

# Chapter 2 Olympia's People and Their Waste

A portion of the 2 million plastic beverage containers used in the US every 5 minutes.



Partial zoom.



Detail.



Click on thumbnail to view larger image.  
Click on larger image to close.

CHRIS JORDAN

**Running the Numbers**  
An American Self-Portrait  
*Plastic Bottles, 2007*  
60"x120"

This chapter describes trends in population, households, employment and land use that affect the City's ability to reduce waste, increase recycling and manage collection services efficiently. It also presents basic facts and trends about waste generated by Olympia residents and businesses, and opportunities for diverting more recyclables and compostables from the waste stream.

## POPULATION AND EMPLOYMENT TRENDS

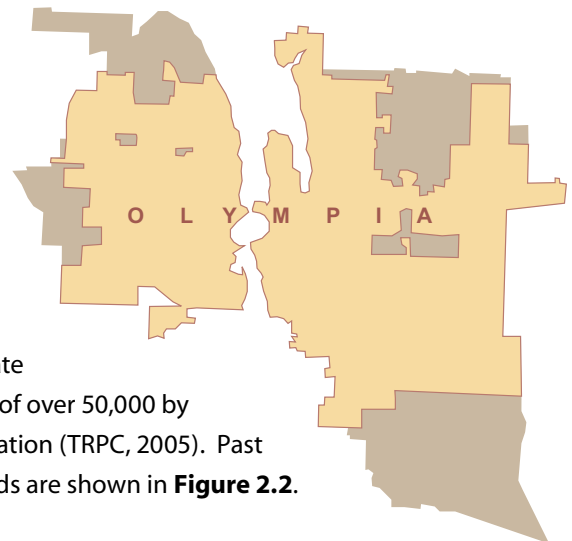
The key strategic issue for Waste ReSources is the current pattern of resource extraction, manufacture, distribution and consumption which, combined with a growing population, creates ever more waste and results in the kind of environmental and economic impacts described in **Chapter 1**. Operational challenges presented by increasing volumes of waste are described in **Chapter 5**.

This section presents information helpful for understanding how the trends in Olympia's population, and related trends in households and employment, affect waste management planning.

### Population and Solid Waste Customers

The City provides garbage and recycling collection services within City limits (**Figure 2.1**). Between 1995 and 2005, population within the City grew by almost 15 percent, from 37,730 to 43,330. Growth occurred at a rate of 2.3 percent per year from 1995 to 2000, and 0.38 percent per year from 2000 to 2005. The Thurston Regional Planning Council projects an annual 2 percent growth rate over the next six years to a population of over 50,000 by 2013, including growth through annexation (TRPC, 2005). Past population growth and projected trends are shown in **Figure 2.2**.

**Figure 2.1**  
Olympia City Limits  
and Urban Growth Area



**A 2% population increase  
= 870 new residents/year  
= 400 new curbside  
customers/year**

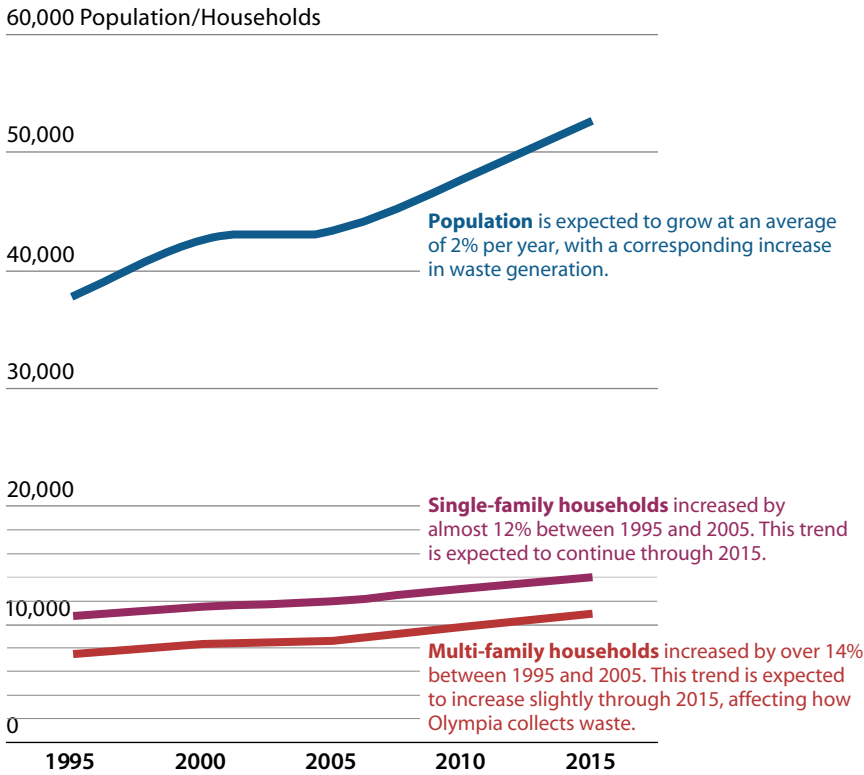
As population increases, a corresponding increase in waste generation and utility customers can be expected. With improvements in equipment and collection technology and the current level of service, this Plan assumes the Utility can absorb this increase with the same number of collection personnel and vehicles for the next two or three years.

