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Background Brief on ...

# Recycling and Waste Prevention

## Oregon's Recovery Rate

Oregon has been a leader in recycling programs, and has one of the highest recovery rates for solid waste in the United States. The statewide recovery rate has increased fairly regularly since 1992 when the rate was first calculated. According to the Department of Environmental Quality's (DEQ) 2012 Material Recovery and Waste Generation Rates Report, Oregon recovered 2,398,552 tons, or 53.4 percent, of the measured municipal post-consumer waste stream in 2012 – the highest recovery rate since the survey began in 1992. This was an increase from the 52.3 percent recovery rate reported for 2011. Most of this increase was due to increased organics recovery (including yard debris, food waste, and animal waste). Recovery of electronics, papers, and plastics also increased, while glass and metals recovery decreased.

A total of 2,422,883 tons of municipal post-consumer waste was disposed in Oregon in 2012, down 0.6 percent from 2011. Per capita disposal decreased 1.3 percent to 1,248 pounds per person. This is the lowest rate in the 21 years the survey has been conducted and 17.6 percent below the per capita disposal rate in 1992.

Oregon law directs DEQ to give credits to local governments that implement additional, non-measurable recovery efforts such as promoting home-composting programs and reuse programs. Including these credits, Oregon for the first time met the statutory goal of 50 percent waste recovery in 2010 - one year after the target date of 2009 for reaching that goal. In 2012, Oregon met its 50 percent recovery goal for the third straight year. In 2012, 50.2 percent of waste generated was disposed, 32.6 percent was recycled,

9.7 percent was composted, and 7.4 percent was recovered and burned as a fuel.

### **Oregon's Waste Generation Rate**

Generation is the sum of all discards that are either disposed or recovered. It is a rough measure of the use of materials that are commonly disposed or recovered. As can be seen in the chart at end of this document, per capita waste generation climbed fairly steadily from 1992 until it peaked at 8.5 pounds per person per day in 2006. A combination of economic factors and declines in newspaper and magazine production then caused the rate to drop sharply, falling to 6.8 pounds per person per day in 2009. Total tons of waste generated in 2012 was 4,821,435, an increase of 1.7 percent. This equates to a pre-capita generation of 2,483 pounds per person, compared to 2,477 pounds per person in 2011, an increase of one percent. With these increases, the state narrowly missed the goals for no increase in total or per-capita generation. However, waste generation in 2012 continued to be nearly one million tons less than at its peak in 2006. This is a drop of nearly 16 percent total waste generated between 2006 and 2012, or close to a 20 percent drop in the per capita amount.

### **Current Recycling Requirements for Local Governments**

Cities and counties must assure that their residents are being provided with opportunities to recycle that meet the minimum requirements of state law.

For cities with a population over 4,000, this means that residents who have garbage collection service must also be provided with recycling service and recycling education and promotion. In addition, the city must make sure that at least three of the following "menu items" are being provided:

1. Weekly, residential curbside collection of source-separated recyclable materials on the same day as garbage service. (If this program element is not implemented, a minimum of monthly curbside collection is still required). Local governments must also give notice to each person of the

opportunity to recycle and encourage source separation of recyclable materials through an education and promotion program.

2. An expanded recycling education and promotion program that includes, among other things, recycling collection promotion directed at residential and commercial solid waste service customers and generators at least four times a year.
3. Provision of at least one durable recycling container directly to each residential collection service customer.
4. Recycling collection service provided to multi-family dwelling complexes having five or more units.
5. Residential yard debris collection program for collection and composting of residential yard debris.
6. Regular, on-site collection of source-separated principle recyclable materials from commercial generators.
7. Establishment of an expanded system of recycling depots that are conveniently located to the population served.
8. Garbage collection rates established as a waste reduction incentive, including a mini-can option.
9. A collection and composting program for commercial and institutional food waste, non-recyclable paper, and other compostable waste.

All cities of 10,000 or more population must provide an additional one or two recycling program elements, depending on the activities chosen. DEQ can also approve alternative recycling programs that comply with administrative rules adopted by the Oregon Environmental Quality Commission.

### **Benefits of Recycling, Waste Prevention, and Reuse**

DEQ uses the results of the Material Recovery Survey to estimate the energy savings resulting from recycling, as well as reductions in greenhouse gases associated with recycling, composting, and "counting" energy recovery.

*Energy* - When recycled materials replace virgin feedstocks in manufacturing, energy

savings can be significant. For example, making aluminum from old beverage containers uses 93 percent less energy than making aluminum from bauxite. Newsprint made from old newspapers requires 46 percent less energy to make than newsprint made from wood.

DEQ estimates that energy savings in 2012 from recycling and energy recovery (counting only wastes generated in Oregon, not those generated elsewhere and shipped to Oregon for recycling) totaled approximately 34 trillion British thermal units (**BTUs**). To put this number in context, this is the equivalent of 272 million gallons of gasoline, or roughly 3.3 percent of total energy used in 2012 by all sectors of the economy in Oregon. Although both of these comparisons are imperfect, the energy savings from recycling in Oregon is significant.

