



# Victorian Local Government Annual Survey

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## Executive summary

In September 2009, Sustainability Victoria commenced its survey on the waste management and recycling services provided by Victorian local governments during the 2008–09 financial year.

This is the ninth in the series of annual surveys undertaken for Victoria and builds on previous surveys to enable an evaluation of the performance of local government waste management services.

The data collection for 2008–09 included the following service areas:

- > household garbage collection and disposal
- > household recyclables collection and sorting including material collected from drop-off facilities / transfer stations
- > household green organics collection and processing
- > litter bin and litter trap collection and disposal
- > litter clean-up services
- > street sweeping
- > hard waste collection
- > commercial and industrial recyclables services
- > landfill and transfer station operations

### **Total waste generation in 2008 – 2009**

- > Kerbside collection services for garbage, recyclables and green organics generated 1.9 million tonnes of waste in Victoria, an increase of 37,195 tonnes or 2.0% from the previous financial year. More than half of the increase is directly attributed to the gains achieved through the increased recovery of green organics with an additional 20,124 tonnes collected. Although the amount of garbage collected increased by 17,456 tonnes in 2008–09, more properties were serviced in Victoria (2.6%) and the total yield generated by each household decreased by 4 kg annually.
- > Kerbside collection expenditure by local government on the three services exceeded \$260 million (Table 1), an increase of nearly \$20 million (8.2%) from the previous year.

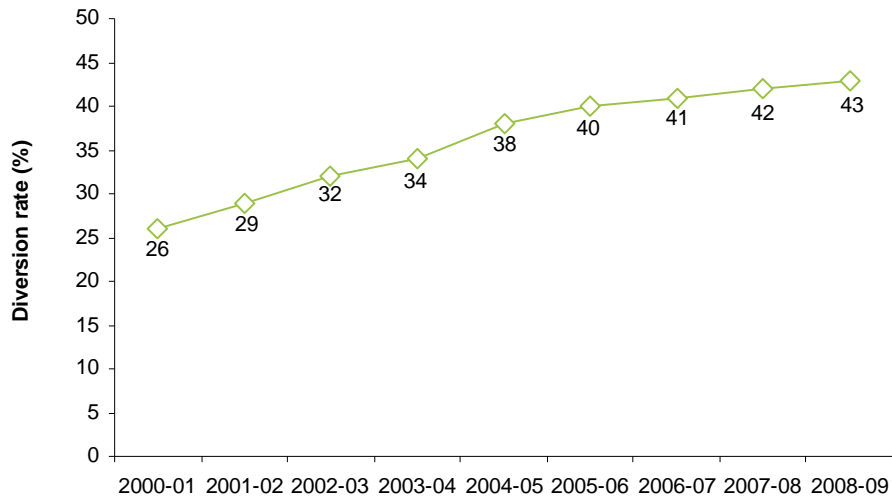
Table 1 Kerbside services, Victoria 2008–09

	Garbage	Recyclables	Green organics	Total
<b>2008-09</b>				
Annual service cost	\$145,434,658	\$73,386,074	\$41,388,571	\$260,209,303
Tonnes collected	1,024,965	607,837	270,774	1,903,576
Tonnes processed / recycled	—	554,426	261,015	815,441
Total households serviced*	2,172,074	2,149,337	1,595,032	—
Cost per tonne	\$141.89	\$120.73	\$152.85	\$136.69
Cost per household	\$66.96	\$34.14	\$25.95	—
Household yield (kg)	472	283	170	—
<b>2007-08</b>				
Annual service cost	\$132,088,031	\$72,211,402	\$36,150,171	\$240,449,604
Tonnes collected	1,007,509	608,223	250,650	1,866,381
Tonnes processed / recycled	—	541,398	248,795	790,193
Total households serviced*	2,116,076	2,093,315	1,506,394	—
Cost per tonne	\$131.10	\$118.73	\$144.23	\$128.83
Cost per household	\$62.42	\$34.50	\$24.00	—
Household yield (kg)	476	291	166	—
<b>Per cent change</b>				
Annual service cost	10.1%	1.6%	14.5%	8.2%
Tonnes collected	1.7%	-0.1%	8.0%	2.0%
Tonnes processed / recycled	—	2.4%	4.9%	3.2%
Total households serviced*	2.6%	2.7%	5.9%	—
Cost per tonne	8.2%	1.7%	6.0%	6.1%
Cost per household	7.3%	-1.0%	8.1%	—
Household yield (kg)	-0.9%	-2.7%	2.0%	—

\*Total households serviced may also include commercial and industrial properties. For green organics this refers to the number of households with access to a service.

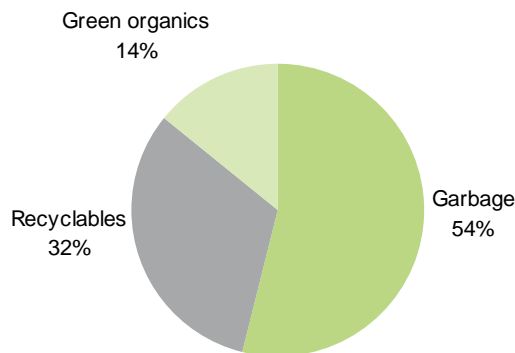
- > The statewide average diversion rate for recyclables and green organics has increased from 42% in 2007–08 to 43% in 2008–09 (see Figure 1). The diversion rate has increased every year since 2000–01 and has improved by 17 percentage points. The largest increase in the diversion rate was recorded for the 2003–04 to 2004–05 period when most local governments adopted the best practice systems for recyclables.

Figure 1 Diversion rate, Victoria 2000–01 to 2008–09



- > Garbage accounted for more than half of the total waste stream (54%), consistent with figures for the 2007–08 period (see Figure 2).

Figure 2 Composition of waste collected through kerbside services, Victoria 2008–09

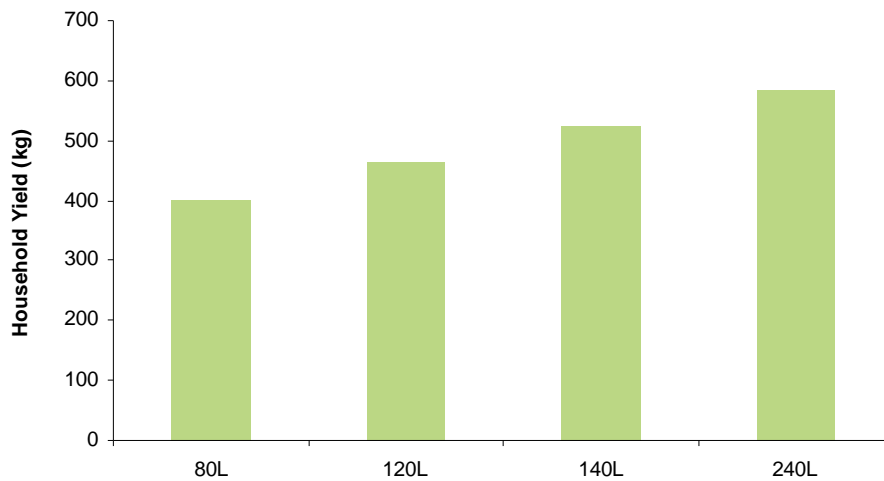


### Garbage

- > A little over 1 million tonnes of garbage was collected through kerbside services in 2008–09. This equates to 191 kg for every person<sup>1</sup> in Victoria, 1 kg less than in the previous year.
- > Although the total tonnes collected have increased by 1.7% or 17,456 tonnes over the past year the number of households serviced has increased by more than 56,000 or 2.7%.
- > Households generated on average 472 kg annually or 4 kg less garbage than in 2007–08.
- > Service costs averaged \$66.96 per household per year compared to \$62.42 in 2007–08.
- > Local governments using smaller garbage bins generated less waste (see Figure 3) and had greater diversion rates for recycling than those using larger garbage bins. This has been a consistent trend since the first survey in 2000-01.

<sup>1</sup> ABS Catalogue number 3101.0 Australian Demographic Statistics, Dec Qtr 2009, 24 Jun 2009. Table 4, Persons Sept qtr 2008 population figure has been used to calculate the Victorian 'per person rate' in this publication (pop. 5,355,409).

Figure 3 Garbage yield by collection system, Victoria 2008–09



### Recyclables

- > For the second year in a row, recyclables collected from kerbsides exceeded 600,000 tonnes but showed a small decrease of 0.1% or 385 tonnes less than in the previous year. Although the tonnes collected have decreased slightly, 13,028 more tonnes were reprocessed for recycling in 2008-09 compared with 2007-08 indicating that households are recycling better and reducing the amount of contaminants in recycling bins.
- > As per last year, the cost of providing a kerbside recyclables collection service at \$120.73 per tonne is still less expensive than the cost of providing a kerbside garbage collection and disposal service at \$141.89. These figures indicate that recycling waste material is economically viable for collectors of recyclables compared to the more expensive option of disposing of garbage to landfill.
- > Collections averaged 283 kg per household per year representing a decrease of 8 kg over 2007–08. This represents 113 kg of recyclables generated by every person in Victoria, slightly less than the previous year with 116 kg per person. In real terms, given the additional amount of waste material recycled (compared to collected) households did marginally better than the previous year (104 kg vs. 103 kg per household annually).
- > 77 of the 79 local governments (97%) now use a best practice commingled system for recyclables instead of a crate for containers and tied bundle for paper, which was the predominant system prior to 2002–03.
- > Service costs averaged \$34.14 per household per year which was slightly less (1.0%) than in 2007–08.
- > The average contamination rate for recyclables was 8.8%, a decrease from 11.0% in 2007–08.
- > By weight paper/cardboard accounted for 62.8%, miscellaneous containers (glass containers, steel and aluminium cans) 29.4% and plastic containers 7.8% of recycled materials from kerbside (excluding green waste).

### **Green organics**

- > Of the 79 local governments, 51 different green organics collection services were offered across 45 councils. Of these, 22 were regular council provided collection (i.e. weekly, fortnightly or monthly) while 19 local governments also provided an optional user pays fortnightly collection.
- > 270,774 tonnes of green organics were collected from kerbside services, an increase of 20,124 tonnes, or 8.0% compared to 2007–08.
- > On average, 170 kg of green organics was collected per household (51 kg per person).
- > The cost of providing a green organics service to households increased by 8.1% from \$24.00 in 2007–08 to \$25.95.
- > A fortnightly service (either regular or user pays options) was the most common (73%); yielding on average 252 kg per household annually for a regular council service and 290 kg per household for a fortnightly user pays system.

### **Environmental benefits from kerbside services**

The environmental savings from kerbside recycling of containers, paper and cardboard for the year are equivalent to:

- > filling 4,773 Olympic-sized swimming pools (11,932 megalitres of water)
- > taking 56,178 cars off the road (337,066 tonnes of greenhouse gases)

The environmental savings from kerbside recycling of green organics for the year are equivalent to:

- > filling 50 Olympic-sized swimming pools (125 megalitres of water)
- > taking 10,027 cars off the road (60,164 tonnes of greenhouse gases).

### **Litter and street sweeping services**

The total cost of litter and street sweeping maintenance for local governments was over \$74 million or \$13.92 for every person in Victoria. Of this:

- > maintenance of litter bins, traps and litter clean up (such as dumped rubbish) cost just under \$25 million, or 33% of the total cost
- > street sweeping services cost nearly \$50 million a year, of which metropolitan local governments accounted for 74%
- > 26,310 tonnes of roadside litter and illegally dumped rubbish cost local government nearly \$6 million annually to collect.

### **Hard waste**

- > 41 out of 79 local governments provided a hard waste collection service.
- > Nearly 101,000 tonnes were collected and nearly 59,000 tonnes were disposed to landfill representing a 42% diversion rate.
- > On average, 68 kg of hard waste were collected per household costing an average of \$8.78 per household.

### **Commercial and industrial kerbside services**

- > A total of 99,698 commercial and industrial properties received a domestic regular household garbage service and 74,823 received a domestic recyclables kerbside service.

## Landfill and transfer station operations

- > There are 285 resource recovery and waste transfer stations operating in Victoria.
- > 94 local governments owned and/or operated landfills (40 licensed and 54 unlicensed) operated in Victoria.
- > 20,466 tonnes of packaging material (glass containers, aluminium cans, steel cans, plastic containers and paper) and 228,417 tonnes of green organics were recovered from drop-off facilities / transfer stations<sup>2</sup>.
- > Material collected from drop-off / transfer station facilities represented nearly 22% of all material recovered from kerbside and drop-off facilities. Green organics represented the largest proportion of all items collected with 44% of the total, followed by paper with 35% (Table 2).

Table 2 Main items recovered by source of recovery, Victoria 2008–09

	Source of item			% of total
	Kerbside	Drop-off	Total	
Main items recovered	Tonnes			
Plastic containers	47,413	848	48,261	4.3%
Paper	381,843	13,927	395,770	35.1%
Glass containers	154,398	2,594	156,992	13.9%
Steel cans	17,908	2556	20,464	1.8%
Aluminium cans	6,275	541	6,816	0.6%
Green organics	270,774	228,417	499,191	44.3%
<b>Total</b>	<b>878,611</b>	<b>248,883</b>	<b>1,127,494</b>	<b>100.0%</b>

<sup>2</sup> Refers to local government owned and operated transfer stations only

## Introduction

The Victorian *Local Government Annual Survey* plays a vital role in the formulation of future directions for waste management services in Victoria. The survey provides a measure of Victoria's delivery of efficient and sustainable waste management kerbside services to the Victorian community and provides a measure for local governments of progress against targets set in the State Government's *Towards Zero Waste* (TZW) strategy.

Sustainability Victoria gratefully acknowledges the cooperation of Victorian local governments and regional waste management groups in achieving a 100% response rate to the survey for 2008–09.

The data collection includes information about the following service areas:

- > household garbage collection and disposal
- > household recyclables collection and sorting including material collected from drop-off facilities / transfer stations
- > household green organics collection and processing
- > litter bin and litter trap collection and disposal
- > litter clean-up services
- > street sweeping
- > hard waste collection
- > commercial and industrial recyclables services
- > landfill and transfer station operations

The data collected has been organised in this report under these broad section headings:

### **Total waste generation**

This section focuses on the total waste generation by Victorian households that is collected through kerbside services.

### **Local government household kerbside services**

Kerbside services provided through local government for the collection of household garbage, recyclables and green organics are covered more specifically in this section.

As well as providing an overview of the services, this section draws on the data to analyse the efficiency of these services in relation to costs, yields, access, container type, and service frequency.

### **Environmental benefits from kerbside recycling**

Applying the findings of *The Independent Assessment of Kerbside Recycling in Australia*<sup>3</sup> and the *Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria*<sup>4</sup>, this section looks at the environmental benefits gained from kerbside recycling and green organics collection in Victoria during 2008–09.

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<sup>3</sup>National Packaging Covenant Council (2001) *The Independent Assessment of Kerbside Recycling in Australia*

<sup>4</sup>Grant T, James KL, Lundie S, Sonneveld K (2001) *Stage 2 Report for Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria*, Centre for Design at RMIT University, Melbourne

**Litter services**

The cost of litter services is covered in this section. Litter services include collecting waste from litter bins and litter traps, as well as litter clean-up services, such as removing illegally dumped rubbish and street sweeping.

**Hard waste collections**

This sections deals with the hard waste kerbside collection services provided by local governments.

**Commercial and industrial recyclables services**

The focus of this section is the range of kerbside collection services provided by local governments to non-residential premises as part of the normal domestic kerbside collection service.

**Landfills and transfer stations**

This section deals with reporting the number of local government owned and/or operated landfills (licensed and unlicensed), and waste transfer stations.

Sustainability Victoria has sought to verify information provided in data collection returns through rigorous follow-up with individual local governments. However, Sustainability Victoria is not in a position to validate underlying data in the report. Findings in this report are therefore subject to the accuracy of data provided by individual local governments.

## Total waste generation

The focus of this section is on the generation of waste by Victorian households.

Household waste generation is closely linked to Victorian household consumption patterns. It is a clear measure of the state's progress towards the sustainable use of resources and the goals and targets set in the State Government's *Towards Zero Waste (TZW)* strategy.

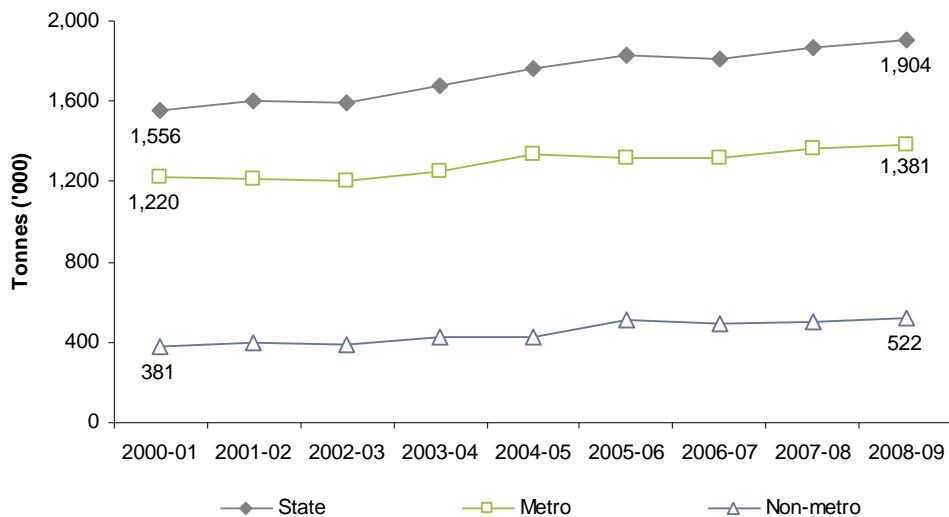
The *Victorian Local Government Annual Survey* focuses on measuring waste collected through kerbside services when analysing household waste generation. It is important to note that waste recovered and removed by private contractors is not included in this survey.

The following sections outline the key findings.

### Total waste generated

Victorians generated 1,903,576 tonnes of solid waste through garbage, recyclables and green organics kerbside collection services in 2008–09. This represents nearly 355 kg for every person<sup>5</sup> in Victoria annually. Total waste generated increased by 2.0% or 37,195 tonnes compared to 2007–08, and has increased by 22% since 2000–01 (see Figure 4). Although total waste generation has increased, the amount of green organics collected through kerbside for reprocessing has also increased by 8.0% while recyclables has remained relatively steady with only a small decrease of 0.1%. Consistent with the increase in total waste generation, the total number of premises serviced through kerbside collections has also increased for all three kerbside services ranging from 2.6% for garbage and 5.9% for green organics. The 30 metropolitan local governments represent 73% of the total waste generation in Victoria which is proportional to the size of the population for metropolitan local governments.