Based on these projections, this Plan assumes that 300-400 new residential customers will request garbage and recycling service in each year between 2008 and 2013. Projects already permitted for construction will add customers during the next two years. These include 707 single-family units, 208 multi-family units and 131 commercial units (City of Olympia, 2006).

In subsequent years, annexation and further development will add more new customers. For example, annexations completed during 2006 are expected to result in a potential of about 250 dwelling units, with waste collection service beginning in 2016.

The Plan assumes the number of commercial customers will stay fairly stable for the next six years.

**Figure 2.2**  
Population and Number of Households in Olympia, 1995 - 2015



Sources: Thurston Regional Planning Council, 2005 Profile and data request program, 2006.

## Demographics

Over 72 percent of Thurston County's population growth is due to in-migration from neighboring counties. Employment stability, lower housing costs and lower density are considered the main attractions.

Compared to other Thurston County jurisdictions, Olympia has the highest proportion of 20- to 64-year-olds (62 percent) and therefore the lowest ratio of population under the age of 19 (24 percent). This appears to be a direct result of the in-migration of people 55 and older, for which Thurston County was ranked fifth in the State during the past 20 years (TRPC, 2005). People in this age group tend to live on fixed incomes and are considered to be relatively sensitive to cost increases and diligent about recycling and resource conservation.

*One fully automated truck can collect about 150 residential garbage or recycle carts in an hour.*

## Households

The number of households in Olympia has increased with population growth. Between 1995 and 2005, single-family households increased almost 12 percent, from 10,710 to 11,970. Multi-family households increased more than 14 percent, from 7,500 to 8,600. Future projections are for a slightly more rapid growth in multi-family households (TRPC, 2005). These trends are shown in **Figure 2.2**.

The increase in the number of households and the trend to more multi-family households means more customers will need Waste ReSources services. The trend to more multi-family households will affect the way Olympia collects its waste (see **Chapter 5**).

Household size in Olympia has remained relatively stable, at about two people per household, and is not expected to change much over the next six years.

## Employment

Employment is a convenient indicator of the need for waste management services in the business sector. In 2003 an estimated 52,940 people worked in Olympia. Of these, more than half worked in retail and service businesses, and over one third in government and schools.

Depending on whether or not some State offices move outside the City, total employment is expected to grow to between 54,000 and 60,000 by 2010, and between 59,000 and 65,000 by 2015. The most rapid increase is expected in the financial and service sectors, including restaurants and groceries, which typically are large generators of paper and food scraps (TRPC, 2005).



*The quantity of waste is increasing along with population.*

## WASTE GENERATION AND DIVERSION

This section describes the total “pile” of waste that Olympia residents and businesses now generate, and the portion of that “pile” that is currently and potentially diverted through recycling and composting programs.

As discussed in **Chapter 1**, the City’s Zero Waste vision aims to eventually reduce the size of the overall “pile” of waste and increase the portion that is recycled or composted.

In Thurston County, all waste that is not diverted from the waste stream is taken to the County’s Waste and Recovery Center (WARC) at Hawks Prairie in Lacey. From there it is shipped by rail to the regional landfill in Klickitat County. See **Chapter 4** for details on the collection and processing of garbage, recyclables and compostables.

## What Is Waste?

In order to pursue the City's Zero Waste vision, this Plan addresses all Municipal Solid Waste (MSW), recyclables and compostable debris generated by Olympia residents and businesses, regardless of whether the material is collected by the City or private

### WAC 173-350 – Solid Waste Definitions

**Municipal solid waste (MSW)** means a subset of solid waste which includes unsegregated garbage, refuse and similar solid waste material discarded from residential, commercial, institutional and industrial sources and community activities, including residue after recyclables have been separated. Solid waste that has been segregated by source and characteristic may qualify for management as a non-MSW solid waste, at a facility designed and operated to address the waste's characteristics and potential environmental impacts. The term MSW does not include:

- Dangerous wastes other than wastes excluded from the requirements of chapter 173-303 WAC, Dangerous waste regulations, in WAC 173-303-071 such as household hazardous wastes;
- Any solid waste, including contaminated soil and debris, resulting from response action taken under section 104 or 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. 9601), chapter 70.105D RCW, Hazardous waste cleanup – Model Toxics Control Act, chapter 173-340 WAC, the Model Toxics Control Act cleanup regulation or a remedial action taken under those rules; nor
- Mixed or segregated recyclable material that has been source-separated from garbage, refuse and similar solid waste. The residual from source-separated recyclables is MSW.

