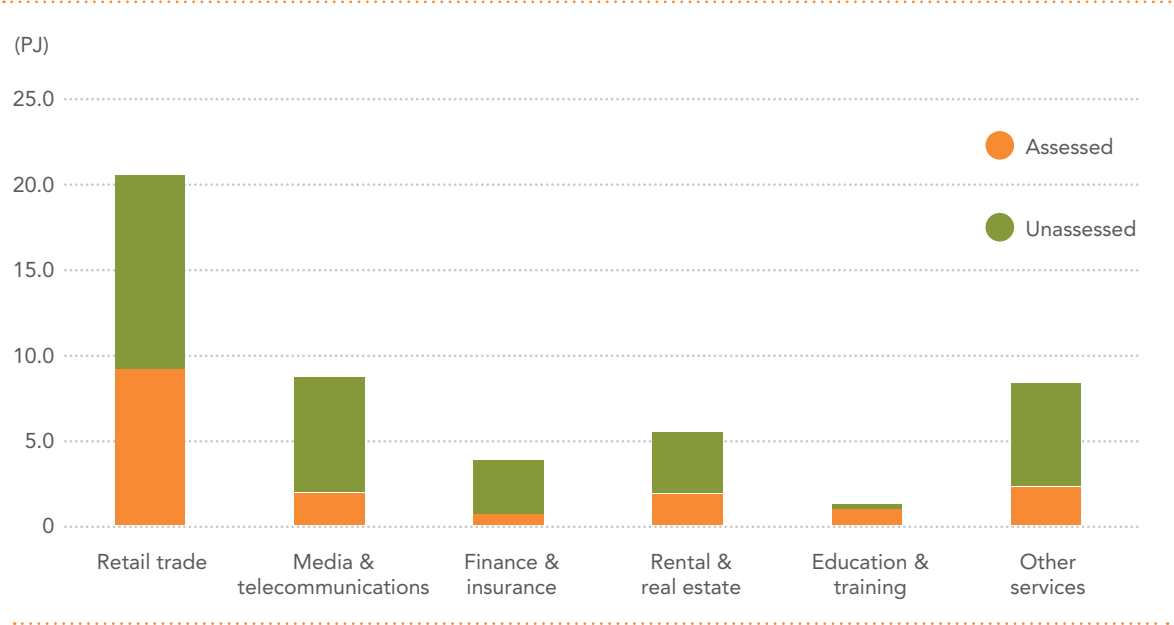
Retail trade, the largest energy-using division, had assessed the highest level of energy (9.09 PJ), accounting for 54.4 percent of the assessed energy among all service industries. About 45 percent of the energy used by these retail trade entities had been assessed.

The second highest value of assessed energy was reported by entities within media and telecommunications (1.91 PJ), accounting for 11.4 percent of the assessed energy among all service industries. About 22 percent of the energy used by these entities had been assessed.

Rental and real estate entities reported the third highest level of assessed energy (1.85 PJ), accounting for 11.1 percent of the service industries' assessed energy. Around a third, 34.1 percent, of the energy used by these entities had been assessed.

The energy assessment data from Table 2 are depicted graphically in Figure 2. The retail trade entities clearly dominate both energy use in the services industry and the level of assessed energy use.

**Figure 2: Assessed and unassessed energy use by service industry**



## 4. ENERGY SAVINGS IDENTIFIED BY CORPORATIONS

The corporations were required to report on the energy efficiency opportunities that they identified during their energy efficiency assessments and the energy savings that could arise if they implemented these projects.

The services businesses identified a total of 2.06 PJ of energy savings as a result of their assessment process. The share of identified savings is listed in Table 3 and shown graphically in Figures 3 and 4.

The retail trade businesses dominated the identification of energy savings, with their opportunities totalling 1.08 PJ or just over a half (52.4 percent) of total savings.

Entities operating in rental and real estate accounted for the second largest share, identifying 0.42 PJ or 20.4 percent of energy savings in services. The media and telecommunications division was the third largest energy-saving industry, with 0.18 PJ or 8.8 percent of total savings.

The remaining service industries identified 0.38 PJ of energy savings.

