2017 Oregon Material Recovery and Waste Generation Rates Report

By:

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

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This report provides one of the most complete and accurate collections of state-level disposal and recycling data in the country.

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email deqinfo@deq.state.or.us.

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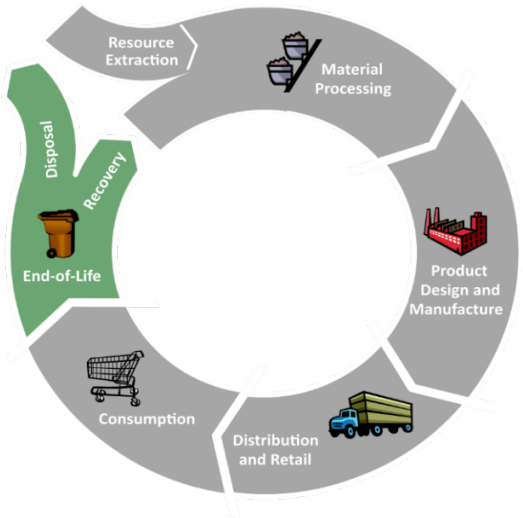
Executive summary

Materials management takes a holistic view of environmental impacts across the full life cycle of materials, as well as actions to reduce those impacts. It includes resource extraction and use of recovered materials, the design and production of materials, their use, and end-of-life management, including solid waste disposal and recovery.

This report focuses on how we manage materials at the end of their life, via disposal and recovery.

- *Disposal* refers to all materials placed in landfills and many materials burned in incinerators.
- *Recovery* refers to recycling, composting and some incineration for energy recovery.
- *Generation* is the sum of disposal and recovery and represents the total tonnage of the waste stream.
- The *recovery rate* is the percentage of generation recovered.

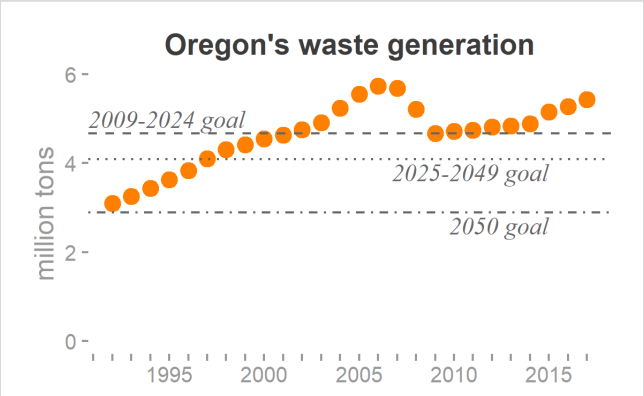
The materials life cycle



In 2017 Oregonians:

- Generated 5,534,877 tons of waste, up nearly five percent from 2016;
- Disposed of 3,207,448 tons into landfills and incinerators, up five percent from 2016; and
- Recovered 2,327,428 tons of material, 42.1 percent of the waste generated. This percentage was very similar to 2016's 42.2 percent.

The rise in generation was likely the result of a busy economy with abundant construction activity and purchasing of consumer goods. Aluminum, container glass, and plastic containers all showed increased recycling in 2017, likely due to the doubling of the refund value of beverage containers under the Oregon Bottle Bill in April 2017. Overall though, recovery remained lower than the peak in 2012-2013, due to the continued absence of markets for recovered wood. Compared to 2016, recovery of scrap metal and cardboard increased, but recovery of film plastics and miscellaneous paper declined.

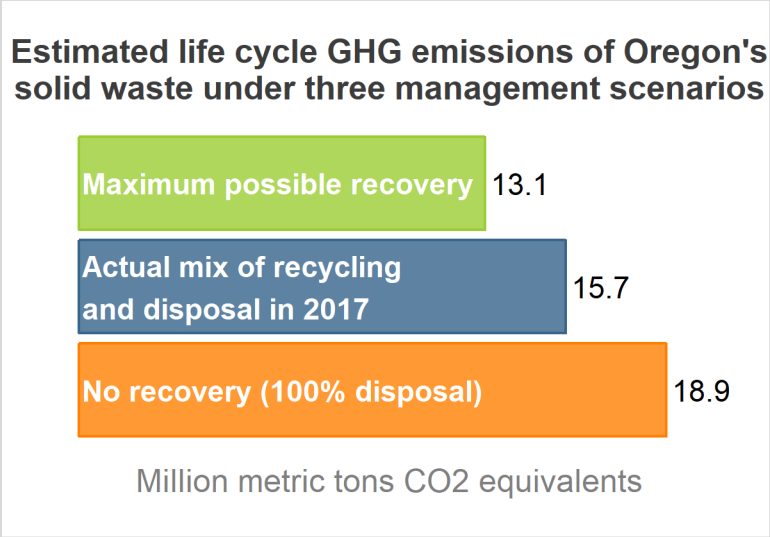


These charts show trends in waste generation and recovery in relation to the Oregon's long-term goals for reducing generation and increasing recovery (Oregon Revised Statute 459A.010).

Recovery via recycling and other means has environmental value. DEQ estimates that for greenhouse gas emissions, in 2017:

- Recovery reduced 3.2 million metric tons of CO_2 equivalents compared to a scenario where all waste was disposed.
- Another 2.6 MMTCO2E in reductions are possible, if recovery rates could be raised to the maximum possible level.

While recovery provides notable environmental benefits, Oregonians will need to do much more than increase recovery to achieve deep reductions in the environmental impacts of materials and waste. For context, Oregon's total GHG emissions exceeded 60 MMTCO2E in 2017. Large reductions in the impacts of materials will require other strategies, such as reducing overall material use and the resulting generation of waste.



This graphic shows the limited scale of recovery as a solution to reducing GHG emissions. DEQ and partners will need to addresses the entire life cycle of materials, and take action to not only improve the way we manage materials at the end of their life, but also to reduce impacts earlier in the life cycle.

Introduction and purpose

This report describes results and methodology for Oregon's Material Recovery Survey for calendar year 2017. "Material recovery" includes all materials collected for recycling or composting, and for a subset of materials, incineration with energy recovery. Each year, the Oregon Department of Environmental Quality compiles data on municipal post-consumer waste recovery. DEQ sends a survey to all collection service providers and private recycling companies that handle materials for recycling, composting and energy recovery. Survey data is combined with data gathered from quarterly and annual disposal site reporting forms. Together, recovery and disposal numbers make up the amount of waste generated by Oregonians each year.

$$\frac{\textit{Total Recovered}\ \textbf{2,327,428 tons}}{\textit{Total Generated}\ \textbf{(Total Recovered + Total Disposed)}\ \textbf{5,534,877 tons}} = \textit{Recovery Rate}$$

2017 OR Rate
42.1%

DEQ uses this information to estimate energy savings and greenhouse gas reductions, two important environmental benefits from material recovery. DEQ also uses it to calculate material recovery rates and waste generation. The recovery rate is the percentage of the total waste generated in Oregon that is recycled, composted or recovered for energy. Waste generation is the amount of waste recovered plus the amount of waste disposed. Recovery, disposal and generation data, as well as recovery rates, are calculated for the state and for each of Oregon's 35 individual wastesheds.

Individual wastesheds also use this information to implement and improve their waste prevention and material recovery programs.

This is the 26th year that DEQ has used the survey to gather this data. The 1991 Oregon Legislature enacted requirements for this annual survey and set goals for state and local recovery rates. These recovery goals were amended by the Legislature in 2001, and then again in 2015 (effective 2016). Wasteshed goals range from 15 percent (Lake Wasteshed) to 64 percent (Metro and Marion Wastesheds) by 2025. The statewide recovery goals are 52 percent recovery by 2020 and 55 percent recovery by 2025.

In 2001, the Legislature also established statewide goals for reducing waste generation. These goals were revised by the Legislature in 2015. The waste generation goals require that the generation of solid waste in the years 2025 to 2049 be 15 percent below the amount of solid waste generated in 2012, and for 2050 and beyond, the generation goal is 40 percent less than the waste generated in 2012.

Requirement to report

Oregon law requires that all publicly and privately operated recycling and material recovery operations complete a Material Recovery Survey form. This includes landfills, local recycling collectors, private recycling collection companies and depots, transfer stations, material recovery facilities, composters, local governments and any other operation that handles post-consumer recoverable materials. One exception, due to the difficulty of separating post-consumer scrap metal from commercial and industrial scrap metal, are companies handling only scrap metal. These companies are not required to report on privately obtained post-consumer scrap metal, but many do report on a voluntary basis.

The survey requires that companies report all recyclable materials they handle, including the amount of each material collected, the county of origin, the company they received any transfers from, and where or to whom the materials were marketed.

Oregon law further requires DEQ to keep confidential the information reported by private recyclers. This includes customer lists and specific amounts and types of materials collected or marketed by individual companies. For private recyclers, only aggregated information may be released to the public.

Materials included in the analysis

Oregon's analysis of the environmental benefits from material recovery and the recovery rates includes only post-consumer materials generated in Oregon for recycling, composting or energy recovery. Per Oregon's recycling law (Oregon Revised Statute 459A.010 (3)(a)), waste from manufacturing and industrial processes (pre-consumer materials), reconditioned and reused materials, material that can be disposed of as clean fill without being put in a landfill such as brick and concrete, and waste originating out of state (but handled in Oregon) are excluded. Some scrap metals, including discarded vehicles or parts of vehicles and metal derived from major demolition activities handled by scrap metal dealers, are also excluded. Scrap metal collected at disposal sites by collection service providers, at community recycling depots or through municipally sponsored collections events counts as recovered material.

The first Material Recovery Survey for the 1992 calendar year included 30 types of materials. Since then, some new materials have been added and other materials consolidated, so that the survey now contains 33 types of material. The major materials for 2017 are:

- Yard Debris
- Metals – Tinned cans, aluminum and other scrap metals
- Cardboard
- Wood Waste
- Paper Fiber – Other paper fiber (combined high-grade paper, newsprint and mixed scrap paper) not including cardboard
- Other – Including tires, used motor oil, antifreeze, batteries of all types, gypsum, asphalt roofing materials, textiles, paint, and animal waste and grease
- Container Glass
- Plastic – Rigid plastic containers, plastic film, other plastics and composite plastic (including carpet pad)
- Food Waste – Residential and commercial food waste
- Electronics

A complete list of materials recovered is included in Table 8, at the end of this report.

Recovery and reductions in environmental impacts

Summary of analytical results

Oregon's recovery activity in 2017 can be associated with:

- 3.2 million metric tons CO_2 equivalents of savings in greenhouse gas emissions; and
- 31 trillion British thermal units of savings in energy expenditures.

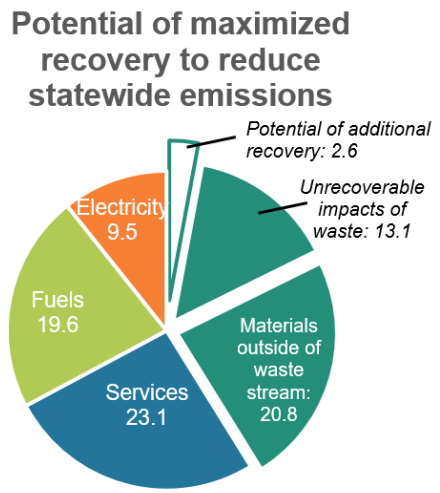
If recovery could be increased from its current rate (about 42 percent by weight) to the currently conceivable maximum rate (about 90 percent by weight), it can be calculated that:

- GHG emissions would decline an additional 2.6 MMTCO2E; and
- Energy expenditures would decline an additional 32 trillion BTU.

Such savings must be placed within the context of the state's total environmental impacts.

- Oregon's total GHG emissions are more than 60 MMTCO2E. A recent DEQ report[1] gives recent yearly totals as 66.2 MMTCO2E, from a sector-based method, and 88.7 MMTCO2E, from a consumption-based method. The consumption-based results are illustrated at right.
- Oregon's overall direct energy expenditures are nearly 977 trillion BTU per year, in a recent Oregon Department of Energy report.[2]

While increased recovery does present an opportunity for environmental impact reductions, the opportunity is limited. Increased recovery cannot provide the sizeable decreases in impacts anticipated by the state's greenhouse gas reduction goals (ORS 468A.205), or the *2050 Vision*.[3] Achieving greater reductions in environmental impacts of materials will require other materials management strategies.



Sources of GHG emissions in Oregon, in MMTCO2E, according to the state's consumption-based inventory, combined with results from a life cycle assessment of the solid waste stream. The impact of materials (in dark green) already includes the current benefits of recovery. Additional recovery (above current levels) offers 2.6 MMTCO2E in possible further impact reductions. The remaining GHG impacts of materials are either not preventable by recovery (13.1 MMTCO2E), or not represented by the solid waste stream at all (20.8 MMTCO2E).

[1] Oregon DEQ, "Oregon's Greenhouse Gas Emissions through 2015: An Asessment of Oregon's Sector-Based and Consumption-Based Greenhouse Gas Emissions," May 2018, www.oregon.gov/deq/FilterDocs/OregonGHGreport.pdf.
[2] Oregon Department of Energy, "Biennial Energy Report 2018," November 2018, www.oregon.gov/energy/Data-and-Reports/Documents/2018-Biennial-Energy-Report.PDF.
[3] Oregon DEQ, "Materials Management in Oregon: 2050 Vision and Framework for Action," 2012, www.oregon.gov/deq/FilterDocs/MManagementOR.pdf.

Understanding impact reductions

All products and materials can be seen within the context of the materials life cycle. Everything people touch or use has been created somehow – usually via "extraction" from the earth or soil, followed by production, distribution, consumption and use, and "end of life" processes such as disposal or recycling. Environmental impacts occur at every stage of this life cycle. For example, extracting ore, or operating a farm, uses machinery that emits GHGs and expends energy. The sum total of impacts associated with the materials life cycle are called the "life cycle impacts."

The materials life cycle

Recovery activities such as recycling and composting also create impacts. For example, recycling trucks emit GHGs and expend energy as they collect material, as does processing collected recyclables to create new products.

Where, then, do the "impact reductions" or "savings" associated with recovery come from?