**Recyclable materials** means those solid wastes that are separated for recycling or reuse, including, but not limited to, papers, metals, and glass, that are identified as recyclable material pursuant to a local comprehensive solid waste plan.

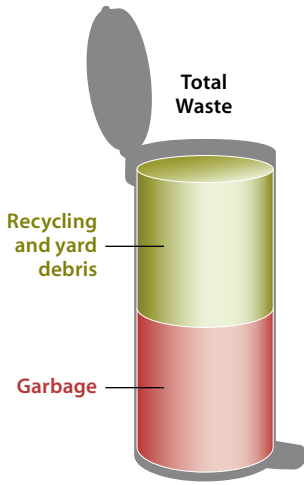
**Yard debris** means plant material commonly created in the course of maintaining yards and gardens and through horticulture, gardening, landscaping or similar activities. Yard debris includes, but is not limited to, grass clippings, leaves, branches, brush, weeds, flowers, roots, windfall fruit, and vegetable garden debris.

companies, or whether it is self-hauled to disposal or recycling collection centers. It does not address Dangerous Wastes, Biomedical Wastes, or other wastes with special regulatory requirements, although the City can exert influence on these other wastes through regulation, education, advocacy and direct service.

MSW is a mixture of discarded items and materials that have not been separated for recycling or composting. Because people are not 100 percent efficient at separating out recyclables, MSW usually contains a percentage of recyclable materials and yard debris that have been discarded with other trash.

Recyclable materials include the traditional "curbside" items such as paper, cardboard, bottles and cans. However, anything that can be "transformed or remanufactured" into "usable or marketable materials" is considered recyclable. Other materials often recycled include ferrous and non-ferrous metals, gypsum, textiles and food debris. Products such as computers and rechargeable batteries are also considered recyclable where a take-back program is available.

Construction and demolition (C&D) debris is often identified as a separate waste category because of the way it is generated. However, it is essentially a component of MSW. Some C&D materials are discarded into ordinary residential and commercial garbage containers; for example waste from small remodels and repairs. Large quantities of C&D debris generated at construction sites are usually placed into rented dumpsters and sent to the landfill. If C&D materials such as wood, concrete or metal are separated for recycling, they are counted as recyclables, not MSW.



## How Much Waste Is Generated?

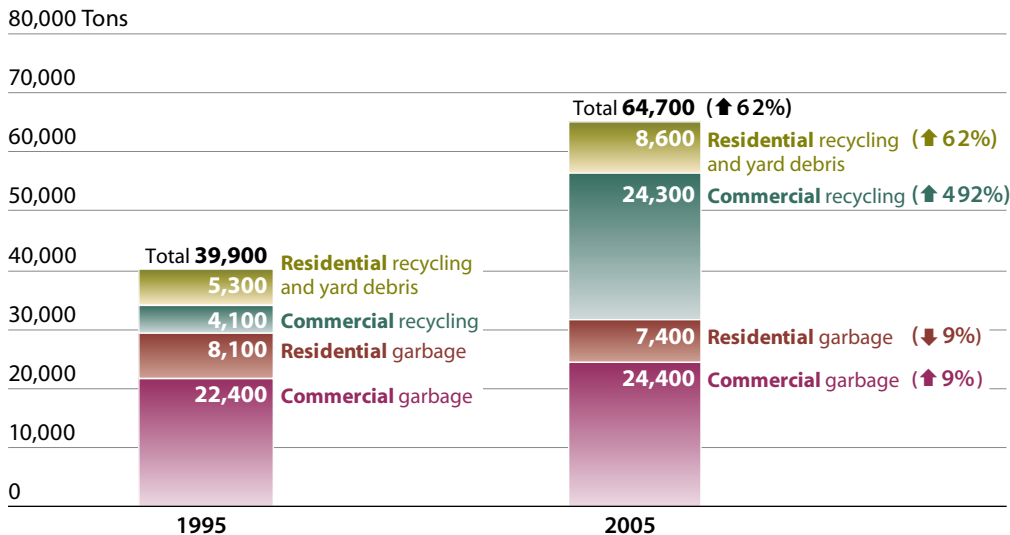
In 2005, Olympia’s residents and businesses generated approximately 64,700 tons of waste, of which an estimated 32,900 tons were composted or recycled.<sup>1</sup> This does not include material – garbage, recyclables, yard debris – self-hauled to WARC or garbage from Capitol Campus, which was collected by a private hauler. This represents an overall composting/recycling rate of roughly 51 percent. As defined in this Plan:

$$\text{Total material discarded (waste generated)} = \text{recycling} + \text{yard debris} + \text{garbage}$$

The goal of this Plan is to take the first steps toward reducing the total quantity of material discarded (waste) and increasing the portion of waste that is recycled or composted.