Figure 4 Waste generation\*, Victoria 2000–01 to 2008–09



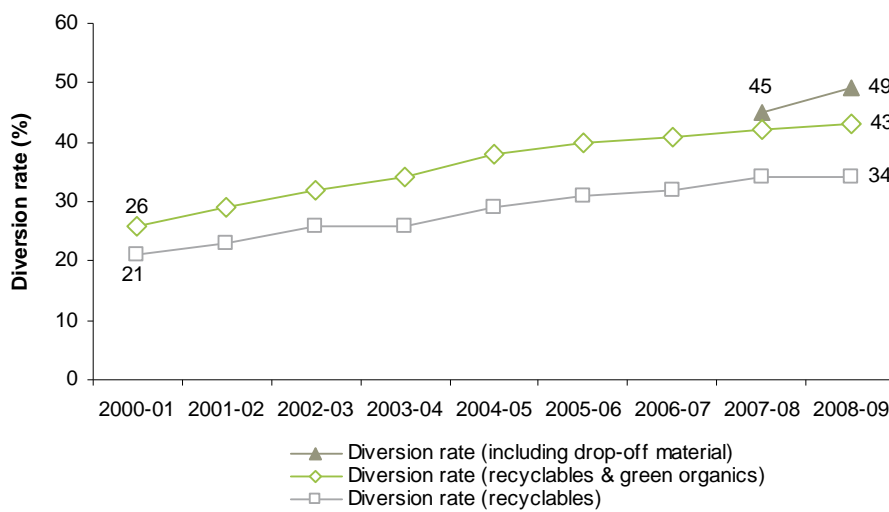
\*Waste generation includes garbage, recyclables and green organics

<sup>5</sup>ABS Catalogue number 3101.0 Australian Demographic Statistics, Dec Qtr 2009, 24 Jun 2009. Table 4, Persons Sept qtr 2008 population figure has been used to calculate the Victorian 'per person rate' in this publication (pop. 5,355,409).

The state average diversion rate (recyclables and green organics) has risen from 26% in 2000–01 to 43% in 2008–09 and is one percentage point better than in 2007–08. The diversion rate for recyclables only has risen from 21% to 34% over the same period. The diversion rate for both scenarios is illustrated in Figure 6.

For the past 2 years Sustainability Victoria has sought data from local governments about the amounts of municipal domestic waste material collected from drop-off facilities such as transfer stations / resource recovery facilities. Only material relating to household waste typically collected through kerbside services are included in the data tabulated from drop-off facilities such as glass bottles, aluminium and steel cans, plastic containers, paper and green organics. Figure 5 demonstrates the impact of including these drop-off figures in the diversion rate. The state diversion rate increases by 6 percentage points from 43% to 49%.

Figure 5 Diversion rate, Victoria 2000–01 to 2008–09

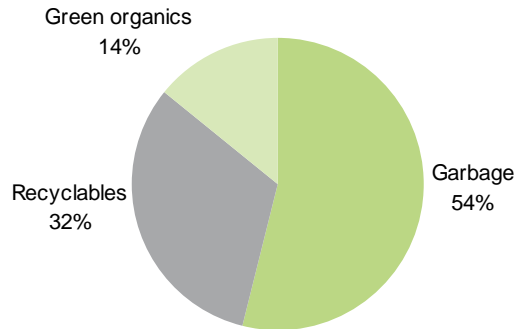


For comparative purposes, the diversion rate which includes recyclables and green organics (net of contaminants) is the current official method used in this publication to benchmark local governments and waste management groups against the state average diversion rate. That is, the state average rate for 2008-09 of 43% is the official figure that should be quoted and not 34% or 49%. The impact of including drop-off material on the state diversion rate is significant and warrants further investigation which will be undertaken in future surveys.

## Composition

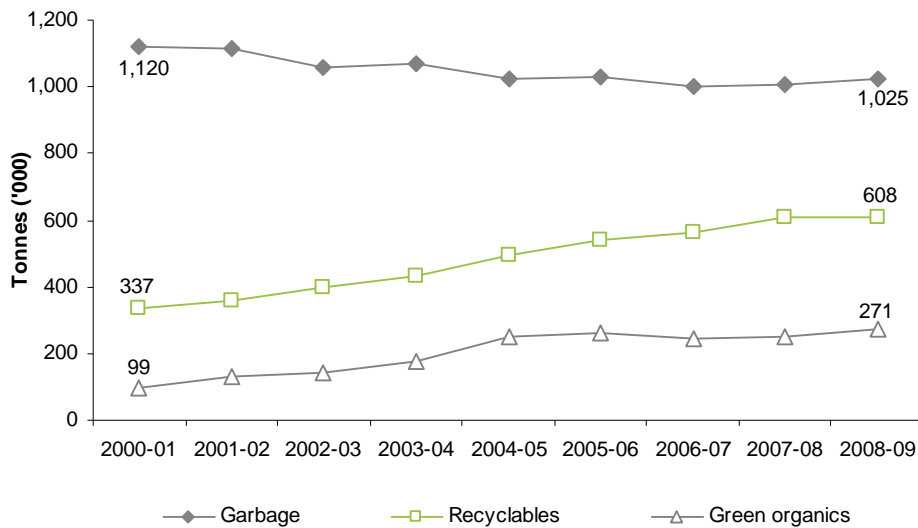
Of the total amount of waste generated, garbage accounted for more than half (54%) of the total amount of waste generated from kerbside collections (see Figure 6).

Figure 6 Composition of waste collected through kerbside services, Victoria 2008–09



Although garbage still represents the greatest component of the waste stream, the total amounts of recyclables and green organics collected over the last nine years has significantly increased relative to garbage as is illustrated by Figure 7.

Figure 7 Tonnes collected for the three main kerbside services, Victoria 2000–01 to 2008–09



The amount of recyclables and green organics collected from kerbside has increased by 80% and 174% respectively, while garbage has decreased by 8.5% since the baseline survey of 2000–01.

## Waste generated per geographic sector

Metropolitan local governments (30 of 79) generated most of Victoria's total waste for the 3 main kerbside services (garbage, recyclables and green organics), accounting for nearly 1.4 million tonnes, or approximately 73% of the total (see Figure 8).

Figure 8 Waste generation by metro / non-metro local governments, Victoria 2008–09

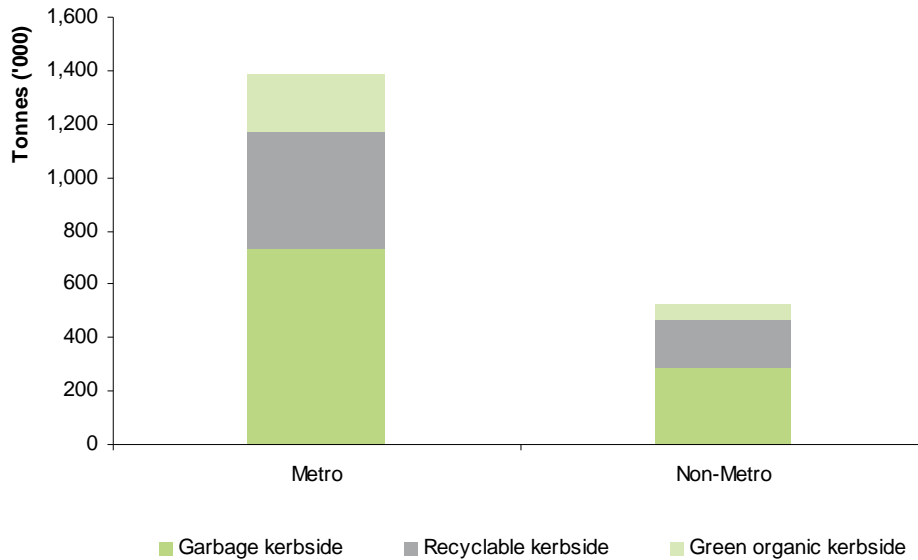
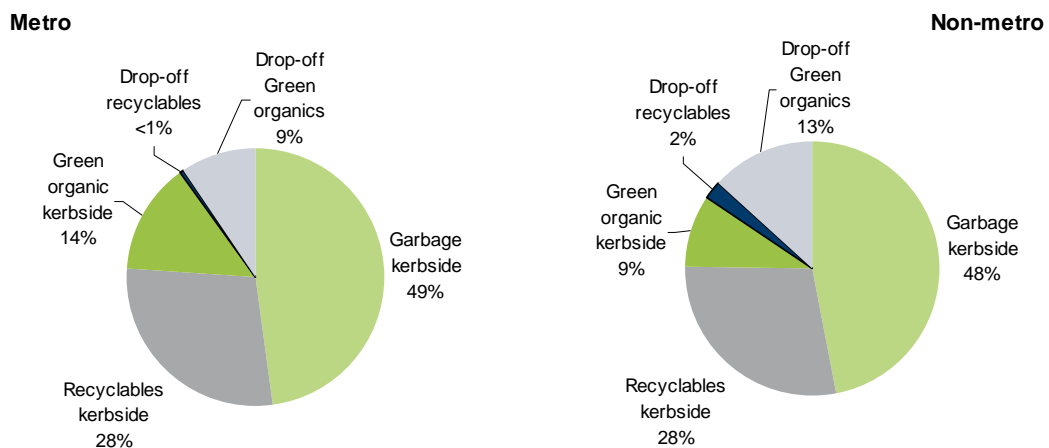


Figure 9 illustrates the relative proportion of material collected by metropolitan and non-metropolitan local governments from both kerbside and drop-off facilities. Non-metropolitan local governments generated as a proportion of their total waste stream, 1% less garbage, the same amount of recyclables and 5% less green organics than metropolitan local governments, but recovered more green organics and recyclables from drop-off facilities than metropolitan local governments. This indicates that, although metropolitan local governments have better developed kerbside services, non-metropolitan councils recovered more material from drop-off sources.

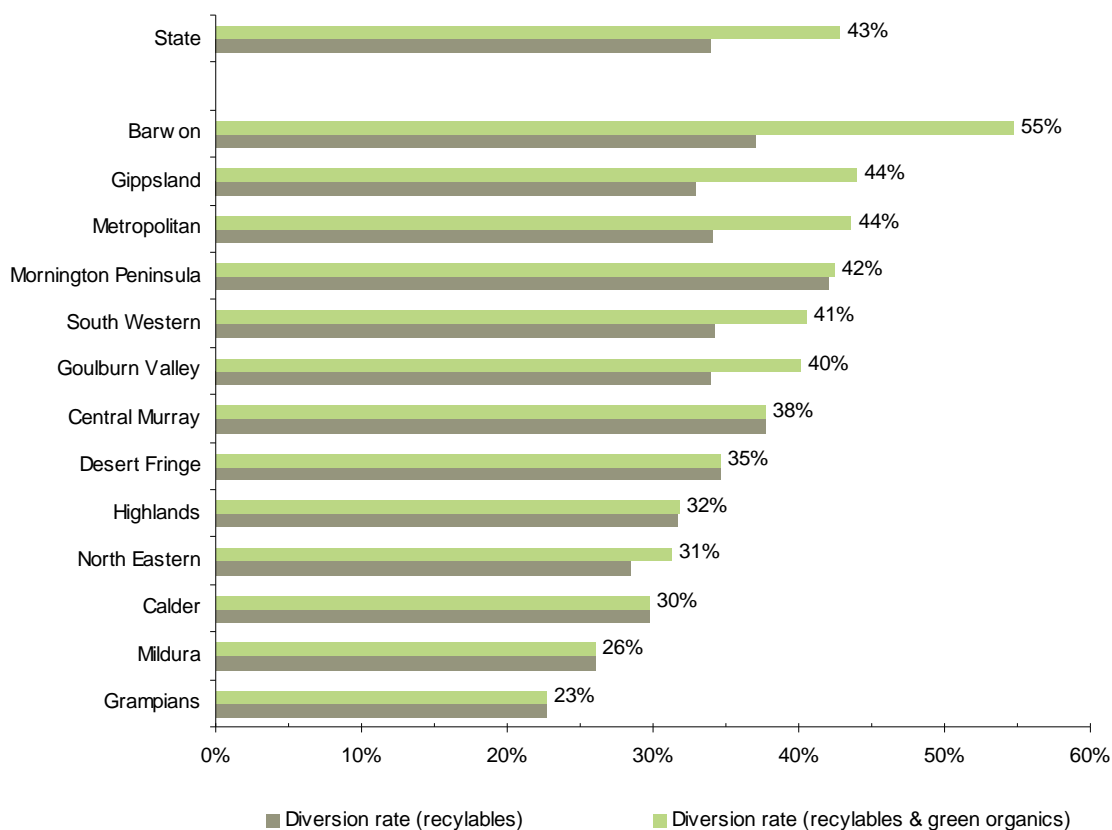
Figure 9 Composition of waste generation by metro / non-metro local governments, Victoria 2008–09



## Waste diversion rates per waste management group

Figure 10 shows the diversion rate achieved by each of the 13 waste management groups. The Barwon Regional Waste Management Group had the highest diversion rate of 55%, surpassing the state average rate of 43%. The Metropolitan Waste Management Group and Mornington RWMG were the only other regions with diversion rates higher than the state average, with 44%.

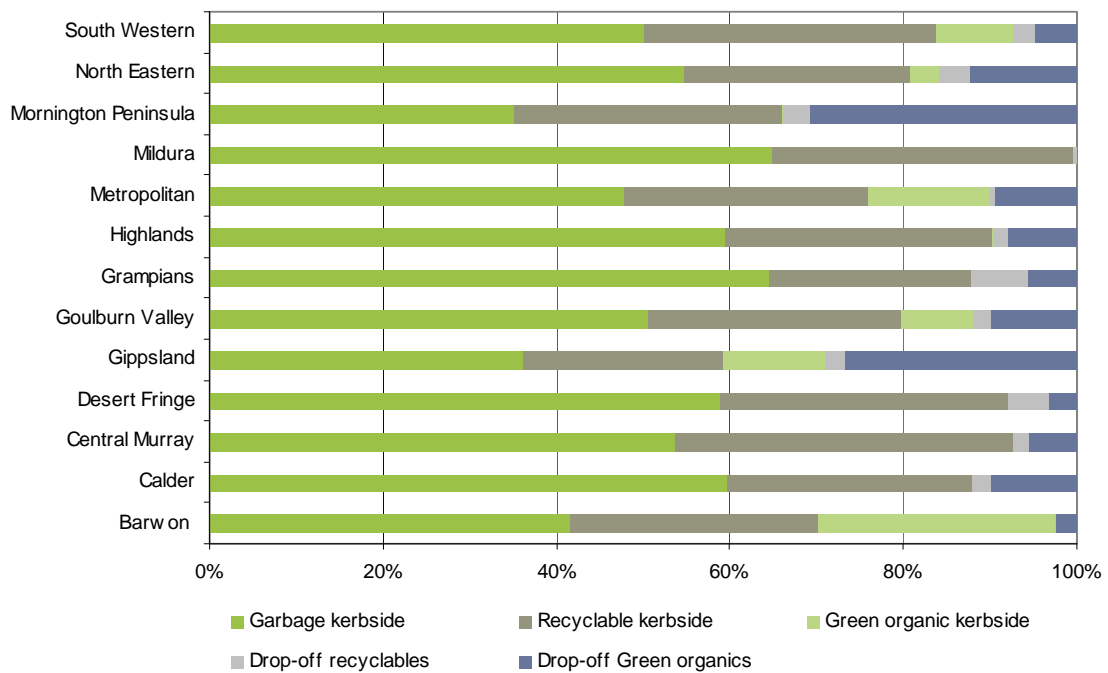
Figure 10 Diversion rate by waste management group, Victoria 2008–09



Regions that provided a green organics kerbside service have much higher diversion rates than those waste management groups that do not. This is evident from Figure 11 where the diversion rate for the regions with a green organics service is considerably higher than those without; Barwon region for example shows a diversion rate of 37% without a green organics service and 55% with a green organics service. In many rural areas, drop-off services are often provided instead of a kerbside service as this is a more cost-effective way to divert material. The impact of including drop-off material is illustrated by Figure 12 which shows the composition of the waste stream by each region.

The impact of including packaging material<sup>6</sup> and green organics collected from drop-off facilities for each of the waste management groups' diversion rate is presented in Figure 11 where the proportional composition of each material type is shown as a percentage of the total waste stream collected. Gippsland and Mornington Peninsula RWMG's for instance derive nearly one third of their total waste stream from green organics from drop-off facilities. The inclusion of green organics from drop-off sources significantly improves the diversion rate for Gippsland from 44% to 60% and Mornington Peninsula from 42 to 62% (Figure 11). By combining the quantities collected from drop-off facilities, the state average diversion rate increases from 43% to 49%. The incentive to improve data quality is especially important for non-metropolitan local governments where the impact of drop-off facilities is significant compared to the more traditional regular kerbside services. Until regions are better able to improve the reliability and robustness of reporting from drop-off sources, the official diversion rate does not include drop-off data in the calculation of the diversion rate.

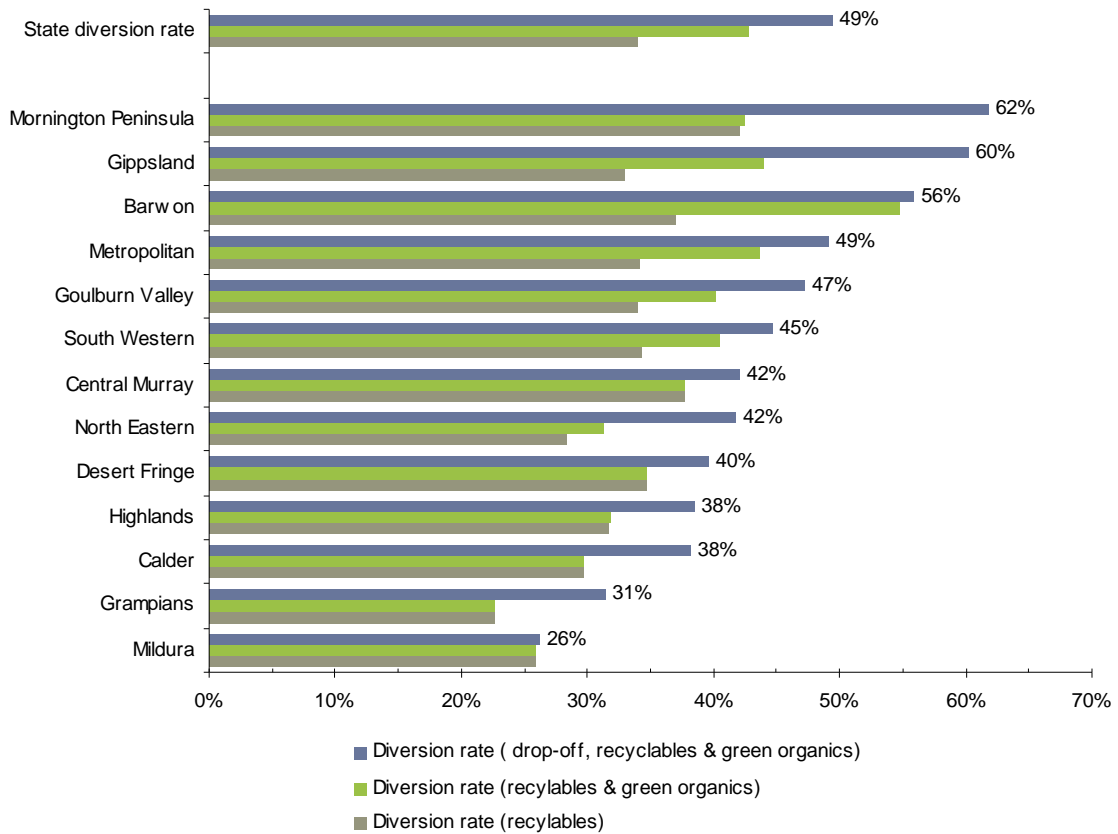
Figure 11 Waste management group by composition of waste stream collected, Victoria 2008–09



<sup>6</sup> Packaging material refers to domestic recyclables typically collected from kerbside such as steel and aluminium cans, glass jars and containers, plastic containers and paper products derived from municipal sources only.