DEQ assumes, as is conventional in the field of life cycle assessment, that use of recovered materials prevents production from newly extracted material, or otherwise prevents some undesired environmental impact. For example, production of a metric ton of glass from recycled sources may save about 300 kg of GHG emissions, *compared to the emissions of production from newly extracted material*.[4] Similarly, while aerobic composting does lead to CO_2 emissions, composting may still represent a savings *compared to the methane emissions that could result from disposal in a landfill*.[5]

Accordingly, "impact reductions" or "savings" are not direct measurements, but *projections* of how impacts could differ if materials had been managed differently at end-of-life.[6]

It is important to note that these impacts may occur spread over time instead of in a single year, and may occur in areas outside of Oregon. Though we associate the materials in the waste stream with a particular place (Oregon) and time (for example, 2017), the life cycle impacts of those materials are not always so localized. An item recycled in 2017 in Oregon may have been created in another state or country in a different year. An item disposed in 2017 may decay in a landfill, but slowly over a period of many years. Environmental impacts, and "savings," are spread out over time and space.

[4] David A. Turner, Ian D. Williams, and Simon Kemp, "Greenhouse Gas Emission Factors for Recycling of Source-Segregated Waste Materials," *Resources, Conservation and Recycling* 105, Part A (December 2015): 186–97, https://doi.org/10.1016/j.resconrec.2015.10.026.

[5] US EPA, "Organic Materials Chapters [Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM)]," February 2016, www.epa.gov/sites/production/files/2016-03/documents/warm_v14_organic_materials.pdf.

[6] The assumptions behind such projections are important to note. Such calculations, including DEQ's, presume that demand for materials is unaltered by the presence of recycled materials, and that collected recyclables actually replace newly extracted materials at a high rate, often 1:1. Authors such as Zink and Geyer question both these assumptions – see doi://10.1111/jiec.12545 and doi://10.1111/jiec.12355 .

Methodological details, in brief

DEQ calculates impact reductions through a multi-step process. First it characterizes Oregon's solid waste stream, which includes both disposed and recovered materials, by weight and end-of-life disposition (for example, recycling, composting or landfilling). Next it links those weights to "impact factors" that convert weights into environmental impacts for both production processes and end-of-life dispositions. Appropriate credits are given for recovery activities when it can be presumed that recovery has prevented some other, greater environmental impact, as described earlier. Then it sums life cycle impacts for three possible management scenarios:

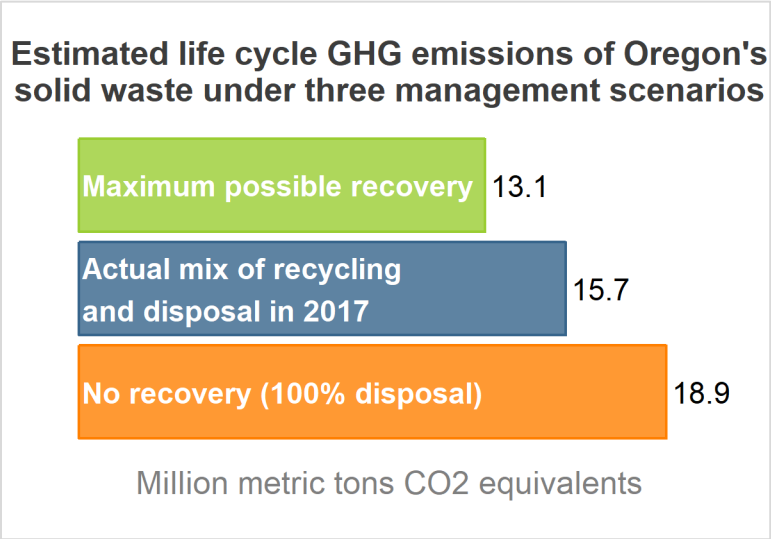
- *Actual*: the life cycle impact of materials in the solid waste stream, given the current mix of recovery and disposal.
- *No recovery*: the life cycle impact of materials in the solid waste stream, if no recovery had taken place and all materials had been disposed.
- *Maximum possible recovery*: the life cycle impact of materials in the solid waste stream, if all recoverable materials had in fact been recovered.

Note that:

- In all scenarios the weights of materials are the same. The scenarios only differ in the end-of-life dispositions of those materials.
- The *maximum possible recovery* scenario assumes that about 90 percent of the solid waste stream is recovered. The figure is 90 percent, not 100 percent, because approximately 10 percent of the solid waste stream, by weight, consists of materials which have no currently viable recovery disposition.

Finally, "impact reductions" or "savings" are calculated as differences between the scenarios. The currently realized savings are the difference between the *no recovery* impact and the *actual* impact. The additional savings, which might be realized by maximizing recovery, are the difference between the *actual* impact and the *maximum possible recovery* impact.

For example, the currently realized GHG savings of 3.2 MMTCO2E, and the additional potential savings of 2.6 MMTCO2E, were calculated by comparing life cycle emissions for the three scenarios, totaling 18.9, 15.7, and 13.1 MMTCO2E:



The weight data describing Oregon's waste stream comes from several sources.

- Quantities and dispositions of recovered materials come from DEQ's Material Recovery Survey for 2017.

- Quantities of disposed materials are derived by combining two data sources: the total amount of material disposed in Oregon in 2017, from DEQ's disposal records, and the Waste Composition Study[7] for 2016/17, which describes the proportions of disposed waste in various material categories.

With a few exceptions, impact factors are copied from the EPA's WARM model,[8] version 14. DEQ staff have modified WARM's impact factors for wood waste and yard debris based on their own research and analyses. For uncommon materials appearing in Oregon's waste stream that are not covered by WARM, weighted averages of WARM's impact factors were used.

Differences compared to 2016

The savings in energy and greenhouse gases reported for 2017 (31 trillion BTU and 3.2 MMTCO2E) are somewhat higher than the values reported for 2016 (27 trillion BTU and 2.9 MMTCO2E). These differences in impact savings between 2016 and 2017 were not the result of major changes in the solid waste stream; as this report shows, total weights for generation, recovery, and disposal only changed a few percent.

Instead, the differences in impact savings result from a change in DEQ's analytical method. Calculating life cycle impacts from solid waste data is a rapidly evolving field, and for 2017 DEQ made some changes. The changes in method with the biggest influence on differences between 2016 and 2017 were:

- In 2017, DEQ used its own impact factors for wood waste, the most abundant organic material. Determining appropriate impact factors for wood is an active area of inquiry for DEQ's Materials Management program.
- In 2017, paper fiber (not including cardboard and kraft paper) was collected into a single material category with a single set of impact factors. In 2016 paper fiber had been broken down into a number of more specific subcategories. The model for 2017 is simpler, but realistic given the nature of the market for recycled paper.
- In 2017, the analysis included practically all materials in the waste stream. The 2016 analysis ignored less common materials which were difficult to associate with WARM impact factors.

For further information about how DEQ calculates impact reductions contact Martin Brown of Oregon DEQ at 503-229-5502, or brown.martin@deq.state.or.us.

[7] Oregon DEQ, "Statewide 2016 Waste Composition Study: Excel Results Files Updated June 20, 2018 [Sheet P16TOT]," 2018, www.oregon.gov/deq/FilterDocs/A01-StatewideWCS16.xlsx.
[8] US EPA, *Warm Version 14*, 2016, www.epa.gov/sites/production/files/2016-04/warm_v14.xls.

Recovery rates

The recovery rate is the percentage of total waste generation that is recovered. DEQ calculates both the statewide recovery rate and a recovery rate for each of the 35 individual wastesheds in the state.

2017 statewide recovery rate

In 2017, the state recovered 2,327,428 tons of material. This represented 42.1 percent of the municipal post-consumer waste stream, well below the statewide goal of 52 percent recovery by the year 2020. Recovered tons increased by 4.6 percent from the previous year surveyed, 2016.

From 1992 through 2005, tons of material recovered increased regularly each year. From 2006 through 2009, recovered tons declined even though recovery rates were fairly flat, as declining consumption of newspapers and magazines, followed by a general decline in overall consumption due to the recession, reduced the amount of material available to be recovered. In 2010, Oregon saw an increase in recovery, as the economy gradually recovered from the recession. In 2016, with the closure of the largest paper mill that accepted wood waste for fuel, and an unexpected decrease in cardboard recovery, there was a decline in the state's recovery rate. However, in 2017, cardboard recovery increased by nearly 56,000 tons and wood waste increased over 10,000 tons over 2016 levels. Close to 300,000 tons of wood waste were recovered in 2017, still well below the record of more than 500,000 tons recovered in 2006.

Oregon State Recovered Tons and Recovery Rates

Year	Tons Recovered	Tons Disposed	Calculated Rate[9]
1992	839,679	2,263,099	27.1
1993	974,685	2,280,513	29.9
1994	1,118,912	2,312,669	32.6
1995	1,257,204	2,362,146	34.7
1996	1,338,259	2,497,170	34.9
1997	1,462,114	2,633,017	35.7
1998	1,604,985	2,695,903	37.3
1999	1,626,271	2,788,699	36.8
2000	1,765,817	2,778,463	38.9
2001	1,999,085	2,635,072	43.1
2002	2,029,261	2,723,365	42.7
2003	2,116,880	2,796,787	43.1
2004	2,317,064	2,923,462	44.2
2005	2,523,367	3,026,457	45.5
2006	2,494,050	3,235,828	43.5
2007	2,437,569	3,248,126	42.9
2008	2,326,146	2,890,503	44.6
2009	2,082,631	2,586,721	44.6
2010	2,163,957	2,523,808	46.2
2011	2,306,124	2,437,767	48.6
2012	2,391,490	2,424,833	49.7
2013	2,390,859[1]	2,513,404[1]	48.8[1]
2014	2,307,269[1]	2,634,653[1]	46.7[1]
2015	2,369,080[1]	2,784,467[1]	46.0[1]
2016	2,225,943[1]	3,050,432	42.2[1]
2017	2,327,428[1]	3,207,448[1]	42.1[1]

[1] These tonnage figures are corrected from earlier published values.

A total of 3,207,448 tons of municipal post-consumer waste from Oregon were disposed in 2017, up 5.1 percent from 2016. This is still well below the peak disposal tonnage in 2007. Per-capita disposal was 1,549 pounds per year, surpassing the 1992 figure of 1,513 pounds, but still staying below the 2007 per capita disposal of 1,734 pounds per year.

Total tons disposed added to total tons recovered equaled 5,534,877 tons of total waste generated in 2017 (see Waste Generation on page 12). Total generation rose by 4.9 percent, with per-capita generation increasing by 3.3 percent from 2016 levels.

Waste recovery increased 4.6 percent (+101,486 tons) and disposal increased 5.2 percent (+157,016 tons), resulting in the increase in generation (+258,502 tons). Although waste generation has increased steadily since 2010, moving us away from our waste generation goals, total generation in 2017 was still 195,002 tons less than it

[9] Between 2001 and 2015, Oregon's law specified that "credits" be provided towards the statewide recovery goal for jurisdictions that promoted programs for home composting and for material reuse - programs for which recovery is difficult to measure directly. At the state level, these credits added about 3.6 to 3.8 percent to the statewide recovery rate in those years. Changes in legislation in 2015 eliminated the recovery credits, and so they have been dropped from this table.

was at its peak in 2006. This is a drop of 3.4 percent in waste generation between 2006 and 2017, or 13.9 percent if measured on a per-capita basis.

How DEQ calculates the statewide recovery rate

DEQ combines information about quantities of material collected from privately-operated recycling and material recovery facilities with recovery information from collection service providers and disposal site collections, in a manner that eliminates double-counting of material that is passed on from collectors through processors to end-users. This determines the total weight of material recovered.

Next, DEQ adds the total weight of material recovered to the total weight of material disposed, obtained from disposal site reports. This sum is the total weight of material generated. The total weight of material recovered is divided by the total weight generated. This results in the calculated recovery rate.

How DEQ calculates individual wasteshed recovery rates

The total weight of material recovered is allocated to the wasteshed of origin. Direct collectors of materials are the primary and best information source for the collected materials' wasteshed of origin. When information from direct collectors is not available, or when a survey respondent does not know the wasteshed of origin for the collected materials, DEQ uses information from the companies receiving materials from the collectors in order to allocate material back to wastesheds. Material is allocated back to wastesheds based on population in rare cases when survey respondents and market information is insufficient.

DEQ also uses information from disposal site reporting forms to determine the total weight of material disposed to the wasteshed of origin. For each wasteshed, total weight of material disposed is added to total weight of materials recovered to ascertain the amount of waste generated in the wasteshed. The total weight of material recovered is divided by the total weight generated to determine the calculated recovery rate for each wasteshed.

Marion County adjustment

As home to the state's only municipal waste-to-energy incinerator, Marion County's recovery and disposal tonnages are revised each year to include certain wastes burned for energy as recovered, as directed by the 2001 Legislature. For 2017, the five materials that could be counted toward the recovery rate when burned for energy were wood, yard debris, used motor oil, fuels, and paint. In 2017, 15,324 tons of these materials burned for energy in the county's incinerator were counted as recovered instead of disposed. DEQ obtained this tonnage by multiplying the quantity of non-industrial, in-county, counting solid waste processed at the facility by the percentage that those six materials make up of Marion County's municipal solid waste disposal stream. Marion County also recovered 7,995 tons of scrap metal from the incinerator ash. DEQ subtracted the scrap metal tonnage from the Marion County disposed tons so that the same tons would not be counted as being both disposed and recycled.

Wasteshed recovery rates

Oregon has 35 individual wastesheds[10], each with its own recovery rate and goal. Based on the new goals established by Senate Bill 263, eight wastesheds are already at or above their goal for 2025.

[10] A "wasteshed" is defined in Oregon law as being an area of the state that shares a common solid waste disposal system, or an appropriate area in which to develop a common recycling system. For the most part, individual Oregon counties are designated as wastesheds. Three exceptions are that:

- The greater Portland tri-county area, consisting of Clackamas, Multnomah and Washington Counties, is designated as the Metro wasteshed.
- Milton-Freewater, a city within Umatilla County, is designated as a separate wasteshed.

The Survey Report Tables listed on page 20 of this report show 2017 recovery rates for each wasteshed (Table 1), tons of materials recovered in 2017 by wasteshed (Table 2), and tons of solid waste disposed by wasteshed in 2017 (Table 3).