**Figure 2.3** shows the changes in waste generation between 1995 and 2005 – including total waste, commercial and residential garbage, and recycled materials and yard debris. The data show a slight net increase in total residential waste (garbage, recycling and yard debris); collection of recycled materials and yard waste increased and collection of garbage decreased. Commercial garbage collection has increased slightly. The best explanation available for the significant increase in estimated commercial recycling is a combination of better reporting by recycle haulers, an economic upswing after 2002, more interest by large businesses in recycling, and the addition of recyclable materials such as yard waste and mixed paper.

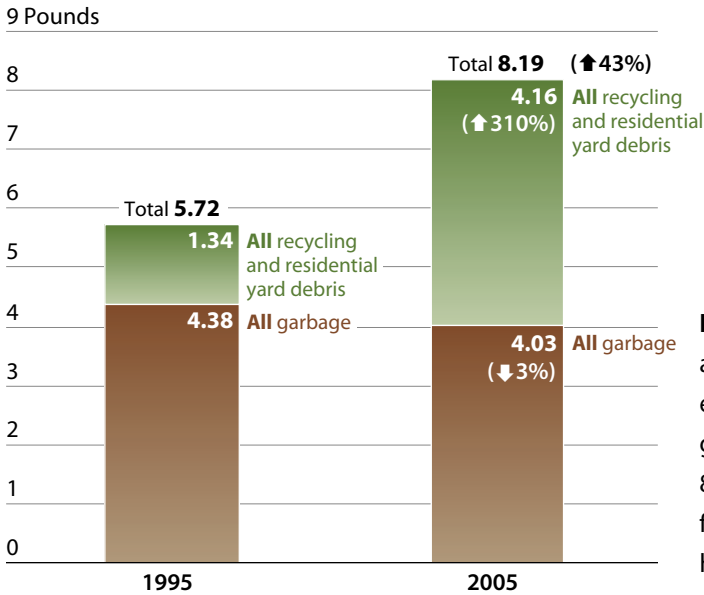
**Figure 2.3**  
Waste Generation in Olympia, 1995 and 2005 (Tons)



Sources: City of Olympia weight measures (residential garbage and recycling tons, and commercial garbage tons); Thurston Regional Planning Council 2005 Profile (population). Commercial recycling tons are estimated as shown in Table 2.2.

<sup>1</sup> This includes only traditional curbside materials: mixed paper, newspaper, cardboard, glass bottles and jars, aluminum cans, tin cans, PET and HDPE plastic bottles, and milk cartons. The rate does not include other materials such as construction debris, food and renderings, and materials or products that have special collection programs.

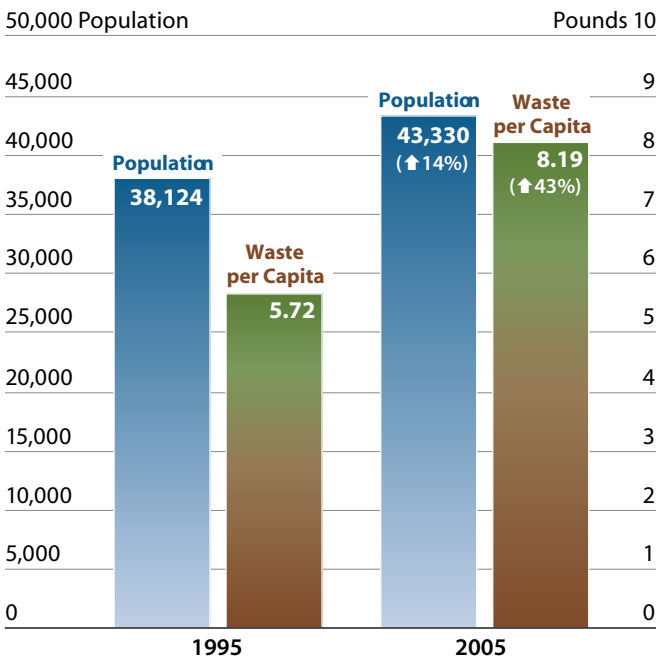
**Figure 2.4**  
Waste Generation per Capita per Day, 1995 and 2005



Sources: City of Olympia weight measures; Department of Ecology 2006 Annual Status Report; Thurston Regional Planning Council 2005 Profile.

**Figure 2.4** illustrates how total tonnage of waste, garbage and recyclables has changed between 1995 and 2005, expressed in pounds per person per day. Total waste generated in Olympia has increased from 5.72 to 8.19 pounds per person per day. Garbage has decreased from 4.38 to 4.03 pounds per person per day, and recycling has increased from 1.34 to 4.16 pounds per person per day.

**Figure 2.5**  
Population and Waste per Capita per Day, 1995 and 2005



Sources: City of Olympia weight measures; Department of Ecology 2006 Annual Status Report; Thurston Regional Planning Council 2005 Profile.

