Appendix I. State of Oregon Diversion Measurement Information

SUMMARY

State of Oregon

SOLID WASTE MANAGEMENT PROGRAM

2000 INFORMATION UPDATE
and
REPORT TO THE 71st OREGON LEGISLATIVE SESSION

KEY POINTS

- Oregon will not meet the goal of 50% recovery by the year 2000, as set by the legislature in 1991.
- The recovery rate has leveled off at 37%.
- The Waste Policy Leadership Group, an advisory body to DEQ, believes that the 50% goal is attainable, and has proposed programs and legislation designed to reach this goal by 2009.

INTRODUCTION

The purpose of this report is to provide current data and information about solid waste generation and management in Oregon. In so doing, it is also intended to satisfy the legislative reporting requirements under ORS 459A.015 and the state solid waste management plan update requirements in ORS 459A.020.

This is a summary of the information contained in the full report, which can be accessed on the DEQ web page: *www.deq.state.or.us/wmc/solwaste/2000update.html.*

This report includes current data for 1999, as well as historical trend information. The waste composition data is for 1998, which is the most recent available.

A. GENERAL TRENDS

In 1999, for the first time since Oregon began surveying recyclers statewide in 1992, the statewide recovery rate declined from the previous year. In addition, the upward trend in solid waste generation continued.

- Annual per capita waste generation per person has increased from 6.1 pounds-per-

day in 1994, to 7.3 pounds-per-day in 1999. Oregonians continue to consume and throw away increasing amounts of materials each year.

- The statewide recovery rate increased steadily from 33% in 1994 to 37.3% in 1998, but declined to 36.8% in 1999. The legislature adopted a goal of achieving 50% recovery by the year 2000, but it is now clear that Oregon will not reach that goal without new efforts in recycling and waste prevention.
- Solid waste disposed at Oregon municipal waste (i.e. non-hazardous) facilities, including waste from out-of-state, contaminated soil, and other special wastes, has increased from 3,633,536 tons in 1994 to 4,779,178 tons in 1999, an increase of over 1,100,000 tons.
- Waste is increasingly managed by fewer and larger facilities. Of the 92 landfills open at the end of 1991, 57 are now closed. Only one new municipal landfill has opened since 1991, leaving a total of 36 open landfills and two burning facilities. Twenty-six of the closed landfills were very small, accepting less than a ton of waste per day on average. Oregon still receives a significant amount of waste for landfilling from out-of-state. In 1999, 27% of the waste disposed in Oregon was from out-of-state.
- Oregon exports only a tiny fraction of its waste for disposal in other states. In 1999, only 19,703 tons of Oregon waste was landfilled out-of-state, less than 1 percent of the waste generated in Oregon.

B. WASTE POLICY LEADERSHIP GROUP

In late 1999, DEQ's Director appointed a diverse stakeholder group (the Waste Policy Leadership Group or WPLG) to make recommendations to the department regarding future policy and program directions in solid waste management. In creating this advisory panel, the Director noted that while conditions in Oregon have changed substantially in recent years, both in terms of disposal and recovery, there have been no major revisions or changes to Oregon's solid waste policies since SB 66 was adopted in 1991. The continuing increase in both per capita and total waste generation, along with stagnating recycling rates, indicate that current practices are still far from sustainable. The need for such a review was also highlighted by the fact that Oregon's statewide recovery rate declined for the first time in 1999 (to 36.7%), and will fail to reach the goal of 50% recovery by 2000 that was set by the legislature in 1991.

The WPLG, comprised of 14 members representing businesses, local governments, the waste and recycling industries, and environmental organization, held public meetings for one full year to study, discuss and propose changes to solid waste policies and programs at the state level. The group began by establishing a set of guiding principles for their work. They also proposed broadening the criteria that the DEQ solid waste program should consider in setting policies and priorities to explicitly include both toxicity and greenhouse gas emissions.

Strategic Direction

In terms of strategic priorities, the WPLG encouraged the DEQ solid waste program to devote greater emphasis and resources to waste prevention. The group based its recommendation on the alarming trend of continually increasing waste generation and the fact that waste prevention generally yields greater environmental and economic benefits than recovery.

Prevention Goals

The group's recommendations are summarized in a final report that is available from the DEQ website at: www.deq.state.or.us/wmc/solwaste/wplg/wplgfinalreport . Those recommendations include waste prevention goals that address waste generation and persistent bioaccumulative toxins (PBTs).

- By 2005, and for subsequent years, achieve a 0% annual increase in per capita municipal solid waste generation.

- By 2009, and for subsequent years, achieve a 0% annual increase in total municipal solid waste generation.
- By 2009, policies and programs shall be established to ensure that PBT-containing products shall no longer be disposed of as solid waste in Oregon.

Recovery Goals

The WPLG's proposed waste recovery goals address both wasteshed (i.e. county) and statewide recovery rates.

- New, higher wasteshed recovery rates will be set for 2005 and 2009.
- By, 2005, the statewide recovery rate shall be at least 45%.
- By 2009, the statewide recovery rate shall be at least 50%.

The WPLG specified the need for increased recovery of construction and demolition material (C&D), commercial waste, and food waste in the larger wastesheds in order to meet these goals.

Product Stewardship

The WPLG also recommended adoption of a product stewardship policy for three priority products: electronics, mercury-containing products, and carpet. Product stewardship, both voluntary and regulatory, is a growing trend in many industries and countries. A primary aim of product stewardship is to internalize the costs of end of life management into the costs of producing and selling products so that government and the general taxpaying public do not pay those costs. This can be achieved by ensuring that all parties involved in producing, selling, and using these products bear greater responsibility for the full environmental impact of the product from a life-cycle perspective. The WPLG product stewardship proposal calls for stakeholder negotiations involving state and local government and the affected industries to reach agreement on the specific steps to be taken and a timeline for implementation.

