



Oregon's Rigid Plastic Container Recycling Rate for 2007 and Determination of the Recycling Rate for Compliance Purposes for 2009

Summary

Oregon law establishes recycling or reuse requirements for rigid plastic containers sold or offered for sale in Oregon. One way that all plastic container manufacturers and product manufactures can be assured that they are in compliance with Oregon law is if the aggregate recycling for compliance purposes remains above 25%. DEQ has determined that the rate will be above 25% for 2009.

The year 2007 saw another large increase in the recycling of rigid plastic containers in Oregon. An estimated 19,887 tons of rigid plastic containers were recycled in 2007, and 46,182 tons were disposed, giving a recycling rate of 30.1%. This compares to 17,675 tons recycled, 45,905 tons disposed, and a recycling rate of 27.8% for 2006. The gain in 2007 was the result of increases in the amount of plastic containers set out for recycling in curbside and other public programs. The main factor has probably been the increased use of large roll-carts for collecting commingled recyclables. These large carts make it more convenient to recycle large plastic containers that might have difficulty fitting into the bins previously used.

Looking forward to 2009, two factors should lead to increases in recycling, while two other factors may lead to decreases. First, curbside recycling of rigid plastic containers should be even higher in 2008. Portland and some other jurisdictions switched to using roll carts in 2008 and also expanded their programs to include plastic tubs and pails. Second, Oregon's Bottle will expand to include water bottles in 2009. This could bring in an additional 1,200 to 1,800 tons of PET plastic in 2009. On the negative side, the biggest factor is likely to be the decline in market prices for plastics and other recyclable materials experienced late in 2008 and expected to continue into 2009. This decline in prices will probably have little effect on curbside and bottle bill recycling, but it could have a substantial negative impact on the specialty recycling. Also, continued declines in the redemption of soft drink containers will probably occur as soft drinks continue to lose market share to non-carbonated beverages such as water. Overall though, DEQ expects that the increases in recycling due to adding water bottles to the bottle bill and further expanding curbside recycling will outweigh the declines due to lower prices paid for plastic and reduced returns of soft drink bottles.

Based on this analysis, DEQ believes that the aggregate recycling rate for compliance purposes for rigid plastic containers will remain above 25% through 2009. Plastic container manufacturers and product manufacturers can rely on this determination to assure compliance with Oregon's rigid plastic container law for the year 2009.

Background: Oregon's Rigid Plastic Recycling Law

Oregon's rigid plastic container recycling law was originally passed as part of the comprehensive 1991 Oregon Recycling Act (Chapter 385, Oregon Laws 1991, otherwise known as Senate Bill 66)¹. Under this law, any rigid plastic container sold in Oregon must meet at least one of three criteria:

1. Contain at least 25% recycled content,
2. Be made of plastic that is recycled in Oregon at a rate of at least 25%, or
3. Be a reusable container, made to be reused a minimum of five times.

Rigid plastic containers are defined in rules (OAR 340-090-0330) as plastic bottles, jars, cups, tubs, pails, "clamshell" containers, or other plastic containers that, among other criteria, are designed to hold a product for sale, are between 8 ounces and 5 gallons in size, are composed predominantly of plastic resins, and maintain their shape whether empty or full. The following rigid plastic containers are exempt from these requirements:

2007/2009 Rigid Plastic Container Recycling Rates

- Containers for medical foods, drugs, and devices
- Packaging necessary to provide tamper-resistant seals
- Containers of food other than beverages
- “Reduced” packaging, where the packaging has been reduced in weight by at least 10% compared to packaging for the same product used five years earlier

Generally, containers of beverages and non-food products such as detergents, automotive fluids, and other consumer and commercial products are covered under these requirements.

The “Recycling Rate for Compliance Purposes”

Recycling rates for materials for any year can be calculated only after recycling and disposal data for that year have been gathered and analyzed. This time delay in collecting data and reporting rates for the prior year could be problematic for rigid plastic container manufacturers who rely on an aggregate plastic container recycling rate of 25% or higher for compliance.