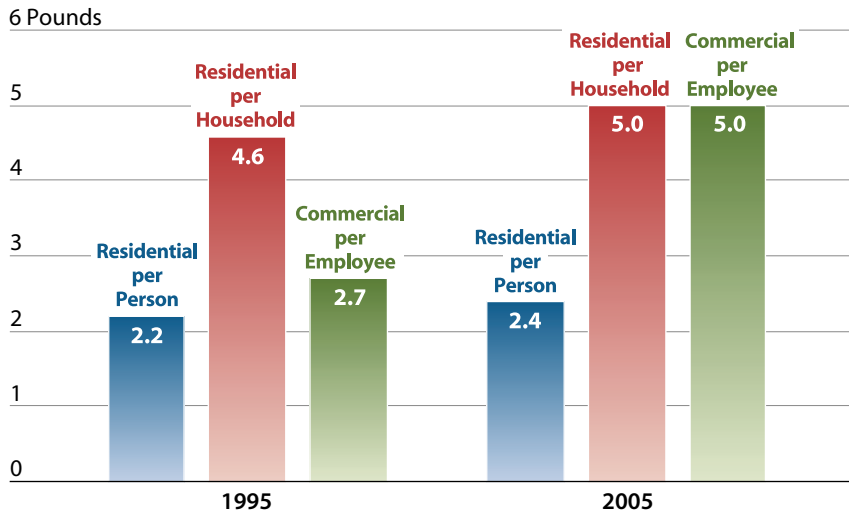
**Figure 2.5** illustrates the relationship between total waste generation and population. While population has increased by 14 percent, total waste has increased by an estimated 62 percent, and waste per capita has increased by an estimated 43 percent. Each year the average waste generated was 0.2 pounds more per person than during the previous year.

Given the projected population growth, trends in waste generation are likely to continue unless consumption and recycling patterns change.

*Per capita waste is increasing at a faster rate than population.*

**Figure 2.6** shows separate commercial and residential daily generation rates – by person, household and employee. Generation is increasing in all sectors, but especially in the commercial sector. The separated data can be useful in assessing the success of programs intended to reduce waste.

**Figure 2.6**  
Residential and Commercial Daily Waste Generation per Person, Household and Employee, 1995 and 2005

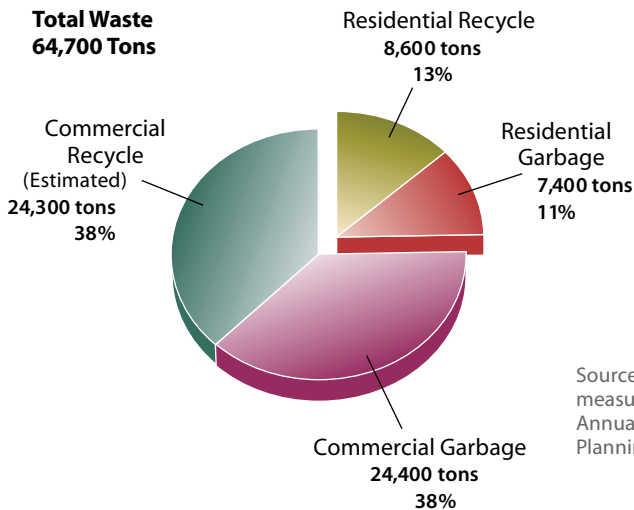


Sources: City of Olympia weight measures; Department of Ecology 2006 Annual Status Report; Thurston Regional Planning Council 2005 Profile.

### Who's Generating the Waste?

**Figure 2.7**  
Sources of Waste Generated in Olympia, 2005

As shown in **Figure 2.7**, 76 percent of total waste is generated by commercial businesses, of which about half is recycled. Households generate 24 percent of total waste, of which 54 percent is recycled or composted.



**Table 2.1** details Olympia's waste data for 2005. Tonnages shown are actual weighed tons, except for commercial recycling data. Commercial recycling data are based on an annual survey of recycling companies performed by Ecology. No data are available on the amount of garbage generated by State Capitol Campus buildings, or on the amount of garbage or recyclables that Olympia residents and businesses self-haul to the County WARC.

Sources: City of Olympia weight measures; Department of Ecology 2006 Annual Status Report; Thurston Regional Planning Council 2005 Profile.

**Table 2.1**  
Olympia Waste and Customer Data

Waste Type	Waste Generator	Receptacle Type	Receptacles September 2006 <sup>1</sup>	Total Tons 2005 <sup>2</sup> (rounded)	Customers December 1, 2005	Hauler
<b>Residential garbage</b>	Single-family dwellings and duplexes	Carts	13,620	7,400	12,021	City
	Multi-family dwellings	Sometimes carts, mostly dumpsters, drop boxes and compactors	Carts included with single-family, dumpsters included with commercial	Included in single-family (carts) and commercial tonnage (dumpsters)	Included with single-family or commercial customers	City
<b>Residential recyclables<sup>3</sup></b>	Single-family dwellings and duplexes	Carts	12,969	5,000	12,009	City
	Multi-family dwellings	Carts	1,096	Included above	102 (~6000 households)	City
		4 cu yd dumpsters (cardboard only)	39	Included above	27	City
<b>Residential yard debris</b>	Mostly single-family dwellings	Carts	5,348	3,600	5,284	City
<b>Commercial garbage</b>	Businesses, institutions, government agencies, etc.	Carts/Cans	Included below	Included below	472/50	City
		Dumpsters	1,148	10,700	887	—
		Drop boxes and compactors	101 permanent 60 temporary (average)	13,700	101 permanent 60 temporary	City
<b>Commercial recyclables</b>	Businesses, institutions, government agencies, etc.	Various	Unknown	24,000 (estimated)	Unknown	Private recyclers City
<b>Commercial yard debris</b>	Mostly businesses	Drop boxes	30	300	18	City
<b>Total Generation</b>				<b>64,700</b>		
<b>Total Recycling</b>				<b>32,900</b>		