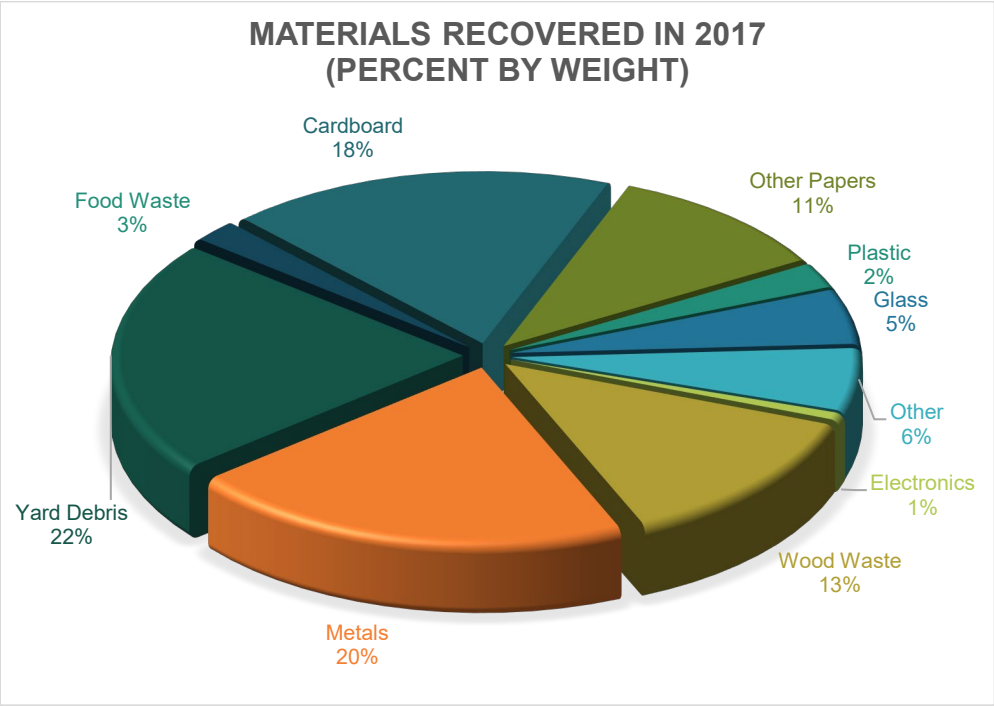
For a historical look at recovery, disposal and generation data in Oregon, see Survey Report Tables 4, 5, 6 and 7, which provide the recovery rates, recovered material tons, disposal tons, and tons of solid waste generated each year since the Material Recovery Survey began in 1992.

- For most cities such as Albany that have populations in two counties, the entire city was included in the wasteshed that included the larger portion of the city population. The exception is Salem, where most of Salem is in the Marion Wasteshed, but West Salem is included in the Polk Wasteshed.

Materials recovered

Oregon's material recovery rate for 2017 includes materials that were recycled, composted (including yard debris, food waste and some wood waste), and burned for energy (including tires, fuels, oil-based paint, used oil, wood waste and some yard debris). Sixty-four percent of the material recovered was recycled, 23 percent was composted and 13 percent was burned for energy.

The chart below shows major categories of materials recovered in 2017 and the percentage of total recovery (by weight) for each category. Specific materials included in these categories are listed on page 3.



The following describes changes in amounts of materials recovered in 2017:

Bottle Bill Materials. 2017 saw substantial increases in the recycling of aluminum, container glass, and plastic containers (mainly bottles) compared to 2016. These increases are likely linked to the doubling of the refund value for beverage containers from five cents to ten cents in April 2017, increasing people's incentive to recycle these containers. Oregon may see another increase in 2018, with the addition of juice, tea, and many other beverages to the Bottle Bill.

Metals. The total amount of other recovered metals increased by more than 14 percent in 2017 compared to 2016. This increase may be due to scrap metal prices rising in 2017, and is expected to continue increasing in 2018.

Paper (including cardboard). In 2017, cardboard tons recycled increased by 15 percent compared to 2016 tons. Increased economic activity often leads to increased sales of products, requiring more cardboard for packaging. In contrast, printing, writing, and other paper tons recycled declined by nearly seven percent, continuing a long-term decline as the use of electronics for news and communication increases.

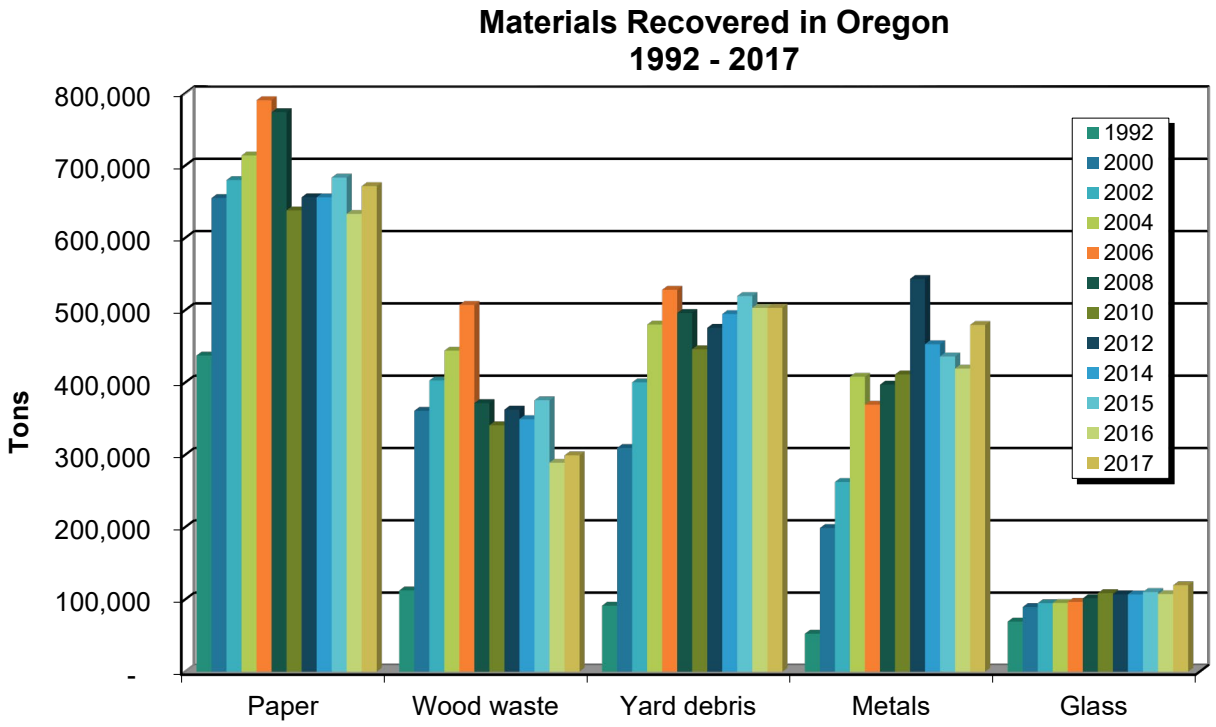
Plastic. Recycling of rigid plastics increase by 21 percent in 2017 compared to 2016, while film plastic recycling tonnage decreased by seven percent. Although the increase in beverage container refund values increased bottle bill recycling, toward the end of 2017, markets for recycling plastic were greatly disrupted as China began implementing bans or restrictions on the importation of a number of recyclable materials, including a ban on post-

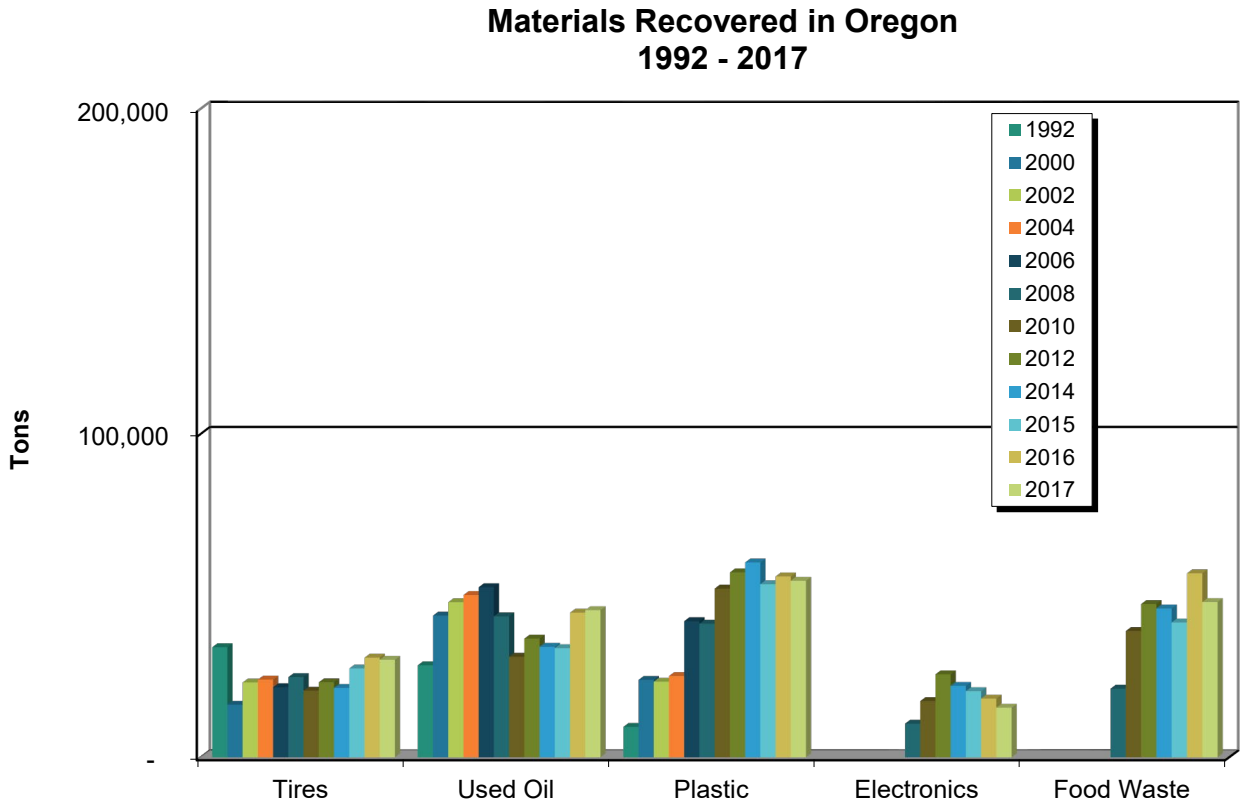
consumer plastics. China previously had been by far the largest importer of these plastics. A number of cities dropped plastic tubs from their curbside programs in 2018 as a result of the poor markets for some plastics, and this could have a significant impact on plastics recycling in 2018.

Electronics. Electronics recovery continued its decline showing a decrease of over 15 percent in 2017 compared to 2016. This is partially due to the decrease in the number of cathode ray tube monitors and TVs returned for recycling as lighter flat-screen devices replace the heavier CRT devices.

Organics. Total recovery of organics (which includes wood waste, yard debris, food waste and animal waste/grease) decreased less than one percent in 2017 compared to a nearly ten percent decrease in 2016.

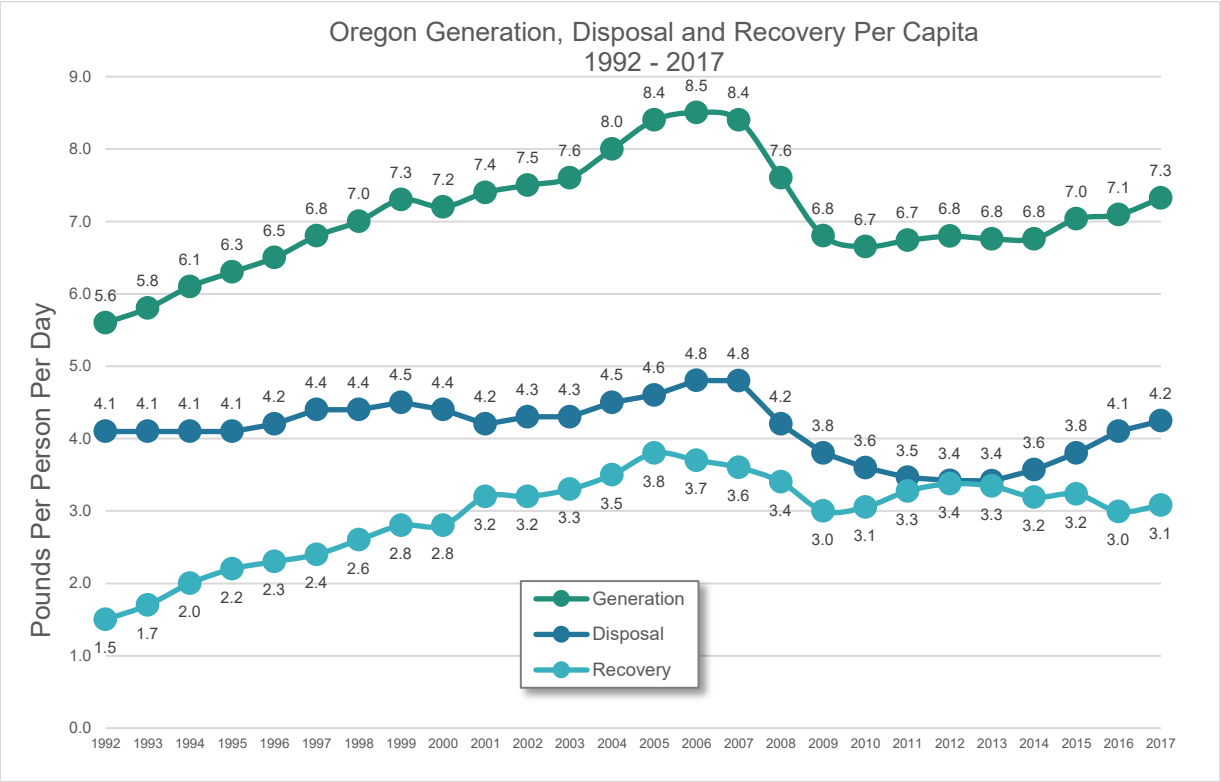
The following charts compare the materials recovered over the past 26 years.


Materials Recovered in Oregon
1992 - 2017
Tons
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
Paper
Wood waste
Yard debris
Metals
Glass
1992
2000
2002
2004
2006
2008
2010
2012
2014
2015
2016
2017


Materials Recovered in Oregon
1992 - 2017
Tons
200,000
100,000
-
Tires
Used Oil
Plastic
Electronics
Food Waste
1992
2000
2002
2004
2006
2008
2010
2012
2014
2015
2016
2017

Waste generation

Changes in the total amount of municipal solid waste generated (materials recovered plus waste disposed) in Oregon over time tell an interesting story. From 1992 to 2006, total waste generation increased every year, often steeply. Waste generation then declined slightly in 2007 and sharply in both 2008 and 2009, coinciding with the economic recession. Between 2009 and 2014, waste generation started growing again, but at a very slow pace, averaging less than one percent increase per year. In 2017 Oregon generated 5,534,877 tons of municipal solid waste, an increase of nearly five percent over 2016. This equates to per-capita generation of 2,673 pounds per person (7.3 pounds per day), a 3.3 percent increase from 2,589 pounds per person (7.1 pounds per day) in 2016. In 2017, the state missed both its goals for no increase in per-capita and total waste generation. Still, total waste generation in 2017 was well below (195,002 tons less) its peak in 2006. This is a drop of 3.4 percent in total waste generation between 2006 and 2017, or a 13.9 percent drop in the per-capita amount.