Used Tires

In response to the recent sharp drop in Oregon's tire recycling rates, the WPLG recommended that the legislature set a recovery goal of 95% by 2009, and that a stakeholder group made up of industry and government representatives be convened to draft an action plan to implement programs to meet the goal.

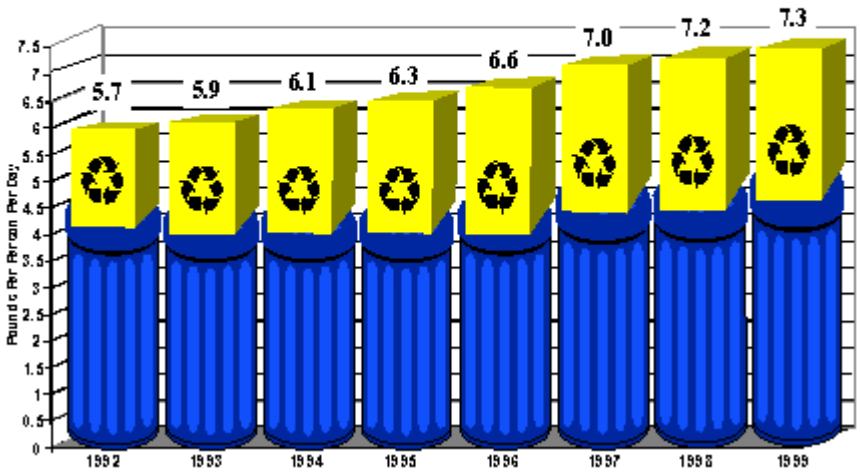
Bottle Bill

Finally, the WPLG recommended expanding the deposit law (bottle bill) to include all single-serving drink containers and increasing the deposit amount from five cents to ten cents, with provisions for a portion of the unredeemed deposits to be paid to retailers to partially offset their collection costs.

C. WASTE GENERATION

The amount of residential, commercial, and construction solid waste generated in Oregon has increased from 3,102,778 tons in 1992, to 4,415,191 tons in 1999, an increase of over 42%, far more than the 11% increase in the state's population over the same period. It is particularly troubling, that on a per-person basis, Oregonians are generating more and more waste each year. Figure 1 shows per capita waste generation has increased from 5.7 pounds-per day in 1992, to 7.3 pounds-per-day in 1999, an increase of 28 percent over a seven year period. Oregonians continue to consume more and more materials and natural resources each year. In order to reduce environmental impacts and conserve resources, it will be necessary to reverse this disturbing trend.

Figure 1

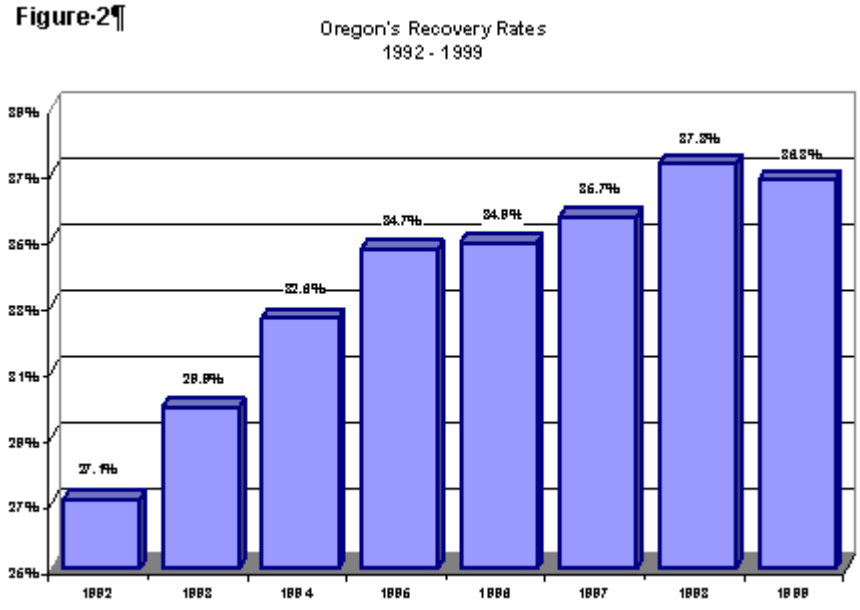


D. RECYCLING AND WASTE RECOVERY

The Oregon legislature established a 50% statewide recovery goal for the year 2000 and assigned each wasteshed (county) with individual recovery goals. These wasteshed rates were to be reached by 1995, at which time the legislature was to re-evaluate the progress made and determine what further actions, if any, were necessary. Consequently, each wasteshed has set interim goals for recovery, which range from 8% in a sparsely population rural county to 52% in the metropolitan area of Portland. The actual 1999 wasteshed goals achieved ranged from 11% to 43%.

Oregon's 1999 statewide recovery rate was 36.8%. Figure 2 shows the progress of waste recovery over the last six years.

Figure 2



Statewide, the increase in recovery rates between 1992 and 1999 can largely be attributed to a very significant increase in recovery of organics - particularly wood waste and yard debris - and to an increase in paper recovery. Tire recovery rates, on the other hand, have dropped steeply. The below table shows the recovery rates for different materials in 1994 and 1999, and the percentage of the disposed waste stream that each material makes up in 1999 based on projections from the 1998 waste composition study.