<sup>1</sup> For operational reasons, the City of Olympia tracks garbage collection on the basis of container type – cart, dumpster or compactor – rather than by customer type. Because multi-family structures use both carts and dumpsters, the multi-family garbage tonnage is included with residential or commercial garbage tonnage, depending on container type.

<sup>2</sup> Excludes garbage from Capitol Campus and materials self-hauled to the Thurston County Waste and Recovery Center (WARC).

<sup>3</sup> Includes all “traditional” curbside materials: mixed paper, newspaper, cardboard, glass bottles and jars, aluminum cans, tin cans, PET and HDPE plastic bottles, and milk cartons.

**Table 2.2** shows how the Utility estimated the proportion of total Thurston County recycling that can reasonably be attributed to Olympia's businesses. The reported tonnage of total recycling in Thurston County, less residential recycling, is 55,320 tons of commercial recycling. Since Olympia's employment is an estimated 44 percent of the county total, the City's share of commercial recycling was estimated at 44 percent of 55,320, or about 24,300 tons.

**Table 2.2**  
Calculation of Estimated Commercial Recycling, 2005

Waste Category	Tons
Total Thurston County "traditional" recycling (not including yard debris)	73,059 <sup>1</sup>
Total Thurston County residential recycling	17,739
Olympia residential	4,989 <sup>2</sup>
County residential <sup>1</sup>	9,500 <sup>3</sup>
Country drop box and recycle center recycling <sup>1</sup>	3,250 <sup>3</sup>
Subtotal (tons)	17,739
Total Thurston County commercial recycling:	$73,059 - 17,739 = 55,320$
Portion of Thurston County employment in Olympia	44%
Estimated Olympia commercial recycling:	$55,320 \times .44 = \mathbf{24,300}$ (rounded)

<sup>1</sup> Washington Department of Ecology 2006 Annual Status Report, Recycling Survey.

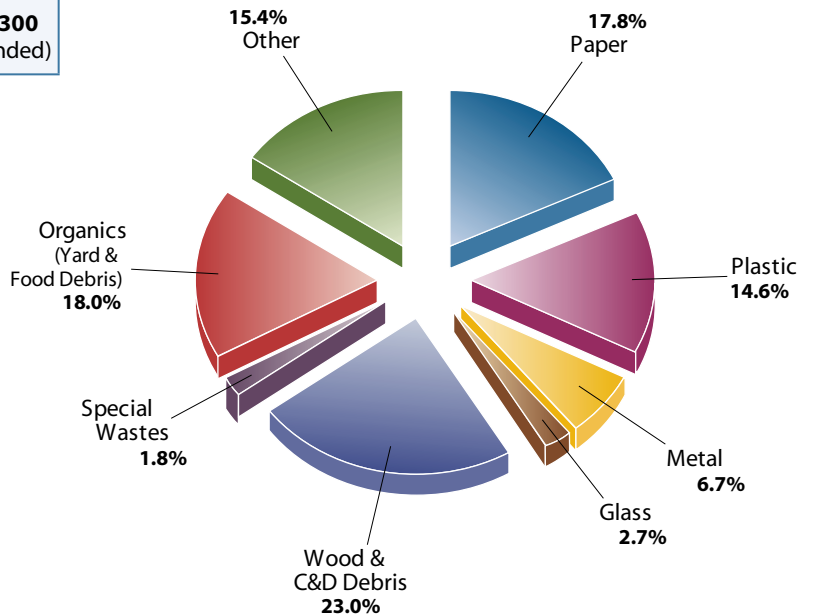
<sup>2</sup> City of Olympia weight measures.

<sup>3</sup> Thurston Regional Planning Council, 2005 Profile.

### What's Sent to the Landfill?

Thurston County regularly measures what materials are going to the landfill as garbage. **Figure 2.8** shows the relative quantities of these materials in 2005. These percentages are useful to Olympia because they help estimate the quantities of recyclable materials that could potentially be removed from Olympia's garbage.

**Figure 2.8**  
Composition of Thurston County Garbage, 2004



Source: Thurston County 2004 Waste Composition Study.

**Table 2.3**  
Thurston County Waste  
Composition 2004 –  
Summary of Results

Shaded areas highlight currently recyclable materials that could be diverted from the landfill.