Generation can be seen as a crude measure of consumption, and for many materials, the environmental impacts of production (the corollary of consumption) are many times higher than the impacts of disposal. For example, EPA has estimated that roughly 40 percent of the country's greenhouse gas emissions are associated with the production and transportation of goods[11]. The leveling off of waste generation in 2006, the sharp decline in 2007 through 2009, and lack of restoration to pre-recession levels since then suggests that some of the changes in waste generation that occurred during the last recession may be long-lasting, and that the reduction in use of materials is not temporary. Reduction in materials use would, in turn, likely result in a reduction of greenhouse gas emissions associated with all stages of the life cycle of materials. Many other adverse environmental impacts associated with materials likely also decreased.

[11] Figure ES-1of *Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices.* US Environmental Protection Agency, Sept. 2009.

The following table shows the disposition of the municipal solid waste generated in Oregon in 2017. See Table 9 for individual wasteshed dispositions.

Disposition of Waste Generated in Oregon in 2017	
Disposition	**Percent by weight**
Disposed*	57.9
Recycled	27.1
Composted	9.5
Recovered for Energy*	5.5

*For the Marion County's waste-to-energy facility only the portion of waste that counts toward the county's and state's recovery rates is included here in "recovered for energy" (see Marion County Adjustments on page 10). Other wastes burned at the facility are counted here as disposed.

Discussion

The energy savings and greenhouse gas reductions associated with materials recovered for recycling, composting and energy recovery in 2017 were notable. Energy savings were 31 trillion BTUs, and reductions in GHGs were 3.3 MMTCO2E. There is potential for further savings via recovery. If recovery were increased to the maximum possible level using current technology, another 31 trillion BTUs, and 2.5 MMTCO2E, in savings might be realized.

These numbers should be viewed in the context of Oregon's total environmental impacts. Oregon's total yearly energy expenditure is about 977 trillion BTUs, and Oregon's total yearly GHG emissions are 62.0 or 88.7 million metrics tons, depending on analytical method. Recovery can reduce impacts, but it cannot reduce them on the scale of the changes anticipated by state goals such as the *2050 Vision*.

Greater impact reductions should be achievable by other materials management strategies, such as reducing the generation of waste in the first place. Unfortunately, overall waste generation in 2017 increased. This likely indicates an overall increase in the use (and production) of materials, with associated increases in emissions across all stages of their life cycle.

In 2015, Oregon adopted new statutory goals of 52 percent recovery by 2020 and 55 percent by 2025. At the time these goals were adopted, we did not anticipate the closure of the paper mill that by far was the largest user of post-consumer wood waste as a fuel, nor the discontinuance of the use of wood by other mills, strongly impacting the ability to recover and use wood. Though much less impactful, we also did not anticipate that Oregon and the world would experience disruptions in the markets for most plastics and for mixed paper, as China, the largest importer of recyclable material in the world, has restricted the importation of these materials and has banned the importation of unsorted paper and all post-consumer plastics in 2018. Oregon recovered 2,327,428 tons of material for recycling, composting and energy recovery in 2017, giving a recovery rate of 42.1 percent, a slight decrease of the 42.2 percent rate in 2016. Other anticipated changes in products and packaging are likely to make it even harder to achieve the state's goals in 2020 and 2025, as products and packaging become increasingly difficult to recycle due to such factors as substituting light-weight non-recyclable packaging for heavier recyclable packaging. Although these changes may make achieving a weight-based recovery goal more difficult, they can often lead to environmental benefits since less material is needed for the packaging, resulting in less energy use and greenhouse gases produced and even less solid waste generated and disposed.

Adjustments to reports from previous years

DEQ continues to review and use survey data even after publishing the final report each year. Occasionally, we encounter and correct errors in previously reported results. Thus, tonnages published in this report for previous years may not match the tonnages originally reported for that year.

DEQ made the following adjustments for the 2017 report:

- A significant correction to disposal for several wastesheds, increased the total tons disposed in Oregon and dropped the recovery rate from 42.8 percent to 42.1 percent for 2017. This also resulted in the publishing of a revised 2017 report in March 2019.
- A correction to recovered tonnage of yard debris was made to the 2015 and 2016 survey period, due to a double count discovered.
- A correction was made to some asphalt roofing tons that were found to be used as alternative daily cover at a local landfill but that had been reported as recovered. “Alternative daily cover” - material used to cover garbage daily at a landfill instead of using soil, is considered to be a form of disposal rather than recovery. This correction was made to 2015 and 2016 data.
- The yard debris and asphalt roofing corrections resulted in adjustments to the previous year’s recovery rates; the recovery rate for 2015 dropped from 46.2 to 46.0 percent, the recovery rate for 2016 dropped from 42.6 to 42.2 percent.

DEQ corrected data in previous years, for the following reasons:

- A correction to recovered tonnage of yard waste was made to the 2015 survey period, a reporting facility for 2016 sent in a missing 2015 report.
- In 2016 a correction was made to some “plastic other” and “plastic film” incorrectly converted to tons from pounds, this increased the total recovered for both materials.
- A couple of 2015 disposal reports were revised. This adjustment increased disposal tonnage for 2015; which dropped the state recovery rate from 46.5 percent to 46.2 percent for 2015.
- A correction to recovered tonnage of wood waste in two wastesheds was made to survey years 2014 and 2013, as some tonnage was determined to be pre-consumer material.
- Adjustments were made to 2014 and 2013 animal waste/grease collection amounts, as well as correctly identifying wastesheds of origin, based on revised reporting by an end-user.
- Disposal tonnage was reported for the wrong wasteshed. This adjustment increased disposal tonnage for 2014 for one wasteshed; which changed the wasteshed rate of the two wastesheds involved. This did not affect the state’s recovery rate.
- An error in reporting was discovered by one of the recycling processors; a large amount of newspaper was double counted in the previously published 2004 results. The paper was counted both at the processing facility and at the paper mill.
- An enforcement action carried out by Metro showed that most of the brick reported as being recycled by one facility was falsely reported. DEQ subsequently decided that brick more closely resembled other inert materials such as cement and asphalt. Since these are not counted toward the recovery rate, brick was removed from all previous recovery tonnages.
- New information showed that corrections needed to be made to tonnages for roofing and non-container glass in 2003 and 2004, as well as other minor adjustments in other categories.
- Field visits showed that some plastic for 2005 had been reported as ‘Plastic Other’ and that this material was actually ‘Rigid Plastic Containers.’ The 2005 numbers have been adjusted for this change, along with a few other minor adjustments.
- Field visits and continued investigation showed that previously reported ‘Wood Waste’ collections for 2006 were actually collected in three years – 2004, 2005 and 2006. These years are now correct.
- The 2006 and 2007 plastics numbers were adjusted between grades of “Rigid Plastic Containers,” “Plastic Other,” and “Plastic Film.” This may have led to small changes in the recovered tonnages for these materials.

- Investigation of disposal numbers at two landfills led to deductions in the amount of SW disposed – these were really Industrial Waste, non-counting for the purposes of this survey.
- Some changes were made in 2006 and 2007 to disposition of materials. Changes were made to composted, burned for energy recovery and disposed amounts.
- Adjustments were made to the 2007 collection amounts, correctly identifying the wasteshed of origin.
- For 2006 and 2007, some non-counting slaughterhouse material was deleted from the recovered tonnage.
- Sawdust material from manufacturing was deleted for 2006 and 2007.
- Beginning with 2006, material previously identified as "CD – Construction and Demolition" was separated out into individual materials.
- Textiles previously counted were determined to be re-used, which does not count for recovery. 2006, 2007, 2010 and 2011 recovered tonnage was decreased.
- Some gypsum sent for disposal was included in the 2006 and 2007 tonnage – this was removed.
- Bottle bill materials, container glass and aluminum had better reporting for 2009, and DEQ made some adjustments to those materials for 2008.
- Municipal solid wastes from another landfill were determined to be industrial and were deleted from the 2007 and 2008 counting tonnages.
- Minor disposal adjustments were made to two wastesheds for 2006 data with incorrectly reported county of origin.
- Yard debris numbers contained a large double counting for the Metro region – the correction caused a decrease in recovered tons
- Some roofing material was deleted - it was determined to be industrial material.
- Added in disposal tonnages for 2009 and 2010 for material sent out of state for disposal.
- Corrected the disposition methods for food waste and yard debris in 2011.
- Fixed the disposal tonnages originally recorded for the incorrect wasteshed in 2011.
- An error in food waste reporting discovered by DEQ showed a large amount of food waste was double counted in the 2011 and 2012 reports. The food waste was counted both by the composting facility and by the recycling collectors.
- More accurate reporting identified corrections needed in tonnages for used oil, antifreeze, solvents and used oil filters in 2011 and 2012.
- Adjustments were made to 2013 and 2012 collection amounts, as well as correctly identifying wastesheds of origin.
- Municipal solid waste from one landfill was reported incorrectly as out-of-state waste, this adjustment increased the "counting" disposal tonnage for 2013. This in turn adjusted the state recovery rate from 54 percent for 2013 to 53.4 percent.

2017 survey report tables

List of data tables one through nine used for this report.

Table 1: Wasteshed Recovery Rates, 2017

Wasteshed	Tons Disposed	Tons Recovered	Tons Generated	Calculated Recovery Rate[1]	SB 263 Goal[3] 2025
Baker	14,077.9	3,553.8	17,631.6	**20.2%**	25%
Benton	63,167.3	33,217.4	96,384.7	**34.5%**	44%
Clatsop	33,381.1	24,545.5	57,926.6	**42.4%**	53%
Columbia	31,937.3	10,682.2	42,619.6	**25.1%**	45%
Coos	48,726.2	14,927.9	63,654.1	**23.5%**	30%
Crook	20,558.2	6,470.4	27,028.6	**23.9%**	20%
Curry	20,287.1	5,921.9	26,209.0	**22.6%**	30%
Deschutes	182,095.4	88,562.9	270,658.3	**32.7%**	45%
Douglas	79,113.5	33,110.4	112,223.9	**29.5%**	34%
Gilliam	2,038.0	383.3	2,421.3	**15.8%**	25%
Grant	4,088.9	851.9	4,940.8	**17.2%**	25%
Harney	4,136.9	1,339.9	5,476.7	**24.5%**	25%
Hood River	23,134.7	6,800.6	29,935.2	**22.7%**	35%
Jackson	188,625.2	103,729.2	292,354.4	**35.5%**	25%
Jefferson	15,156.7	5,877.9	21,034.6	**27.9%**	32%
Josephine	76,898.2	43,105.9	120,004.0	**35.9%**	20%
Klamath	59,153.6	19,016.4	78,170.0	**24.3%**	20%
Lake	6,427.7	659.9	7,087.5	**9.3%**	15%
Lane	274,802.3	306,540.6	581,342.9	**52.7%**	63%
Lincoln	50,902.5	15,705.9	66,608.4	**23.6%**	37%
Linn	106,751.2	63,794.0	170,545.2	**37.4%**	45%
Malheur	23,261.8	6,867.3	30,129.1	**22.8%**	25%
Marion[2]	263,789.1	251,456.4	515,245.5	**48.8%**	64%
Metro	1,281,096.1	1,130,317.2	2,411,413.2	**46.9%**	64%
Milton-Freewater	2,526.9	1,531.0	4,057.9	**37.7%**	25%
Morrow	22,055.1	5,959.0	28,014.1	**21.3%**	20%
Polk	51,179.5	46,100.8	97,280.3	**47.4%**	48%
Sherman	1,212.7	151.0	1,363.8	**11.1%**	20%
Tillamook	27,325.5	10,721.1	38,046.5	**28.2%**	37%
Umatilla	78,725.4	29,501.1	108,226.6	**27.3%**	20%
Union	22,504.4	6,754.8	29,259.2	**23.1%**	25%
Wallowa	4,433.6	1,480.4	5,914.0	**25.0%**	25%
Wasco	22,232.4	5,669.9	27,902.2	**20.3%**	35%
Wheeler	378.4	87.4	465.8	**18.8%**	20%
Yamhill	101,267.8	42,033.2	143,301.0	**29.3%**	45%
OR Totals	3,207,448	2,327,428	5,534,877	**42.1%**	

[1] The recovery rate is calculated using the following formula:
1) Tons Disposed + Tons Recovered = Total Tons Generated
2) Tons Recovered / Total Generated = Calculated Recovery Rate

[2] The Marion County disposal and recovery rates reflect 15,538.27 tons of recyclable materials burned for energy in 2017
(per ORS 459A.010(3)(f)(B)).

Table 2: Amount Recovered in 2017 by Wasteshed

Wasteshed	2017 Tons Recovered	2017 Pounds Per Capita	2017 Wasteshed Population
Baker	3,554	424	16,750
Benton	33,217	783	84,855
Clatsop	24,546	1,265	38,820
Columbia	10,682	416	51,345
Coos	14,928	472	63,310
Crook	6,470	585	22,105
Curry	5,922	519	22,805
Deschutes	88,563	968	182,930
Douglas	33,110	596	111,180
Gilliam	383	384	1,995
Grant	852	230	7,415
Harney	1,340	364	7,360
Hood River	6,801	541	25,145
Jackson	103,729	956	216,900
Jefferson	5,878	507	23,190
Josephine	43,106	1,007	85,650
Klamath	19,016	562	67,690
Lake	660	163	8,120
Lane	306,541	1,654	370,600
Lincoln	15,706	655	47,960
Linn	63,794	967	131,930
Malheur	6,867	431	31,845
Marion*	251,456	1,484	339,000
Metro	1,130,317	1,248	1,811,860
Milton-Freewater	1,531	380	8,050
Morrow	5,959	1,002	11,890
Polk	46,101	1,151	80,130
Sherman	151	168	1,800
Tillamook	10,721	819	26,175
Umatilla	29,501	814	72,450
Union	6,755	502	26,900
Wallowa	1,480	411	7,195
Wasco	5,670	418	27,100
Wheeler	87	118	1,480
Yamhill	42,033	784	107,170
OREGON TOTALS	**2,327,428**	**1,124**	**4,141,100**

Source for population data is the Center for Population Research and Census, Portland State University, published April 2018. Wastesheds populations are not the same as County populations for the Wastesheds of Benton, Linn, Marion, Metro, Milton-Freewater, Polk, Umatilla, and Yamhill (see OAR 340-090-0050).