**Table 3: Identified energy savings by service industry as a share of total energy use, energy savings and assessed energy use**

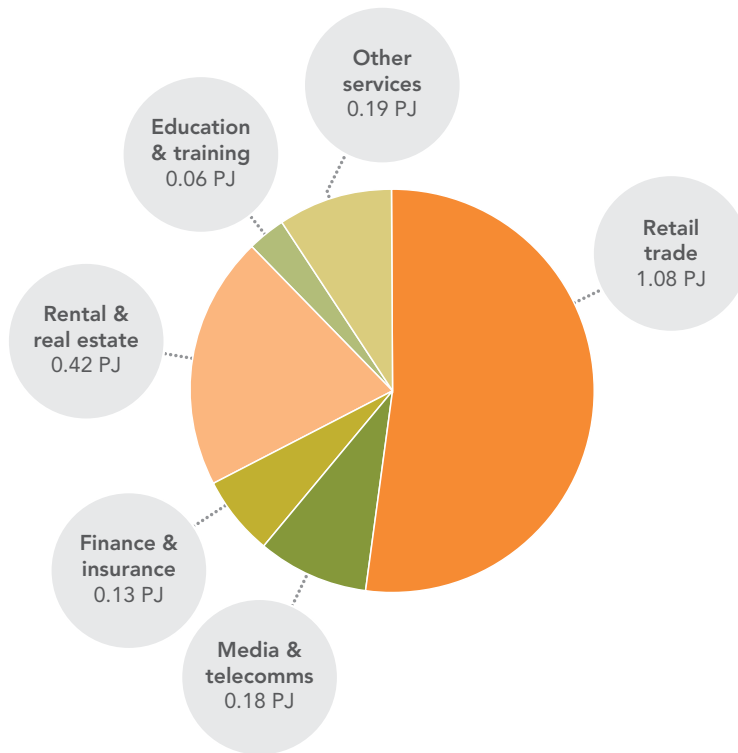
Service industry division	Energy savings identified (PJ)	Share of total energy savings (%)	Energy savings as a share of total energy use (%)	Energy savings as a share of assessed energy (%)
Retail trade	1.08	52.4	5.30	11.86
Media and telecommunications	0.18	8.8	2.10	9.45
Finance and insurance	0.13	6.5	3.49	20.15
Rental and real estate	0.42	20.4	7.73	22.65
Education and training	0.06	2.9	4.72	6.40
Other services	0.19	9.2	2.28	8.29
<b>Total services</b>	<b>2.06</b>	<b>100.0</b>	<b>4.31</b>	<b>12.32</b>

The services industry's 2.06 PJ of energy savings represented 12.32 percent of the total level of assessed energy (also shown in Table 3). This is around double that reported for the program as a whole, which recorded savings totalling 6.6 percent of assessed energy.

The energy savings level reported by the rental and real estate entities was significantly higher - the highest of all the service industries - at 22.65 percent of assessed energy.

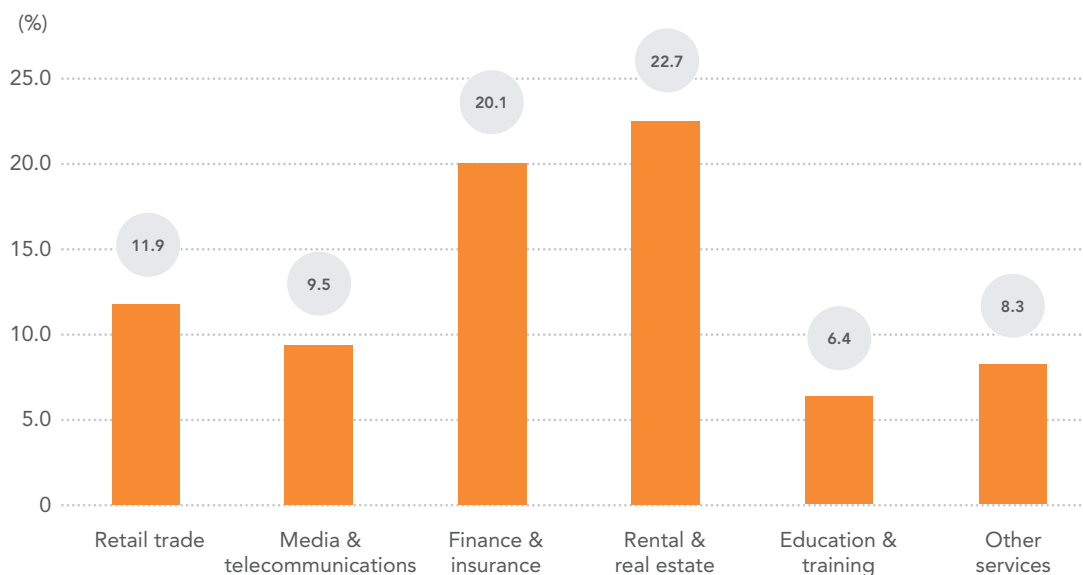
The rental and real estate businesses were able to identify a high proportion of savings from energy use assessed through optimising heating, ventilation and air conditioning (HVAC) systems, chillers, motors, drives and lighting. Typically these systems are not well monitored, optimised or maintained in buildings.