Figure 12 illustrates the impact of including drop-off material on the overall diversion rate for regions. Barwon Regional Waste Management Group has a high proportion of green organics collected from kerbside services, which increases its diversion rate from 37% to 55% while the impact of including drop-off material only improves its diversion rate by 1 percentage point to 56%. Mornington Peninsula on the other hand has a very low proportion of green organics collected through conventional kerbside services, but a very large proportion of green organics recovered from drop-off facilities which significantly improved its diversion rate from 42% to 62% well above the state average, as shown in Figure 12.

Figure 12 Diversion rate by waste management group, including drop-off\* material, Victoria 2008–09



\*Drop-off includes municipal (household) recyclables and green organics collected from transfer stations and other resource recovery facilities

## Local government household kerbside services

Part 2 of this report provides an analysis of local government kerbside collection services. It is divided into four sections: a general overview, garbage services, recyclables services and green organic services.

The focus of each section, drawing from the data provided by local governments, is on the efficiency of these services. The key efficiency considerations are:

- > service costs, expressed both on a per household and per tonne basis
- > yields (kilograms per household) or quantities collected
- > access to kerbside services.

## Overview

This section of the report provides an overview of the kerbside collection services provided by Victorian local governments. It is important to note that the data does not include waste collected by private contractors outside the local government system.

In 2008–09, expenditure by Victorian local governments on garbage, recyclables and green organic kerbside services was more than \$260 million (Table 3).

Table 3 Kerbside services summary, Victoria 2008–09

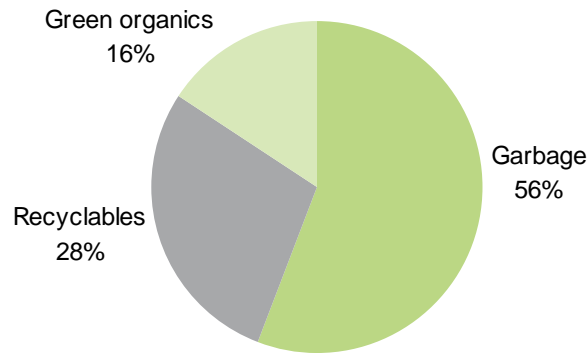
	Garbage	Recyclables	Green organics	Total
<b>Metro</b>				
Annual service cost	\$96,080,918	\$43,014,295	\$33,068,110	\$172,163,324
Tonnes collected	735,028	431,878	214,404	1,381,310
Tonnes processed / recycled	—	397,506	204,795	602,301
Total households serviced*	1,502,010	1,485,971	1,285,917	—
Cost per tonne	\$130.72	\$99.60	\$154.23	\$124.64
Cost per household	\$63.97	\$28.95	\$25.72	—
Household yield (kg)	489	291	167	—
<b>Non-Metro</b>				
Annual service cost	\$49,353,739	\$30,371,779	\$8,320,461	\$88,045,979
Tonnes collected	289,814	175,960	56,370	522,143
Tonnes processed / recycled	—	156,920	56,220	213,140
Total households serviced*	670,064	663,366	309,115	—
Cost per tonne	\$170.29	\$172.61	\$147.60	\$168.62
Cost per household	\$73.66	\$45.78	\$26.92	—
Household yield (kg)	433	265	182	—
<b>Total</b>				
Annual service cost	\$145,434,658	\$73,386,074	\$41,388,571	\$260,209,303
Tonnes collected	1,024,965	607,837	270,774	1,903,576
Tonnes processed / recycled	—	554,426	261,015	815,441
Total households serviced*	2,172,074	2,149,337	1,595,032	—
Cost per tonne	\$141.89	\$120.73	\$152.85	\$136.69
Cost per household	\$66.96	\$34.14	\$25.95	—
Household yield (kg)	472	283	170	—

\*Total households serviced may also include commercial and industrial properties, for green organics this refers to the number of households with access to a service. Refer to Appendix B, Glossary for more details

### Overall cost of kerbside collection services

The provision of a kerbside garbage collection service accounted for more than half (56%) of the \$260 million spent by Victorian local governments on kerbside collection services during 2008–09 (see Figure 13).

Figure 13 Kerbside service cost by service provision, Victoria 2008–09



The total expenditure for garbage recyclables and green organics cost local governments in excess of \$172 million, nearly \$19.8 million more than for 2007–08 and represents an 8.2% increase. The increase in the cost of service provision is consistent with the expansion of kerbside services provided to more Victorian households in each of the three services. The cost of providing a garbage service increased by 10.1%, recyclables 1.6% and green organics 14.5% (see Table 1).

### Geographic comparison

Metropolitan local governments generated 57 kg per household more garbage than non-metropolitan local governments but recovered 25 kg more recyclables per household (see Table 3). Non-metropolitan local government households however were better at collecting more green organics per household with 182 kg compared to metropolitan yields of 167 kg annually.

The cost of providing kerbside services to households was higher for all three services in non-metropolitan local governments. Garbage service was \$9.69 higher per household annually in non-metropolitan local governments; recyclable services cost \$16.84 more while green organics were only a little more expensive to deliver at \$1.20 (see Table 3).

## Overall access to kerbside collection services

Victorian household access to kerbside collection services is high, with 95% of households having access to kerbside garbage and recyclables collections (see Table 4)<sup>7</sup>. Access to all 3 services is still predominately higher in metropolitan local government areas than in non-metropolitan areas.

Table 4 Kerbside services by proportion of households receiving service, Victoria 2008–09

Kerbside service	Metro	Non-metro	Total
Per cent			
Garbage	97	89	95
Recyclables	97	89	95
Green organics	87	43	73

Access to green organics services is also relatively high at 73% although less than half (43%) of households in non-metro communities received a green organics service.

While Table 4 shows access to services at the household level, Table 5 presents the number of local governments providing each service.

Table 5 Kerbside services provided by number of local governments, Victoria 2008–09

Kerbside service	Metro (no.)	Non-Metro (no.)	Total (no.)	Total as a proportion of local governments (%)
Garbage	30	49	79	100
Recyclables	30	49	79	100
Green organics	29	16	45	57
Litter service	30	45	75	95
Hard waste	29	13	42	53
Street sweeping	28	48	76	96

All 79 Victorian local governments provide a kerbside garbage and recyclables service to residents.

While 57% of local governments provide a green organics service, 64% were concentrated in metropolitan areas with only 36% of non-metropolitan local governments providing such a service.

Hard waste collections are provided by just over half of the local governments. In line with the green organics service, the trend is for metropolitan local governments to provide this type of service rather than non-metropolitan local governments where drop-off services are more common and are provided instead of a regular kerbside service.

<sup>7</sup>Some anomalies exist in the data due to the variations in the number of households reported in the survey. It is likely that some of the survey data contains commercial premises within the residential household figures.

## Garbage services

This section of the report analyses local government kerbside services for the collection of garbage.

### **Access**

All 79 local governments have a kerbside garbage collection service covering 95% of Victorian households (see Tables 4 and 5).

Table 6 details the variations between garbage costs and yields by service provision category

Table 6 Garbage services by service provision category, Victoria 2007–08 to 2008–09

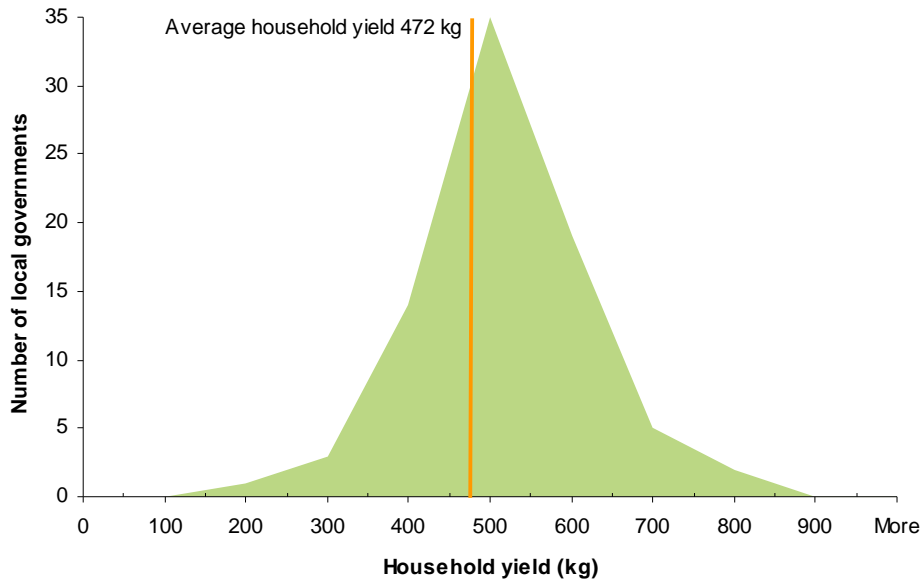
	Inner Metro	Outer Metro	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
<b>2008-09</b>							
Annual service cost	\$30,176,735	\$57,256,505	\$16,152,109	\$13,139,221	\$20,781,710	\$7,928,377	\$145,434,658
Tonnes collected	223,039	462,618	86,013	101,764	118,506	33,025	1,024,965
Total households serviced*	454,372	926,425	223,659	211,930	283,685	72,003	2,172,074
Cost per tonne	\$135.30	\$123.77	\$187.79	\$129.11	\$175.36	\$240.07	\$141.89
Cost per household	\$66.41	\$61.80	\$72.22	\$62.00	\$73.26	\$110.11	\$66.96
Household yield (kg)	491	499	385	480	418	459	472
<b>2007-08</b>							
Annual service cost	\$28,407,058	\$56,236,507	\$13,498,605	\$10,395,180	\$17,856,811	\$5,693,871	\$132,088,031
Tonnes collected	223,039	453,781	80,466	97,844	118,820	33,558	1,007,509
Total households serviced*	444,329	910,665	200,783	207,442	282,039	70,818	2,116,076
Cost per tonne	\$127.36	\$123.93	\$167.75	\$106.24	\$150.28	\$169.67	\$131.10
Cost per household	\$63.93	\$61.75	\$67.23	\$50.11	\$63.31	\$80.40	\$62.42
Household yield (kg)	502	498	401	472	421	474	476
<b>Per cent change</b>							
Annual service cost	6.2	1.8	19.7	26.4	16.4	39.2	10.1
Tonnes collected	0.0	1.9	6.9	4.0	-0.3	-1.6	1.7
Total households serviced*	2.3	1.7	11.4	2.2	0.6	1.7	2.6
Cost per tonne	6.2	-0.1	11.9	21.5	16.7	41.5	8.2
Cost per household	3.9	0.1	7.4	23.7	15.7	37.0	7.3
Household yield (kg)	-2.2	0.2	-4.0	1.8	-0.8	-3.2	-0.9

\*Total households serviced may also include commercial and industrial properties

## Yields

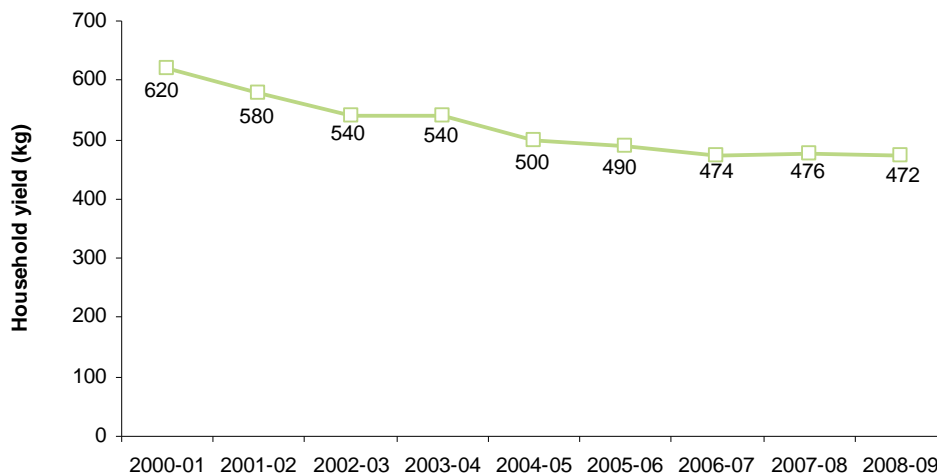
Victorians generate an average of 472 kg of garbage per household, but this varied between local governments (see Figure 14). On average, each person<sup>8</sup> in Victoria generates 191 kg of garbage, compared to 192 kg per person in 2007–08.

Figure 14 Garbage household yield across local governments, Victoria 2008–09



Victorian households have steadily reduced their garbage generation since the baseline was established in 2000–01 (see Figure 15). Households generated 4 kg less in 2008–09 compared with 2007–08.

Figure 15 Garbage household yield, Victoria 2000–01 to 2008–09



Household garbage generation has steadily decreased by 24%, or 148 kg per household, from 620 kg to 472 kg since the baseline survey of 2000–01.

<sup>8</sup>ABS Catalogue number 3101.0 Australian Demographic Statistics, Dec Qtr 2009, 24 Jun 2009. Table 4, Persons Sept qtr 2008 population figure has been used to calculate the Victorian 'per person rate' in this publication (pop. 5,355,409).

### Geographic comparison

Non-metropolitan local governments generated on average, about 13% or 57 kg less garbage than metropolitan local governments per household per year (see Table 3) but continue to pay higher prices for access to services with the cost per tonne and cost per household nearly \$40 and \$10 higher respectively than metropolitan local governments.

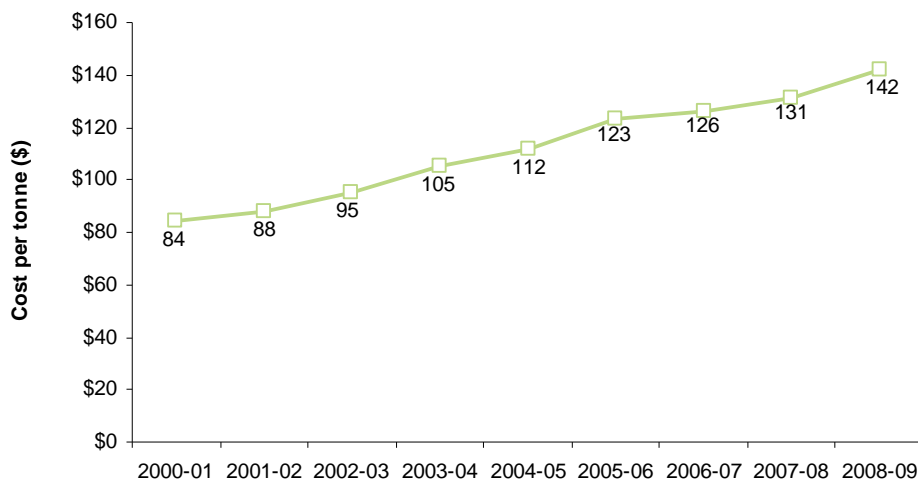
Cost per tonne and yield per household varied between local government service provision categories (see Table 6). Definitions of the six service provision categories used in Table 6 are provided in Appendix B and a list of all local governments, classified by service provision, regional waste management group and metropolitan/non-metropolitan classification, is located in Appendix C.

- > Melbourne fringe local governments again recorded the lowest yield of garbage at 385 kg (401 kg in 2007–08).
- > Rural townships had the highest cost per tonne and cost per household for garbage at \$240.07 and \$110.11 respectively (see Table 6) while outer metropolitan areas had the lowest costs with \$123.77 per tonne and \$61.80 per household.

Figure 16 illustrates the steady increase in cost per tonne since 2000–01; representing a 69% increase in 9 years.

As the increasing landfill cost drives up the cost of providing a kerbside garbage service to households, the cost of providing a kerbside recyclables collection service at \$120.73 per tonne makes it economically viable for collectors of waste to recycle rather than to dispose of waste to landfills.

Figure 16 Garbage cost per tonne, Victoria 2000–01 to 2008–09



It is expected that the cost per tonne for garbage will increase over time as the cost of managing landfills, and the landfill levy both increase.

## Collection system

The 120L garbage bin continues to be the most common garbage bin collection system in use with 63% of local governments using this system (see Table 7).

Table 7 Garbage collection system\* by service provision category, Victoria 2008–09

Service Standard Category	80L	120L	240L split Garbage and Green organics	140L	240L	Number of local governments
Inner Metropolitan	3	5	—	—	2	10
Outer Metropolitan	1	12	—	4	—	17
Melbourne Fringe	1	4	—	1	—	6
Major Provincial	1	1	—	2	1	5
Small Provincial	3	16	1	4	1	25
Rural Township	—	12	—	1	3	16
Number of local governments	9	50	1	12	7	79

\* Refers to the predominant bin type used by the local government (see Appendix B, Glossary for definition of predominant bin)

The 120L garbage bins are the most predominant in nearly all service provision categories except in major provincial local governments where the predominant collection system is a 140L bin. The largest garbage bin (240L) is still used by seven (9%) local governments. Local governments that had a split garbage and recyclables bin are moving away from these in favour of separate bins, with only one local government providing this type of bin system. Most of these bin systems are weekly collection services except for one metropolitan local government with a 120L fortnightly system.

Table 8 shows how yields and costs are affected by the size of the garbage collection system employed.

Table 8 Garbage average yields and costs by collection system\*, Victoria 2008–09

Collection system	Cost per tonne	Cost per household	Household yield (kg)
80L	\$162.91	\$65.50	402
120L	\$144.42	\$67.05	464
140L	\$117.75	\$61.79	525
240L	\$137.34	\$80.09	583
State average	\$141.89	\$66.96	472

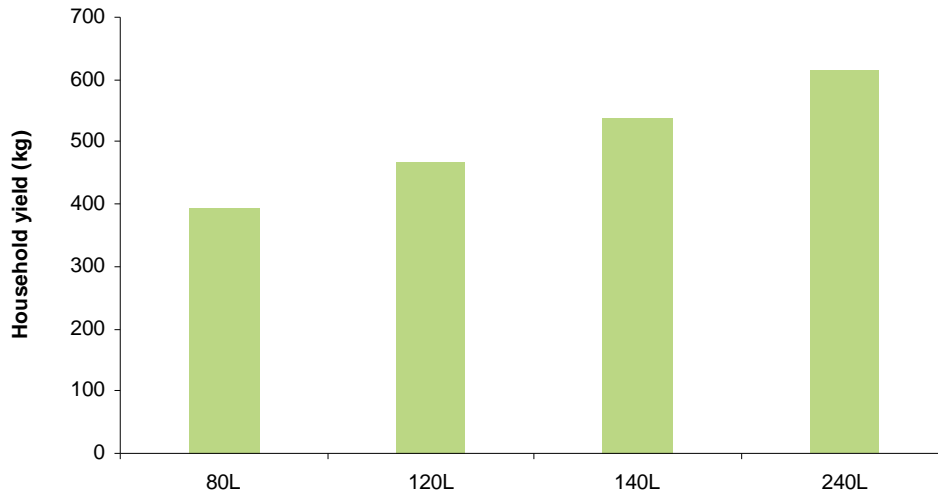
\* Refers to the predominant bin system

Surveys over the past nine years have consistently shown that as the bin size increases, the corresponding household yield increases. Smaller bins, such as the 80L bin, produced on average 402 kg of garbage per household per year, compared to the 240L which yielded 583 kg per household. This represents 45% more garbage produced per household per year.