To remedy this situation and allow manufacturers to definitely determine they comply with the law, the 1995 Oregon Legislature amended the law to create the “Recycling Rate for Compliance Purposes.” This recycling rate is DEQ’s determination of what the recycling rate will be for rigid plastic containers in the coming year. This prospective determination is based on the calculated recycling rate for the most recent year for which actual recycling and disposal data are available and on other information on the trends in plastic container generation, recycling, and disposal that are likely to affect the recycling rate for the coming year. If DEQ determines that the aggregate rigid plastic container recycling rate for the coming year will be below 25%, manufacturers can take steps to assure they comply with the law using a different method than the aggregate recycling rate.

Calculated Annual Recycling Rate for 2007

The annual recycling rate is calculated from the actual tonnage of rigid plastic containers disposed and recycled for a particular year. Unlike the “Recycling Rate for Compliance Purposes,” it is not a prospective determination of what the recycling rate will be in the coming year. The annual recycling rate is calculated using the following formula:

$$\text{Recycling rate} = [\text{Tons recycled}] / ([\text{Tons recycled}] + [\text{Tons disposed}])$$

Four types of information are gathered and analyzed to calculate the annual recycling rate:

1. Recycling data from Oregon’s annual material recovery survey.
2. Disposal data from Oregon’s landfills, burners, and waste exporters on the tons of mixed municipal solid waste disposed from Oregon sources each year.
3. Waste composition study data used to determine the percentage of mixed solid waste that is rigid plastic containers. The most recent waste composition studies were conducted statewide in 2005.
4. Data related to the sales of rigid plastic containers, and how those sales have changed over time.

Table 1 shows the annual recycling rate for rigid plastic containers from 1993 through 2007 as calculated by DEQ.

2007/2009 Rigid Plastic Container Recycling Rates

Table 1. Rigid Plastic Container Annual Recycling Rates for 1993 - 2007

Year	Tons disposed	Tons recovered**	Tons generated **	Recycling rate **
1993	22,635	8,107	30,742	26.4%
1994	23,825	9,007	32,832	27.4%
1995	23,684	9,813	33,497	29.3%
1996	25,793	10,494	36,287	28.9%
1997	27,584	10,596	38,180	27.8%
1998	29,058	11,076	40,134	27.6%
1999	31,400	11,843	43,243	27.4%
2000	33,879	12,873	46,752	27.5%
2001	34,395	14,897	49,292	30.2%
2002	35,808	12,192	48,000	25.4%
2003	37,698*	13,840	51,538	26.9%
2004	40,425	13,106	53,531	24.5%
2005	43,035	14,584	57,619	25.3%
2006	45,905	17,675	63,580	27.8%
2007	46,182	19,887	66,069	30.1%

* Disposal numbers for 2003 have been adjusted based on interpolating results of the 2002 and 2005 waste composition studies.

** For 1993-2005, tons recovered have been recalculated as reported in the June 20, 2007, supplement to the 2005/07 Rigid Plastic Container Recycling Report.

Recycled Tonnage for 2007

DEQ uses a comprehensive material recovery survey to tabulate the recycling of different materials in Oregon each year. Recyclers at all levels, from collectors through processors to end-users or exporters, are asked to report the total amount of each material they collect, where they get it from, and what they do with it. The survey is structured to eliminate double or triple-counting of material as it passes from collector to processor to exporter or user. In 1999 and prior years, DEQ gathered data on recycling of plastics by resin type and could determine how much PET (#1), HDPE (#2), and other resins were recycled. In recent years many of the Oregon collectors and processors have discontinued sorting plastic by resin and instead, export commingled bales of different plastic bottle or container resin types. As a result, DEQ no longer has detailed information on the amount of each type of plastic resin being collected.

In recognition of this trend, beginning in 2000, DEQ changed the way in which we survey plastics collectors and processors. Instead of asking collectors to provide tonnages for the different resin types, we ask them to separate the plastic into three basic categories:

- rigid plastic containers
- film plastic, such as plastic bags and sheeting, and
- all other plastic, such as plastic products or rigid plastic packaging that does not function as a container.