**Figure 3: Identified energy savings per year by service industry 2006-08**



In media and telecommunications, the businesses identified energy savings of 0.18 PJ, equivalent to 9.45 percent of assessed energy. The education and training businesses reported energy savings of 6.4 percent of assessed energy.

**Figure 4: Identified energy savings as a percentage of assessed energy use**



The analysis of the corporations' reports shows that identified energy savings are unevenly distributed throughout the service industries, as shown in Figure 5.

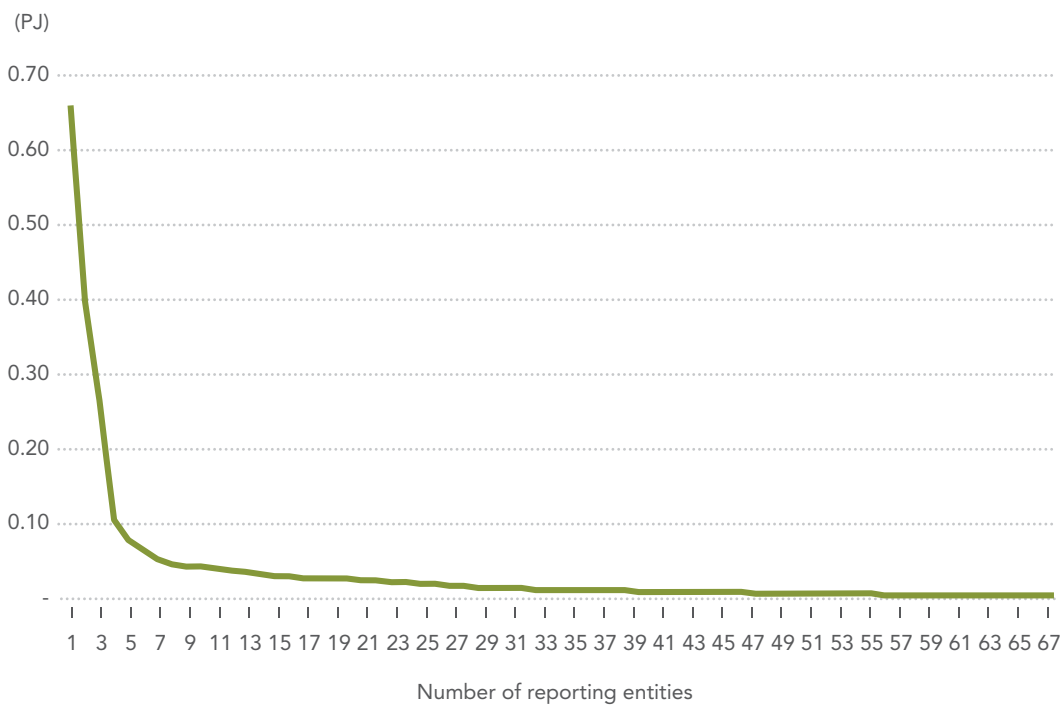


Of the 185 service businesses, 68 had identified some level of savings:

- 68 entities reported some form of energy savings (37 percent of service-based entities),
- four entities saved 0.1 PJ of energy savings or more, and
- 43 entities saved 0.01 PJ or more.

The uneven concentration of energy savings across the services businesses is consistent with the fact that 117 entities had not either not assessed their energy use or not identified any energy savings by the end of the first reporting period (see Section 3).

**Figure 5: Distribution of identified energy savings by service industry**



Note: Data has been smoothed to avoid disclosure of company-specific data.

The service industries reported they potentially could achieve net financial benefits of \$39.5 million a year as a result of the energy savings projects with paybacks of up to four years that they identified through their energy efficiency assessments.

The net financial benefits are the annual savings, or ongoing benefits net of costs, the corporations expect to make in the first four years of an energy project's implementation, less the initial investment and assessment costs involved. The benefits include *all* financial savings, not just financial savings from reduced energy use.

The estimated financial results for each of the service divisions are not able to be presented here due to commercial-in-confidence reasons; however, estimated dollar per gigajoule financial savings are outlined in Section 5.

## 5. BUSINESS RESPONSE TO ENERGY SAVINGS BY PAYBACK PERIOD

Corporations are required under program rules to report whether they would proceed with implementing the energy savings opportunities that they identified during their energy efficiency assessments.