	1994 Oregon recovery rate %	1999 Oregon recovery rate %	1999 Percent of waste disposed
All recyclable paper*:	53.5%	61.1%	14.6%
Cardboard/Kraft	66.5%	71.1%	4.5%
Newspaper	72.6%	78.4%	1.8%
Other recyclable paper*	26.9%	39.1%	8.3%
All Plastic	7.9%	7.0%	8.7%
Container glass	56.6%	63.5%	1.7%
All metals	25.9%	49.1%	6.4%
Food & Grease	6.1%	5.3%	13.9%
Yard Debris	61.5%	67.6%	4.9%
Wood	42.7%	53.3%	10.6%
Asphalt Roofing	0.0%	9.7%	2.8%
Gypsum	9.6%	6.2%	3.7%
Tires	97.9%	32.5%	1.7%
All other*	7.0%	4.4%	31.2%

More detailed information on waste generation, material recovery, and specific wasteshed programs can be found in Section 3 of the full report.

E. WASTE CHARACTERIZATION

The legislature directed DEQ to conduct periodic waste characterization/composition studies to determine the precise types and quantities of materials that are being disposed in Oregon. This information allows recycling managers and businesses to target recycling efforts towards those materials that currently are not being successfully recovered.

1998 statewide waste composition study showed a few positive trends. The percentage of recyclable paper and yard debris being disposed was less in 1998 than in earlier studies. This decrease in disposal appears to be caused by increases in recovery of these materials. Paper remains the largest group of materials disposed by weight and food waste remains the largest single material disposed. The last column of the above table shows makeup of the disposed, non-industrial waste from Oregon based on this study. A new statewide study was conducted throughout the year 2000, and results should be available in the Spring of 2001. For details, see the study in Section 4 of the full report.

F. HOUSEHOLD HAZARDOUS WASTE

1999 was another successful year for DEQ's Household Hazardous Waste (HHW) Program. DEQ sponsored seven collection events, which attracted over 3,000 participants. The Salem collection event held in the Fall of 1999 set a DEQ-sponsored collection event attendance record with 1,569 participants. The average amount of waste collected per participant at the

1999 events was approximately 75 pounds.

The recently revised DEQ Household Hazardous Waste Management Plan calls for two major changes in emphasis within the HHW program: 1) To shift increasingly more resources to grants to help local municipalities develop their own capacity for HHW management. Correspondingly, the resources available for DEQ-sponsored collection events will have to decrease over time. 2) To shift the focus of HHW collection efforts toward high hazard wastes (e.g. mercury) vs. less hazardous wastes (e.g. latex paint.) Section 6 of the full report provides more detailed data about household hazardous waste collection and management in Oregon.

G. DISPOSAL

Currently, there are 36 operating municipal solid waste landfills, one mixed solid waste energy recovery facility, and one mixed solid waste incinerator operating in Oregon. Nearly 100 landfills have been closed in Oregon in the past two decades, and a handful of new facilities have opened. However, it is important to note that both the potential for landfills to leak contamination and the need for regulatory oversight continue well beyond the date at which a facility stops accepting waste for disposal. Continued monitoring of groundwater and methane gas levels may be necessary for decades after a facility closes to the public.

Many of the landfills that remain open or that have opened in the past decade are larger facilities that accept waste on a regional rather than a local basis. Some of these landfills are among the nation's largest, providing Oregon with sufficient disposal capacity for many years to come.

For more detailed information about disposal and a map of disposal facilities in Oregon see Section 2 of the full report.

The full report of the 2000 information update is organized according to the table of contents below. In an effort to conserve natural resources, only Section 1, the Summary Of Statewide Information, is being distributed in hard copy. Other sections can be found on the Department of Environmental Quality's web site at www.deq.state.or.us/wmc/solwaste/2000update.html on the Recycling and Solid Waste Program Web Page. The reader can access and print any part of the report without having to copy the entire report.

SECTION 1: Summary of Statewide Trends and Information

SECTION 2: 1999 Disposal Status

SECTION 3: 1999 Oregon Material Recovery Rate Report

SECTION 4: Oregon Waste Composition Study Update

SECTION 5: Disposal Costs in Oregon (Coming Soon)

SECTION 6: 1999 Household Hazardous Waste Information

SECTION 7: Final Report of the Waste Policy Leadership Group (WPLG)

For questions, comments, or further information please email solwaste@deq.state.or.us or contact the Department of Environmental Quality's Solid Waste Policy and Program Development Section, 811 SW Sixth Avenue, Portland, OR 97204, 503-229-5913 or toll-free in Oregon, 1-800-452-4011.

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1999 Oregon Material Recovery Survey Report

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*Forms from Appendix 2 are not available online. To request these forms, please contact Mary Sue Gilliland at (503) 229-5808 or toll-free in Oregon at 1-800-452-4011, ext. 5808.

List of Tables

Acknowledgments

The Department of Environmental Quality's (DEQ) Solid Waste Policy and Program Development Section conducted the eighth annual Oregon Material Recovery Survey for calendar year 1999. DEQ extends its appreciation to industry representatives, haulers, and landfill administrators and staff for providing recovery and disposal data for 1999 and to the Metro staff for their work on the survey. This year's survey results were reported earlier than in previous years due to the efforts of Chris Taylor, Solid Waste Policy & Program Development Manager, who assigned additional staff to the project and facilitated expeditious survey processing. Survey staff also thank DEQ personnel who contributed to the accuracy and integrity of the information contained in this report:

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Introduction and Purpose

This report gives background and results of the eighth annual Oregon Material Recovery Survey compiled by Oregon DEQ's Solid Waste Policy and Program Development Section. The results of this survey are used to calculate wasteshed and statewide recovery rates and to monitor progress toward Oregon's recovery goals.

The Material Recovery Survey was mandated by the 1991 Legislature, which set a 50% material recovery goal for the state for the year 2000. To measure progress toward the statewide goal, Oregon Revised Statute 459A.010 established 1995 required rates for wastesheds. Wastesheds are comparable to counties except for the Metro wasteshed, which includes Clackamas, Multnomah, and Washington counties, and the City of Milton-Freewater, which is its own wasteshed. The required wasteshed rates range from 7% in rural areas to 40% in the Portland metropolitan area, whereas their actual rates range from 11% to 43%.