Based on the data collected from the 2007 Oregon Material Recovery Survey, DEQ determined that a gross tonnage of 21,990 tons of rigid plastic containers was collected from Oregon sources in 2007. However, not all of this material is actually rigid plastic containers as defined by state law. The bales of plastic being recycled included items such as lids, water or residue of original contents, some other plastic items that are not containers, plastic containers that are larger than 5 gallons or smaller than 8 oz, and other materials.

2007/2009 Rigid Plastic Container Recycling Rates

In 2004 and 2005, DEQ gathered data on the contamination levels of plastics being recycled by plastics recyclers in Oregon. The work involved collecting samples of rigid plastic containers from recyclers immediately before they go in the recycling baler; carefully going through and removing and weighing all materials that are not rigid plastic containers; and washing, air-drying, and re-weighing the plastic containers. Results are shown in the "contamination level" row of Table 2. PET bottles collected under the bottle bill are the least contaminated of all the streams. The contamination levels for curbside programs were higher, but still were less than contamination levels for curbside-derived materials found in other state. Specialty recyclers have been difficult to sample for contamination since different loads can vary greatly from each other in terms of content (for example pails vs. flower pots vs. trays vs. mixed containers picked from garbage). The limited number of samples collected showed low contamination levels. These low levels were mainly due to lack of lids and the heavy weight of some of the containers relative to the weight of contaminants. However, there is potential for some specialty loads to be highly "contaminated" with plastic items which, although not rigid plastic containers under state law, are still made of plastic compatible for recycling with containers.

Table 2. Contamination levels and recycled tons by recycler type: 2007.

	Bottle bill distributors	Curbside / public programs	Specialty recyclers	Total
Contamination level	6.42%	10.84%	7.22%	
2007 tons - raw	3,747	15,068	3,175	21,990
2007 tons excluding contamination	3,507	13,435	2,946	19,887

Overall, the 21,990 tons of rigid plastic containers reported recycled in 2007 works out to an estimated 19,887 clean plastic container tons after removing contaminants. The recycling number for rigid plastic containers includes only the containers actually sent to a plastics recycling market. As discussed below, a substantial number of containers collected for recycling are evidently not being separated from commingled recyclables and end up in paper bales sent to paper recycling mills where they end up being discarded.

Disposal Tonnage for 2007

DEQ normally calculates the tons of rigid plastic containers being disposed by comparing waste composition study results to the total disposal of waste in Oregon. The last waste composition study conducted in Oregon was done in 2005, and found that rigid plastic containers made up 1.42% of the 3,030,908 tons of waste disposed. This gives a total of 43,035 disposed tons of rigid plastic containers. In years when no waste composition data are available, other methods are needed to estimate changes in disposal. Many methods could be used to project disposal changes, but DEQ's preferred method is to project changes in generation of plastic containers, and then subtract the known tons recycled to estimate the tons disposed. Different sources of information can be used to estimate changes in generation. Two sources looked at by DEQ are:

- 1) Regression analysis to project the tons of containers generated based on estimated generation of rigid plastic containers in Oregon for 1993 through 2005, and
- 2) Data on generation of containers from the Environmental Protection Agency's report "Municipal Solid Waste in the United States: 2007 Facts and Figures" compared to the same report for 2005.