This correlation between yield and bin size is illustrated in Figure 17. The impact of using larger garbage bin systems compared with smaller systems is clearly illustrated by Figure 17. This correlation between the garbage bin size and household yield generation has been observed since 2000-01 when the survey was first conducted.

For local governments to reduce the amount of garbage generated, the implementation of a smaller bin system is one means in achieving this target.

Figure 17 Garbage yield by collection system, Victoria 2008–09



## Recyclables services

This section of the report analyses local government kerbside services for the collection of recyclables (i.e. plastic containers, glass bottles, aluminium and steel cans) and paper/cardboard.

### Costs, yields, access to services and geographic comparison

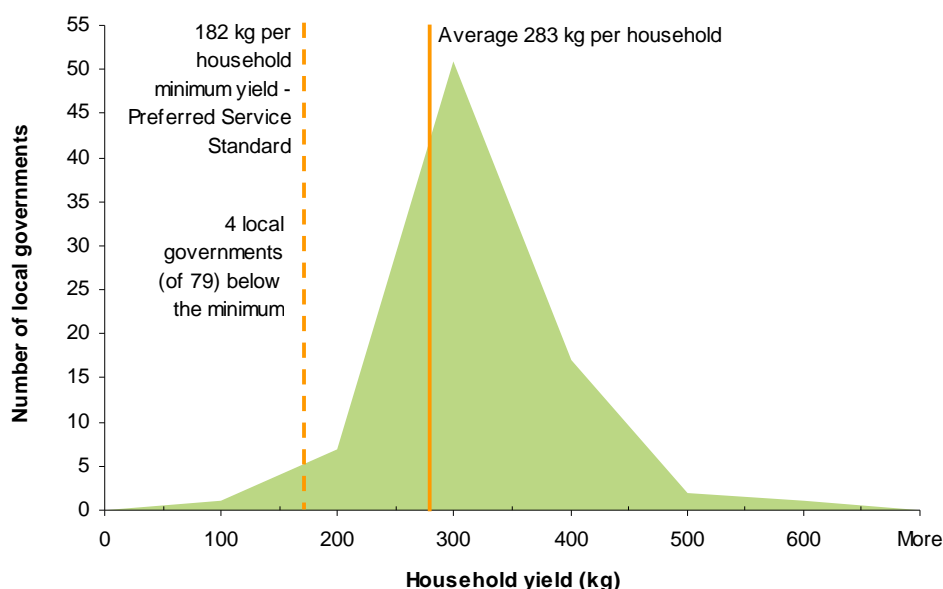
#### Access

All 79 local governments run a kerbside recyclables service, providing access for 95% of Victorian households (see Table 4).

#### Yields

On average, 283 kg of recyclables were collected per household per year (see Figure 18). This represents approximately 113 kg for every person in Victoria.

Figure 18 Recyclables household yield across local governments, Victoria 2008–09



Sustainability Victoria has developed a *Guide to Preferred Standards for Kerbside Recycling in Victoria*. The collection systems now outlined in the guide are the:

- > 240L commingled bin<sup>9</sup> collected fortnightly
- > 240L split recyclables bin<sup>10</sup> collected fortnightly
- > 120L commingled bin collected weekly.

The guide outlines minimum performance criteria for a kerbside recyclables system, including:

- > minimum annual household yield of 182 kg
- > maximum cost per household of \$42 for metropolitan and larger provincial areas, and \$50 for rural areas

<sup>9</sup>Commingled bin refers to one collection system used to accept containers and paper mixed together

<sup>10</sup>Split recyclables bin refers to the collection of containers and paper in one collection system but is segmented to accept both recyclables streams

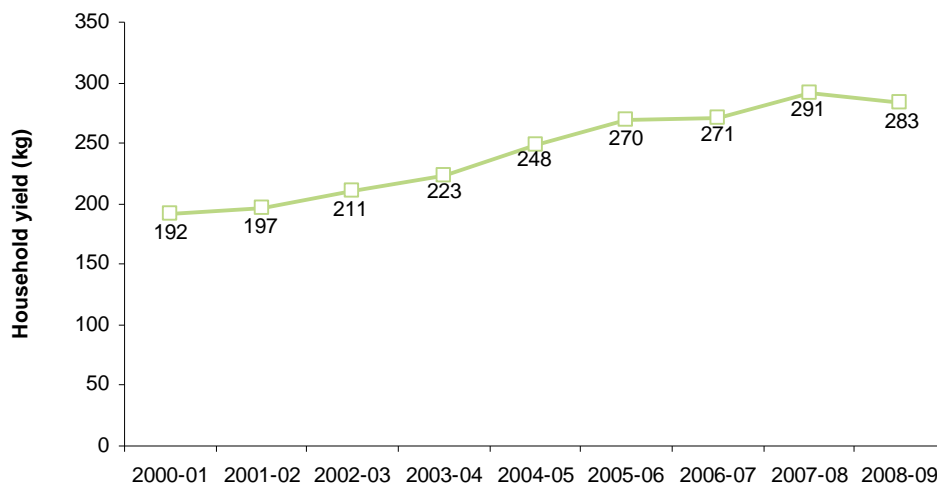
- > maximum cost per tonne of \$170 for metropolitan and large provincial areas, and \$200 for rural areas.

In 2008–09, the state average yield of 283 kg was 101 kg higher than the 182 kg average minimum efficiency measure established in the guide. This represents nearly 56% more than the minimum efficiency measure. The household yield has decreased by 8 kg (1.6%) over 2007–08.

Although the yield of recyclables varied around this average (Figure 18), 95% of local governments are above the minimum efficiency yield of 182 kg.

Victorians have successfully increased their recyclables yield over the last eight years but for the first time since the benchmark was established in 2000-01, the household yield has fallen from the previous high of 291 kg per household (see Figure 19) but still well above all other previous years. Although the household yield for recyclables *collected* decreased compared to 2007–08, the amount of recyclables *recycled/processed* actually increased by more than 13,000 tonnes. This indicates that Victorian households are better source separating recyclables than in previous years which has led to a decrease in the contamination rate from 11.0% in 2007–08 to 8.8% in 2008–09. This means that 13,000 more tonnes of recyclables are being processed into new products rather than being sent to landfill compared to the previous year.

Figure 19 Recyclables household yield, Victoria 2000–01 to 2008–09



The household yield for recyclables has risen from 192 kg in 2000–01 to 283 kg in 2008–09 which is an increase of 91 kg or 47%.

On average, households in metropolitan local governments generated 26 kg, or 9% more recyclables per household per year than those in non-metropolitan municipalities (see Table 3).

### Geographic comparison

In non-metropolitan areas it cost \$73.01 (42%) more per tonne for recyclables (\$172.61) than for metropolitan areas (\$99.60). The higher cost per tonne and lower yield highlight the greater challenges of delivering efficient and high-yielding recycling services in rural areas, given the greater transport distances between households and end-markets.

Table 9 details the variations between recyclables costs and yields by service provision category.

Table 9 Recyclable services by service provision category, Victoria 2007–08 to 2008–09

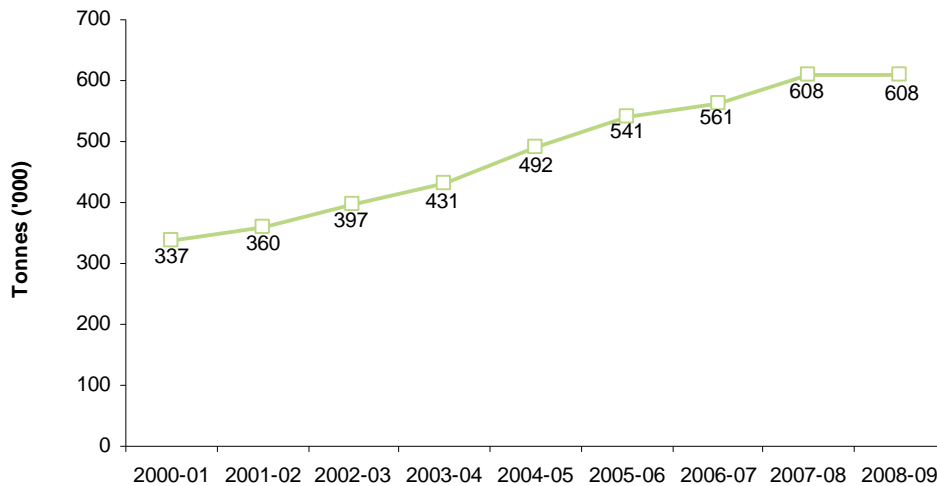
	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
<b>2008-09</b>							
Annual service cost	\$12,880,960	\$25,229,079	\$8,309,596	\$8,208,808	\$14,285,456	\$4,472,175	\$73,386,074
Tonnes collected	116,604	283,874	60,950	57,142	71,983	17,284	607,837
Total households serviced <sup>*</sup>	474,650	910,779	212,236	207,905	274,570	69,197	2,149,337
Cost per tonne	\$110.47	\$88.87	\$136.33	\$143.66	\$198.45	\$258.74	\$120.73
Cost per household	\$27.14	\$27.70	\$39.15	\$39.48	\$52.03	\$64.63	\$34.14
Household yield (kg)	246	312	287	275	262	250	283
<b>2007-08</b>							
Annual service cost	\$14,593,759	\$25,882,334	\$7,761,085	\$7,852,317	\$12,323,659	\$3,798,248	\$72,211,402
Tonnes collected	123,249	285,434	61,405	56,798	64,946	16,390	608,223
Total households serviced <sup>*</sup>	446,277	900,684	205,850	203,752	269,138	67,614	2,093,315
Cost per tonne	\$118.41	\$90.68	\$126.39	\$138.25	\$189.75	\$231.75	\$118.73
Cost per household	\$32.70	\$28.74	\$37.70	\$38.54	\$45.79	\$56.18	\$34.50
Household yield (kg)	276	317	298	279	241	242	291
<b>Per cent change</b>							
Annual service cost	-11.7	-2.5	7.1	4.5	15.9	17.7	1.6
Tonnes collected	-5.4	-0.5	-0.7	0.6	10.8	5.5	-0.1
Total households serviced <sup>*</sup>	6.4	1.1	3.1	2.0	2.0	2.3	2.7
Cost per tonne	-6.7	-2.0	7.9	3.9	4.6	11.6	1.7
Cost per household	-17.0	-3.6	3.8	2.5	13.6	15.0	-1.0
Household yield (kg)	-11.0	-1.6	-3.7	-1.4	8.6	3.0	-2.7

\* Total households serviced may also include commercial and industrial properties. Refer to Appendix B, Glossary, Total households serviced for more details

Outer metropolitan local governments again delivered the highest average recyclables yield of all service provision categories with 312 kg per household compared with the state average of 283 kg. Rural Township areas have the highest cost per tonne at \$258.74 more than double the state average of \$120.73 while also having the highest cost per household with \$64.63 compared to Inner Metropolitan areas with the lowest cost of \$27.14. The largest increase in household yield was displayed by small provincial areas with a 21 kg improvement over the previous year representing a 8.6% increase.

Figure 20 illustrates the steady increase in tonnes of recyclables collected since 2000–01.

Figure 20 Recyclables tonnes collected, Victoria 2000–01 to 2008–09

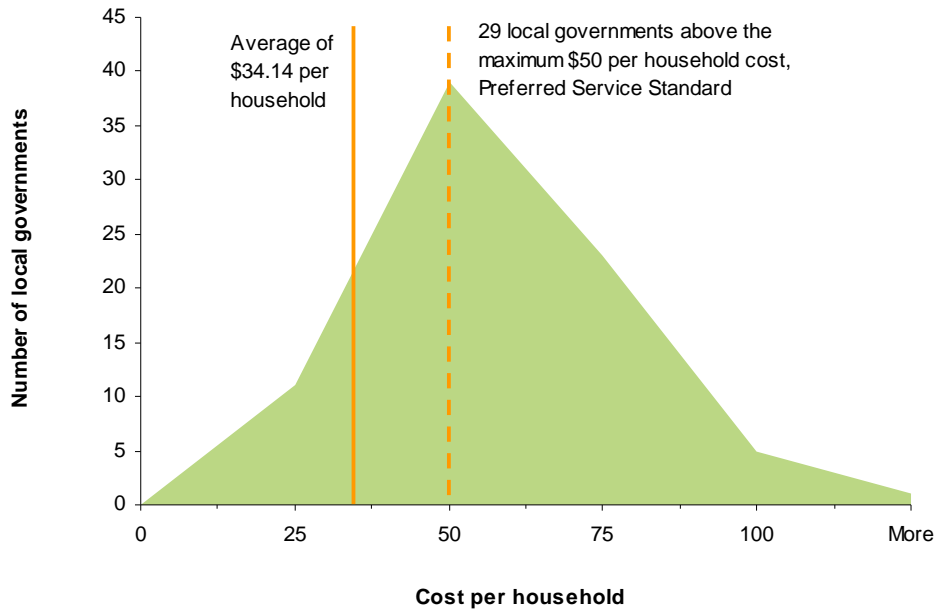


The quantity of recyclables collected has risen from a little more than 337,000 tonnes in 2000–01 to nearly 608,000 tonnes in 2008–09. This represents an increase of over 270,000 tonnes, or 80%, since 2000–01. The increase in tonnes collected can be largely attributed to the increase in the number of local governments that have adopted the preferred service standard for kerbside recycling (commingled bin systems). The majority of local governments 77 or 97% now use a 240L or 120L commingled bin for recyclables instead of crate-based systems. All 79 Victorian local governments provide access to a kerbside recyclables service, although in some small rural communities it is limited to townships rather than to the wider municipality.

## Costs

Figure 22 shows the average household cost of \$34.14 per year for a kerbside recyclables service and the wide variation around this average.

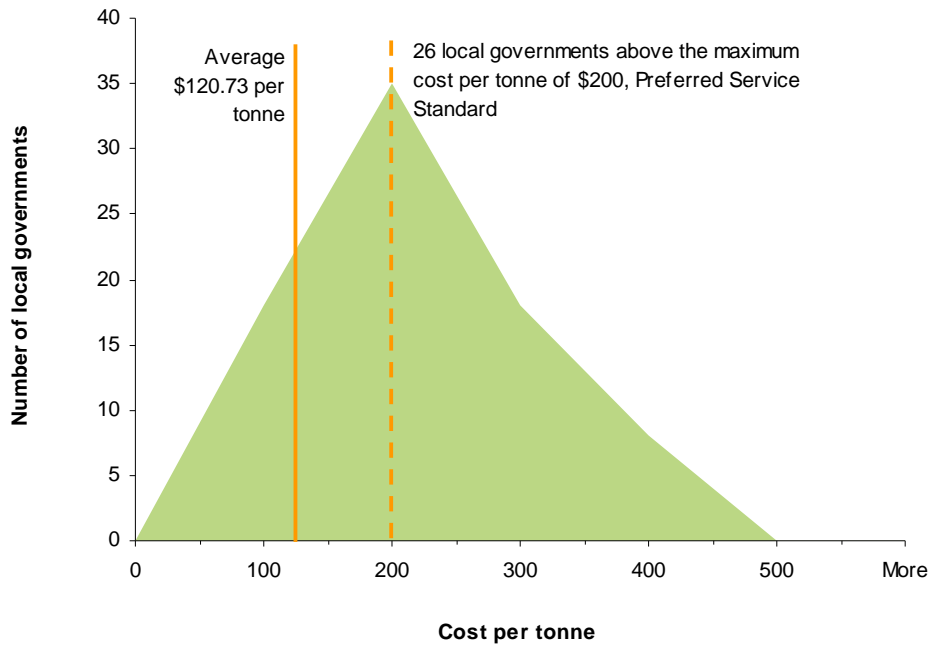
Figure 21 Recyclables cost per household across local governments, Victoria 2008–09



Of the 29 local governments with recyclable costs above the highest band of \$50 per household; 26 (90%) are from non-metropolitan areas providing evidence of the continuing challenge associated with greater travel distances and lower urban population densities in containing the costs of delivering optimum kerbside recycling services. In such cases, it may be more cost-effective to provide high-quality drop-off facilities to the standard outlined in Sustainability Victoria's *Guide to Best Practice at Resource Recovery and Waste Transfer Facilities*.

The average cost per tonne of \$120.73 is less than the maximum of \$170 per tonne for metropolitan and large provincial local governments and \$200 for rural, established in the *Guide to Preferred Standards for Kerbside Recycling in Victoria* (see Figure 22). Of the 26 local governments with recyclable costs above the maximum of \$200 per tonne, 25 are from non-metropolitan areas. This again highlights the difficulties faced by rural local governments in delivering a cost-effective kerbside service.

Figure 22 Recyclables cost per tonne across local governments, Victoria 2008–09

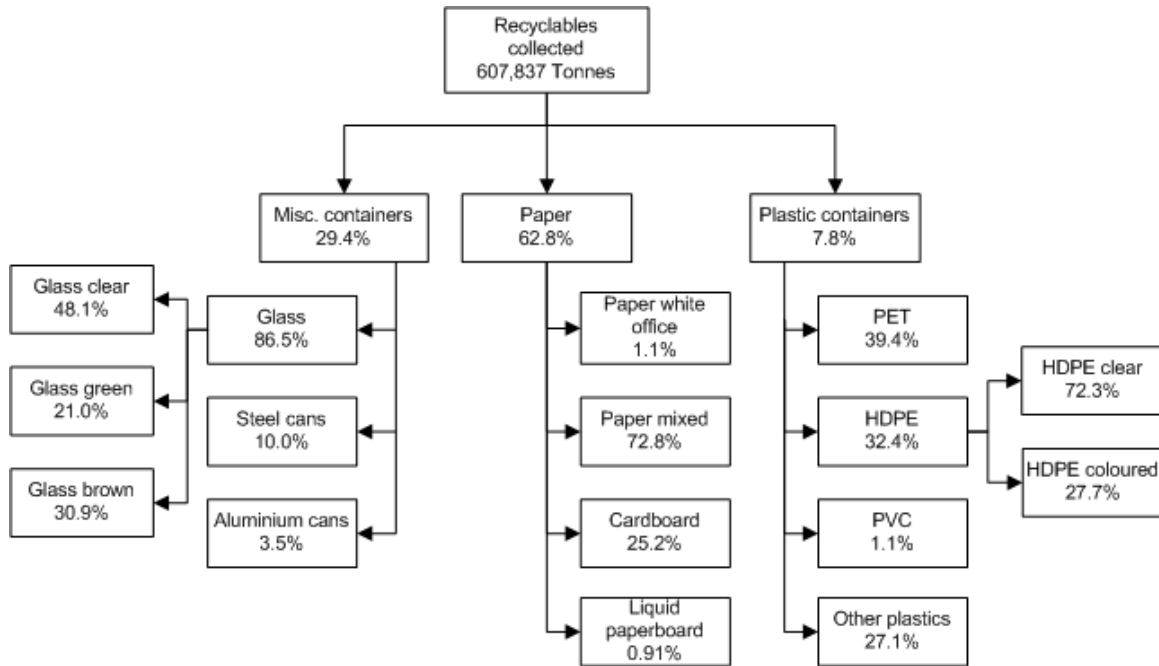


## Materials collected and contamination

### Materials collected

Paper items were the largest category of recyclables collected through kerbside services, accounting for 62.8% by weight of all recyclables (see Figure 23).