Although the deadline for meeting the original required rates has passed, the 1997 Legislature passed legislation requiring the wastesheds to set new goals and to maintain the lesser of their required rate or their actual 1996 rate (no backsliding). This legislation also provided for 2% credits on wasteshed recovery rates for waste prevention, reuse, and home

composting programs approved by DEQ. In 1999, 11 of the 35 wastesheds received one or more of these credits (see Table 1).

Requirement to Report

Oregon law requires that all companies surveyed respond to the Material Recovery Survey or be subject to enforcement action. Because of the difficulty of separating post-consumer scrap metal from commercial and industrial scrap metal, scrap metal dealers are exempt from mandatory reporting.

Oregon's waste haulers and private recycling companies must report on all the recyclable materials they handle, including the amount collected, county of origin of each material, and where materials are marketed. The survey tracks about 40 materials collected for recycling, composting, or energy recovery. Data on disposed tonnage comes from quarterly or annual disposal fee report forms.

Oregon law requires DEQ to keep the information reported on the Material Recovery Survey confidential, including customer lists or specific amounts and types of material collected or marketed by individual companies. Only aggregate information can be released to the public.

Materials Included in the Survey

Oregon's recovery rate includes only post-consumer materials collected for recycling, composting, or energy recovery. Waste from manufacturing and industrial processes (pre-consumer materials), reconditioned and reused materials, and out-of-state waste disposed in Oregon are excluded. Commercial scrap metal, including demolition debris, discarded vehicles or parts of vehicles, major equipment, and appliances handled by scrap metal dealers, also are excluded. Scrap metal collected at disposal sites, by haulers, at community recycling depots, or through municipally-sponsored collection events counts as recovered material.

Chart 1: Materials Recovered In Oregon 1992-1999

The recovery rate includes materials composted or burned for energy recovery if there is no viable market for recycling the material. A viable market is "a place within a wasteshed that will pay for the material or accept the material free of charge; or a place outside a wasteshed that will pay a price for the material that, at minimum, covers the cost of transportation of the material." (ORS 459A.010(4)(b))

The first Material Recovery Survey in 1992 included 24 types of materials; the 1999 survey contains 40 materials.

The major materials included in 1999 are:

- **Paper** — Newspaper, high-grade paper, corrugated cardboard/kraft paper, magazines, phone books, mixed waste paper.
- **Plastic** — #1 PET beverage containers, #2 HDPE milk jugs, #2 HDPE other, #3 PVC, #4 LDPE, #5 polypropylene, #6 polystyrene, composite plastic (such as carpet pad), mixed plastic.
- **Glass** — Container glass, such as refillable bottles and all other container glass or cullet; other glass.
- **Metals** — Tinned cans, aluminum, other scrap metals.
- **Organics** — Wood waste, yard debris, food waste, animal waste.
- **Other** — Tires, used motor oil, lead acid batteries, gypsum, roofing materials,

carpeting, textiles, paint/solvents, lead-acid batteries.

Haulers who collected commingled materials were asked to estimate the amount of individual materials in the commingled loads. It is becoming increasingly difficult to make these estimates for individual materials, but the computer system used to calculate statewide and wasteshed recovery rates was designed to make calculations based on amounts of individual materials recovered. As amounts (and definitions) of individual materials become less meaningful, DEQ may attempt to combine materials.

Methodology

Data Sources

This report gives details on the 1999 statewide and wasteshed rates, as measured by data reported on the 1999 Material Recovery Survey, 1999 Recycling Collector (hauler) Survey, and quarterly and annual Solid Waste Disposal Report/Fee Calculation forms (see samples at the end of this report).

In 1999 DEQ collected recycling and disposal data from:

- 263 private recycling companies, including buy-back centers, intermediate processors, yard debris composting facilities, beer and soft drink distributors, and end users (7 other companies did not respond to the survey; see Appendix 1 for a list of responding and non-responding companies)
- 198 waste haulers
- 12 scrap metal dealers (32 scrap metal dealers did not respond to the survey; see Appendix 1 for a list of responding companies)
- 40 disposal sites handling municipal and construction and demolition wastes.

Another 67 surveys were mailed to companies that went out of business during the year, could not be located, or did not collect materials for recycling in Oregon in 1999.

Data Requirements

In order to collect, analyze, and perform quality checks on the data generated by the survey, DEQ developed a computer system for entering and storing data, calculating recovery rates, and generating reports. The Solid Waste Information Management System (SWIMS) is an Oracle database that:

- Holds information about disposal sites, haulers, and recycling companies that DEQ surveys.
- Tracks receipt of survey forms and follow-up actions taken by DEQ staff to maximize the response rate.
- Stores information about the collection, storage, transfer, and disposition of recovered materials by wasteshed and collection method.
- Performs data validation functions and calculates material recovery rates.
- Generates reports to assist DEQ in analyzing the data and responding to legislative reporting requirements, such as annual per capita weight disposed and recovered by county and statewide, annual recovery rate, and types and amount of material recovered.

DEQ staff also use an Access database to create custom queries and reports from SWIMS tables.

Data Collection and Management

For most materials, the recyclers who directly collected the bulk of the material in each county are surveyed. However, it is not practical to identify and survey generators of recyclable materials (such as all the retail stores in the state), so DEQ also surveys the processors and end-users to whom the original collectors transfer their material.

Survey recipients were asked to return the completed surveys by Feb. 28, 2000. About 145 of the 304 private recycling companies met the deadline. In May 2000, 44 private recycling companies who did not respond to the survey were sent letters of non-compliance (NONs). All but 7 of those companies responded to the NONs.