Materials marked with an asterisk (\*) are currently collected at curbside in Olympia.

<b>Paper</b>	<b>17.8%</b>
Newspaper*	1.4%
Cardboard*	3.4%
Other recyclable paper*	5.9%
Compostable paper	4.5%
Non-recyclable paper	2.6%
<b>Plastic</b>	<b>14.6%</b>
Plastic bottles*	1.4%
Film and bags	4.6%
Other plastic	8.6%
<b>Wood and C&amp;D</b>	<b>23.1%<sup>1</sup></b>
Wood	14.2%
C&D	8.9%
<b>Glass</b>	<b>2.7%</b>
Glass bottles*	2.2% <sup>1</sup>
Other glass	0.5%
<b>Organics</b>	<b>18.0%</b>
Food waste	13.6%
Yard waste*	4.4%
<b>Metal</b>	<b>6.7%</b>
Aluminum cans*	0.4%
Tin cans*	0.7%
Other metals	5.6%
<b>Other</b>	<b>15.4%</b>
Disposable diapers	1.6%
Textiles	2.5%
Carpet and padding	1.3%
Miscellaneous	10.0%
<b>Special Wastes</b>	<b>1.8%</b>
Animal excrement	1.2%
Other special waste	0.6%
<b>Recyclable Subtotal</b>	<b>27.8%</b>

<sup>1</sup> Percentages rounded differently than in source document.

Source: Thurston County 2004 Waste Composition Study, Figure E-1.

**Table 2.3** shows the breakdown of Thurston County garbage in more detail. Shaded areas highlight the large quantity of currently recyclable materials that could be diverted from the landfill. A total of 27.8 percent of the waste being landfilled is recyclable in current programs. This figure includes “other metals” and textiles which Olympia does not collect for recycling. Materials marked with an asterisk (\*) are currently collected at curbside in Olympia.

### What Could Be Diverted from Olympia's Garbage?

As noted above, all materials considered “recyclable” in the County study are not currently recycled in Olympia. The opportunities for diversion of recyclables and compostables from Olympia's garbage are summarized below:

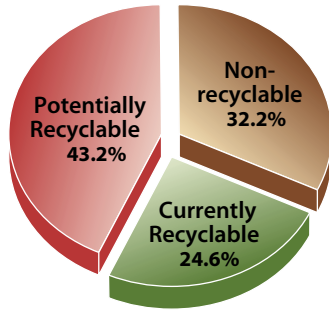
- Recyclables currently collected by Olympia curbside programs (newspaper, cardboard, other paper, plastic bottles, aluminum and tin cans, glass bottles) and yard debris – 19.7 percent.
- Compostable food debris and paper that could be diverted if programs were offered – 18.0 percent.
- Potentially recyclable materials that could be diverted if programs were offered (such as metals, textiles, film plastic, some wood and construction debris and electronic waste – about 30 percent.

Non-recyclable materials are those that are unlikely to be recyclable in the near future (e.g. certain types of paper, many plastics and certain types of glass).

**Figures 2.9** and **2.10** summarize the estimated quantities of currently recyclable, potentially compostable or recyclable, and non-recyclable materials disposed of as residential or commercial garbage in 2005. **Table 2.4** gives the details, based on the percentages from the 2004 Thurston County Waste Composition Study (**Table 2.3**) multiplied by the total waste generated in Olympia in 2005.

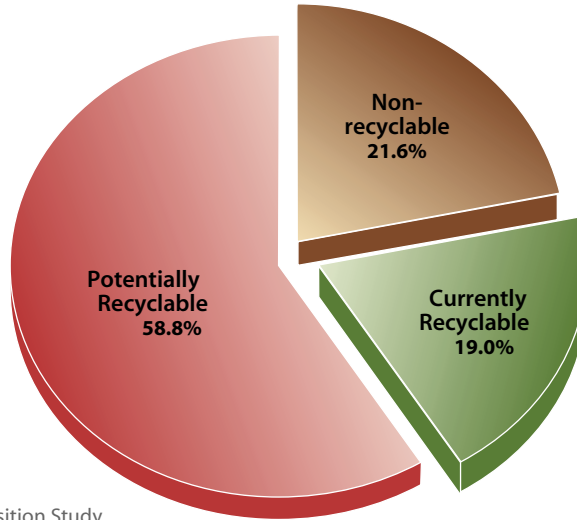
**Figure 2.9**  
Materials in Olympia's Residential Garbage, 2004

**Estimated Total  
7,400 Tons**



**Figure 2.10**  
Materials in Olympia's Commercial Garbage, 2004

**Estimated Total  
24,400 Tons**



Source for both figures:  
2004 Thurston County Waste Composition Study.