*Includes certain Marion County recyclable materials burned for energy (per ORS 459A.010(3)(f)(B)).

Table 3: Solid Waste Disposed in 2017 by Wasteshed

Wasteshed	2017 Tons Disposed	2017 Pounds Per Capita	2017 Wasteshed Population
Baker	14,078	1,681	16,750
Benton	63,167	1,489	84,855
Clatsop	33,381	1,720	38,820
Columbia	31,937	1,244	51,345
Coos	48,726	1,539	63,310
Crook	20,558	1,860	22,105
Curry	20,287	1,779	22,805
Deschutes	182,095	1,991	182,930
Douglas	79,113	1,423	111,180
Gilliam	2,038	2,043	1,995
Grant	4,089	1,103	7,415
Harney	4,137	1,124	7,360
Hood River	23,135	1,840	25,145
Jackson	188,625	1,739	216,900
Jefferson	15,157	1,307	23,190
Josephine	76,898	1,796	85,650
Klamath	59,154	1,748	67,690
Lake	6,428	1,583	8,120
Lane	274,802	1,483	370,600
Lincoln	50,902	2,123	47,960
Linn	106,751	1,618	131,930
Malheur	23,262	1,461	31,845
Marion*	263,789	1,556	339,000
Metro	1,281,096	1,414	1,811,860
Milton-Freewater	2,527	628	8,050
Morrow	22,055	3,710	11,890
Polk	51,179	1,277	80,130
Sherman	1,213	1,347	1,800
Tillamook	27,325	2,088	26,175
Umatilla	78,725	2,173	72,450
Union	22,504	1,673	26,900
Wallowa	4,434	1,232	7,195
Wasco	22,232	1,641	27,100
Wheeler	378	511	1,480
Yamhill	101,268	1,890	107,170
OREGON TOTALS	**3,207,448**	**1,549**	**4,141,100**

Source for population data is the Center for Population Research and Census, Portland State University, published April 2018. Wastesheds populations are not the same as County populations for the Wastesheds of Benton, Linn, Marion, Metro, Milton-Freewater, Polk, Umatilla, and Yamhill (see OAR 340-090-0050).

*Excludes certain Marion County recyclable materials burned for energy recovery (per ORS 459A.010(3)(f)(B)).

Table 4: Oregon Calculated Recovery Rates by Wasteshed, 1992-2017

Wasteshed	1992 Rate	1993 Rate	1994 Rate	1995 Rate	1996 Rate	1997 Calc. Rate*	1998 Calc. Rate*	1999 Calc. Rate*	2000 Calc. Rate*	2001 Calc. Rate*	2002 Calc. Rate*	2003 Calc. Rate*	2004 Calc. Rate*	2005 Calc. Rate*	2006 Calc. Rate*	2007 Calc. Rate*	2008 Calc. Rate*	2009 Calc. Rate*	2010 Calc. Rate*	2011 Calc. Rate*	2012 Calc. Rate*	2013 Calc. Rate*	2014 Calc. Rate*	2015 Calc. Rate*	2016 Calc. Rate*	2017 Calc. Rate*
Baker	10%	14%	17%	22%	25%	19%	19%	18%	18%	24%	20.5%	21.9%	19.9%	22.8%	16.8%	21.9%	20.6%	26.3%	21.7%	22.4%	23.2%	22.7%	28.4%	26.2%	20.0%	20.2%
Benton	27%	30%	36%	35%	37%	41%	41%	35%	35%	41%	41.0%	39.0%	43.0%	40.0%	36.2%	38.9%	41.1%	37.9%	38.4%	38.3%	41.4%	41.5%	37.3%	35.3%	35.6%	34.5%
Clatsop	19%	22%	20%	19%	20%	23%	22%	24%	25%	28%	25.2%	28.7%	30.6%	38.9%	33.9%	34.0%	36.5%	36.0%	36.0%	38.7%	39.9%	44.3%	37.8%	39.5%	37.8%	42.4%
Columbia	34%	28%	22%	27%	22%	28%	29%	25%	31%	38%	33.8%	37.9%	30.9%	32.0%	30.5%	28.5%	29.9%	32.1%	35.8%	35.3%	33.3%	34.7%	28.6%	31.0%	32.5%	25.1%
Coos	21%	20%	23%	28%	29%	28%	27%	22%	23%	23%	25.5%	21.1%	21.2%	22.9%	20.8%	19.7%	22.3%	23.0%	35.0%	47.7%	43.7%	40.3%	38.3%	23.5%	22.5%	23.5%
Crook	16%	23%	19%	30%	23%	15%	14%	23%	27%	37%	26.8%	14.4%	21.4%	20.5%	25.6%	25.1%	33.2%	31.6%	33.6%	31.5%	34.6%	30.5%	26.1%	20.9%	20.7%	23.9%
Curry	21%	25%	27%	31%	35%	33%	29%	27%	41%	39%	36.0%	25.1%	25.2%	15.0%	18.1%	23.7%	21.0%	19.8%	20.4%	27.2%	25.3%	22.8%	26.6%	24.1%	26.7%	22.6%
Deschutes	15%	18%	24%	22%	23%	25%	32%	25%	31%	29%	26.6%	28.4%	26.8%	28.0%	27.0%	29.8%	31.1%	39.1%	35.1%	39.3%	38.8%	38.2%	35.8%	36.6%	33.1%	32.7%
Douglas	26%	23%	23%	24%	26%	29%	30%	26%	26%	30%	29.0%	29.1%	31.2%	24.6%	23.7%	25.8%	34.4%	28.7%	35.9%	42.9%	41.0%	37.4%	32.8%	30.3%	27.0%	29.5%
Gilliam	17%	6%	15%	20%	19%	21%	18%	15%	14%	13%	19.7%	10.4%	11.3%	6.7%	8.5%	12.9%	14.4%	27.0%	20.9%	18.0%	44.2%	41.8%	17.6%	35.4%	13.7%	15.8%
Grant	18%	14%	16%	19%	16%	15%	16%	18%	19%	19%	18.0%	15.7%	19.3%	28.2%	21.2%	24.2%	25.1%	22.4%	22.1%	25.0%	21.5%	28.8%	18.4%	24.5%	27.4%	17.2%
Harney	18%	21%	20%	34%	24%	21%	34%	34%	20%	27%	27.6%	27.3%	21.3%	26.8%	28.0%	25.2%	33.8%	23.6%	26.2%	31.1%	28.4%	27.3%	27.6%	21.8%	22.3%	24.5%
Hood River	16%	24%	26%	16%	17%	17%	17%	19%	18%	30%	33.7%	35.3%	37.2%	36.1%	33.1%	29.5%	28.2%	29.3%	26.5%	34.4%	31.4%	32.2%	28.1%	29.5%	26.9%	22.7%
Jackson	15%	19%	35%	33%	34%	34%	34%	29%	28%	32%	36.4%	32.2%	31.3%	31.7%	33.7%	30.4%	32.3%	35.6%	42.0%	41.6%	43.3%	43.1%	40.9%	37.2%	38.6%	35.5%
Jefferson	21%	16%	18%	22%	24%	33%	33%	21%	27%	27%	20.7%	22.9%	34.0%	33.1%	27.7%	36.2%	33.7%	30.7%	41.3%	47.2%	44.8%	41.6%	33.2%	24.6%	31.6%	27.9%
Josephine	14%	19%	27%	34%	38%	37%	41%	42%	33%	34%	36.8%	34.9%	37.4%	36.8%	38.9%	34.3%	38.9%	37.6%	40.1%	49.0%	49.9%	46.0%	40.3%	34.5%	35.4%	35.9%
Klamath	13%	12%	17%	18%	15%	16%	17%	15%	18%	31%	30.4%	23.0%	31.0%	37.3%	33.6%	34.8%	45.4%	32.9%	29.2%	28.1%	33.1%	29.9%	30.9%	22.3%	25.7%	24.3%
Lake	6%	6%	9%	8%	7%	6%	8%	11%	8%	11%	10.8%	25.1%	25.0%	14.7%	19.4%	21.8%	34.5%	25.1%	27.2%	28.5%	26.8%	26.3%	16.7%	12.5%	12.1%	9.3%
Lane	19%	28%	32%	32%	39%	39%	40%	41%	46%	46%	43.9%	46.0%	45.0%	47.7%	46.9%	46.3%	46.4%	46.1%	51.2%	55.5%	54.7%	50.9%	53.1%	50.4%	50.0%	52.7%
Lincoln	20%	20%	21%	19%	16%	19%	20%	19%	23%	28%	27.2%	28.0%	29.1%	33.3%	26.3%	27.6%	30.8%	29.4%	32.6%	32.4%	35.9%	29.2%	32.1%	31.2%	26.3%	23.6%
Linn	15%	27%	29%	30%	32%	33%	31%	33%	29%	34%	38.5%	34.1%	44.0%	43.3%	40.5%	37.4%	41.3%	40.5%	43.8%	49.2%	45.0%	44.0%	42.4%	39.3%	38.2%	37.4%
Malheur	19%	15%	12%	15%	20%	19%	22%	24%	25%	26%	26.9%	25.8%	26.7%	24.8%	22.8%	22.6%	21.9%	18.9%	23.3%	20.9%	27.3%	27.8%	24.7%	24.2%	26.4%	22.8%
Marion	26%	27%	27%	29%	28%	28%	30%	32%	38%	**50%	**50.9%	**47.0%	**47.4%	**49.6%	**51.9%	**50.4%	**52.4%	**52.2%	**50.1%	**54.7%	**54.4%	**55.2%	**53.8%	**52.2%	**49.4%	**48.8%
Metro	35%	37%	39%	42%	41%	42%	43%	43%	45%	49%	47.5%	50.1%	51.0%	52.6%	49.6%	48.9%	50.2%	50.4%	51.9%	53.3%	56.3%	57.0%	53.6%	53.0%	47.0%	46.9%
Milton-Freewater	16%	13%	13%	22%	21%	20%	19%	18%	21%	21%	23.9%	25.1%	24.2%	29.5%	32.8%	30.8%	43.0%	34.9%	35.3%	37.9%	27.0%	41.2%	39.0%	40.1%	28.7%	37.7%
Morrow	11%	16%	13%	12%	13%	17%	17%	20%	15%	16%	15.7%	19.7%	19.7%	14.0%	21.5%	26.4%	24.8%	23.2%	22.0%	23.2%	25.1%	18.3%	20.9%	21.1%	24.4%	21.3%
Polk	20%	25%	24%	23%	19%	24%	26%	29%	33%	39%	38.4%	42.8%	44.1%	50.1%	47.9%	46.4%	47.0%	45.9%	45.6%	47.7%	44.2%	43.6%	46.0%	45.1%	45.9%	47.4%
Sherman	24%	17%	20%	20%	21%	11%	16%	24%	17%	15%	13.5%	16.1%	25.8%	15.9%	18.5%	16.4%	14.8%	14.3%	11.5%	13.9%	21.9%	14.2%	15.9%	15.9%	11.5%	11.1%
Tillamook	31%	27%	28%	27%	26%	26%	26%	28%	26%	28%	27.7%	26.6%	38.8%	36.9%	33.4%	30.6%	31.5%	29.1%	31.2%	33.7%	33.0%	31.9%	29.6%	28.9%	26.1%	28.2%
Umatilla	14%	15%	15%	19%	20%	25%	24%	25%	26%	28%	35.3%	33.5%	35.9%	36.5%	35.0%	36.5%	37.9%	31.7%	29.3%	29.3%	31.1%	28.6%	28.1%	29.5%	25.0%	27.3%
Union	16%	19%	21%	30%	26%	29%	27%	24%	22%	22%	27.6%	25.8%	27.4%	27.4%	33.7%	31.5%	29.8%	29.3%	28.6%	30.7%	30.5%	30.4%	25.2%	24.8%	25.1%	23.1%
Wallowa	6%	8%	11%	18%	11%	16%	16%	19%	21%	19%	19.3%	15.6%	18.4%	19.5%	22.2%	27.4%	24.1%	23.5%	19.4%	23.5%	22.4%	23.7%	26.6%	22.4%	27.0%	25.0%
Wasco	25%	23%	26%	29%	30%	29%	31%	34%	34%	26%	28.3%	30.8%	24.6%	24.1%	18.8%	23.0%	23.4%	32.7%	28.0%	31.3%	27.8%	32.0%	28.0%	28.1%	26.2%	20.3%
Wheeler	7%	8%	11%	24%	20%	20%	25%	18%	14%	13%	25.2%	26.9%	15.8%	34.3%	23.9%	26.9%	27.1%	20.0%	8.1%	12.9%	8.8%	8.7%	7.3%	15.6%	12.8%	18.8%
Yamhill	19%	22%	25%	30%	35%	25%	31%	36%	44%	49%	54.4%	42.3%	50.2%	44.6%	39.0%	35.7%	35.6%	39.7%	34.2%	40.2%	32.8%	38.1%	37.1%	38.3%	30.0%	29.3%
OREGON TOTALS	**27.1%**	**29.9%**	**32.6%**	**34.7%**	**34.9%**	**35.7%**	**37.3%**	**36.8%**	**38.9%**	**43.1%**	**42.7%**	**43.1%**	**44.2%**	**45.5%**	**43.5%**	**42.9%**	**44.6%**	**44.6%**	**45.9%**	**48.6%**	**49.7%**	**49.5%**	**47.2%**	**46.0%**	**42.2%**	**42.1%**

*does not include 2% credits
**does include certain Marion County recyclable materials burned for energy