Figure 23 Kerbside recyclables by type of items collected, Victoria 2008–09<sup>11</sup>



The second largest category is miscellaneous containers with 29.4%. Of this category, glass accounted for the largest component with 86.5%, which equates to almost 25.4% of the entire kerbside recyclables stream. Plastic containers, due to their light weight, made up only 7.3%. These proportions are similar to previous year's results.

### Contamination

Contamination is general material that cannot be reprocessed. Material that may fall into this category includes broken glass (i.e. it is recyclable but unable to be sorted out from the recycling stream) or plastics not normally collected such as plastic film. Contamination rates differed for each type of material collected.

Recycling contamination levels averaged 8.8% of quantities collected for 2008–09, which is much lower than the 2007–08 rate of 11.0%.

<sup>11</sup>Based on returns from local governments, comprising 62 detailed responses for plastic containers, 62 for miscellaneous containers and 63 for paper products

Table 10 illustrates the contamination rates found for the various collection systems employed for kerbside recyclables.

Table 10 Recyclables average yields, costs and contamination rates by collection system\*, Victoria 2008–09

Collection system	Number of local governments	Cost per tonne	Cost per household	Household yield (kg)	Contamination rate (%)
120L commingled Weekly	7	\$106.39	\$28.10	264	6.5
240L commingled Fortnightly	70	\$122.49	\$34.95	285	9.1
Other**	2	\$168.80	\$58.45	346	3.9
<b>State average</b>	<b>79</b>	<b>\$120.73</b>	<b>\$34.14</b>	<b>283</b>	<b>8.8</b>

\*Refers to the predominant bin system used by the local government

\*\*Refers to a fortnightly 240L bin & tied bundle and a weekly crate & tied bundle collection systems

The 240L commingled bin system had the highest contamination rate with 9.1% compared to the 120L system with 6.5% which has been the trend since 2000–01.

### Container type and service frequency

There are currently 4 different combinations of container systems used by Victorian local governments. This indicates that the majority of local governments have adopted the preferred service standards and have provided a more consistent approach to delivering a kerbside recyclables service, compared to past years where there were at least 14 different container systems in use.

The predominant bin system is now a 240L commingled bin provided fortnightly. This system is used by 70 (89%) local governments. The crate and tied bundle system is now used by only 1 local government. The Best Practice Bin Systems (240L commingled fortnightly or 120L commingled weekly) are used by 77 (97%) of all Victorian local governments.

### Container type

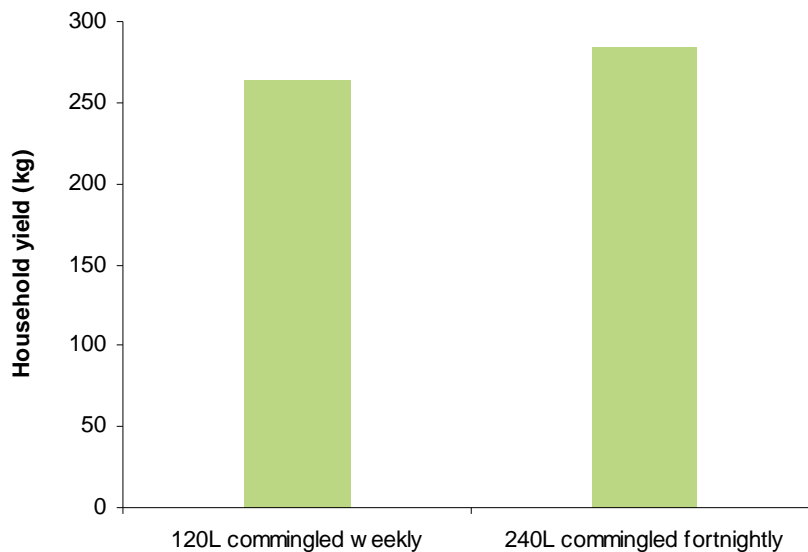
Container type has a direct impact on yields and costs.

A 240L commingled yields 21 kg per household annually more than a 120L commingled recyclables collection system. The trade off of having a higher household yields for a 240L bin system is the higher cost per tonne and cost per household compared to a 120L bin.

Because of the very small number of local governments using the 'Other' systems, this data should be interpreted with caution as the systems are very different and the averages could be misleading compared to the 120L and 240L bin systems.

Figure 24 illustrates yields for the most common kerbside recyclables systems employed across Victoria.

Figure 24 Recyclables yields by collection system, Victoria 2008–09



In previous surveys, yields are generally much higher for bin-based systems than crate-based systems such as the crate and tied bundle system although this is not reflected in the data for 2008–09. This year, only one local government uses such a system and the data can be misleading as the variability in using one sample may be high. There are many factors that can have a significant impact on yields and costs such as population density, length of time a system has been established, and distances to sorting facilities and end-markets. The performance of recycling systems should not be judged outside the context of these variables.

**Correlation between garbage and recyclables container size and diversion**

Table 11 shows the correlation between using smaller garbage bin sizes and achieving higher diversion rates<sup>12</sup> This correlation has been clearly evident in each survey since the 2000–01 benchmark survey and is reflected again in the 2008–09 data.

Table 11 Correlation between a garbage and 240L recyclables collection system\* and average household diversion rate, Victoria 2008–09

	Garbage collection system				Average diversion rate (%)
	80L	120L	140L	240L	
Recyclables collection system:					
240L commingled	37	35	30	27	34

\* Refers to predominant bin system used by local governments

The difference in diversion rate achieved by matching the most common recycling bin system (240L commingled) to the different garbage bins is illustrated by Table 11. Using smaller garbage bins increases the proportion of recyclables collected, resulting in more efficient kerbside recovery. This same trend has been observed with other size recycling bin systems.

<sup>12</sup>Diversion is calculated as: quantity recyclables recycled / (quantity recyclables collected + garbage collected)

Table 11 clearly shows that using an 80L garbage bin in conjunction with a 240L commingled recyclables bin delivers the highest average diversion rates of 37%. In contrast, matching the 240L garbage bin to the 240L recyclables bin delivers the lowest diversion rate with only 27%, 10% less than the 80L garbage bin combination system.

Table 12 illustrates the various combinations of the different garbage and recyclables bin systems used by local governments during 2008–09. In Victoria the most common combination is a 240L commingled fortnightly recyclables bin with a 120L garbage bin. This system is used by 44 or 56% of local governments.

Table 12 Garbage and recyclables collection system\* by number of local governments, Victoria 2008–09

Recyclables collection system	Garbage collection system					Total
	80L	120L	240L split bin**	140L	240L	
120L commingled weekly	2	4	—	—	1	7
240L & Tied bundle fortnightly	—	1	—	—	—	1
240L commingled fortnightly	7	44	1	12	6	70
Crate & Tied bundle weekly	—	1	—	—	—	1
Total number of local governments	9	50	1	12	7	79

\* Refers to the predominant bin system used by local governments

\*\* The 240L split system refers to a garbage and green organics split system

## Green organics services

This section of the report looks at green organics kerbside collection services provided by Victorian local governments.

### **Access**

Seventy three percent of Victorian households in 45 municipalities had access to green organics kerbside collection services (see Tables 4 and 5).

### **Yields**

In 2008–09, the average yield of green organics collected per household per year is 170 kg (see Table 13). This represents an increase over the previous period of 2.0%, or 4 kg per household.

Previous reporting on the total households serviced was based on how many households participated, or the number of on-call services made. Since 2002–03 the analysis has used the total households that were offered the service, i.e. had access to the service rather than those that simply took up the offer to use the service. Hence, the total households serviced and the number of households with access should not be compared with the data predating 2002–03.

The cost and tonnes collected for the green organics service across service provision areas are summarised in Table 13.

Table 13 Green organics by service provision category, Victoria 2007–08 to 2008–09

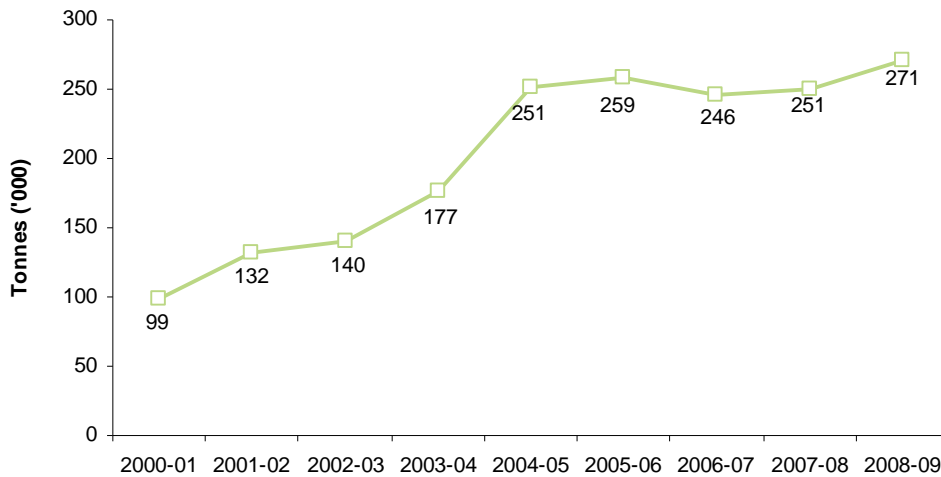
	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
<b>2008-09</b>							
Annual service cost	\$5,385,832	\$24,488,364	\$3,252,214	\$4,885,075	\$2,887,136	\$489,950	\$41,388,571
Tonnes collected	31,364	169,321	13,986	35,426	18,155	2,523	270,774
Total households serviced*	371,605	830,552	161,740	126,872	95,306	8,957	1,595,032
Cost per tonne	\$171.72	\$144.63	\$232.54	\$137.90	\$159.03	\$194.23	\$152.85
Cost per household	\$14.49	\$29.48	\$20.11	\$38.50	\$30.29	\$54.70	\$25.95
Household yield (kg)	84	204	86	279	190	282	170
<b>2007-08</b>							
Annual service cost	\$4,399,352	\$22,048,484	\$2,416,218	\$4,139,054	\$2,764,697	\$382,366	\$36,150,171
Tonnes collected	28,516	159,558	10,575	30,480	19,116	2,335	250,580
Total households serviced*	344,874	772,923	152,306	124,472	100,728	11,091	1,506,394
Cost per tonne	\$154.27	\$138.19	\$228.48	\$135.80	\$144.63	\$163.75	\$144.27
Cost per household	\$12.76	\$28.53	\$15.86	\$33.25	\$27.45	\$34.48	\$24.00
Household yield (kg)	83	206	69	245	190	211	166
<b>Per cent change</b>							
Annual service cost	22	11	35	18	4	28	14
Tonnes collected	10	6	32	16	-5	8	8
Total households serviced*	8	7	6	2	-5	-19	6
Cost per tonne	11	5	2	2	10	19	6
Cost per household	14	3	27	16	10	59	8
Household yield (kg)	2	-1	25	14	0	34	2

\*Total households serviced refers to the number of households with access to any of the green organics kerbside services, such as a regular fortnightly collection, an on-call service or a user-pays optional service

A total of 270,774 tonnes of green organics was collected during 2008–09, 20,124 tonnes more than in 2007–08. This represents an increase of 8.0% over the previous period. Of the amount collected, 96% was processed. Quantities not processed may have been burnt or sent to landfill due to contamination.

The quantities of green organics collected over time are shown in Figure 25.

Figure 25 Green organics tonnes collected, Victoria 2000–01 to 2008–09



The quantity of green organics collected since 2000–01 has increased by 173%. During this time, there has been an expansion of the three-bin system to one small bin for garbage, one large bin for recyclables and another large bin for green organics. This has encouraged householders to divert green organics from landfill. Quantities collected over the past five years have remained fairly stable and not shown any large changes and this can be attributed in part to the prevailing drought conditions experienced in Victoria and the watering restrictions enforced in many parts of the state. The increase shown in 2008–09 can be attributed in large part to the expansion of the green organics service to more households in Victoria increasing by 5.9% over 2007–08 or an additional 89,000 households.

### Costs

The cost of providing this service is now a little over \$41 million a year, an increase of \$5.2 million or 14.5% since 2007–08. This represents an average cost of \$25.95 per household per year.

## Frequency

A frequent (weekly, fortnightly or monthly) green organics collection service was provided by 41 local governments (see Table 14) of which 19 were of an optional user pays fortnightly service.

Table 14 Green organics collection by frequency of service, Victoria 2008–09\*

Predominant frequency of service	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
Bi-annual	2	—	—	—	—	—	2
Tri-annual	—	—	—	—	1	—	1
Monthly	—	—	—	—	2	—	2
Fortnightly	2	10	—	1	3	2	18
Weekly	—	—	1	—	1	—	2
On-call	3	2	1	—	—	1	7
Fortnightly (user pays)	5	8	2	2	2	—	19
<b>Total</b>	<b>12</b>	<b>20</b>	<b>4</b>	<b>3</b>	<b>9</b>	<b>3</b>	<b>51</b>

\* Local governments that have more than one frequency of collection are listed here as separate services. Only 45 local governments offered a green organics services

Inner and outer metropolitan service areas continue to provide a significant proportion (63%) of the green organic collection services and mainly offer a fortnightly collection.

### **Regular green organics kerbside services**

Table 15 illustrates the costs and yields associated with a regular kerbside service. A regular service is provided by council as a mandatory service and the cost is generally included as part of the overall council waste charges.

Table 15 Green organics average costs and yields by collection system, Victoria 2008–09

Regular green organics service	Number of local governments*	Cost per tonne	Cost per household	Household yield (kg)
Weekly	2	\$213.19	\$53.67	252
Fortnightly	18	\$133.99	\$33.79	252
Other (i.e. monthly, triannual, biannual & annual)	5	\$142.25	\$5.55	39
<b>Total</b>	<b>25</b>	<b>\$137.32</b>	<b>\$30.63</b>	<b>222</b>

\*Local governments that had more than one frequency of collection are listed here as separate services

Regular collections (weekly and fortnightly services) had the highest household yield with 252 kg with weekly services having a 59% higher cost per household compared with fortnightly services. *Other* collections had much lower costs per households and significantly lower yields and are probably green organics services provided through a hard waste collection service or an on-call service, rather than a separate dedicated green organics service.

### **On-call green organic services**

Table 16 compares the costs and yields associated with regular 'on-call' services. An on-call service is provided by councils as part of the general waste charges and allows households to have access to a number of free services per year.

Table 16 Green organics average costs and yields for on-call services, Victoria 2008–09

	Number of local governments*	Cost per tonne	Cost per on-call service**	Household yield (kg) per on-call service**	Participation rate*** (%)
On-call service	7	\$260.87	\$29.69	114	8.2

\*Local governments that had more than one frequency of collection are listed here as separate services

\*\*Refers to the number of households that took up the service offered rather than the number of households with access to the service

\*\*\*Refers to the number of households that took up the service offered as a proportion of the total number of households with access to the service

The number of on-call services provided per household can be as high as 12 (i.e. one per month) but it is more often limited to once or twice per year.

Currently there are 7 local governments that offer an on-call green organics service. The cost per tonne associated with a regular on-call green organics service is generally much higher, about double the cost of providing a regular frequent service such as a fortnightly collection.

### **Optional user pays regular (fortnightly) green organic services**

Table 17 compares the costs and yields associated with an optional fortnightly user pays service. An optional user pays regular (fortnightly) service is offered to residents as an additional service where no regular green organics service is offered. All residents may have access to the optional service but only some will elect to participate. An optional regular user pays service incurs an additional annual fee to the regular council waste charges.

Table 17 Green organics average costs and yields for optional user pays services, Victoria 2008–09

	Number of local governments*	Cost per tonne	Cost per optional user pays service**	Household yield (kg) per optional user pays service**	Participation rate*** (%)
Fortnightly (user pays)	19	\$180.25	\$52.25	290	39.2

\*Local governments that had more than one frequency of collection are listed here as separate services

\*\*Refers to the number of households that took up the service offered rather than the number of households with access to the service

\*\*\*Refers to the number of households that took up the service offered as a proportion of the total number of households with access to the service

There are 19 local governments with this system. Compared to regular fortnightly service, user pays services cost nearly 35% more per tonne (\$46.26); cost 55% (\$18.46) more per household but deliver 15% more (38 kg) per household than regular fortnightly services.

### Container type

Table 18 illustrates the range and frequency of containers used for green organic collections.

The predominant bin system used by Victorian local governments in 2008–09 is the 240L bin, accounting for 34 or 67% of all green organic services provided.

Table 18 Green organics bin systems, Victoria 2008–09

Primary bin	Metro	Non-Metro	Total
120L	5	—	5
240L	22	12	34
240L split garbage & green organics	—	1	1
Other*	8	3	11
<b>Total</b>	<b>35</b>	<b>16</b>	<b>51</b>

\*Other includes tied bundle, and residents own green organics container

## Environmental benefits from kerbside recycling

This section looks at the environmental benefits gained from recycling during 2008–09.

Of the 607,837 tonnes of recyclables collected for recycling in Victoria, 554,426 tonnes was recycled in 2008–09.

Applying this data to the findings of the *Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria*<sup>13</sup>, the benefits for the total amount recycled are estimated to include savings of:

- > 11,932 megalitres of water a year – equivalent to filling 4,773 Olympic-sized swimming pools, or 25 showers for every Victorian per year
- > 337,066 tonnes of greenhouse gases (such as CO<sup>2</sup>) a year, or taking 56,178 cars off the road<sup>14</sup>

A life cycle assessment was also applied to the green organics processed through kerbside collection services. Of the 270,774 tonnes collected, 261,015 tonnes were processed. The environmental benefits of kerbside green organics processed were savings of:

- > 125 megalitres of water a year – equivalent to filling 50 Olympic-sized swimming pools
- > 60,164 tonnes of greenhouse gases a year – equivalent to taking 10,027 cars off the road.