All but 3 hauler forms were received by the beginning of April. Metro-area forms were reviewed by Metro staff for completeness before being forwarded to DEQ staff. Receiving the hauler forms earlier than in previous years enabled DEQ staff to release this year's recovery rates earlier than ever before.

As surveys were received, DEQ staff checked the data for completeness and, in many instances, verified information by calling the survey respondent. Once approved, the data was entered into the SWIMS database, and a number of quality control checks were performed. The two most important checks are:

- Comparing information from different sources. For example, often collectors report sending more material to a recycler (or end user) than the recycler reports receiving. This issue is usually resolved by directly calling either the receiving recycler or both the recycler and the collectors to determine the source of the discrepancy. When a discrepancy cannot be resolved by talking to the involved recyclers, the information provided by the end user is used in most cases.
- Examining per-capita recycling calculations for unlikely results. For example, occasionally more material is reported as recovered than would be expected in a county, based on estimates using population. This issue is resolved by determining which survey respondents reported collecting or handling the material for the county in question, looking for unlikely results in their reports, and calling the involved recyclers. Problems in the units of measurement used sometimes cause these types of unlikely results.

Quality of data. This is the eighth year DEQ has collected recovery rate data. Many companies who report have set up their record-keeping mechanisms to help them provide complete, accurate, and timely data. However, each year DEQ staff encounter problems with reported data that need to be resolved. For example, with the 1999 data, DEQ staff took extra steps to evaluate the amounts of tires reported as recovered and disposed. Through this analysis, staff discovered that 22,998 tons of tires originally reported as generated in Oregon actually came from out-of-state. This amount was thus deducted from the statewide total of tires generated in Oregon in 1999.

How Recovery Rates Are Calculated

The formula for determining recovery rates is:

Amt. Disposed + Amt. Recovered = Total Generated

$$\frac{\text{Total Recovered}}{\text{Total Generated}} = \text{Recovery Rate}$$

For each county, information about the quantities of material collected from privately

operated recycling and material recovery facilities is combined with information from hauler and disposal site collections. This determines the total weight of material recovered.

Next, the total weight of material recovered is added to the total weight of material disposed. This determines the total weight of material generated. Finally, the total weight of material recovered is divided by the total weight of the material generated.

Direct collectors of materials are the primary and best source of information for the collected materials' county of origin. This information is used whenever it is available. When information from direct collectors is not available, or when a survey respondent does not know the county of origin for the collected materials, the markets' and end users' estimates for county of origin is the secondary method used to allocate material back to counties. Material is allocated back to the counties based on population only when survey respondents cannot accurately estimate county of origin.

Since 1997, wastesheds have been eligible for 2% credits toward their recovery rates if they certify that they implemented programs in waste prevention, home composting, and reuse (2% credit for each program). Eleven wastesheds received at least one 2% credit in 1999:

Benton 6%
Clatsop 2%
Deschutes 4%
Douglas 4%
Jackson 6%
Lane 6%
Lincoln 2%
Linn 4%
Marion 6%
Metro 6%
Polk 2%

Double Counting of Materials

Because of the processing chain for recyclable materials and in order to determine recovery rates for individual wastesheds as well as the state as a whole, DEQ must survey multiple companies handling the same material. This means that the potential for double counting of materials is a major issue. For example, haulers collecting materials are surveyed. Processors who purchase the materials from the haulers, generally small- to medium-sized recycling companies, and markets or end users of materials also are surveyed.

Having information on where each collector or recycler sells their material allows DEQ to eliminate the double counting of that material. SWIMS was designed to track materials transferred from one collector to a second recycler, subtracting material which a reporting company sold to another, while at the same time keeping track of the county of origin for the material.

The Amount Disposed includes municipal solid waste and excludes industrial process waste, asbestos, sludge, petroleum contaminated soil, and full loads of inert material, such as rock, if a record is kept at the disposal site.

Wastesheds are comparable to counties except for the Metro wasteshed, which includes Clackamas, Multnomah, and Washington counties, and the City of Milton-Freewater, which is its own wasteshed.

Results

1999 Statewide Recovery Rate

For the first time since the survey began in 1992, the statewide recovery rate declined. On

the other hand, the trend upward in total solid waste generation continued. In 1999, the state of Oregon recovered 1,626,458 tons, or 36.8% of the total "counting" (municipal) waste stream. This is a 1% increase in tonnage from 1998, when 1,605,741 tons were collected. The 1999 recovered tonnage translates to 985 pounds per person per year (2.7 pounds per day) compared to 983 pounds per person per year in 1998 (2.7 pounds per day).

Chart 2: Oregon Generation, Disposal, and Recovery Per Capita 1992-1999

Table 8 gives a breakdown of the recovered materials, and Table 9 shows the disposition of recovered materials – whether material was recycled, composted, or burned for energy recovery.

Oregon's recovery rate and total amount recovered increased each survey year from 1992 through 1998. In 1999, the amount recovered increased again, but the recovery rate decreased slightly because the total amount recovered increased at a lower rate than the total amount of material generated. In other words, the numerator in the equation shown on page 4 increased less than the denominator.