Table 5: Oregon Amount Recovered by Wasteshed, 1992-2017

Wasteshed	1992 Rvd (tons)	Per Capita (lbs.)	1996 Rvd (tons)	Per Capita (lbs.)	1999 Rvd (tons)	Per Capita (lbs.)	2001 Rvd (tons)	Per Capita (lbs.)	2007 Rvd (tons)	Per Capita (lbs.)	2009 Rvd (tons)	Per Capita (lbs.)	2011 Rvd (tons)	Per Capita (lbs.)	2012 Rvd (tons)	Per Capita (lbs.)	2013 Rvd (tons)	Per Capita (lbs.)	2014 Rvd (tons)	Per Capita (lbs.)	2015 Rvd (tons)	Per Capita (lbs.)	2016 Rvd (tons)	Per Capita (lbs.)	2017 Rvd (tons)	Per Capita (lbs.)	Change in Per Capita 2017-16
Baker	982	124	3,644	438	2,792	334	3,488	418	3,565	434	4,067	494	3,402	420	3,200	395	3,325	408	4,071	499	4,122	502	3,111	377	3,554	424	12.6%
Benton	21,480	626	30,352	830	29,992	821	35,609	966	36,292	922	31,438	789	33,775	852	38,226	955	37,953	939	33,959	832	33,394	807	34,311	820	33,217	783	-4.5%
Clatsop	5,148	300	7,118	403	10,333	581	11,999	669	19,029	1,017	17,584	929	18,366	989	19,465	1,047	23,013	1,235	19,025	1,015	20,973	1,111	20,671	1,082	24,546	1,265	16.9%
Columbia	7,894	407	6,258	302	7,732	357	14,050	634	13,647	574	12,001	496	13,386	539	12,703	511	13,254	532	10,273	410	11,730	466	13,786	543	10,682	416	-23.3%
Coos	10,035	323	14,972	472	11,068	352	11,075	352	12,162	386	12,666	402	36,368	1,155	31,613	1,005	27,146	864	26,190	833	13,024	414	13,215	418	14,928	472	12.7%
Crook	1,581	206	3,156	363	4,177	442	7,040	709	7,004	541	6,273	462	7,535	723	6,328	613	6,182	598	5,209	501	4,459	423	5,302	491	6,470	585	19.1%
Curry	2,863	288	6,011	572	5,720	542	9,464	878	6,632	618	4,223	396	6,235	558	5,557	499	4,798	430	5,748	514	5,424	483	6,989	618	5,922	519	-16.0%
Deschutes	12,858	305	30,222	605	36,537	647	49,459	810	75,346	937	75,362	883	72,635	914	72,065	900	74,062	911	72,965	877	83,271	975	79,755	903	88,563	968	7.2%
Douglas	29,467	614	30,945	621	30,878	615	38,983	770	36,158	691	30,846	585	55,220	1,025	50,342	931	42,333	778	36,263	663	32,335	588	27,725	502	33,110	596	18.6%
Gilliam	177	205	284	306	263	275	252	265	301	319	768	815	462	491	1,684	1,773	1,395	1,434	488	495	1,070	1,084	358	361	383	384	6.4%
Grant	911	232	687	171	734	185	897	230	1,342	354	1,098	292	1,338	359	954	256	1,386	373	838	226	1,235	332	1,457	393	852	230	-41.6%
Harney	600	171	678	188	1,703	452	1,076	283	1,203	313	944	245	1,327	360	1,414	387	1,307	360	1,360	374	1,084	297	1,156	316	1,340	364	15.3%
Hood River	1,855	212	3,333	345	3,696	365	6,517	633	8,365	779	7,466	687	9,541	843	7,785	681	7,847	674	6,701	565	7,783	642	7,437	601	6,801	541	-10.1%
Jackson	17,134	221	60,292	707	60,638	675	71,666	776	80,422	795	79,275	766	99,579	977	108,893	1,064	105,705	1,025	108,992	1,046	97,326	923	110,460	1,033	103,729	956	-7.5%
Jefferson	1,269	170	2,667	307	2,693	288	3,963	409	8,132	738	4,475	394	8,641	791	8,244	752	7,305	663	5,400	486	4,046	361	6,161	541	5,878	507	-6.2%
Josephine	7,826	239	21,688	600	30,928	822	25,556	665	32,943	800	29,510	705	47,045	1,136	48,567	1,173	43,614	1,053	39,387	948	32,725	782	38,476	909	43,106	1,007	10.8%
Klamath	8,827	301	11,171	360	11,447	360	21,617	673	34,502	1,048	26,256	791	20,751	623	23,432	702	19,793	593	22,134	662	15,183	452	20,055	595	19,016	562	-5.6%
Lake	269	74	601	161	410	111	643	171	1,691	447	1,754	461	2,656	674	1,843	465	2,177	548	1,145	287	847	211	897	224	660	163	-27.4%
Lane	72,072	493	153,843	992	180,383	1,124	206,010	1,264	237,578	1,385	190,877	1,098	269,100	1,524	268,429	1,516	229,818	1,291	264,472	1,474	242,830	1,341	258,360	1,412	306,541	1,654	17.2%
Lincoln	6,886	338	7,823	352	9,912	445	15,128	678	20,035	898	17,010	761	18,520	803	22,104	955	16,915	727	19,940	850	19,827	840	17,012	713	15,706	655	-8.1%
Linn	17,232	352	33,201	634	35,776	664	36,510	670	51,543	888	56,125	950	76,150	1,226	65,299	1,045	61,833	983	60,159	947	59,426	926	60,100	923	63,794	967	4.7%
Malheur	3,283	237	4,808	319	6,538	417	7,204	450	7,045	446	4,909	310	5,309	338	7,470	476	7,699	490	6,621	421	6,703	426	7,973	503	6,867	431	-14.2%
Marion	55,834	462	85,731	645	109,639	778	191,817	1,331	251,673	1,619	218,787	1,376	235,584	1,482	228,708	1,428	232,540	1,441	238,422	1,463	240,544	1,460	237,150	1,421	251,456	1,484	4.4%
Metro	514,747	825	752,470	1,106	932,889	1,304	1,097,409	1,496	1,325,112	1,663	1,106,279	1,356	1,122,542	1,355	1,222,024	1,461	1,278,987	1,510	1,182,294	1,377	1,285,248	1,473	1,116,712	1,255	1,130,317	1,248	-0.6%
Milton-Freew.	908	323	1,186	392	1,191	390	1,344	410	2,351	718	2,319	640	2,567	670	1,615	419	3,103	797	2,674	683	2,846	719	1,884	472	1,531	380	-19.4%
Morrow	930	227	842	181	1,446	270	1,364	245	3,967	643	3,548	566	3,269	580	3,680	651	2,944	515	4,047	702	4,466	768	5,635	960	5,959	1,002	4.5%
Polk	4,873	187	6,787	237	15,429	432	22,550	717	33,838	1,013	32,201	946	34,439	917	30,505	805	29,953	786	34,580	899	35,114	904	39,526	1,002	46,101	1,151	14.8%
Sherman	270	278	264	275	348	360	234	246	239	258	204	222	194	220	319	362	181	203	219	246	251	281	158	176	151	168	-4.9%
Tillamook	4,518	406	5,246	438	6,930	572	7,113	578	11,435	885	9,271	710	10,407	824	10,606	838	9,698	764	9,078	713	9,424	734	9,331	720	10,721	819	13.8%
Umatilla	6,641	236	12,454	414	18,947	595	23,097	718	38,402	1,169	30,306	930	27,610	801	28,990	835	26,066	744	26,990	766	29,813	837	24,276	675	29,501	814	20.6%
Union	2,525	210	5,203	419	5,358	436	5,578	454	9,180	727	7,119	559	7,823	602	7,991	611	8,031	610	6,350	480	6,691	503	6,916	517	6,755	502	-2.9%
Wallowa	433	119	503	135	1,131	311	1,045	294	1,767	496	1,211	341	954	273	923	263	1,058	300	904	256	1,122	316	1,513	424	1,480	411	-2.9%
Wasco	5,443	485	7,519	648	9,692	818	6,240	517	6,650	551	9,236	762	7,682	607	6,688	525	8,158	632	7,062	541	6,863	520	6,892	516	5,670	418	-19.0%
Wheeler	59	82	185	226	80	102	67	86	204	260	102	129	62	86	37	52	45	63	29	40	77	107	55	74	87	118	58.6%
Yamhill	11,850	338	26,116	663	38,842	919	63,021	1,447	57,816	1,233	47,122	982	45,653	907	43,787	864	51,237	1,002	43,277	837	47,808	915	41,125	777	42,033	784	1.0%
OR. TOTALS	**839,679**	**562**	**1,338,259**	**825**	**1,626,271**	**958**	**1,999,085**	**1,152**	**2,437,569**	**1,302**	**2,082,631**	**1,089**	**2,306,124**	**1,196**	**2,391,490**	**1,232**	**2,390,859**	**1,220**	**2,307,269**	**1,164**	**2,369,080**	**1,180**	**2,225,943**	**1,092**	**2,327,428**	**1,124**	**2.92%**
change in total from previous year			6.45%		1.33%		13.21%		-2.26%		-10.47%		6.57%		3.70%		-0.03%		-3.50%		2.68%		-6.04%		4.56%		
change in per capita from previous year				4.40%		0.03%		12.06%		-3.70%		-11.23%		6.01%		3.04%		-0.97%		-4.59%		1.41%		-7.48%		2.92%	

Data from some years is not shown due to page formatting. Please contact DEQ directly for data from these years.

Certain recoverable materials in mixed waste burned at the waste-to-energy facility in Brooks are excluded from Marion County and Statewide recovery in years prior to 2001 but included in 2001 and subsequent years (per ORS 459A.010(3)(f)(B)).