Their business response is reported under the following five categories: under investigation, to be implemented, implementation commenced, implemented and not to be implemented. The categories allow the program to differentiate the *potential* energy and emissions savings of projects that might be implemented from the *actual* savings of projects already completed.

In assessing their business response, the corporations used two separate simple payback categories – projects with a payback of less than two years and a payback of 2-4 years. Corporations could also voluntarily report on projects with simple paybacks greater than four years.

The services businesses together identified savings of 0.63 PJ of energy in projects that had a financial payback of less than two years. The average net financial return for the opportunities in this category was \$41.30 per GJ saved.

Of these opportunities, around two-thirds (64 percent) were being adopted, meaning the businesses already had, or were planning to, implement the projects, see Table 4.

**Table 4: Identified energy and financial savings by payback period**

Payback period	Service industry division	Energy savings (PJ)	Financial savings (\$/GJ)	Proportion of identified savings to be adopted* %
0 < 2 years	Retail trade	0.26	np	55
	Media and telecommunications	0.12	np	92
	Finance and insurance	0.10	np	96
	Rental and real estate	0.07	np	8
	Education and training	0.04	np	70
	Other services	0.05	np	47
	<b>Total services</b>	<b>0.64</b>	<b>41.30</b>	<b>64</b>

**Table 4 continued**

<b>Payback period</b>	<b>Service industry division</b>	<b>Energy savings (PJ)</b>	<b>Financial savings (\$/GJ)</b>	<b>Proportion of identified savings to be adopted* %</b>
2-4 years	Retail trade	0.30	np	85
	Media and telecommunications	0.06	np	31
	Finance and insurance	0.04	np	92
	Rental and real estate	0.25	np	5
	Education and training	0.02	np	69
	Other services	0.11	np	40
	<b>Total services</b>	<b>0.78</b>	<b>17.34</b>	<b>49</b>

np = data not published to maintain confidentiality of commercially sensitive information. Methodology detailed in Appendix A.  
 \* 'Adopted' refers to the business response categories of to be implemented, implementation commenced, and implemented.

Unlike the mining, metals manufacturing and general manufacturing industries, a higher level of energy savings in the services industry were identified in the 2-4 year payback period. Of these, around half (49 percent) were being adopted.

In the 2-4 year payback category the businesses reported they would adopt 0.77 PJ of savings, which was higher than 0.63 PJ of savings in the less than two year payback category. This saving represented 38 percent of all the energy savings identified across the service industries. The average net financial return for opportunities identified in this category was \$17.34 per GJ saved. This was less than half that reported in the 0 < 2 year payback category, where savings were estimated at \$41.30 per GJ saved.

In their reporting, corporations could choose to voluntarily submit results for projects with payback periods of greater than four years. These results have not been collated in Table 4 because financial savings were not required to be reported for opportunities with paybacks greater than four years.

It is interesting to note, however, that the service industries had the highest share of savings reported in the greater than four year category of any industry sector. The services businesses reported 0.66 PJ of energy savings in projects with a payback of greater than four years, representing 33 percent of total energy savings.

## 6. GREENHOUSE GAS EMISSIONS

The greenhouse gas emissions produced by the service entities were calculated based on their use of different types of fuels, such as electricity, natural gas and diesel. The reported figures for both energy use and energy savings were converted into emissions using National Greenhouse Accounts (NGA) factors produced by the Department of Climate Change and Energy Efficiency.

As the emissions only relate to the corporations' use of energy, they are referred to as energy-related emissions to distinguish them from total emissions data published in the National Greenhouse Gas Inventory. Energy-related emissions include only the greenhouse gas emissions arising from the direct combustion of energy and the use of purchased electricity.

Almost all, or 99 per cent, of the emissions reductions in the services industry arose from energy savings in electricity. Generally electricity is the major energy source in service-based industries.

The energy savings reported by the service businesses equated to a potential reduction in greenhouse gas emissions of 518 kilotonnes of carbon dioxide-equivalent (ktCO<sub>2</sub>-e), as seen in Table 5, which if implemented would represent a financial benefit of approximately \$114.5 per tonne of CO<sub>2</sub>-e abated per annum.

Around 513 ktCO<sub>2</sub>-e of emissions savings were attributable to indirect emissions and 5.2 ktCO<sub>2</sub>-e to direct emissions. The dominance of indirect emissions reflects the high usage of electricity in the service industries.