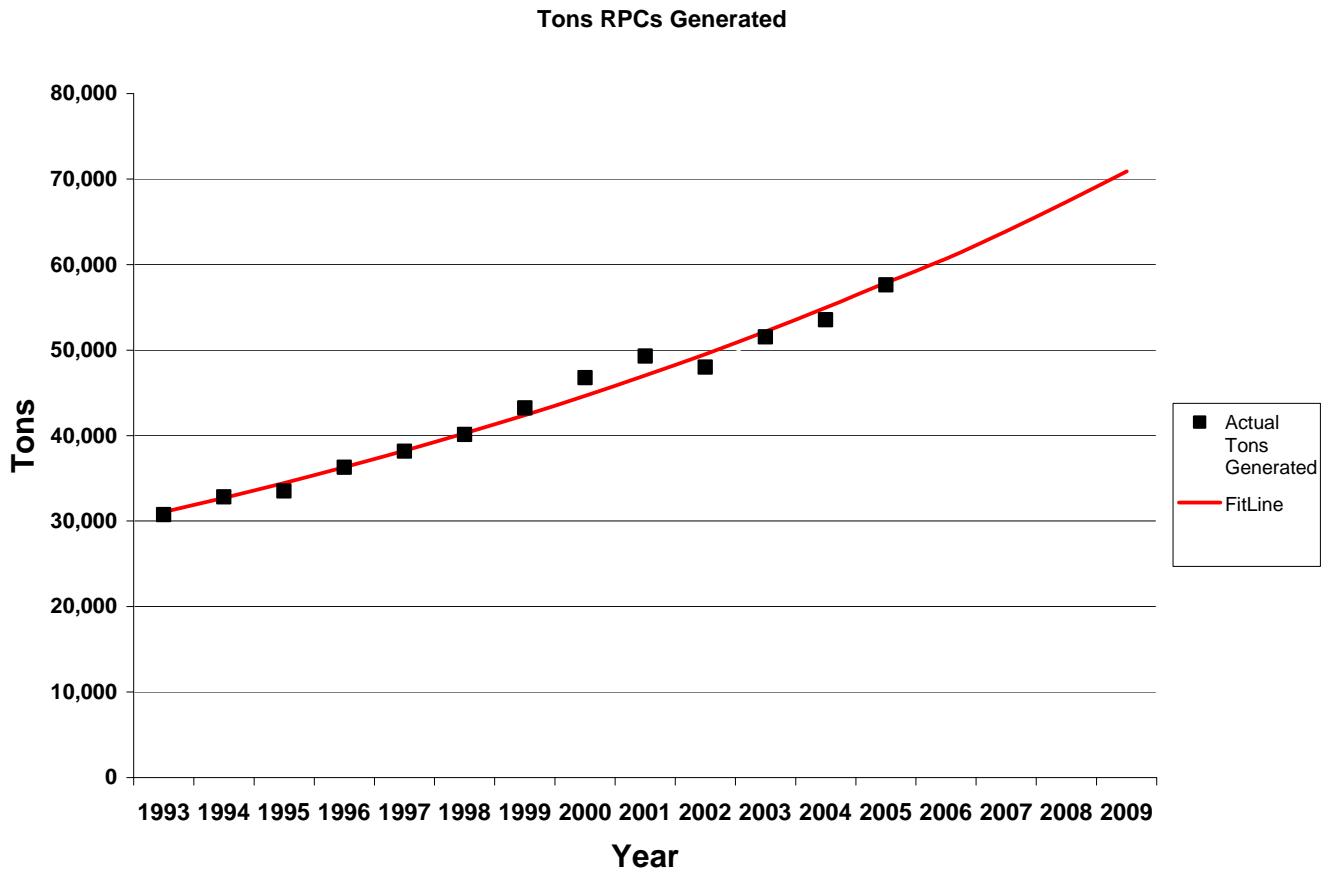
2007/2009 Rigid Plastic Container Recycling Rates

Disposal Calculation Method 1: Generation projected based on extrapolating generation growth 1993-2005.

Figure 1 shows the estimated tons of rigid plastic containers generated from 1993 through 2005. Also shown in Figure 1 is a curve of best fit calculated by doing regression analysis of the log of tons generated vs. year. The coefficients of best fit for this curve are given by the following formula:

$$\text{Log (tons)} = [0.022526 \times (\text{year})] - 40.40161$$

Figure 1. Projecting Tons of Rigid Plastic Container Generation



The above regression analysis projects that 63,917 tons of rigid plastic containers would have been generated in 2007. Subtracting the 19,887 tons of containers recycled gives 44,030 tons of containers being disposed. The recycling rate calculated using this method would then be 31.1%.²

Disposal Calculation Method 2: Generation based on Environmental Protection Agency generation estimates.

The Environmental Protection Agency (EPA) publishes updated facts and figures every other year on the tons of various materials and products that are generated, disposed, and recycled each year. The EPA 2005 and 2007 reports are currently both available on links from the following web page:

<http://www.epa.gov/osw/nonhaz/municipal/msw99.htm>

Data from Table 3 below gives EPA's estimates of nationwide plastic container generation in thousands of tons for 2005 and 2007, based on Table 7 of each year's respective report.