Table 6: Oregon Solid Waste Disposed by Wasteshed, 1992-2017

Wasteshed	1992 Disposed (tons)	Per Capita (lbs.)	1996 Disposed (tons)	Per Capita (lbs.)	1999 Disposed (tons)	Per Capita (lbs.)	2001 Disposed (tons)	Per Capita (lbs.)	2007 Disposed (tons)	Per Capita (lbs.)	2009 Disposed (tons)	Per Capita (lbs.)	2011 Disposed (tons)	Per Capita (lbs.)	2012 Disposed (tons)	Per Capita (lbs.)	2013 Disposed (tons)	Per Capita (lbs.)	2014 Disposed (tons)	Per Capita (lbs.)	2015 Disposed (tons)	Per Capita (lbs.)	2016 Disposed (tons)	Per Capita (lbs.)	2017 Disposed (tons)	Per Capita (lbs.)	Change in Per Capita 2017-16
Baker	8,419	1,062	10,897	1,310	12,602	1,507	11,317	1,355	12,730	1,549	11,391	1,385	11,926	1,471	10,610	1,309	11,309	1,389	10,251	1,256	11,585	1,411	12,432	1,506	14,078	1,681	11.62%
Benton	58,761	1,713	50,840	1,390	54,675	1,497	51,577	1,399	57,109	1,451	51,470	1,292	54,525	1,375	54,062	1,351	53,516	1,324	57,050	1,398	61,331	1,483	61,999	1,482	63,167	1,489	0.46%
Clatsop	22,263	1,299	28,671	1,623	32,047	1,801	31,318	1,747	36,874	1,970	31,293	1,654	29,266	1,576	29,291	1,575	28,969	1,555	31,314	1,670	32,170	1,704	34,076	1,783	33,381	1,720	-3.54%
Columbia	15,131	780	22,650	1,095	23,519	1,087	23,197	1,047	34,317*	1,443*	25,365	1,048	24,614	992	25,400	1,023	24,970	1,002	25,697	1,026	26,130	1,037	28,657	1,128	31,937	1,244	10.25%
Coos	37,596	1,211	36,436	1,148	39,302	1,250	37,711	1,198	49,459	1,569	42,305	1,342	39,987	1,270	40,733	1,295	40,287	1,282	42,222	1,343	42,362	1,345	45,445	1,438	48,726	1,539	7.02%
Crook	8,378	1,091	10,646	1,224	14,034	1,486	11,872	1,196	20,867	1,612	13,566	998	16,415	1,574	11,978	1,160	14,082	1,361	14,736	1,418	16,902	1,603	20,340	1,885	20,558	1,860	-1.33%
Curry	10,555	1,062	11,121	1,059	15,210	1,440	14,996	1,392	21,404	1,993	17,093	1,602	16,661	1,492	16,419	1,473	16,289	1,461	15,885	1,421	17,103	1,522	19,222	1,701	20,287	1,779	4.59%
Deschutes	72,529	1,720	103,397	2,070	111,141	1,968	120,334	1,972	177,543	2,208	117,292	1,374	112,751	1,419	113,611	1,419	119,682	1,473	130,956	1,574	144,067	1,688	161,087	1,824	182,095	1,991	9.15%
Douglas	85,040	1,772	87,325	1,751	86,354	1,721	90,379	1,786	103,772	1,983	76,578	1,453	73,716	1,368	72,583	1,342	70,763	1,300	74,219	1,357	74,436	1,354	75,054	1,360	79,113	1,423	4.66%
Gilliam	872	1,008	1,176	1,271	1,446	1,514	1,622	1,707	2,026	2,150	2,074	2,201	2,108	2,243	2,126	2,238	1,943	1,998	2,285	2,314	1,955	1,980	2,247	2,270	2,038	2,043	-10.00%
Grant	4,178	1,063	3,492	869	3,375	849	3,790	972	4,205	1,109	3,798	1,010	4,010	1,076	3,473	932	3,421	920	3,730	1,005	3,809	1,025	3,868	1,044	4,089	1,103	5.65%
Harney	2,650	756	2,126	591	3,299	875	2,892	761	3,578	932	3,058	793	3,043	825	3,563	974	3,484	960	3,576	984	3,886	1,065	4,036	1,103	4,137	1,124	1.95%
Hood River	9,959	1,139	16,016	1,659	16,021	1,583	15,397	1,495	19,965	1,860	17,972	1,655	18,221	1,611	17,046	1,490	16,530	1,419	17,175	1,448	18,607	1,535	20,187	1,632	23,135	1,840	12.73%
Jackson	98,002	1,265	115,011	1,348	151,523	1,687	152,562	1,652	184,062	1,820	143,484	1,386	139,973	1,373	142,338	1,391	139,677	1,354	157,217	1,509	164,031	1,555	175,856	1,645	188,625	1,739	5.71%
Jefferson	4,813	645	8,380	965	9,870	1,054	10,929	1,127	14,248	1,294	10,118	891	9,714	889	10,148	925	10,250	930	10,883	980	12,394	1,104	13,348	1,171	15,157	1,307	11.59%
Josephine	47,687	1,457	35,873	992	42,449	1,129	50,436	1,313	63,004	1,529	49,054	1,173	49,130	1,186	48,812	1,179	51,156	1,235	58,277	1,402	62,132	1,484	70,076	1,655	76,898	1,796	8.49%
Klamath	57,247	1,950	66,874	2,153	65,045	2,048	48,182	1,501	64,641	1,964	53,652	1,617	53,361	1,603	47,284	1,417	46,506	1,392	49,603	1,483	52,858	1,575	58,112	1,724	59,154	1,748	1.37%
Lake	4,364	1,196	7,468	2,002	3,321	895	5,120	1,365	6,051	1,600	5,244	1,380	6,773	1,718	5,025	1,269	6,110	1,539	5,698	1,426	5,926	1,480	6,496	1,621	6,428	1,583	-2.34%
Lane	302,695	2,072	239,310	1,542	263,180	1,640	240,984	1,479	275,032	1,603	223,028	1,283	215,728	1,222	222,486	1,256	221,532	1,244	233,477	1,301	239,016	1,320	258,041	1,410	274,802	1,483	5.16%
Lincoln	27,601	1,355	42,443	1,908	40,984	1,842	38,835	1,740	52,580	2,356	40,801	1,826	38,810	1,682	39,388	1,702	40,968	1,760	42,098	1,796	43,698	1,851	47,700	1,999	50,902	2,123	6.21%
Linn	94,644	1,931	69,506	1,328	71,818	1,332	70,471	1,294	86,370	1,488	82,520	1,397	78,919	1,270	79,746	1,276	78,590	1,249	81,869	1,289	91,837	1,431	97,379	1,496	106,751	1,618	8.15%
Malheur	13,815	996	18,776	1,246	20,844	1,330	20,995	1,312	24,152	1,528	21,134	1,333	20,176	1,283	19,920	1,269	20,043	1,275	20,201	1,284	20,956	1,331	22,205	1,401	23,262	1,461	4.30%
Marion	158,109	1,307	219,182	1,648	230,271	1,635	194,190	1,347	247,331	1,591	200,420	1,261	195,332	1,229	191,947	1,199	193,571	1,200	204,991	1,258	220,237	1,336	243,107	1,457	263,789	1,556	6.83%
Metro	945,634	1,516	1,097,246	1,613	1,240,433	1,734	1,151,339	1,569	1,385,870	1,740	1,088,580	1,334	977,769	1,180	946,915	1,132	963,041	1,137	1,022,371	1,190	1,138,552	1,305	1,259,663	1,416	1,281,096	1,414	-0.13%
Milton-Freew.	4,642	1,649	4,332	1,431	5,383	1,762	5,024	1,532	5,280	1,612	4,321	1,193	4,051	1,058	4,367	1,133	4,429	1,137	4,189	1,069	4,242	1,072	4,670	1,169	2,527	628	-46.31%
Morrow	7,221	1,763	5,883	1,264	5,930	1,105	7,394	1,326	11,024	1,788	11,777	1,878	10,885	1,932	10,976	1,943	13,146	2,301	15,285	2,653	16,661	2,865	17,477	2,976	22,055	3,710	24.65%
Polk	19,036	729	28,655	1,000	38,163	1,068	34,914	1,110	39,129	1,172	37,985	1,116	37,817	1,007	38,564	1,018	38,774	1,017	40,516	1,054	42,734	1,100	46,533	1,180	51,179	1,277	8.24%
Sherman	876	903	987	1,028	1,109	1,149	1,306	1,375	1,219	1,314	1,222	1,335	1,203	1,363	1,135	1,286	1,091	1,226	1,160	1,300	1,330	1,486	1,219	1,358	1,213	1,347	-0.80%
Tillamook	9,940	893	15,212	1,271	17,446	1,441	18,324	1,490	25,952	2,008	22,600	1,730	20,559	1,628	21,556	1,704	20,712	1,632	21,590	1,695	23,130	1,801	26,403	2,037	27,325	2,088	2.48%
Umatilla	41,059	1,461	51,388	1,709	57,420	1,802	59,854	1,861	66,763	2,033	65,260	2,002	67,354	1,955	64,341	1,854	65,129	1,858	69,030	1,958	71,374	2,004	72,808	2,025	78,725	2,173	7.29%
Union	12,866	1,069	14,676	1,181	16,547	1,346	20,051	1,633	19,923	1,578	17,207	1,351	17,785	1,369	18,237	1,393	18,425	1,400	18,872	1,425	20,289	1,524	20,625	1,542	22,504	1,673	8.48%
Wallowa	6,801	1,876	4,024	1,076	4,861	1,339	4,393	1,237	4,692	1,316	3,953	1,114	3,250	929	3,197	912	3,402	966	2,495	706	3,881	1,093	4,091	1,146	4,434	1,232	7.54%
Wasco	16,760	1,494	17,480	1,508	18,727	1,580	17,884	1,481	22,250	1,845	19,033	1,571	17,005	1,344	17,368	1,363	17,324	1,342	18,175	1,392	17,527	1,329	19,419	1,455	22,232	1,641	12.80%
Wheeler	758	1,053	763	930	360	461	461	595	555	707	409	517	417	582	384	540	468	655	368	511	418	579	371	507	378	511	0.85%
Yamhill	52,199	1,490	48,909	1,241	69,994	1,656	65,022	1,493	104,150	2,221	71,663	1,493	64,513	1,281	89,805	1,771	83,241	1,628	73,473	1,422	76,900	1,472	96,181	1,817	101,268	1,890	4.00%
Rounding adj.																											
OR. TOTALS	**2,263,099**	**1,513**	**2,497,170**	**1,539**	**2,788,699**	**1,644**	**2,635,072**	**1,518**	**3,248,126**	**1,734**	**2,586,721**	**1,353**	**2,437,767**	**1,264**	**2,424,833**	**1,249**	**2,442,827**	**1,247**	**2,580,933**	**1,303**	**2,784,467**	**1,387**	**3,050,432**	**1,497**	**3,207,448**	**1,549**	**3.50%**
change in total from previous year			5.72%		3.44%		-5.16%		0.38%		-10.51%		-4.42%		-0.53%		0.74%		5.65%		7.89%		9.55%		5.15%		
change in per capita from previous year				3.68%		2.12%		-6.12%		-1.09%		-11.27%		-4.92%		-1.18%		-0.16%		4.49%		6.48%		7.87%		3.50%	

*includes flood debris

Data from some years is not shown due to page formatting. Please contact DEQ directly for data from these years.

Certain recoverable materials in mixed waste burned at the waste-to-energy facility in Brooks are included in Marion County and Statewide disposal in years prior to 2001 but excluded in 2001 and subsequent years (per ORS 459A.010(3)(f)(B)).

Table 7: Oregon Solid Waste Generated by Wasteshed, 1992-2017

Wasteshed	1992 Generated (tons)	Per Capita (lbs.)	1996 Generated (tons)	Per Capita (lbs.)	1999 Generated (tons)	Per Capita (lbs.)	2001 Generated (tons)	Per Capita (lbs.)	2007 Generated (tons)	Per Capita (lbs.)	2009 Generated (tons)	Per Capita (lbs.)	2011 Generated (tons)	Per Capita (lbs.)	2012 Generated (tons)	Per Capita (lbs.)	2013 Generated (tons)	Per Capita (lbs.)	2014 Generated (tons)	Per Capita (lbs.)	2015 Generated (tons)	Per Capita (lbs.)	2016 Generated (tons)	Per Capita (lbs.)	2017 Generated (tons)	Per Capita (lbs.)	Change in Per Capita 2017-16
Baker	9,401	1,186	14,540	1,748	15,395	1,841	14,805	1,773	16,295	1,983	15,457	1,879	15,328	1,891	13,810	1,704	14,634	1,798	14,322	1,755	15,707	1,913	15,543	1,883	17,632	2,105	10.08%
Benton	80,241	2,339	81,192	2,220	84,668	2,318	87,186	2,365	93,400	2,374	82,908	2,081	88,300	2,227	92,288	2,307	91,469	2,264	91,009	2,231	94,724	2,290	96,311	2,302	96,385	2,272	-0.79%
Clatsop	27,411	1,600	35,789	2,027	42,380	2,382	43,317	2,416	55,903	2,986	48,877	2,583	47,632	2,565	48,757	2,622	51,982	2,789	50,339	2,685	53,143	2,816	54,747	2,864	57,927	2,984	6.00%
Columbia	23,025	1,187	28,908	1,397	31,251	1,444	37,247	1,681	47,964	2,017	37,366	1,544	38,000	1,531	38,103	1,534	38,224	1,534	35,970	1,437	37,860	1,503	42,442	1,671	42,620	1,660	10.48%
Coos	47,631	1,534	51,409	1,620	50,370	1,603	48,786	1,550	61,621	1,955	54,971	1,743	76,354	2,425	72,346	2,301	67,432	2,145	68,412	2,175	55,386	1,759	58,660	1,857	63,654	2,011	14.35%
Crook	9,959	1,297	13,802	1,586	18,211	1,928	18,912	1,905	27,871	2,153	19,839	1,460	23,950	2,297	18,305	1,773	20,263	1,959	19,945	1,920	21,361	2,026	25,642	2,376	27,029	2,445	20.69%
Curry	13,418	1,350	17,132	1,632	20,930	1,982	24,460	2,270	28,036	2,611	21,317	1,998	22,896	2,050	21,977	1,971	21,087	1,891	21,633	1,935	22,526	2,005	26,211	2,320	26,209	2,299	14.64%
Deschutes	85,387	2,025	133,618	2,676	147,678	2,615	169,793	2,782	252,889	3,145	192,654	2,257	185,386	2,334	185,676	2,319	193,744	2,384	203,921	2,451	227,338	2,663	240,842	2,727	270,658	2,959	11.12%
Douglas	114,507	2,386	118,269	2,372	117,232	2,337	129,362	2,556	139,929	2,674	107,424	2,039	128,936	2,392	122,925	2,272	113,095	2,078	110,482	2,020	106,771	1,943	102,779	1,862	112,224	2,019	3.91%
Gilliam	1,049	1,213	1,459	1,577	1,708	1,789	1,874	1,972	2,327	2,469	2,842	3,015	2,570	2,734	3,810	4,011	3,338	3,432	2,774	2,809	3,026	3,064	2,605	2,631	2,421	2,427	-20.77%
Grant	5,089	1,295	4,179	1,040	4,109	1,034	4,687	1,202	5,546	1,463	4,896	1,301	5,347	1,436	4,427	1,189	4,807	1,293	4,568	1,230	5,043	1,358	5,324	1,437	4,941	1,333	-1.84%
Harney	3,249	927	2,804	779	5,002	1,327	3,968	1,044	4,782	1,245	4,002	1,038	4,370	1,185	4,977	1,361	4,791	1,320	4,936	1,359	4,970	1,363	5,191	1,418	5,477	1,488	9.21%
Hood River	11,814	1,352	19,349	2,004	19,717	1,948	21,914	2,128	28,330	2,639	25,438	2,342	27,761	2,454	24,831	2,171	24,377	2,093	23,876	2,012	26,389	2,177	27,625	2,234	29,935	2,381	9.38%
Jackson	115,135	1,486	175,303	2,054	212,160	2,362	224,228	2,428	264,484	2,615	222,759	2,152	239,552	2,349	251,230	2,455	245,382	2,379	266,209	2,555	261,357	2,478	286,316	2,679	292,354	2,696	8.80%
Jefferson	6,082	815	11,047	1,272	12,563	1,342	14,892	1,536	22,380	2,032	14,593	1,285	18,356	1,681	18,393	1,677	17,554	1,593	16,284	1,467	16,440	1,465	19,509	1,712	21,035	1,814	23.84%
Josephine	55,513	1,696	57,560	1,592	73,377	1,951	75,992	1,978	95,947	2,329	78,564	1,878	96,175	2,323	97,379	2,353	94,770	2,289	97,664	2,350	94,857	2,266	108,552	2,564	120,004	2,802	23.66%
Klamath	66,074	2,251	78,044	2,512	76,492	2,408	69,799	2,174	99,143	3,013	79,908	2,409	74,112	2,226	70,715	2,119	66,299	1,985	71,737	2,144	68,042	2,028	78,167	2,319	78,170	2,310	13.90%
Lake	4,633	1,269	8,069	2,163	3,731	1,006	5,763	1,536	7,742	2,047	6,998	1,841	9,428	2,391	6,868	1,734	8,287	2,087	6,844	1,713	6,773	1,691	7,394	1,845	7,088	1,746	3.23%
Lane	374,767	2,565	393,153	2,534	443,563	2,764	446,994	2,743	512,611	2,988	413,905	2,381	484,827	2,746	490,915	2,772	451,350	2,535	497,949	2,776	481,845	2,661	516,401	2,822	581,343	3,137	17.90%
Lincoln	34,487	1,693	50,266	2,259	50,896	2,287	53,963	2,418	72,615	3,254	57,810	2,587	57,331	2,484	61,492	2,657	57,883	2,486	62,038	2,646	63,525	2,690	64,713	2,711	66,608	2,778	3.25%
Linn	111,875	2,282	102,707	1,962	107,593	1,996	106,981	1,964	137,913	2,375	138,645	2,347	155,069	2,496	145,045	2,320	140,423	2,232	142,028	2,235	151,264	2,358	157,480	2,420	170,545	2,585	9.66%
Malheur	17,098	1,233	23,583	1,565	27,383	1,747	28,199	1,762	31,197	1,973	26,044	1,642	25,485	1,621	27,390	1,745	27,742	1,765	26,822	1,705	27,660	1,757	30,177	1,904	30,129	1,892	7.68%
Marion	213,943	1,768	304,913	2,293	339,910	2,413	386,007	2,678	499,004	3,210	419,207	2,637	430,916	2,711	420,655	2,627	426,111	2,641	443,413	2,721	460,780	2,796	480,258	2,878	515,245	3,040	8.71%
Metro	1,460,380	2,341	1,849,716	2,719	2,173,322	3,038	2,248,748	3,065	2,710,982	3,403	2,194,860	2,690	2,100,311	2,535	2,168,939	2,593	2,242,027	2,648	2,204,665	2,567	2,423,800	2,777	2,376,376	2,671	2,411,413	2,662	-4.16%
Milton-Freew.	5,551	1,972	5,518	1,823	6,574	2,152	6,368	1,942	7,631	2,330	6,640	1,834	6,618	1,728	5,982	1,551	7,533	1,934	6,863	1,752	7,088	1,791	6,554	1,641	4,058	1,008	-43.70%
Morrow	8,151	1,990	6,725	1,445	7,375	1,375	8,758	1,571	14,992	2,431	15,325	2,444	14,154	2,512	14,656	2,594	16,090	2,817	19,333	3,355	21,126	3,633	23,112	3,936	28,014	4,712	29.70%
Polk	23,909	916	35,442	1,237	53,592	1,499	57,464	1,827	72,967	2,185	70,186	2,062	72,256	1,924	69,068	1,823	68,726	1,803	75,095	1,953	77,848	2,003	86,059	2,183	97,280	2,428	21.21%
Sherman	1,146	1,181	1,252	1,304	1,456	1,509	1,540	1,621	1,458	1,572	1,425	1,558	1,397	1,583	1,454	1,647	1,271	1,429	1,379	1,545	1,582	1,767	1,378	1,535	1,364	1,515	-14.26%
Tillamook	14,458	1,300	20,458	1,709	24,376	2,013	25,437	2,068	37,387	2,893	31,870	2,439	30,967	2,452	32,162	2,542	30,410	2,397	30,669	2,407	32,554	2,534	35,735	2,757	38,047	2,907	14.71%
Umatilla	47,700	1,698	63,843	2,123	76,367	2,397	82,951	2,579	105,165	3,202	95,566	2,932	94,964	2,756	93,331	2,689	91,195	2,602	96,020	2,724	101,186	2,841	97,084	2,701	108,227	2,988	5.17%
Union	15,391	1,279	19,879	1,599	21,904	1,782	25,629	2,087	29,102	2,305	24,327	1,910	25,607	1,971	26,228	2,004	26,456	2,010	25,222	1,905	26,979	2,027	27,541	2,059	29,259	2,175	7.34%
Wallowa	7,234	1,996	4,528	1,211	5,991	1,650	5,438	1,531	6,459	1,812	5,164	1,455	4,204	1,202	4,121	1,175	4,460	1,266	3,399	962	5,004	1,409	5,605	1,570	5,914	1,644	16.63%
Wasco	22,202	1,980	24,999	2,156	28,419	2,398	24,124	1,998	28,900	2,396	28,269	2,333	24,687	1,952	24,057	1,888	25,482	1,975	25,237	1,933	24,390	1,850	26,311	1,971	27,902	2,059	11.32%
Wheeler	817	1,135	948	1,156	439	562	528	681	759	967	512	646	479	668	422	592	513	718	397	551	495	686	426	582	466	629	-8.18%
Yamhill	64,049	1,829	75,024	1,904	108,836	2,574	128,043	2,940	161,965	3,453	118,785	2,475	110,166	2,188	133,592	2,635	134,478	2,630	116,749	2,259	124,708	2,387	137,306	2,594	143,301	2,674	12.02%
OR. TOTALS	**3,102,776**	**2,075**	**3,835,427**	**2,364**	**4,414,967**	**2,602**	**4,634,157**	**2,670**	**5,685,695**	**3,036**	**4,669,352**	**2,442**	**4,743,891**	**2,459**	**4,816,323**	**2,481**	**4,833,686**	**2,467**	**4,888,202**	**2,467**	**5,153,547**	**2,568**	**5,276,375**	**2,589**	**5,534,877**	**2,673**	**3.26%**
change in total from previous year			5.84%		2.65%		1.98%		-0.77%		-10.49%		0.62%		1.53%		0.36%		1.13%		5.43%		2.38%		4.90%		
change in per capita from previous year				3.81%		1.34%		0.95%		-2.23%		-11.25%		0.09%		0.87%		-0.56%		0.00%		4.09%		0.81%		3.26%	