Year	Percent	Tons
1992	27.0%	839,679
1993	29.9%	974,694
1994	32.5%	1,118,913
1995	34.7%	1,257,225
1996	34.9%	1,338,446
1997	35.7%	1,462,663
1998	37.3%	1,605,741
1999	36.8%	1,626,458

The total amount of municipal solid waste generated (waste disposed plus materials recovered) has increased each year, as well as the per capita amount generated:

MSW Generated *(tons)*		MSW Per Capita/Year *(lbs.)*	MSW Per Capita/Day *(lbs.)*
1992	3,102,778	2,083	5.7
1993	3,255,202	2,143	5.9
1994	3,437,255	2,231	6.1
1995	3,623,705	2,314	6.3
1996	3,836,183	2,412	6.6
1997	4,100,180	2,549	7.0
1998	4,301,657	2,633	7.2

1999	4,415,191	2,675	7.3

Using the 1999 generation rate of 4,415,191 tons of solid waste, 2,207,595.5 tons would need to be recovered in order for the state to reach a 50% recovery rate. To meet this goal, recovery would have to increase more than 36% over the current level of 1,626,458 tons. Based on the state's recovery trends, it's reasonable to assume that Oregon will not meet its 50% recovery goal for the year 2000.

Wasteshed (County) Recovery Rates

Twenty wastesheds had calculated recovery rates in 1999 that were equal to or greater than their 1998 rates, compared to 26 in 1998. Only Hood River wasteshed did not meet its required rate in 1999. Two other wastesheds used 2% credits to help them meet their required rates (Clatsop and Polk). Table 1 shows a breakdown of 1999 recovery rates by wasteshed, and Table 2 gives the amount of materials recovered in 1999 by wasteshed. Table 3 shows the amounts of solid waste disposed by wasteshed in 1999.

For an historical look at recovery rates in Oregon, Tables 4, 5, 6, and 7 give the recovery rates, recovered material amounts, disposal tonnages, and amounts of solid waste generated, by wasteshed, for 1992-1999.

Disposal

The amount of municipal solid waste disposed in Oregon in 1999 was 2,788,733 tons (see Table 3) or 1,690 pounds per person per year, based on a statewide population of 3,300,800. This translates to 4.6 pounds of municipal solid waste disposed per person per day. This per capita rate is slightly higher than the 1998 rate of 1,650 pounds per person. Thus, in 1999 Oregonians continued the trend of disposing of more solid waste per person each year. DEQ staff attribute this trend to a strong economy fueled by a construction boom and more households with fewer individuals per household than in the past.

Information on disposal tonnages comes from annual or quarterly reports filed with DEQ by disposal sites for fee collection purposes. Disposal sites report "counting" waste by county. They also report waste which state law allows to be excluded from the calculation for the amount disposed for recovery rate purposes. "Non-counting waste" includes industrial waste from manufacturing processes, sewage sludge, asbestos, petroleum-contaminated soil, and inert waste (full loads only) such as rock and gravel, brick, dirt, concrete, and asphalt paving. "Counting" waste includes construction and demolition wastes such as wood waste, asphalt roofing, carpeting, and gypsum wallboard.

As in 1998, DEQ staff analyzed the disposal data for tires by contacting the sources reporting tires. The goal of this review was to verify information about the number of tires that came from out-of-state. In 1998, DEQ staff found that about 16,000 tons of tires originally reported as generated in Oregon actually came from out-of-state sources. In 1999 the discrepancy was 22,998 tons. Most of this amount was deducted from the disposed total tonnage because most of these tires were disposed of, not recovered. This change affected the allocation of tires disposed and recovered in all wastesheds.

DEQ staff also uncovered errors in data reported for the amount of corrugated cardboard and wood waste recovered in 1999. These were recovery overstatements in commercial recovery reporting by end-users.

Per Capita Data

County recovery rates alone do not always provide the type of detailed information needed to determine how waste is managed in a county. Per capita disposal and recovery rates are useful for providing this information. Low disposal rates may reflect a low generation rate or a difference in waste disposal methods. Residents in rural areas might be more likely to dispose of their waste by burning it in burn barrels or by putting it on the "back 40" than in hauling it to a landfill. Waste disposed outside of permitted disposal sites is not measured and thus is not counted as waste disposed for the purposes of this study. For example, while the statewide average pounds disposed per person in 1999 was 1,690, in some less populated counties in Eastern Oregon, the per capita disposal rate falls below 1,000 pounds per person and is as low as 450 pounds per person in Wheeler County.

DEQ staff also use per capita disposal and recovery rates to check the reported data for inconsistencies and unlikely results.

Materials Recovered

The 1999 recovery rate includes materials recycled, burned for energy recovery (tires, used oil, wood waste, and some yard debris), or composted (yard debris and some wood waste). Although 1999 marked yet another year of fluctuating market prices, the total amount of materials collected for recovery went up about 1% from 1998. As in 1998, metals showed the greatest increase in amount recovered. The amount of used motor oil recovered went down by 25%, and the amount of papers recovered went down by 2%. A summary by material follows.

Metals. The amount of recovered metals went up considerably; total metals went up 23%, while scrap metal alone went up 24%. As in 1997 and 1998, DEQ staff believe this increase is largely due to a change in reporting by one large processor, who examined its categories of materials and determined that some materials reported as industrial in the past were indeed post-consumer materials. However, the combined amount of aluminum and tinned cans recovered went up 16% from 1998 to 1999.

Papers. The amount of recovered papers decreased by 2.4% overall. While some grades increased, others decreased. The changes are reflective of the increase in commingled collections of paper mixes more than actual increases or decreases in individual grades. While newsprint increased by 19% and phone books by 20%, corrugated cardboard decreased by 5%, high-grade paper by 19%, magazines by 47%, and mixed scrap paper by 4%.

Organics. In 1999, the amount of organic materials recovered increased by 1.4% from 1998. Both wood waste and yard debris collections increased (3% for wood waste, 2% for yard debris), but animal waste and grease decreased by 16% from 1998 amounts recovered

Other materials. The amount of plastics recovered went up by 2%, but plastics still account for only 1% of the total materials recovered. The amount of tires recovered in 1999 increased by 10%, but at the same time, the amount of used motor oil went down by 25%. A small portion of this decrease in recovery of used motor oil is due to the fact that one of the used oil processor did not response to the Material Recovery Survey in 1999.