**Table 2.4**  
Estimated Composition of Olympia's Garbage, 2005

		RESIDENTIAL GARBAGE		COMMERCIAL GARBAGE	
		Percent	Tons	Percent	Tons
<b>Currently recyclable</b>	■ Newspaper, cardboard and other recyclable paper	13.3%	980	10.8%	2,630
	■ Plastic bottles	2.1%	160	1.6%	390
	■ Aluminum and tin cans	1.8%	130	0.8%	190
	■ Glass bottles	2.7%	200	2.3%	560
	■ Yard debris	4.7%	350	4.1%	1,000
	<b>Subtotal</b>		<b>24.6%</b>	<b>1,820</b>	<b>19.6%</b>
<b>Potentially recyclable</b>	■ Food debris and compostable paper	22.7%	1,680	22.9%	5,590
	■ Other metals, wood and C&D debris	9.4%	700	27.4%	6,690
	■ Plastic film, textiles, carpet, e-waste	11.1%	820	8.5%	2,070
	<b>Subtotal</b>		<b>43.2%</b>	<b>3,200</b>	<b>58.8%</b>
<b>Non-recyclable</b>	■ Certain types of paper	3.8%	280	1.5%	370
	■ Many plastics	4.9%	360	10.8%	2,640
	■ Certain types of glass	0.2%	20	0.7%	170
	■ Other <sup>1</sup>	23.3%	1,720	8.6%	2,100
	<b>Subtotal</b>		<b>32.2%</b>	<b>2,380</b>	<b>21.6%</b>
<b>Total</b>		<b>100.0%</b>	<b>7,400</b>	<b>100.0%</b>	<b>24,400</b>

<sup>1</sup> Includes rubber products, cosmetics, leather, furniture, miscellaneous organics, ash, dust, diapers, animal excrement, medical waste, carpet padding.

Source: 2004 Thurston County Waste Composition Study.

### ***Diversion of Curbside Recyclables***

An estimated 1,820 tons of residential garbage and 4,770 tons of commercial garbage are materials that are already readily recyclable in Olympia's curbside residential program, and in programs offered to businesses by private recyclers. In both residential and commercial waste, over half of this material is newspaper, cardboard and recyclable paper.

One of the most straightforward ways to increase residential recycling is to encourage people to recycle more of their waste. Commercial recycling collection is provided by the private sector, and the City does not have information about the level of participation or availability and cost of recycling services. However, this clearly represents a major opportunity to increase diversion from the landfill.

### ***Diversion of Food Debris and Compostable Paper***

Food debris and compostable paper also represent a large opportunity for increased diversion – nearly 1,700 tons from residential waste and 5,600 from commercial waste. The presence of a new composting facility in the area that accepts food debris makes this more feasible than in the past.

### ***Diversion of Metals, Wood and C&D Debris***

There is a significant amount of this material in the garbage – 700 tons from residential and 6,690 tons from commercial waste. However, not all of it is recyclable. Some metals, concrete and brick can sometimes be recycled locally, but other materials must be hauled to the Tacoma area. The economic hurdles for extensive recycling of C&D debris are high, and it is uncertain whether the South Sound area can generate enough volume to make recycling economically feasible in the short term.

### ***Diversion of Other Potentially Recyclable Materials***

Markets exist in Washington for other materials such as carpet and padding, various kinds of textiles, other plastics, such as plastic bags and plastic film, and electronic waste. Olympia could help increase recycling of these additional materials through a variety of means, ranging from collecting materials at curbside or drop-off points, to providing information to businesses about how to access these markets.

## CHALLENGES AND OPPORTUNITIES

The key strategic issue for Olympia Waste ReSources is that the growing population and business activity results in increasing quantities of waste, which has environmental and public health impacts and adds pressure to an already strained waste management system. This section highlights some of the challenges and opportunities that will either constrain or facilitate Olympia's efforts to move toward Zero Waste. Strategies for taking advantage of these opportunities are discussed in **Chapters 7-9**.

### Growing Population and Waste

- An increasing population will increase waste generation and the number of customers that the Utility will need to serve.
- Increasing numbers of multi-family households, and annexation of parts of the Urban Growth Area after 2016, will affect the City's collection program, and may require additional resources and new collection strategies.
- Growth in the commercial sector will increase the production of waste and the need for effective recycling programs that serve all businesses.
- The continued growth of waste generated indicates that more needs to be done to prevent waste in the first place.

*Significant quantities of recyclable materials are sent to the WARC as garbage.*



### Potential for Increased Diversion

- Large quantities of currently and potentially recyclable materials in the garbage – particularly paper and food waste – represent significant opportunities for increasing diversion of waste to compost or recycling.
- Obtaining better information about available commercial recycling services and business participation would help develop effective strategies for increasing commercial recycling.
- The City has an opportunity to work with Thurston County as the countywide Solid Waste Plan is revised to ensure more effective recycling of materials self-hauled to the WARC.

### Potential for Waste Reduction

- The large quantities of non-recyclable products in the garbage provide an opportunity to look upstream and work with manufacturers to reduce packaging waste and make products more durable and recyclable.