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<sup>13</sup>Grant T, James KL, Lundie S, Sonneveld K (2001) *Stage 2 Report for Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria*, Centre for Design at RMIT University, Melbourne

<sup>14</sup>CSIRO Atmospheric Research (2000), CSIRO, Melbourne, <<http://www.dar.csiro.au>> viewed on 17 March 2003

## Litter and street sweeping services

This section looks at the operation of litter maintenance and street sweeping services. The figures provide only a general indication of some of the services, as some local governments were unable to provide full details of specific costs and tonnages for all the litter services.

Seventy five local governments reported on litter bin and trap maintenance services in 2008–09 (see Table 19).

The total cost to local governments of providing a municipal litter service, street sweeping and litter clean up services was in excess of \$74 million annually or \$13.90 for every person in Victoria. Of this, Victorian local governments spent nearly \$25 million on the provision of litter services involving litter bins, traps and litter clean-up services (such as dumped rubbish).

The largest proportion of expenditure was on street sweeping accounting for 67% of the total, followed by expenditure on litter bin maintenance with 22% (see Figure 26).

Figure 26 Litter and street sweeping services, annual service cost, Victoria 2008–09

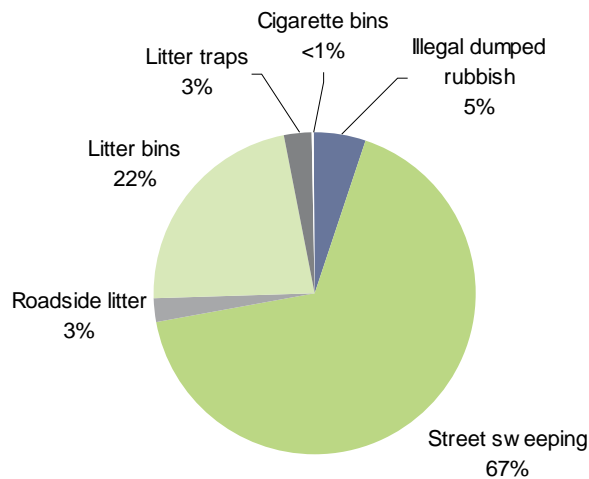


Table 19 Litter services, Victoria 2007–08 to 2008–09

	Metro	Non-Metro	Total
<b>2008–09</b>			
No. of litter bins	19,498	18,186	37,684
Annual service cost for bins	\$9,724,500	\$7,112,335	\$16,836,835
Tonnes collected from bins	17,841	10,687	28,528
No. of side entry traps	2,858	121	2,979
No. of in-line litter traps	623	239	862
Annual service cost for traps	\$1,183,798	\$715,308	\$1,899,106
Tonnes collected from traps	2,052	722	2,774
No. of public recycling bins	1,308	837	2,145
<b>2007–08</b>			
No. of litter bins	19,437	15,974	35,411
Annual service cost for bins	\$10,956,366	\$4,844,633	\$15,801,000
Tonnes collected from bins	22,812	5,480	28,292
No. of side entry traps	2,319	127	2,446
No. of in-line litter traps	520	247	767
Annual service cost for traps	\$1,323,184	\$1,215,047	\$2,538,231
Tonnes collected from traps	2,746	2,008	4,754
No. of public recycling bins	968	665	1,633
<b>Per cent change</b>			
No. of litter bins	0.3	13.8	6.4
Annual service cost for bins	-11.2	46.8	6.6
Tonnes collected from bins	-21.8	95.0	0.8
No. of side entry traps	23.2	-4.7	21.8
No. of in-line litter traps	19.8	-3.2	12.4
Annual service cost for traps	-10.5	-41.1	-25.2
Tonnes collected from traps	-25.3	-64.1	-41.7
No. of public recycling bins	35.1	25.9	31.4

### Litter bins and traps

A total of 37,684 litter bins and 3,841 traps (side entry and in-line traps) were in place in Victorian local governments in 2008–09.

#### Yield

A total of 28,528 tonnes was collected through litter bins in 2008-09, representing a 0.8% increase from 2007–08 figures. Litter traps collected 2,774 tonnes, a decrease of nearly 42% from the previous year of 4,754 tonnes.

#### Cost

The majority of costs associated with the operation of litter maintenance are for litter bins, which account for more than \$16.8 million, or 90% of the total cost, while litter traps cost nearly \$2 million, or 10% of the total cost.

### Public place recycling

Fifty local governments reported a total of 2,145 public place recycling bins, an increase of 31.4% on the previous year where 42 local governments were able to report on this item.

## Litter clean-up services

Some local governments also provided further detail on their litter services (see Table 20). Enhanced reporting is more likely to explain variation year to year rather than increases in real terms.

The combined cost for cleaning up illegally dumped rubbish, roadside litter and cigarette bins amounted to nearly \$6.2 million (see Table 20).

Table 20 Litter clean-up services, Victoria 2007–08 to 2008–09

	Illegally dumped rubbish	Road side litter	Cigarette bins
<b>2008–09</b>			
Annual service cost	\$4,026,087	\$1,865,804	\$254,990
Tonnes collected	16,076	10,234	n.a.
No. of call outs	17,339	n.a.	n.a.
No. of penalties issued	343	n.a.	n.a.
No. of cigarette bins	n.a.	n.a.	1,989
<b>2007–08</b>			
Annual service cost	\$2,893,697	\$1,734,982	\$178,288
Tonnes collected	11,980	13,293	n.a.
No. of call outs	19,330	n.a.	n.a.
No. of penalties issued	256	n.a.	n.a.
No. of cigarette bins	n.a.	n.a.	1,398
<b>Per cent change</b>			
Annual service cost	39.1	7.5	43.0
Tonnes collected	34.2	-23.0	n.a.
No. of call outs	-10.3	n.a.	n.a.
No. of penalties issued	34.0	n.a.	n.a.
No. of cigarette bins	n.a.	n.a.	42.3

Cleaning up illegally dumped rubbish costs local government over \$4 million across 38 local governments, with a total of 16,076 tonnes collected from 17,339 call-outs.

The cost of cleaning up roadside litter was nearly \$1.9 million across 21 local governments (two more than last year), reporting 10,234 tonnes collected.

The number of cigarette bin services increased by 42% over the previous period with 49 local governments (eight more than last year) reporting a total of 1,989 cigarette bins. Twenty five local governments (three more than in 2007–08) had a combined operational cost of \$254,990 representing an increase of 43% over 2007–08 which is consistent with the increase shown in the number of litter bins installed.

## Street sweeping

Seventy six of the seventy nine local governments (96%) indicated that they provided a municipal street sweeping service and 71 (90%) were able to provide service cost figures.

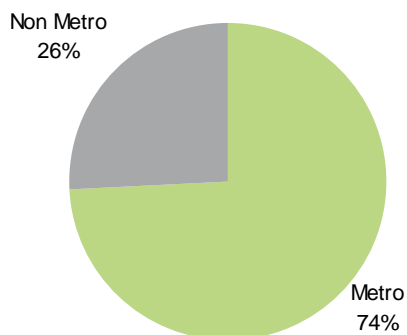
In Victoria, street sweeping costs local government nearly \$50 million (Table 21), an increase of 4.3% from the previous year. This equates to \$9.25 annually for every person in Victoria.

Table 21 Street sweeping services, Victoria 2007–08 to 2008–09

	Metro	Non-Metro	Total
<b>2008–09</b>			
Annual service cost	\$36,796,845	\$12,764,370	\$49,561,215
<b>2007–08</b>			
Annual service cost	\$36,680,549	\$10,403,085	\$47,083,634
<b>Per cent change</b>			
Annual service cost	0.3	22.7	5.3

Metropolitan local governments incurred the greatest proportion of the cost, with 74% of the total (Figure 27).

Figure 27 Street sweeping services, annual service cost, Victoria 2008–09



## Commercial and industrial recyclables

The focus of this section is the range of kerbside collections provided by local governments to commerce and industry.

### Access

Table 22 shows the number of commercial and industrial (C&I) premises receiving kerbside services from local government.

Table 22 Number of commercial and industrial premises serviced by kerbside collections, Victoria 2008–09

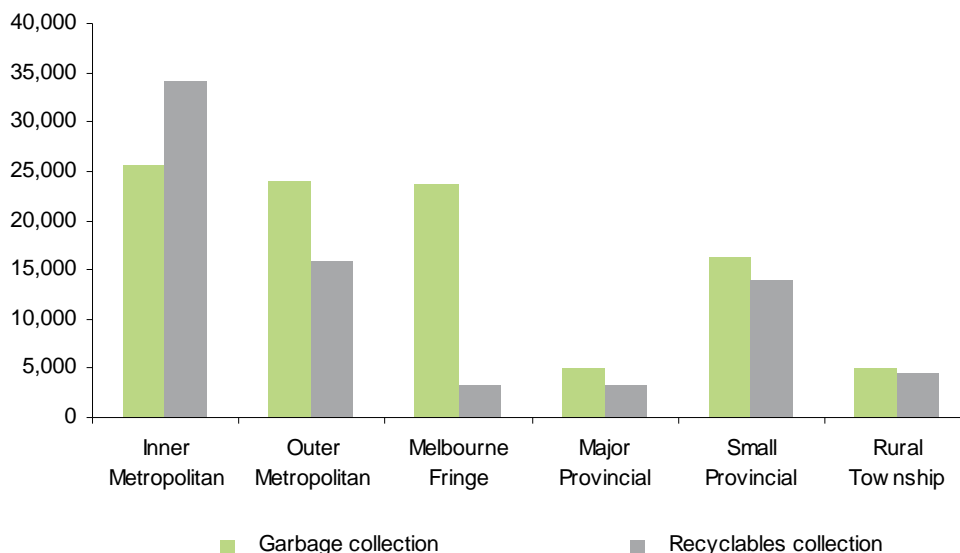
	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
Domestic kerbside service							
Garbage collection	25,518	23,904	23,851	5,107	16,300	5,018	99,698
Recyclables collection	34,081	15,818	3,159	3,173	14,067	4,525	74,823

Of those C&I properties serviced through the domestic kerbside system, 99,698 received a garbage service and 74,823 received a kerbside recyclables collection service.

It should be noted that, wherever possible, local governments were requested to exclude C&I properties from the domestic kerbside service. This occurred only if related costs and tonnes could be excluded (which was often not the case). Some local governments could not identify the number of C&I properties within the total properties serviced and simply listed C&I properties under the number of domestic households serviced, although the reporting of C&I premises has improved over time.

Figure 28 illustrates the spread of where most C&I premises are serviced in Victoria.

Figure 28 Number of commercial and industrial premises serviced by kerbside collections by service provision categories, Victoria 2008–09



Inner Metropolitan local government areas have a higher proportion of C&I properties serviced for recyclables than for garbage compared to the other service provision categories.

## Hard waste

This section of the report looks at hard waste kerbside collection services provided by Victorian local governments. Hard waste is household waste not normally accepted into garbage bins, for example, white goods, tyres and so on.

### Access

Forty one local governments provided a hard waste collection service in 2008–09 (two less than in the previous year) (see Table 23). As with green organics, the analysis of total households serviced has changed to the number of households with access, regardless of how many households participated or the number of on-call services made. Major provincial areas no longer provide a hard waste service.

Table 23 Hard waste services by service provision category, Victoria 2008–09

	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Small Provincial	Rural Township	Total
<b>2008–09</b>						
Annual service cost	\$2,883,465	\$8,683,001	\$1,330,940	\$117,561	\$82,778	\$13,097,745
Tonnes collected	13,529	78,847	7,730	616	257	100,978
Tonnes disposed	12,188	39,285	7,081	242	145	58,941
Diversion rate (%)	10%	50%	8%	61%	44%	42%
Total households serviced*	430,052	823,553	176,159	59,654	3,069	1,492,487
Cost per tonne	\$213.14	\$110.12	\$172.17	\$191.00	\$322.29	\$129.71
Cost per household	\$6.70	\$10.54	\$7.56	\$1.97	\$26.97	\$8.78
Household yield (kg)	31	96	44	10	84	68
No. of local governments	10	16	4	8	3	41
<b>2007–08</b>						
Annual service cost	\$2,006,557	\$5,854,632	\$697,017	\$260,878	\$58,702	\$8,892,786
Tonnes collected	12,259	44,097	5,063	1,260	137	62,901
Tonnes disposed	11,430	37,912	4,712	815	69	55,024
Diversion rate (%)	7%	14%	7%	35%	50%	13%
Total households serviced*	443,792	836,534	149,374	51,694	4,749	1,499,453
Cost per tonne	\$163.69	\$132.77	\$137.66	\$207.13	\$428.48	\$141.38
Cost per household	\$4.52	\$7.00	\$4.67	\$5.05	\$12.36	\$5.93
Household yield (kg)	28	53	34	24	29	42
No. of local governments	10	16	4	9	3	43
<b>Per cent change</b>						
Annual service cost	43.7	48.3	90.9	-54.9	41.0	47.3
Tonnes collected	10.4	78.8	52.7	-51.1	87.5	60.5
Tonnes disposed	6.6	3.6	50.3	-70.3	109.6	7.1
Diversion rate (%)	46.6	257.8	21.0	71.8	-12.0	232.4
Total households serviced*	-3.1	-1.6	17.9	15.4	-35.4	-0.5
Cost per tonne	30.2	-17.1	25.1	-7.8	-24.8	-8.3
Cost per household	48.3	50.6	61.9	-60.9	118.2	48.0
Household yield (kg)	13.9	81.6	29.5	-57.7	190.1	61.3
No. of local governments	0.0	0.0	0.0	-11.1	0.0	-4.7

\* Refers to households with access to a hard waste service

## Cost

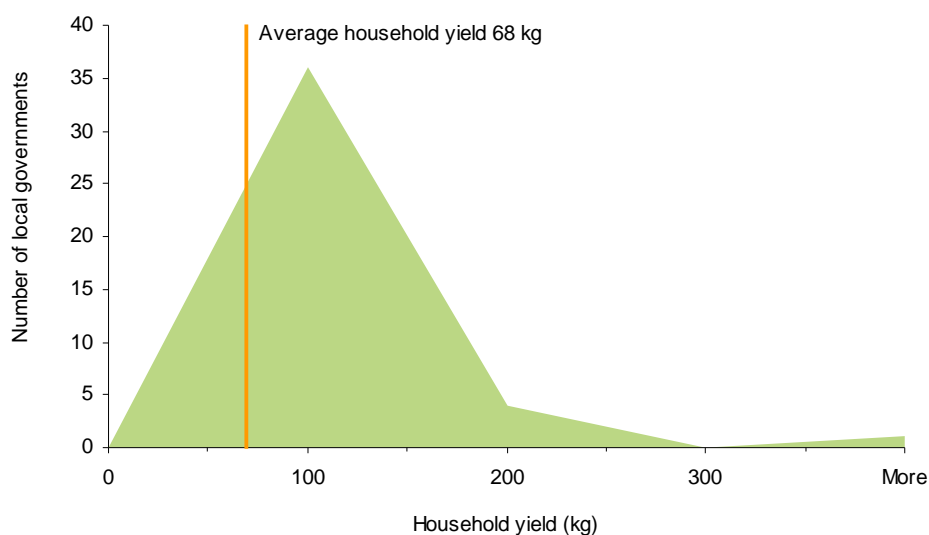
The total hard waste service cost to Victorian local governments was a little over \$13 million. This is an increase of \$4.2 million (47.3%) from 2007–08. Outer metropolitan local governments accounted for the largest proportion of the cost with 66%.

## Yield

Of the 100,978 tonnes collected, more than half (58,941 tonnes) were disposed to landfill representing an average diversion rate of 42%. This represents a 29 percentage point improvement in the diversion rate compared to 2007–08.

On average, 68 kg of hard waste was collected per household during 2008–09 (see Figure 29), 26 kilograms more per household than last year.

Figure 29 Hard waste household yield across local governments, Victoria 2008–09



## Frequency

Of the forty one local governments (52%) providing a hard waste collection service, the main frequency of collection was annual, with 17 local governments offering this service. On-call services was the next most popular method of providing a hard waste service, representing 32% of the total (see Table 24).

Table 24 Hard waste collection frequency by service provision category, Victoria 2008–09

Frequency of service	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Small Provincial	Rural Township	Total
Annual	2	5	2	5	3	17
Bi-annual	1	5	1	2	—	9
Monthly	1	—	—	1	—	2
On call	6	6	1	—	—	13
<b>Total</b>	<b>10</b>	<b>16</b>	<b>4</b>	<b>8</b>	<b>3</b>	<b>41</b>

## Landfills and transfer stations

This section looks at the number of local government owned or operated landfills (licensed and unlicensed) and resource recovery and waste transfer stations across the state, including those that are operated by private contractors for local governments. The data does not include privately owned sites.

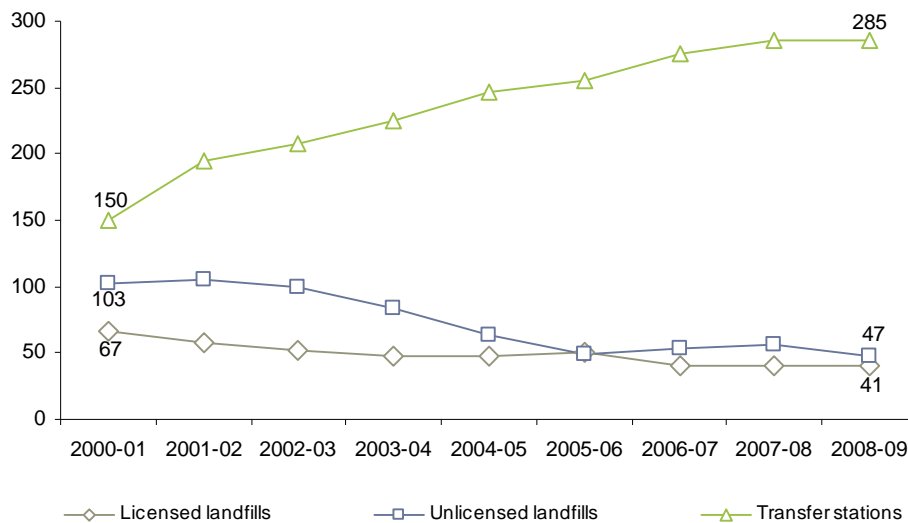
The number of local government owned or operated landfills and waste transfer stations are shown in Table 25.

Table 25 Number of local government owned landfills and transfer stations by service provision category, Victoria 2008–09

	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
<b>Operating landfills</b>							
No. of licensed landfills	0	3	2	6	23	7	41
No. of unlicensed landfills	0	0	0	1	23	23	47
Total landfills	0	3	2	7	46	30	88
<b>Closed landfills</b>							
No. of licensed landfills closed in 2008-09	0	1	0	0	1	0	2
No. of unlicensed landfills closed in 2008-09	0	0	2	0	0	4	6
Total landfills closed	0	1	2	0	1	4	8
<b>Transfer stations</b>							
No. of transfer stations	5	12	21	17	139	91	285
No. of new transfer stations established in 2008-09	1	2	2	0	1	9	15

Over time, there has been a gradual decrease in the number of licensed and unlicensed landfills and a corresponding increase in the number of transfer stations and resource recovery centres being established and/or upgraded across the state (see Figure 30).