Chart 3: Materials Recovered In Oregon 1999

1999 Disposition of Total Waste Generated

Disposed	63.2%
Recycled	25.0%
Composted	4.5%
Recovered for Energy	7.1%

Conclusion

The statewide recovery rate for 1999 was 36.8%, down from 37.3% in 1998. All but one wasteshed met or exceeded their required recovery rates, although two wastesheds used 2% credits to help them meet their required rates. In 1999, 20 wastesheds had recovery rates that were equal to or greater than their 1998 rates.

While Oregon's recovery rate has decreased slightly this year, the state continues to collect more material each year for recovery. Unfortunately, any gains in recovery were negated since the amount of solid waste generated continues to increase at a proportionately higher rate. In 1992, each Oregonian generated 2,083 pounds of solid waste; in 1999 that figure had increased to 2,675 pounds per person – a 28% increase over 8 years.

Solid waste generation also increased disproportionately in the 1990s in other parts of the country where the economy was good and construction levels high. We believe that the increase is also a reflection of our consumer-based culture and an increase in the number of households in the state with fewer individuals per household than in the past.

Oregon solid waste disposal and recycling companies and DEQ devote considerable time and money to the annual recovery rate calculation. Because of this commitment, Oregonians have one of the best estimates of recovery and disposal of solid waste in the country.

For questions, comments, or further information please email solwaste@deq.state.or.us or contact the Department of Environmental Quality's Solid Waste Policy and Program Development Section, 811 SW Sixth Avenue, Portland, OR 97204, 503-229-5913 or toll-free in Oregon, 1-800-452-4011.

Updated: January 9, 2001
DEQ Online is the official web site for the Oregon Department of Environmental Quality.

Wasteshed Programs for a 2% Recovery Rate Credit

1997 HB 3456 creates three new "Programs" which a wasteshed may choose to implement. For each Program implemented, the wasteshed receives a 2% "credit", with a possible total of 6%, on its recovery rate for the year(s) in which the Programs are implemented.

In order to receive the credits, the county must report Program activities to DEQ.

The Programs are: Waste Prevention, Reuse, and Residential Composting.

The 2% Credit Program Criteria: OAR 340-090-0045.

The Wasteshed Reporting Criteria for the 2% Credit Programs: OAR 340-090-0060(3).

To receive the 2% credit for any of the following three Programs, a wasteshed has to implement from the list below:
- a), an education or promotion campaign,
- two of the components under b).

1. **Waste Prevention Program**
   a. Waste Prevention Education Campaign
   b. - 2% Waste Generation Reduction
      - Residential Waste Prevention Promotion
      - Waste Prevention and Reuse Education in Schools
      - Waste Prevention Assessments
      - Waste Prevention Campaign for Businesses
      - Resource Efficiency Model City Program

2. **Reuse Program:**
   a. Reuse Promotion Campaign
   b. - C&D Debris Salvage Program
      - Promotion of Reuse Program
      - White Goods Take-Back Program
      - Waste Exchange Programs
      - Reuse at Transfer Stations or Landfills
      - Sidewalk Pickup or Community Fair Program

3. **Residential Composting Program:**
   a. Residential Composting Promotion Campaign
   b. - Grasscycling
      - Composting in Schools
      - Compost Bins for Residents
      - Yard Trimming or Food Waste Program

Form for 2% Credit: Recovery Rate Credit Claim (49k XLS)

For questions, comments, or further information please email solwaste@deq.state.or.us or contact the Department of Environmental Quality's Solid Waste Policy and Program

Development Section, 811 SW Sixth Avenue, Portland, OR 97204, 503-229-5913 or toll-free in Oregon, 1-800-452-4011.

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DEQ Online is the official web site for the Oregon Department of Environmental Quality.

Table 1: Wasteshed Recovery Rates, 1999

Wasteshed	Tons Disposed	Tons Recovered	Tons Generated	Calculated Rate[1]	2% Credits[2]	Total Recovery Rate	Rate Required by Law	New Goal[3]
Baker	12,602	2,792	15,395	**18%**		**18%**	15%	25%
Benton	54,675	29,992	84,668	**35%**	**6%**	**41%**	30%	45%
Clatsop	32,047	10,333	42,380	**24%**	**2%**	**26%**	25%	25%
Columbia	23,519	7,732	31,251	**25%**		**25%**	25%	27%
Coos	39,302	11,068	50,370	**22%**		**22%**	15%	31%
Crook	14,034	4,177	18,211	**23%**		**23%**	15%	23%
Curry	15,210	5,720	20,930	**27%**		**27%**	15%	35.09%
Deschutes	111,141	36,537	147,678	**25%**	**4%**	**29%**	25%	32%
Douglas	86,354	30,878	117,232	**26%**	**4%**	**30%**	25%	30%
Gilliam	1,446	263	1,708	**15%**		**15%**	7%	20%
Grant	3,375	734	4,109	**18%**		**18%**	7%	19%
Harney	3,299	1,703	5,002	**34%**		**34%**	7%	25%
Hood River	16,021	3,696	19,717	**19%**		**19%**	25%	25%
Jackson	151,523	60,638	212,160	**29%**	**6%**	**35%**	25%	40%
Jefferson	9,870	2,693	12,563	**21%**		**21%**	7%	26%
Josephine	42,449	30,928	73,377	**42%**		**42%**	25%	40%
Klamath	65,045	11,447	76,492	**15%**		**15%**	15%	15%
Lake	3,321	410	3,731	**11%**		**11%**	7%	8%
Lane	263,180	180,383	443,563	**41%**	**6%**	**47%**	30%	45%
Lincoln	40,984	9,912	50,896	**19%**	**2%**	**21%**	15%	19%
Linn	71,818	35,776	107,593	**33%**	**4%**	**37%**	30%	40%
Malheur	20,844	6,538	27,383	**24%**		**24%**	15%	20%
Marion	230,271	109,639	339,912	**32%**	**6%**	**38%**	30%4	35%
Metro	1,240,433	932,889	2,173,321	**43%**	**6%**	**49%**	40%	52%
Milton-Freewater	5,383	1,191	6,574	**18%**		**18%**	15%	30%
Morrow	5,930	1,446	7,375	**20%**		**20%**	7%	13%
Polk	38,163	15,429	53,592	**29%**	**2%**	**31%**	30%	30%
Sherman	1,109	348	1,456	**24%**		**24%**	7%	22%
Tillamook	17,446	6,930	24,377	**28%**		**28%**	15%	30%
Umatilla	57,420	18,947	76,367	**25%**		**25%**	15%	20%
Union	16,547	5,358	21,904	**24%**		**24%**	15%	26.17%
Wallowa	4,861	1,131	5,991	**19%**		**19%**	7%	20%
Wasco	18,727	9,692	28,420	**34%**		**34%**	25%	35%