*Greenhouse Gases* - Net greenhouse gas reductions associated with materials recycled, composted, and burned for energy in 2012 are estimated at 3.1 million metric tons of carbon dioxide equivalent. This includes only materials that are counted toward the state's recovery rate and excludes any materials that are generated in other states but shipped to Oregon for recycling. To put this number in context, 3.1 million metric tons of carbon dioxide is equivalent to tailpipe emissions from 690,000 "average" passenger cars, or roughly 4.6 percent of all 2012 greenhouse gas emissions statewide.

*Waste prevention benefits* - Waste prevention and reuse (as well as recycling) can significantly reduce environmental impacts associated with raw materials extraction, materials manufacturing, and transportation. In many cases, these environmental benefits "upstream" of the consumer may be significantly larger than the "downstream" benefits of waste reduction. Reducing the overall generation of solid waste is not just about saving landfill space. Recent DEQ studies of the environmental impacts of e-commerce packaging, drinking water delivery, and residential housing confirm that waste prevention (using less material) and reuse have

environmental benefits "upstream" in resource extraction and manufacturing that far outweigh the benefit of reduced landfilling. The value of achieving the new statutory waste generation goals was also affirmed in 2004 by the Governor's Advisory Group on Global Warming. In its "Oregon Strategy for Greenhouse Gas Reductions," the advisory group identified achieving the waste generation (and recovery) goals as a top priority recommendation. Achieving the statutory waste generation goals contributes more than 15 percent of the total greenhouse gas reductions projected to result from the advisory group's entire package of recommendations.

### **Important Legislation**

*The Bottle Bill* – In 1971, Oregon enacted the "bottle bill" that has been called the most effective recycling program in American history and is the nation's longest-standing deposit law. Within two years of its implementation, more than 90 percent of all carbonated beverage containers were being recycled and more than 80 percent of the roadside container litter disappeared. Container recovery continues to be much higher in Oregon than in states that do not have bottle deposit laws. The 2007 Legislative Assembly expanded coverage of the five-cent beverage container deposit to include water and flavored water beverage containers and created a nine-member Bottle Bill Task Force to study issues associated with beverage container collection and refund. In 2011, the Legislative Assembly passed House Bill 3145, which expanded the types of beverage containers subject to the deposit, set a trigger for the deposit to increase to 10 cents if the recycling rate falls below 80 percent for two consecutive years (but not before 2017) and set up a redemption center pilot project. In 2012, the Legislative Assembly passed Senate Bill 1508 to provide incentives for a more efficient system for distributors to collect empty containers from stores. In 2013, Senate Bill 117 modified the redemption center program by removing its status as a pilot program and authorized the Oregon Liquor Control Commission to approve additional centers. The redemption centers – known as "BottleDrops" – are operated and

funded by the Oregon Beverage Recycling Cooperative in partnership with grocery retailers. The first BottleDrop center opened in Wood Village in 2010; in mid-2014 there were eight redemption centers operating.

*Recycling Opportunity Act of 1983* – This was the first state law in the United States to require that people statewide be provided with an opportunity to recycle. This opportunity included curbside recycling collection being provided to garbage service customers in cities of 4,000 or more population, recycling at all disposal sites or more convenient locations, and education and promotion programs designed to make sure that everyone is aware of their recycling opportunities and the reasons to recycle. The law also established the statewide hierarchy for managing solid waste, with reduced generation of waste being at the top of the hierarchy, followed by reuse, recycling, composting, and energy recovery, with landfilling being the least-preferred method.

*Oregon Recycling Act* – In 1991, the legislature enacted Senate Bill 66, which strengthened and broadened recycling requirements. The Act set a statewide recovery goal of 50 percent by 2000 and interim recovery goals for individual wastesheds by 1995. “Wastesheds” are generally the same geographic areas as counties, except Metro, which comprises Clackamas, Multnomah, and Washington counties, and Milton-Freewater, which is its own wasteshed. However, by the year 2000, Oregon had not met its ambitious recovery goal of 50 percent, although most wastesheds were meeting their individual goals.

The Act also established a household hazardous waste program; required recycled content in glass containers, directories, and newsprint publications and set requirements for recycling rigid plastic containers to promote market development; required DEQ to calculate annual recovery rates; required DEQ to develop a solid waste management plan; and funded programs through tipping fees at landfills. The Act banned discarded or abandoned vehicles, large home or industrial appliances, used oil, un-

chipped tires, and lead-acid batteries from solid waste disposal sites.

*Wasteshed Incentives* – 1997 legislation, House Bill 3456, provided incentives for governments to establish and maintain programs in waste prevention, reuse, and backyard composting - actions with effects that cannot be directly measured by DEQ's material recovery survey. Wastesheds receive a two percent increase to their calculated recovery rate for each program implemented, allowing a total of six percent if a wasteshed implements all three programs.