2007/2009 Rigid Plastic Container Recycling Rates

Table 3. EPA Estimates of Plastic Container Generation (millions of tons)

EPA Characterization of MSW	2005	2007
Soft Drink PET bottles	850	1,010
Other PET containers	1,040	1,730
Milk Water HDPE bottles	800	820
Other HDPE containers	1,410	1,410
PVC containers	90	60
LDPE Containers	40	40
PP Containers	80	420
PS Containers	0	0
Other Containers	450	80
Total Plastic Bottles, containers	4,760	5,570

Based on Table 3 above, approximately 17.0% more plastic containers were generated in 2007 as compared to 2005. The "plastic containers" included in Table 3 are not quite the same as "rigid plastic containers" as defined in Oregon law, but the two overlap strongly and it is likely that the increases in generation of each are roughly proportional. However, census/population information from Portland State University and the United States Census Bureau show that Oregon's population increased by 3.14% from 2005 through 2007, whereas national population increased by only 1.93% during the same time period. If Oregon's per-capita generation increased at the same rate as is true for the United States as a whole, then 18.4% more rigid plastic containers would have been generated in 2007 as compared to 2005. Based on this percentage increase, 68,221 tons of rigid plastic containers would have been generated in Oregon in 2007. Subtracting the 19,887 tons recycled gives 48,334 tons being disposed, and a recycling rate of 29.15%. A recycling rate for 2006 cannot be calculated by this method, since EPA did not publish container generation rate estimates for 2006.³

Each estimation method has its strengths and weaknesses. The first method, extrapolating generation from past Oregon numbers, would not take into account factors that could substantially increase or decrease generation from one year to the next, such as overall economic conditions. The second method, using national generation data to estimate changes in Oregon generation, does not take into account factors affecting Oregon in particular. Without a strong reason to prefer one method over the other, DEQ averaged the two methods.

Table 4. Averaging Methods of Estimating Generation, Disposal.

Final 2007 estimates:	Method 1	Method 2	Average
Generation	63,917	68,221	66,069
Recycled	19,887	19,887	19,887
Disposed (by subtraction)	44,030	48,334	46,182
Recycling Rate	31.1%	29.2%	30.1%

Note that this disposal tonnage does not include any of the rigid plastic containers that mistakenly end up in paper bales going to paper recycling mills. As discussed below, this tonnage is estimated to be about 1,700 tons per year. These containers end up being disposed by the paper mill, but do not get counted in the disposal figures since disposal from paper mills is considered to be a non-counting industrial waste.

Changes in Recycling and Disposal Tonnage.

From 1993 through 1995, new recycling programs such as curbside mixed bottle collection and recycling depot programs were coming on line throughout the state, and the public was learning about and starting to use these

2007/2009 Rigid Plastic Container Recycling Rates

new programs. During this time, the tons of plastic containers recycled increased greatly, by about 10% per year, while disposal increased only slightly, by 2.3% per year on average.

From 1995 through 2000, recycling programs were fairly stable. Most curbside and other programs continued to increase collection, but few new programs came on line and some of the older programs (polystyrene foam recycling and most Thriftway's plastics recycling depot programs) disappeared. Recycling continued to increase, but only by an average of 5.6% per year, which was smaller than the increase in generation. Disposal of rigid plastic containers, on the other hand, increased by an even greater amount, growing by 7.4% per year from 1995 to 2000.

From 2000 through 2004, the recycling rate for rigid plastic containers continued to drop, as disposal increased substantially but recycling did not keep up. An exception was the data reported for 2001, where recycling was much higher than the few years before or after, but DEQ now believes that rate might be partly due to one processor's reporting error. Although DEQ reports determined that the recycling rate for compliance purposes would be above 25% for each of these years, it now appears that the actual recycling rate did actually fall below 25% in 2004 and rose slightly above 25% in 2005. Three factors that led to these declines included reduced sales of beverage containers that have high recycling rates (soft drink bottles covered under the Oregon Bottle Bill), increased sales of non-bottle containers that have low recycling rates, and the loss of containers that were improperly sorted at the facilities that sort commingled recyclables. These factors were partially offset by increases in specialty recycling such as plastic flower pots, plus changes in curbside programs that increase recycling of plastics.