Figure 30 Number of licensed / unlicensed landfills and transfer stations, Victoria 2000–01 to 2008–09\*



\* No survey was conducted for the 2003–04 period. Data has been estimated from existing information for this period

### Licensed landfills

Of the 88 operational landfills reported by local governments, 41 were licensed. Inner metropolitan local governments did not operate or own any landfills. Most licensed landfills (23) were operating in small provincial local governments during 2008–09, representing 56% of all licensed landfills in Victoria.

### Unlicensed landfills

Of the 47 unlicensed landfills operating in Victoria during 2008–09, the majority (46 or 98%) were in rural townships and small provincial local government areas.

### Closed landfills

Of the 8 landfills closed during 2008–09, 6 were unlicensed landfills and 2 were licensed landfills. The closure of landfills occurred mainly in rural township local government areas.

### Transfer stations

Rural townships and small provincial local governments maintained 230 (81%) of Victoria’s 285 transfer stations, reflecting the need in rural communities for drop-off facilities to consolidate recyclables and waste. These areas accounted for ten of the fifteen new transfer stations established during 2008–09.

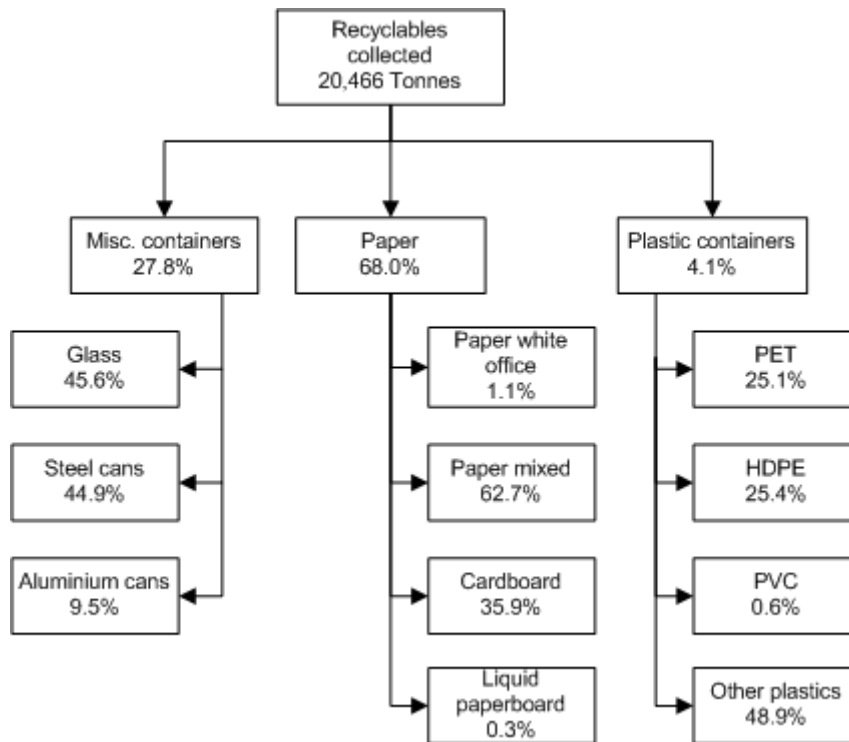
**Resource recovery from drop-off facilities / transfer stations**

A total of 20,466 tonnes of material (glass containers, steel containers, aluminium containers, plastic containers and paper and cardboard) were recovered from drop-off facilities / transfer stations for 2008–09.

Paper comprised the greatest proportion of material recovered representing 68% of the total. Cardboard represented the main component of the waste paper stream recovered with 36%. Overall, cardboard was the largest component of all items collected from drop-off facilities and contributed nearly 43% of the total.

Miscellaneous containers (glass containers/bottles, steel and aluminium cans) was the next largest category with 27.8% of the total. As per previous years, glass containers represented the largest proportion of miscellaneous containers contributing 45.6% to this category and almost 13% to the total of all items recovered (Figure 31).

Figure 31 Resource recovery by type of items recovered at drop-off facilities, Victoria 2008–09



## Resource recovery by source

Some of the main items recovered through municipal kerbside collections and drop-off facilities are shown in Table 26.

Table 26 Main items recovered by source of recovery, Victoria 2008–09

	Source of item		Total	% of total
	Kerbside	Drop-off		
Main items recovered	Tonnes			
Plastic containers	47,413	848	48,261	4.3%
Paper	381,843	13,927	395,770	35.1%
Glass containers	154,398	2,594	156,992	13.9%
Steel cans	17,908	2556	20,464	1.8%
Aluminium cans	6,275	541	6,816	0.6%
Green organics	270,774	228,417	499,191	44.3%
<b>Total</b>	<b>878,611</b>	<b>248,883</b>	<b>1,127,494</b>	<b>100.0%</b>

Material collected through kerbside services represented 78% of all material recovered, with paper being the largest proportion with nearly 44% of kerbside material collected. Green organics was by far the largest component of drop-off material collected representing just under 92% of all drop-off.

## Conclusions

Most local governments now use an efficient combination of bin systems to recover waste material from kerbsides.

- For recyclables, 98% of all local governments now use the best practice 240L or 120L commingled bin system which is a great achievement considering that only nine years ago most local governments used a crate and tied bundle collection system.
- Ninety percent of all local governments now use a smaller more efficient garbage bin such as the 80L, 120L or 140L system compared to the traditional 240L bin system that dominated waste collections over the last decade.
- Forty five local governments now offer some form of green organics collection system to their residents and of these 34 employ the preferred 240L bin system.
- Local governments that have the highest diversion rate, generally have the best combination of 3 bin systems in place, which is a small garbage bin coupled with a large green and recycling bin system.
  - Of the top 22 local governments with diversion rates greater than 45% all had smaller garbage bins (80L, 120L or 140L) with the majority of councils (19) using the 120 weekly garbage bin.
  - All 22 local governments also provided a best practice recycling bin system (i.e. 240L commingled fortnightly collection or a 120L commingled weekly collection) with 21 (95%) using the 240L commingled bin system.
  - Nineteen councils also provided residents with a regular 240L green organics service.
  - Interestingly though, 2 council did not provide a green service but still managed to deliver diversion rates greater than 45% although this is the exception rather than the rule.
- Councils that did not perform as well did not provide a regular green organics service and had larger garbage bins. There were 34 councils with diversion rates of 35% or lower.
  - Seven councils still using the larger 240L garbage bin were in this group.
  - Most local government provided smaller garbage bin systems but there were a higher proportion of 140L bins than the top 22 councils.
  - Of the councils with diversion rates lower than 35%, most (33 of the 34) provide a best practice recyclables bin system but only 6 of these councils provided a regular green service with a large 240L bin system.

In the past year, although total waste generation has increased by 2%, most of this increase can be attributed directly to the increased tonnes collected from green organic services which saw an 8% or a 20,000 tonnes increase compared to 2007 – 08.

More households now have access to the three main kerbside services in Victoria with increases of 2.6% for garbage, 2.7% for recyclables and 5.9% for green organics.

The collection of recyclables has decreased slightly (0.1%) but in real terms, the amount of recyclables *processed* has increased significantly from 2007 – 08 levels (13,000 tonnes more) which has contributed to the increase of the state average diversion rate from 42% to 43% given that the amount of garbage collected has increased by 1.7%. This indicates that Victorian households are doing the right thing and source separating material correctly into the appropriate bin systems which has lead to a reduction in the contamination rate for recyclables from 11.0% in 2007 – 08 to 8.8% in 2008 – 09.

As per last year, the cost of providing a kerbside recyclables collection service at \$121 per tonne is still less expensive than the cost of providing a kerbside garbage collection and disposal service at \$142. These figures indicate that recycling waste material is economically viable for collectors of recyclables compared to the more expensive option of disposing garbage to landfills. As the cost of land filling increases, the cost per tonne of kerbside recycling services (which is an indication of efficiency of system performance) can only decrease further.

The efficiencies that are now being delivered through mature kerbside recycling systems in Victoria have been realised through the cooperation and achievements of local governments in delivering the TZW targets. The environmental benefits from recycling these materials, together with the lower economic cost of collecting and sorting recyclables, provides a significant incentive to collectors to recycle rather than landfill. The amount of greenhouse gas abatement achieved in 2008–09 was 397,000 tonnes, 26,000 tonnes more than in the previous year.

## Appendix A Methodology

### Coverage

The target population of the survey was all 79 local governments. The survey was completed by the local governments on Sustainability Victoria's website.

The data collection is completely enumerated; that is, the data collection included all 79 Victorian local governments, representing a 100% response rate. All local governments have a weighting of one, which means that the numerical findings in this report are entirely derived from the data provided by the 79 participating local governments.

### Data collected

The data collection extended to the following service areas:

- > household garbage collection and disposal
- > household recyclables (i.e. containers and paper/cardboard) collection and sorting
- > household green organics collection and processing
- > litter bin and litter trap collection and disposal
- > litter clean-up services
- > street sweeping
- > hard waste collection services
- > commercial and industrial recyclables collection services
- > landfill and transfer station operations

### Diversion rate

The diversion rate is calculated by comparing the tonnes recycled to the tonnes collected, and includes garbage, recyclables and green organics recovered from kerbside services only.

In 2006–07, drop-off material was reported for the first time in the survey. For comparative purposes, the diversion rate which includes recyclables and green organics is the current official method used in this publication to benchmark councils and waste management groups against the state average diversion rate. That is, the state average rate of 43% is the official figure that should be quoted for 2008–09. Until councils become better at collecting and reporting data for drop-off material collected through transfer stations / resource recovery facilities, the diversion rate will always be expressed as a percentage in terms of tonnes of recyclables and green organics recycled (processed) over garbage, recyclables and green organics collected from the kerbside system. It is envisaged that, over time, future calculations of the diversion rate will expand to include drop-off material when local governments are better able to report the data.

### Presentation of data

The data has been provided in full to regional waste management groups and their respective member local governments for verification and for their use in waste planning and reporting.

In this report, the data is presented in aggregated form. This reduces the impact of statistical anomalies on the findings. The findings are therefore more representative of costs, yields and other features being analysed.

In various parts of the report, the data is grouped by:

- > service provision categories – established in the *Guide to Preferred Service Standards for Kerbside Recycling in Victoria* (Sustainability Victoria, November 2000)
- > metropolitan / non-metropolitan classifications
- > waste management group
- > collection system type
- > collection frequency.

Please note, since the 2005-06 publication, the definition of metropolitan has changed slightly with the exclusion of Mornington Peninsula Shire Council. This is explained in more detail in Appendix B – Glossary, under regional waste management groups.

### **Survey limitations**

Sustainability Victoria has sought to verify information provided in data collection returns through rigorous follow-up with individual local governments to validate data entries. In addition, Sustainability Victoria circulated extracts containing individual local government returns to regional waste management group executive officers and regional education officers to verify data. Through these steps and extensive data analysis, Sustainability Victoria has identified and corrected a significant number of anomalies.

However, Sustainability Victoria is not in a position to validate underlying data in the report. Findings in this report are therefore subject to the accuracy of data provided by individual local governments.

## Appendix B Glossary

### **Annual service cost**

The service cost refers to the collection, sorting, processing and disposal costs of providing a waste service, as well as the annualised depreciated bin costs. In-house contracts should allocate costs for providing labour services and associated sorting and disposal fees, even if they are usually only accounted for internally. Capital equipment used for providing the kerbside service, such as bins, trucks and other specialised equipment should be depreciated as per normal accounting practices, with the annual depreciation figure included as a cost. Lease or hire purchase costs should also be reported. All capital expenditure costs associated with the construction and commissioning of infrastructure are excluded. Only the annual operating expenses of providing a kerbside service are included.

### **Cigarette bins**

Cigarette bins are containers mounted on walls or poles, dedicated to the disposal of cigarette butts. They can be purchased or rented through (and sometimes even cleaned by) the manufacturer.

### **Diversion rate**

The diversion rate is calculated by dividing the tonnes of recyclables and green organics recycled by the tonnes of recyclables, green organics and garbage collected from the kerbside system (i.e. excludes transfer station and drop-off facilities).

### **In-line and side entry traps**

Traps act as filters in stormwater drains to capture litter before it enters the waterways. They are cleaned regularly, either manually or with a vacuum, to dispose of the litter to landfill. In-line entry traps operate within the drainage system and act as a filter to capture litter flowing through the stormwater drains. Side entry traps act at the drainage entrance to capture litter.

### **Items recovered for recycling**

Most local governments provided a total quantity recovered, or at least the sub-totals for paper, miscellaneous containers (glass, aluminium, steel), and plastic containers. Few local governments are able to report down to the detailed level such as clear glass versus brown glass.

### **On-call services**

Many local governments provide an on-call service for green organics collection. The most common number of free services allowed per household was once or twice per year.

### **Penalty infringement notices**

Penalty infringement notices (PINs) are issued for littering under Part VIIA of the *Environmental Protection Act 1970*. Council appointed litter enforcement officers may be based in a range of council units such as local laws, traffic, building and planning. This part of the Act includes a range of offences, such as littering (including the dumping of rubbish), bill posting, leaving advertising material on vehicles, delivering unwanted advertising material, failing to comply with litter abatement notices and others.

## **Plastic Coding System**

The plastic coding system is a series of symbols that identify the most common plastic material used in the manufacture of a product or packaging. The symbols are usually embossed on the bottom of plastic containers and bottles. Their purpose is to assist collectors with sorting the collected plastics by material type. They do not indicate that the product can be recycled or is made from recycled content. Each symbol in the plastics coding system consists of a number from 1 to 7 inside a chasing arrows triangle.

## **Predominant bin type**

This refers to the bin type used by most residential properties within the municipality for garbage and recyclables. For instance, if a local government has a 120L bin for 30% of the municipality and a 240L bin for 70% of the municipality, then the predominant bin type is the 240L bin.

## **Predominant frequency of service**

This refers to the frequency of service that is the most common within the municipality. The defining criterion is the number of households serviced. For example, if a local government has a fortnightly service for 1,000 households and an annual service for 10,000 households, the predominant frequency of service is an annual service as more households receive this service.

## **Recyclable collection systems**

For this publication, the following definitions of bin types have been used:

- > two-crate system – refers to a crate for the collection of commingled containers and a crate for the collection of paper, or one crate that is used to collect containers and paper mixed together
- > crate and tied bundle – refers to a crate for the collection of containers and a tied bundle for the collection of paper
- > commingled bin – refers to one collection system used to accept containers and paper mixed together
- > split bin – refers to the collection of containers and paper in one collection system but is segmented to accept both recyclables streams
- > split garbage and recyclables – refers to the collection of recyclables (commingled containers and paper) together with garbage in one collection system that is segmented to accept the two different streams of waste.

## **Waste management groups (WMG)**

There are currently 13 waste management groups (WMG), which cover all 79 Victorian local governments, divided into metropolitan and non-metropolitan areas. They vary in the number of local governments they include, ranging from one local government to 30 local governments. Each WMG is responsible for coordinating the planning of waste management activities for its member local governments. Prior to the 2005–06 publication, there were 16 WMGs with 31 local governments in metropolitan defined boundaries, and the remainder (48) in non-metro areas of Victoria. On 1 October 2006, the Metropolitan Waste Management Group (MWMG) came into effect through the amalgamation of the four former metropolitan WMGs, namely, Northern, Eastern, South-Eastern, and Western. The legislation (*Environment Protection (Amendment) Act 2006*) provided for the MWMG to be successor in law to the four metropolitan groups. The MWMG represents the 30 metropolitan local governments of Melbourne. To avoid confusion, since the 2005–06 publication, metropolitan or metropolitan service provision categories will now refer specifically to the 30 local governments aligned to the MWMG and will no longer include the Mornington Peninsula Shire Council, unlike reports prior to 2005–06.

## Resource recovery

Resource recovery is where items are collected to avoid waste going to landfill. Items recovered range from those collected through kerbside recycling (e.g. glass bottles), to scrap steel, tyres and motor oil.

## Service provision categories

The six kerbside recycling service provision categories established in the *Guide to Preferred Service Standards for Kerbside Recycling in Victoria* have been applied in this report to the range of waste management services provided by local government. Each local government area has been coded to a service provision category (see Appendix C) according to the following guidelines:

- > Inner metropolitan: Covering the more densely populated inner area of Melbourne. Characterised by high levels of multi-tenanted dwellings, narrower streets making accessibility for collection purposes difficult, and generally short distances to a landfill/transfer station, sorting facilities and end-markets for recyclables. For example, Yarra and Port Phillip city councils.
- > Outer metropolitan: A geographically more dispersed part of Melbourne, which is generally based on average population density, average block sizes and generally short distances to a landfill/transfer station, sorting facilities and end-markets for recyclables. For example, Whitehorse, Monash and Hume city councils.
- > Melbourne fringe: Areas on the outskirts of Melbourne, often with a blend of urban and rural areas. Likely to have slightly larger block size and moderate collection transport costs and freight costs to a landfill/transfer station, sorting facilities and end-markets for recyclables. Includes metropolitan and non-metropolitan local governments. For example, Nillumbik, Cardinia and Macedon Ranges shire councils.
- > Major provincial centres: Characterised by significant population totals and average population density. Likelihood of regional sorting facility within the city and reasonable transport route to Melbourne or other market destinations. Relatively short distances to a landfill/transfer station for waste disposal. For example, Wodonga, Greater Bendigo and Ballarat city councils.

- > Small provincial centres: Population centres of moderate size and density with some surrounding semi-rural properties. Reasonable likelihood of transportation to a major centre for sorting and additional transportation of recyclables to reprocessing markets. Moderate distances to a landfill/transfer station for waste disposal. For example, Ararat Rural City Council, and Baw Baw and Campaspe Shire Councils.
- > Rural townships / remote: Small population centres with significant distances to sorting and reprocessing facilities. Rural areas with sparse populations and lower level road infrastructure, and greater distances to a landfill / transfer station for waste disposal. For example, Buloke, Corangamite and Moira shire councils.

### **Tonnes collected**

Conversion factors have been used to convert quantities reported in cubic metres to tonnes. No compaction factors have been taken into account unless otherwise stated on the survey forms.

The conversion factors as used by Sustainability Victoria are:

1 cubic metre is equivalent to:

Paper / cardboard	0.10 tonne
Household garbage / garden / vegetation	0.15 tonne
Wood / timber	0.30 tonne
Glass	0.347 tonne
Plastics	0.013 tonne
Steel cans	0.052 tonne
Aluminium cans	0.026 tonne
Commingled recyclables, i.e. plastic / glass / steel / aluminium	0.063 tonne

### **Total households serviced**

Refers to both residential households and commercial and industrial premises serviced. Many local governments cannot provide a split of the number of commercial and industrial premises serviced or do not have a separate charge for this service. For practical reasons, the derived figures calculated in this publication which rely upon the total households serviced such as '*cost per household*' refer to the total residential and commercial and industrial premises serviced through the regular domestic kerbside service.