Wheeler	360	80	439	**18%**		**18%**	7%	20%
Yamhill	69,994	38,842	108,835	**36%**		**36%**	30%	37%
Unspec.	35	188	222					
OREGON TOTALS	**2,788,733**	**1,626,458**	**4,415,191**	**36.8%**				

[1]The recovery rate is calculated using the following formula:

1) Tons Disposed + Tons Recovered = Total Tons Generated
2) Tons Recovered / Total Generated = Total Recovery Rate

[2] Legislation enacted in 1997 allows each wasteshed to apply for 2% credits toward the recovery rate for certified programs in waste prevention, home composting, and reuse.
[3] New goals are those set by each wasteshed, as required by 1997 legislation. They go into effect on various dates.
[4]Because Marion County has an energy recovery facility, any amount of waste over 180,000 tons must achieve a 30% recovery rate
(ORS 459A.0101(7)). Marion's true 1995 goal is therefore 27% (82,473.9 tons).

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Updated: September 11, 2000

Table 4: Oregon Calculated Recovery Rates by Wasteshed, 1992-1999

Wasteshed	1992 Rate	1993 Rate	1994 Rate	1995 Rate	1996 Rate	1997 Calculated Rate*	1998 Calculated Rate*	1999 Calculated Rate*	Required Rate
Gilliam	17%	6%	15%	20%	19%	21%	18%	15%	**7%**
Grant	18%	14%	16%	19%	16%	15%	16%	18%	**7%**
Harney	18%	21%	20%	34%	24%	21%	34%	34%	**7%**
Jefferson	21%	16%	18%	22%	24%	33%	33%	21%	**7%**
Lake	6%	6%	9%	8%	7%	6%	8%	11%	**7%**
Morrow	11%	16%	13%	12%	13%	17%	17%	20%	**7%**
Sherman	24%	17%	20%	20%	21%	11%	16%	24%	**7%**
Wallowa	6%	8%	11%	18%	11%	16%	16%	19%	**7%**
Wheeler	7%	8%	11%	24%	20%	20%	25%	18%	**7%**
Baker	10%	14%	17%	22%	25%	19%	19%	18%	**15%**
Coos	21%	20%	23%	28%	29%	28%	27%	22%	**15%**
Crook	16%	23%	19%	30%	23%	15%	14%	23%	**15%**
Curry	21%	25%	27%	31%	35%	33%	29%	27%	**15%**
Klamath	13%	12%	17%	18%	15%	16%	17%	15%	**15%**
Lincoln	20%	20%	21%	19%	16%	19%	20%	19%	**15%**
Malheur	19%	15%	12%	15%	20%	19%	22%	24%	**15%**
Milton-Freewater	16%	13%	13%	22%	21%	20%	19%	18%	**15%**
Tillamook	31%	27%	28%	27%	26%	26%	26%	28%	**15%**
Umatilla	14%	15%	15%	19%	20%	25%	24%	25%	**15%**
Union	16%	19%	21%	30%	26%	29%	27%	24%	**15%**
Clatsop	19%	22%	20%	19%	20%	23%	22%	24%	**25%**
Columbia	34%	28%	22%	27%	22%	28%	29%	25%	**25%**
Deschutes	15%	18%	24%	22%	23%	25%	32%	25%	**25%**
Douglas	26%	23%	23%	24%	26%	29%	30%	26%	**25%**
Hood River	16%	24%	26%	16%	17%	17%	17%	19%	**25%**
Jackson	15%	19%	35%	33%	34%	34%	34%	29%	**25%**
Josephine	14%	19%	27%	34%	38%	37%	41%	42%	**25%**
Marion	26%	27%	27%	29%	28%	28%	30%	32%	**25%**
Wasco	25%	23%	26%	29%	30%	29%	31%	34%	**25%**
Benton	27%	30%	36%	35%	37%	41%	41%	35%	**30%**
Lane	19%	28%	32%	32%	39%	39%	40%	41%	**30%**
Linn	15%	27%	29%	30%	32%	33%	31%	33%	**30%**

Polk	20%	25%	24%	23%	19%	24%	26%	29%	**30%**
Yamhill	19%	22%	25%	30%	35%	25%	31%	36%	**30%**
Metro	35%	37%	39%	42%	41%	42%	43%	43%	**40%**
OREGON TOTALS	**27.1%**	**29.9%**	**32.6%**	**34.7%**	**34.9%**	**35.7%**	**37.3%**	**36.8%**	
*does not include 2% credits									

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