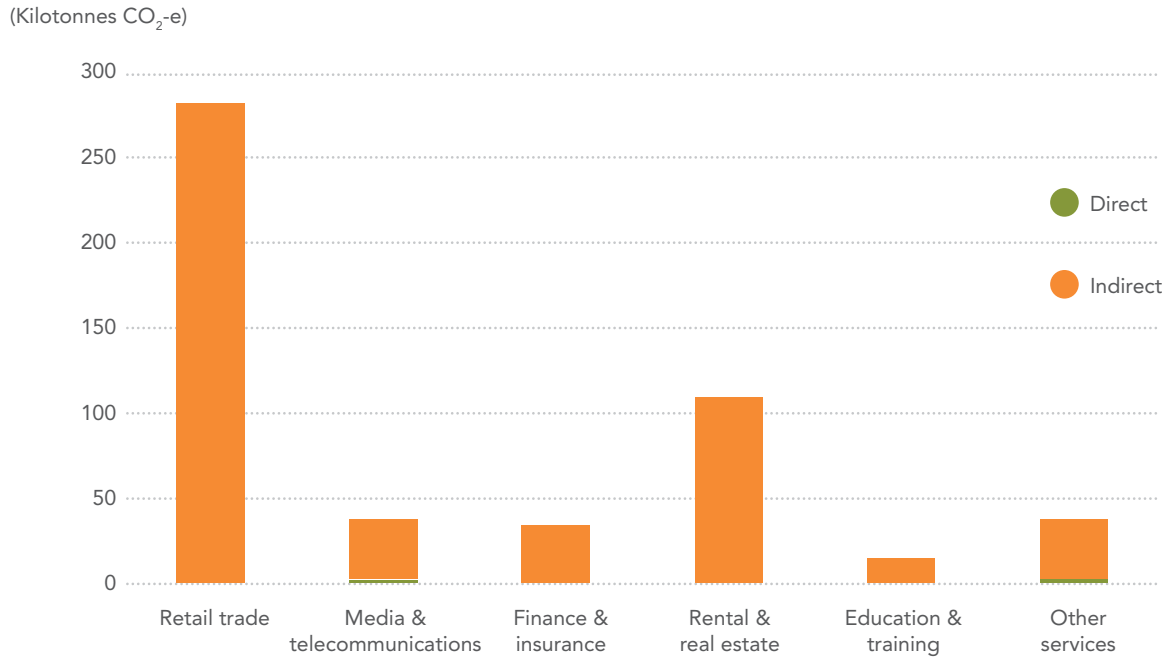
**Table 5: Reductions in greenhouse gas emissions by service industry**

Service industry division	Emissions reductions (kilotonnes CO <sub>2</sub> -e)		
	Direct emissions	Indirect emissions	Total emissions
Retail trade	-	282.6	282.6
Media and telecommunications	2.2	35.8	38.0
Finance and insurance	0.1	34.4	34.5
Rental and real estate	0.1	109.3	109.4
Education and training	0.2	14.8	15.0
Other services	2.7	35.9	38.5
<b>Total services</b>	<b>5.3</b>	<b>512.8</b>	<b>518.0</b>

The retail traders identified the largest reductions in emissions, of 283 kilotonnes CO<sub>2</sub>-e; all of these were attributable to electricity savings.

The rental and real estate businesses identified the second largest share of emissions reductions of 109.4 kilotonnes CO<sub>2</sub>-e; most were again attributable to the energy savings being identified in electricity usage.

**Figure 6: Reductions in greenhouse gas emissions by service industry**



The 'other' services category and media and telecommunications were the two service divisions using natural gas, diesel and petrol in substantial portions compared to their total fuel use.

As a result, the proportion of savings in direct emissions was correspondingly higher for these divisions, compared with the other service industries.

The 'other' services group reported the highest reductions in direct emissions of any service industry, with emission reductions of 2.7 kilotonnes CO<sub>2</sub>-e.

The media and telecommunications businesses identified 2.2 kilotonnes of CO<sub>2</sub>-e reductions.

# APPENDIX A

## REPORTING METHODOLOGY

The data in this *First Opportunities in Depth: the Services Industry* were sourced from the reporting obligations of the corporations participating in the Energy Efficiency Opportunities program.

The tables and graphs in this report have been checked using Australian Bureau of Statistics confidentiality practices to ensure against the disclosure of individual corporations' commercial-in-confidence information. The method used to render the data confidential cannot be disclosed.

Individual company information can be found at the Energy Efficiency Opportunities program website: [www.energyefficiencyopportunities.gov.au](http://www.energyefficiencyopportunities.gov.au). Follow the links to the individual corporations' information.