## Appendix C Victorian Local Governments

The following table lists all local governments by alphabetical order, region, service provision category, and metropolitan/non-metropolitan classification.

Table 27 Victorian local governments, 2007–08

Local government	Regional waste management group	Service standard category	Metro / Non metro classification
Alpine Shire Council	North Eastern RWMG	Small provincial	Non metro
Ararat Rural City Council	Grampians RWMG	Small provincial	Non metro
Ballarat City Council	Highlands RWMG	Major provincial	Non metro
Banyule City Council	Metropolitan WMG	Outer metropolitan	Metro
Bass Coast Shire Council	Gippsland RWMG	Small provincial	Non metro
Baw Baw Shire Council	Gippsland RWMG	Small provincial	Non metro
Bayside City Council	Metropolitan WMG	Outer metropolitan	Metro
Benalla Rural City Council	North Eastern RWMG	Small provincial	Non metro
Boroondara City Council	Metropolitan WMG	Outer metropolitan	Metro
Brimbank City Council	Metropolitan WMG	Outer metropolitan	Metro
Buloke Shire Council	Central Murray RWMG	Rural township	Non metro
Campaspe Shire Council	Goulburn Valley RWMG	Small provincial	Non metro
Cardinia Shire Council	Metropolitan WMG	Melbourne fringe	Metro
Casey City Council	Metropolitan WMG	Outer metropolitan	Metro
Central Goldfields Shire Council	Highlands RWMG	Small provincial	Non metro
Colac Otway Shire Council	Barwon RWMG	Small provincial	Non metro
Corangamite Shire Council	South Western RWMG	Rural township	Non metro
Darebin City Council	Metropolitan WMG	Inner metropolitan	Metro
East Gippsland Shire Council	Gippsland RWMG	Small provincial	Non metro
Frankston City Council	Metropolitan WMG	Outer metropolitan	Metro
Gannawarra Shire Council	Central Murray RWMG	Rural township	Non metro
Glen Eira City Council	Metropolitan WMG	Inner metropolitan	Metro
Glenelg Shire Council	South Western RWMG	Rural township	Non metro
Golden Plains Shire Council	Highlands RWMG	Rural township	Non metro
Greater Bendigo City Council	Calder RWMG	Major provincial	Non metro
Greater Dandenong City Council	Metropolitan WMG	Outer metropolitan	Metro
Greater Geelong City Council	Barwon RWMG	Major provincial	Non metro
Greater Shepparton City Council	Goulburn Valley RWMG	Major provincial	Non metro
Hepburn Shire Council	Highlands RWMG	Small provincial	Non metro

Table 27 continued

Local government	Regional waste management group	Service standard category	Metro / Non metro classification
Hindmarsh Shire Council	Desert Fringe RWMG	Rural township	Non metro
Hobsons Bay City Council	Metropolitan WMG	Inner metropolitan	Metro
Horsham Rural City Council	Grampians RWMG	Small provincial	Non metro
Hume City Council	Metropolitan WMG	Outer metropolitan	Metro
Indigo Shire Council	North Eastern RWMG	Small provincial	Non metro
Kingston City Council	Metropolitan WMG	Outer metropolitan	Metro
Knox City Council	Metropolitan WMG	Outer metropolitan	Metro
Latrobe City Council	Gippsland RWMG	Small provincial	Non metro
Loddon Shire Council	Central Murray RWMG	Rural township	Non metro
Macedon Ranges Shire Council	Calder RWMG	Melbourne fringe	Non Metro
Manningham City Council	Metropolitan WMG	Outer metropolitan	Metro
Mansfield Shire Council	North Eastern RWMG	Rural township	Non Metro
Maribymong City Council	Metropolitan WMG	Inner metropolitan	Metro
Maroondah City Council	Metropolitan WMG	Outer metropolitan	Metro
Melbourne City Council	Metropolitan WMG	Inner metropolitan	Metro
Melton Shire Council	Metropolitan WMG	Outer metropolitan	Metro
Mildura Rural City Council	Mildura RWMG	Small provincial	Non Metro
Mitchell Shire Council	Goulburn Valley RWMG	Small provincial	Non Metro
Moira Shire Council	Goulburn Valley RWMG	Rural township	Non Metro
Monash City Council	Metropolitan WMG	Outer metropolitan	Metro
Moonee Valley City Council	Metropolitan WMG	Inner metropolitan	Metro
Moorabool Shire Council	Highlands RWMG	Melbourne fringe	Non Metro
Moreland City Council	Metropolitan WMG	Inner metropolitan	Metro
Mornington Peninsula Shire Council	Mornington Peninsula RWMG	Melbourne fringe	Non Metro
Mount Alexander Shire Council	Calder RWMG	Small provincial	Non Metro
Moyne Shire Council	South Western RWMG	Rural township	Non Metro
Murrindindi Shire Council	Goulburn Valley RWMG	Rural township	Non Metro
Nilumbik Shire Council	Metropolitan WMG	Melbourne fringe	Metro
Northern Grampians Shire Council	Grampians RWMG	Small provincial	Non Metro
Port Phillip City Council	Metropolitan WMG	Inner metropolitan	Metro
Pyrenees Shire Council	Highlands RWMG	Rural township	Non Metro
Queenscliffe Borough Council	Barwon RWMG	Small provincial	Non Metro
South Gippsland Shire Council	Gippsland RWMG	Small provincial	Non Metro
Southern Grampians Shire Council	South Western RWMG	Small provincial	Non Metro
Stonnington City Council	Metropolitan WMG	Inner metropolitan	Metro

Table 27 continued

Local government	Regional waste management group	Service standard category	Metro / Non metro classification
Strathbogie Shire Council	Goulburn Valley RWMG	Rural township	Non metro
Surf Coast Shire Council	Barwon RWMG	Small provincial	Non metro
Swan Hill Rural City Council	Central Murray RWMG	Small provincial	Non metro
Towong Shire Council	North Eastern RWMG	Rural township	Non metro
Wangaratta Rural City Council	North Eastern RWMG	Small provincial	Non metro
Warrnambool City Council	South Western RWMG	Small provincial	Non metro
Wellington Shire Council	Gippsland RWMG	Small provincial	Non metro
West Wimmera Shire Council	Desert Fringe RWMG	Rural township	Non metro
Whitehorse City Council	Metropolitan WMG	Outer metropolitan	Metro
Whittlesea City Council	Metropolitan WMG	Outer metropolitan	Metro
Wodonga Rural City Council	North Eastern RWMG	Major provincial	Non metro
Wyndham City Council	Metropolitan WMG	Outer metropolitan	Metro
Yarra City Council	Metropolitan WMG	Inner metropolitan	Metro
Yarra Ranges Shire Council	Metropolitan WMG	Melbourne fringe	Metro
Yarriambiack Shire Council	Grampians RWMG	Rural township	Non metro

## Appendix D Waste generation and diversion rate from kerbside collection services

All local governments are listed below and are ranked by diversion rate.

Table 28 Diversion rate through kerbside services for local governments, Victoria 2008–09

Rank	Local government	Diversion rate (%)*
1	Monash City Council	57
2	Manningham City Council	57
3	Greater Geelong City Council	56
4	Surf Coast Shire Council	56
5	Knox City Council	55
6	Maroondah City Council	54
7	Banyule City Council	53
8	Latrobe City Council	53
9	Corangamite Shire Council	52
10	Moyne Shire Council	52
11	Boroondara City Council	51
12	Frankston City Council	51
13	Kingston City Council	49
14	Bayside City Council	48
15	East Gippsland Shire Council	48
16	Greater Shepparton City Council	47
17	Swan Hill Rural City Council	47
18	Casey City Council	47
19	Baw Baw Shire Council	46
20	Hobsons Bay City Council	46
21	Whitehorse City Council	46
22	Nillumbik Shire Council	45
23	Greater Dandenong City Council	43
24	Mornington Peninsula Shire Council	42
25	Moonee Valley City Council	42
26	Colac Otway Shire Council	41
27	Moreland City Council	41
28	Indigo Shire Council	41

Table 28 continued

Rank	Local government	Diversion rate (%)*
29	Mount Alexander Shire Council	40
30	Yarra Ranges Shire Council	40
31	Hepburn Shire Council	40
32	Stonnington City Council	40
33	Yarra City Council	40
34	Murrindindi Shire Council	39
35	Southern Grampians Shire Council	39
36	Melton Shire Council	39
37	Whittlesea City Council	38
38	Hindmarsh Shire Council	37
39	Warrnambool City Council	37
40	Moorabool Shire Council	37
41	Moira Shire Council	37
42	Cardinia Shire Council	37
43	Wyndham City Council	36
44	Wodonga City Council	36
45	Darebin City Council	36
46	Campaspe Shire Council	36
47	Port Phillip City Council	35
48	Macedon Ranges Shire Council	35
49	Mitchell Shire Council	34
50	Brimbank City Council	34
51	Hume City Council	33
52	Ballarat City Council	33
53	Glen Eira City Council	33
54	Queenscliffe Borough Council	33
55	Gannawarra Shire Council	33
56	Central Goldfields Shire Council	32
57	Towong Shire Council	32
58	Bass Coast Shire Council	31
59	West Wimmera Shire Council	31
60	South Gippsland Shire Council	31
61	Alpine Shire Council	31

Table 28 continued

Rank	Local government	Diversion rate (%)*
62	Glenelg Shire Council	30
63	Wellington Shire Council	28
64	Pyrenees Shire Council	28
65	Mansfield Shire Council	28
66	Buloke Shire Council	28
67	Benalla Rural City Council	28
68	Maribyrnong City Council	27
69	Greater Bendigo City Council	27
70	Ararat Rural City Council	26
71	Mildura Rural City Council	26
72	Northern Grampians Shire Council	26
73	Strathbogie Shire Council	26
74	Yarriambiack Shire Council	25
75	Wangaratta Rural City Council	25
76	Loddon Shire Council	23
77	Horsham Rural City Council	18
78	Melbourne City Council	18
79	Golden Plains Shire Council	15
	<b>State average</b>	<b>43%</b>

\* Diversion rate equals tonnes of recyclables and green organics collected (less contamination) divided by tonnes of garbage, recyclables and green organics collected

This table includes all 79 local governments that had a kerbside garbage and recyclables service. Of these, 45 local governments also had a kerbside green organics service.

The table below lists the annual household yield (kg) of recyclables collected through kerbside services by all local governments in alphabetical order.

Table 29 Recyclables household yield (kg) by local government, Victoria 2008–09

Local government	Predominant bin system	Household yield (kg)
Alpine Shire Council	240L commingled Fortnightly	290
Ararat Rural City Council	240L commingled Fortnightly	283
Ballarat City Council	240L commingled Fortnightly	258
Banyule City Council	240L commingled Fortnightly	346
Bass Coast Shire Council	240L commingled Fortnightly	180
Baw Baw Shire Council	240L commingled Fortnightly	252
Bayside City Council	240L commingled Fortnightly	311
Benalla Rural City Council	240L commingled Fortnightly	292
Boroondara City Council	120L commingled Weekly	386
Brimbank City Council	240L commingled Fortnightly	288
Buloke Shire Council	240L commingled Fortnightly	277
Campaspe Shire Council	240L commingled Fortnightly	254
Cardinia Shire Council	240L commingled Fortnightly	253
Casey City Council	240L commingled Fortnightly	318
Central Goldfields Shire Council	240L commingled Fortnightly	175
Colac Otway Shire Council	240L commingled Fortnightly	249
Corangamite Shire Council	240L commingled Fortnightly	229
Darebin City Council	240L commingled Fortnightly	279
East Gippsland Shire Council	240L commingled Fortnightly	311
Frankston City Council	240L commingled Fortnightly	336
Gannawarra Shire Council	240L commingled Fortnightly	282
Glen Eira City Council	240L commingled Fortnightly	258
Glenelg Shire Council	240L commingled Fortnightly	295
Golden Plains Shire Council	240L commingled Fortnightly	147
Greater Bendigo City Council	240L commingled Fortnightly	238
Greater Dandenong City Council	240L commingled Fortnightly	261
Greater Geelong City Council	240L commingled Fortnightly	302
Greater Shepparton City Council	240L commingled Fortnightly	283
Hepburn Shire Council	240L commingled Fortnightly	274
Hindmarsh Shire Council	240L & Tied bundle Fortnightly	363
Hobsons Bay City Council	240L commingled Fortnightly	284
Horsham Rural City Council	240L commingled Fortnightly	278

Table 29 continued

Local government	Predominant bin system	Household yield (kg)
Hume City Council	240L commingled Fortnightly	284
Indigo Shire Council	240L commingled Fortnightly	188
Kingston City Council	240L commingled Fortnightly	292
Knox City Council	240L commingled Fortnightly	319
Latrobe City Council	240L commingled Fortnightly	290
Loddon Shire Council	240L commingled Fortnightly	213
Macedon Ranges Shire Council	240L commingled Fortnightly	292
Manningham City Council	240L commingled Fortnightly	335
Mansfield Shire Council	240L commingled Fortnightly	289
Maribymong City Council	240L commingled Fortnightly	216
Maroondah City Council	240L commingled Fortnightly	311
Melbourne City Council	120L commingled Weekly	84
Melton Shire Council	240L commingled Fortnightly	280
Mildura Rural City Council	240L commingled Fortnightly	234
Mitchell Shire Council	240L commingled Fortnightly	294
Moira Shire Council	240L commingled Fortnightly	274
Monash City Council	240L commingled Fortnightly	285
Moonee Valley City Council	240L commingled Fortnightly	264
Moorabool Shire Council	240L commingled Fortnightly	270
Moreland City Council	120L commingled Weekly	241
Mornington Peninsula Shire Council	240L commingled Fortnightly	259
Mount Alexander Shire Council	240L commingled Fortnightly	276
Moyne Shire Council	240L commingled Fortnightly	214
Murrindindi Shire Council	240L commingled Fortnightly	262
Nillumbik Shire Council	240L commingled Fortnightly	402
Northern Grampians Shire Council	240L commingled Fortnightly	209
Port Phillip City Council	120L commingled Weekly	419
Pyrenees Shire Council	240L commingled Fortnightly	180
Queenscliffe Borough Council	120L commingled Weekly	191
South Gippsland Shire Council	240L commingled Fortnightly	211
Southern Grampians Shire Council	120L commingled Weekly	247
Stonnington City Council	240L commingled Fortnightly	248
Strathbogie Shire Council	240L commingled Fortnightly	182
Surf Coast Shire Council	240L commingled Fortnightly	259
Swan Hill Rural City Council	240L commingled Fortnightly	581

Table 29 continued

Local government	Predominant bin system	Household yield (kg)
Towong Shire Council	240L commingled Fortnightly	287
Wangaratta Rural City Council	240L commingled Fortnightly	246
Warrnambool City Council	240L commingled Fortnightly	310
Wellington Shire Council	240L commingled Fortnightly	222
West Wimmera Shire Council	Crate & Tied bundle Weekly	318
Whitehorse City Council	240L commingled Fortnightly	308
Whittlesea City Council	240L commingled Fortnightly	303
Wodonga City Council	240L commingled Fortnightly	241
Wyndham City Council	240L commingled Fortnightly	326
Yarra City Council	120L commingled Weekly	296
Yarra Ranges Shire Council	240L commingled Fortnightly	305
Yarriambiack Shire Council	240L commingled Fortnightly	210
<b>State average</b>		<b>283</b>

The following table lists the annual household yield (kg) for garbage of all local governments in alphabetical order.

Table 30 Garbage household yield (kg) by local government, Victoria 2008–09

Local government	Predominant bin system	Household yield (kg)
Alpine Shire Council	80L	411
Ararat Rural City Council	120L	500
Ballarat City Council	140L	434
Banyule City Council	80L	399
Bass Coast Shire Council	120L	277
Baw Baw Shire Council	120L	416
Bayside City Council	140L	472
Benalla Rural City Council	140L	510
Boroondara City Council	120L	556
Brimbank City Council	140L	591
Buloke Shire Council	120L	555
Campaspe Shire Council	140L	500
Cardinia Shire Council	120L	577
Casey City Council	120L	524
Central Goldfields Shire Council	80L	375
Colac Otway Shire Council	240L split garbage and green organics	463
Corangamite Shire Council	120L	424
Darebin City Council	80L	458
East Gippsland Shire Council	120L	372
Frankston City Council	120L	412
Gannawarra Shire Council	120L	505
Glen Eira City Council	240L	612
Glenelg Shire Council	120L	384
Golden Plains Shire Council	240L	707
Greater Bendigo City Council	240L	611
Greater Dandenong City Council	140L	561
Greater Geelong City Council	120L	429
Greater Shepparton City Council	80L	508
Hepburn Shire Council	120L	386
Hindmarsh Shire Council	120L	504
Hobsons Bay City Council	120L	457
Horsham Rural City Council	120L	623

Table 30 continued

Local government	Predominant bin system	Household yield (kg)
Hume City Council	140L	596
Indigo Shire Council	140L	335
Kingston City Council	120L	467
Knox City Council	120L	456
Latrobe City Council	120L	407
Loddon Shire Council	240L	568
Macedon Ranges Shire Council	140L	454
Manningham City Council	120L	479
Mansfield Shire Council	240L	486
Maribyrnong City Council	120L	497
Maroondah City Council	120L	453
Melbourne City Council	120L	746
Melton Shire Council	120L	505
Mildura Rural City Council	120L	417
Mitchell Shire Council	120L	474
Moira Shire Council	120L	398
Monash City Council	120L	362
Moonee Valley City Council	120L	439
Moorabool Shire Council	120L	427
Moreland City Council	80L	414
Mornington Peninsula Shire Council	80L	331
Mount Alexander Shire Council	140L	367
Moyne Shire Council	120L	449
Murrindindi Shire Council	120L	364
Nillumbik Shire Council	120L	215
Northern Grampians Shire Council	240L	427
Port Phillip City Council	240L	567
Pyrenees Shire Council	120L	401
Queenscliffe Borough Council	120L	471
South Gippsland Shire Council	120L	437
Southern Grampians Shire Council	120L	373
Stonnington City Council	120L	449
Strathbogie Shire Council	120L	454
Surf Coast Shire Council	120L	267
Swan Hill Rural City Council	120L	500

Table 30 continued

Local government	Predominant bin system	Household yield (kg)
Towong Shire Council	140L	536
Wangaratta Rural City Council	120L	653
Warrnambool City Council	80L	415
Wellington Shire Council	120L	391
West Wimmera Shire Council	120L	632
Whitehorse City Council	120L	467
Whittlesea City Council	120L	598
Wodonga City Council	140L	518
Wyndham City Council	120L	597
Yarra City Council	80L	371
Yarra Ranges Shire Council	120L	475
Yarriambiack Shire Council	120L	556
<b>State average</b>		<b>472</b>

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