Data from some years is not shown due to page formatting. Please contact DEQ directly for data from these years.

Table 8: Oregon Materials Recovered, 1992-2017

Material Type	1992 Tons	1996 Tons	1999 Tons	2001 Tons	2007 Tons	2009 Tons	2011 Tons	2012 Tons	2013 Tons	2014 Tons	2015 Tons	2016 Tons	2017 Tons
Container glass	69,284	77,231	80,194	83,240	96,926	108,084	114,982	107,042	106,840	106,853	110,101	107,100	119,562
Other glass	41	1,557	1,476	9,530	901	709	840	21	28	32	186	232	1
Total glass	**69,325**	**78,788**	**81,670**	**92,770**	**97,827**	**108,793**	**115,822**	**107,062**	**106,868**	**106,885**	**110,287**	**107,333**	**119,563**
Aluminum	18,245	17,815	21,046	20,511	26,932	30,673	19,985	23,733	23,176	21,318	19,310	21,566	25,499
Scrap metal	26,927	45,271	141,653	223,623	361,152	332,781	550,158	511,026	477,097	422,845	408,326	389,347	444,487
Tinned cans/aluminum				23,387	-	-	-	-	-	-	-	-	-
Tinned cans	7,400	8,635	8,407	-	10,174	9,003	9,298	8,398	8,944	8,747	8,327	8,363	9,611
Aerosol cans	0	0	7	-	1	1	1	0	1	2	1	1	1
Total metals	**52,572**	**71,722**	**171,114**	**267,521**	**398,260**	**372,458**	**579,442**	**543,158**	**509,217**	**452,912**	**435,963**	**419,276**	**479,599**
Cardboard/kraft paper	204,729	304,093	305,138	332,876	444,449	367,536	320,162	356,906	361,735	375,097	409,082	365,904	421,789
Paper Fiber[6]	-	-		-	348,250	259,626	277,353	299,224	299,004	280,888	274,318	267,205	249,753
High-grade paper[6]	67,077	49,298	56,035	62,185	-	-	-	-	-	-	-	-	-
Magazines	11,246	17,250	13,988	-	-	-	-	-	-	-	-	-	-
Phone books[1]	-	3,103	2,841	-	-	-	-	-	-	-	-	-	-
Mixed waste paper[6]	24,012	53,771	75,764	81,418	-	-	-	-	-	-	-	-	-
Newspaper[6]	130,181	141,412	183,710	203,021	-	-	-	-	-	-	-	-	-
Fiber-based fuel		9,235	-	-	-	-	-	-	-	-	-	-	-
Total papers	**437,245**	**578,161**	**637,476**	**679,499**	**792,699**	**627,162**	**597,515**	**656,130**	**660,739**	**655,985**	**683,400**	**633,109**	**671,542**
#1 PET beverage	3,329	5,803	4,840	-	-	-	-	-	-	-	-	-	-
#1 other	58	-	-	-	-	-	-	-	-	-	-	-	-
#2 milk jugs	1,940	3,049	1,088	-	-	-	-	-	-	-	-	-	-
#2 other	1,841	1,331	852	-	-	-	-	-	-	-	-	-	-
#3 PVC	25	144	2	-	-	-	-	-	-	-	-	-	-
#4 LDPE	1,196	2,501	1,418	-	-	-	-	-	-	-	-	-	-
#5	360	283	1,093	-	-	-	-	-	-	-	-	-	-
#6	471	430	227	102	-	-	-	-	-	-	-	-	-
Composite plastic	-	1,077	1,357	1,095	1,539	1,823	2,594	2,311	2,222	2,426	2,346	2,369	1,305
Mixed plastic	300	1,708	7,344	-	-	-	-	-	-	-	-	-	-
Other plastic (P7)	-	12	1	-	-	-	-	-	-	-	-	-	-
Plastic bottles[2]				-	-	-	-	-	1	-	-	-	-
Plastic film				4,825	9,625	11,327	11,747	14,886	14,583	14,831	13,680	15,873	14,755
Plastic other				2,005	9,500	9,299	10,167	10,720	9,562	12,507	13,348	13,232	8,761
Rigid plastic containers				16,352	21,990	23,377	30,100	29,485	28,740	30,692	24,370	24,697	29,772
Total plastic	**9,520**	**16,338**	**18,222**	**24,380**	**42,655**	**45,826**	**54,608**	**57,401**	**55,107**	**60,455**	**53,745**	**56,171**	**54,592**
Antifreeze	5	52	317	1,864	2,683	2,515	3,060	2,598	2,680	2,719	2,916	2,472	2,545
C & D -- roofing[7]			6,933	28,904	5,980	7,830	12,998	18,223	15,895	23,743	21,410	19,769	18,661
Carpeting -- used			361	1,064	645	515	1,807	1,837	1,409	1,355	654	0	-
Diesel					156	145	32	33	32	33	34	33	-
Electronics				1,640	9,813	15,174	19,586	25,957	21,929	22,344	20,696	18,349	15,513
Fluorescent lamps	-	7	22	267	514	400	673	662	600	422	172	364	335
Gypsum wallboard	3,695	9,419	8,345	13,164	2,655	3,338	3,364	5,025	4,057	3,819	3,630	4,225	3,862
Household Haz Waste				12	157	436	295	338	323	246	276	326	273
Alkaline batteries				4	-	-	-	-	-	-	-	-	-
Mixed batteries					204	218	336	436	375	301	259	333	172
Lead acid batteries[3]	176	559	974	10,134	12,906	13,794	14,467	14,036	14,637	12,562	16,750	17,537	16,981
Lithium batteries					-	-	-	-	-	-	-	-	-
NiCad batteries			13	18	-	-	-	-	-	-	-	-	-
Old broken crayons	-	-	-	-	-	-	-	-	-	-	-	-	-
Paint[5]	120	489	556	1,403	1,730	1,308	3,015	3,396	3,652	3,826	4,414	4,263	4,212
Porcelain	-	5	9	483	1,258	590	203	551	960	1,071	840	366	85
Rubber tire buffings[4]	-	2,935	-	-	-	-	-	-	-	-	-	-	-
Scrap film (X-ray)	42	68	19	-	-	-	-	-	-	-	-	-	-
Solvents[5]	16	110	227	248	274	237	406	444	369	480	454	457	475
Textiles		508	2,661	3,762	1,519	958	232	872	948	1,248	1,266	1,182	804
Tires[5]	34,392	24,360	22,804	17,339	20,045	23,264	23,361	23,470	30,326	21,711	27,793	31,175	30,504
Used Motor Oil[5]	28,796	47,632	33,664	45,675	43,123	40,513	30,052	37,032	35,544	34,516	34,103	45,015	45,787
Total other	**67,243**	**86,145**	**76,903**	**125,979**	**103,662**	**111,235**	**113,885**	**134,909**	**133,736**	**130,394**	**135,666**	**145,868**	**140,210**
Animal waste/grease	-	22,957	19,315	26,226	13,783	12,853	7,680	7,148	7,621	10,491	13,009	15,002	10,923
Food waste	-	5,000	2,458	9,685	16,407	21,949	42,741	47,665	50,143	46,289	41,991	57,118	48,276
Wood waste[5]	112,425	243,773	335,861	424,569	460,896	307,005	368,356	362,448	387,196	349,253	375,462	289,022	299,270
Yard debris[5]	91,348	235,562	283,440	348,472	511,380	475,351	426,095	475,578	480,238	494,607	519,561	503,171	503,293
Total organics	**203,773**	**507,292**	**641,074**	**808,951**	**1,002,466**	**817,157**	**844,872**	**892,839**	**925,198**	**900,640**	**950,024**	**864,312**	**861,762**
Adj. rounding/unspecified		2		(1)									
OREGON TOTALS	**839,678**	**1,338,446**	**1,626,458**	**1,999,099**	**2,437,569**	**2,082,631**	**2,306,144**	**2,391,499**	**2,390,865**	**2,307,271**	**2,369,084**	**2,226,069**	**2,327,268**

[1] Phone books included in mixed waste paper in 1992, 1993 and 2001 and subsequent years.

[2] About 900 tons of plastic bottles was included with mixed plastics in the 1995 survey.

[3] Includes only batteries collected at household hazardous waste collection events until 2001.

[4] From 1998 rubber tire buffings were included with tires.

[5] Includes Marion Co. materials in 2001 and subsequent years burned for energy.

[6] In 2007 and subsequent years, Mixed Waste Paper, Hi Grade & Newspaper was combined into Paper Fiber

[7] Asphalt Roofing was included as burned for energy only in years 2001-2006

Data from some years is not shown due to page formatting. Please contact DEQ directly for data from these years.

Table 9: Disposition of Recovered Materials, 2017

Wasteshed	Total Recovered	Recycled	% of Total	Energy Recovery	% of Total	Compost	% of Total	Stock
Baker	3,554	2,538	71%	121	3%	895	25%	0
Benton	33,217	21,006	63%	203	1%	12,009	36%	0
Clatsop	24,546	14,597	59%	9,114	37%	716	3%	118
Columbia	10,682	8,169	76%	465	4%	2,048	19%	0
Coos	14,928	14,608	98%	186	1%	134	1%	0
Crook	6,470	5,441	84%	600	9%	430	7%	0
Curry	5,922	5,509	93%	389	7%	23	0%	0
Deschutes	88,563	55,887	63%	11,229	13%	21,445	24%	1
Douglas	33,110	22,254	67%	8,910	27%	1,929	6%	18
Gilliam	383	370	96%	13	4%	-	0%	0
Grant	852	812	95%	1	0%	2	0%	36
Harney	1,340	1,314	98%	23	2%	-	0%	2
Hood River	6,801	6,202	91%	67	1%	531	8%	0
Jackson	103,730	49,237	47%	24,479	24%	30,001	29%	13
Jefferson	5,878	5,709	97%	133	2%	28	0%	8
Josephine	43,106	27,201	63%	5,762	13%	10,135	24%	8
Klamath	19,016	14,346	75%	2,543	13%	2,128	11%	0
Lake	660	651	99%	5	1%	-	0%	4
Lane	306,541	176,947	58%	47,504	15%	82,069	27%	21
Lincoln	15,706	11,387	73%	2,079	13%	2,232	14%	8
Linn	63,794	49,897	78%	892	1%	13,005	20%	0
Malheur	6,867	6,258	91%	322	5%	287	4%	0
Marion	251,456	146,233	58%	53,307	21%	51,915	21%	1
Metro	1,130,320	753,161	67%	115,980	10%	260,828	23%	351
Milton-Freewater	1,531	1,407	92%	28	2%	95	6%	0
Morrow	5,959	5,739	96%	220	4%	-	0%	0
Polk	46,101	21,531	47%	12,335	27%	12,235	27%	0
Sherman	151	139	92%	12	8%	-	0%	0
Tillamook	10,721	9,035	84%	524	5%	1,156	11%	6
Umatilla	29,501	24,924	84%	3,389	11%	1,179	4%	8
Union	6,755	4,420	65%	681	10%	1,653	24%	0
Wallowa	1,480	745	50%	11	1%	650	44%	75
Wasco	5,670	5,197	92%	110	2%	349	6%	14
Wheeler	87	70	80%	4	4%	-	0%	13
Yamhill	42,033	23,979	57%	2,278	5%	15,775	38%	1
Total	**2,327,432**	**1,496,923**	**64%**	**303,920**	**13%**	**525,881**	**23%**	**709**