*Revised Recovery Goals; New Waste Generation Goals* – DEQ confirmed to the 2001 Legislative Assembly that the original wasteshed goals, in total, would not produce a statewide recovery goal of 50 percent. The legislature responded by unanimously enacting House Bill 3744, which set new wasteshed goals and extended Oregon's statewide recovery goals to 2005 (45 percent goal) and 2009 (50 percent goal), and also applied the two percent credits for composting programs and reuse programs towards the statewide recovery rate. The bill also allowed Marion County to count towards its recovery rate the wood and other fuel materials burned in their mass-burn energy recovery facility, if those materials are counted as fuels when burned in other wastesheds. Oregon met the 2005 goal of 45 percent recovery, but missed achieving 50 percent recovery until 2010.

In response to the environmental impacts associated with increasing use of materials, as reflected by rising waste generation, House Bill 3744 also created Oregon's first statewide waste generation goals and added waste prevention goal language to ORS 459.015. The goal for 2005 was that there be no annual increase in per capita waste generation. For 2009 and beyond, the goal is for there to be no annual increase in total waste generation. Oregon initially failed to reach the 2005 goal, as per capita waste generation peaked in 2006. Since then Oregon has generally achieved the goals, as waste generation fell slightly in 2007,

sharply in 2008 and 2009, and only slightly increased in 2010 and again in 2012.

*Oregon E-Cycles* – House Bill 2626, enacted by the 2007 Legislative Assembly provides for the statewide collection and recycling of televisions, computers, and monitors (“covered electronic devices” or **CEDs**), as of January 1, 2009. Under the bill, manufacturers of CEDs must either manage their own statewide collection/recycling program or pay into a DEQ-established state contractor program. Any Oregon household, certain small businesses and non-profits, and other individuals delivering seven or fewer CEDs can recycle without charge under these programs. Retailers are prohibited from selling CEDs unless the products are labeled with a brand that is in compliance with the new law as of January 1, 2009. Effective January 1, 2010, the disposal of computers, monitors, and TVs was prohibited in Oregon.

House Bill 3606 (2010) changed the way minimum recycling obligations are calculated for TV manufacturers. In 2011, Senate Bill 82 added printers and computer peripherals to Oregon E-Cycles beginning January 2015 (but not to the disposal ban). This legislation also established a system that allows recycling programs to claim credits for the pounds they collect over their minimum recycling obligation in any year.

*Paint Product Stewardship* – House Bill 3037 (2009) created a paint stewardship pilot program to reduce the generation of post-consumer paint by promoting its reuse and developing a process of collecting, transporting, and processing it in an environmentally sound fashion. The law required the creation of a stewardship organization made up of paint manufacturers to implement the program by developing a plan and funding its implementation, including the development of educational materials for consumers. Under the legislation, consumers are able to take unwanted paint to locations throughout the state for environmentally appropriate recovery and disposal. House Bill 2048 (2013) made the

program permanent and required any stewardship organization submitting a program plan (the current stewardship organization is known as “PaintCare”) to address the following:

- Describe how the program will meet the statutory standards for the convenient collection of unwanted paint in both urban and rural areas of the state; and
- Specify goals for the program to increase the recycling of latex paint, to enhance consumer awareness of the program, and to reduce overall generation of paint.

Because the Legislature decided to transition from a pilot to a permanent program, House Bill 2048 authorized DEQ with enforcement authority for violations on the plan or statute.

*Lighting Containing Mercury* - Mercury is used in many types of light bulbs because it contributes to the bulbs’ energy efficiency and life expectancy. Mercury is a naturally occurring element that is found in air, water, and soil, but it can also be toxic to humans. Senate Bill 1512 enacted by the 2012 Legislative Assembly prohibits the sale or distribution of any lighting that contains mercury in amounts exceeding specified standards.

### **From Managing Discards to Managing Materials: Oregon’s 2050 Vision for Materials Management**

Oregon law requires DEQ to maintain and update a statewide solid waste management plan. In 2011, DEQ convened a workgroup of external stakeholders to help develop an update, *Materials Management in Oregon: 2050 Vision and Framework for Action*, using a broader framework called “materials management” to more effectively reduce the significant impacts from materials produced, used, and discarded in Oregon. The **materials management** approach includes managing wastes at the time of discard, but more broadly identifies the most significant impacts across the *full life cycle* of materials – from extraction of resources to recovery and disposal – regardless of where they occur and focuses on actions to reduce them. This shift to a broader, materials management approach is important because the large majority of

environmental impacts occur before materials are discarded.

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The Environmental Quality commission adopted the *2050 Vision and Framework for Action* in December 2012. DEQ has begun implementing short-term, high-priority projects such as assessing opportunities to improve plastics recycling and working to advance environmental footprinting for products. Several priorities require changes in the law. In the fall of 2013, DEQ convened another stakeholder workgroup to help develop legislative concepts for the 2015 session to restore and stabilize funding, improve waste recycling, and update program goals and measures.

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