Since 2004, the factors increasing recycling have taken precedence over the factors leading to declines. The largest increases have come from curbside and other public recycling. The expansion of the use of roll carts to collect recyclables has led to big increases in the amounts of plastic being recycled, coupled with an increase in the number of programs that collect tubs, pails, and flower pots in addition to bottles. Specialty recyclers also showed increased collections. The tonnages reported by specialty recyclers in 2007 probably underestimate the tonnages they actually collected, since some companies evidently reported a fair portion of their containers as being "Other Plastic" rather than "Rigid Plastic Containers" in 2007.

One factor causing declines that has clearly continued is the decline in plastic soft drink bottle recovery. This decline is partly due to declining soft drink sales as water, tea, and other beverages with low recycling rates have increased in sales, and partially due to a decrease in percentage of soft drink bottles being redeemed. These trends are show in Table 5 below, in which DEQ categorized the recyclers into three types based on the main sources for their plastics.

Table 5. Plastic Container Recycling by Recycler Type

Recycler type	2005	2006	2007	Change
Bottle bill distributors	4,448	3,958	3,507	-941
Curbside / public programs	8,422	9,717	13,435	5,012
Specialty recyclers	1,714	4,000	2,946	1,232
Total	14,584	17,675	19,887	5,303

Confidence Interval for 2007 Recycling Rate

The recycling rate for rigid plastic containers is constructed from two different factors -- a recycling tonnage and a disposal tonnage. Because the recycling tonnage is based on a survey of all recycling processors, there is no direct way to determine the accuracy of the total. However, in the years when DEQ conducts a waste composition study, the disposal number is based on a sampling survey, so a confidence interval can be determined for the disposal number using standard statistical procedures. For example, the total tons of rigid plastic containers

2007/2009 Rigid Plastic Container Recycling Rates

disposed in 2005 were estimated at 43,035 tons. Based on normal sampling error calculated for the 2005 waste composition study, the 90% confidence interval for the disposal tonnage was between 40,142 tons and 45,978 tons in 2005. However, the 2007 confidence interval cannot be calculated in the same way, since it was also based on certain assumptions about changes in plastics generation as well as the 2005 disposal numbers. If anything, the range of the confidence interval for 2007 should be broader (less precise) than the 2005 interval. In addition, the uncertainty discussed above about the classification of "other plastic" vs. "rigid plastic containers" for the specialty recyclers adds to the uncertainty of the 2007 recycling rate estimate. However, based on the estimated 30.1% recycling rate and on experience with the past analysis and reporting, DEQ is confident that the true recycling rate for rigid plastic containers was well above 25% in 2007. This has not been the case since 2002, since for most of the years between 2002 and 2005 the confidence interval in the recycling rate based solely on the disposal sampling component has had its upper end above 25% but its lower end below 25%.

In calculating this recycling rate, DEQ has not included in the disposal tonnage the estimated 1700 tons of plastic containers that are collected through curbside programs and then lost through mis-sorting at recycling facilities. Adding these containers to the disposal tonnage would lower the 2007 recycling rate from 30.1% down to 29.3%. The estimate of 1700 tons of plastic being lost in sorting is an old estimate from 2004, and may not reflect current sorting practices. However, while the tonnage lost may have increased, it has probably not decreased.

Other sources of error have not been quantified. An unknown number of containers are littered each year and not cleaned up, but if counted in disposal, would further lower the calculated recycling rate. In addition, an unknown but probably fairly small number of plastic soft drink bottles are brought into Oregon from neighboring states to be (improperly) redeemed under the Oregon Bottle Bill. These out-of-state containers should be subtracted from Oregon's recycling total. Reporting errors by companies responding to the Oregon Material Recovery Survey that are not caught during data analysis would be very difficult to quantify. Finally, the contamination analysis of rigid plastic container recycling is a sampling study and thus subject to the normal effects of random sample selection, but DEQ has not yet quantified the size of the expected sampling error for this study.

Rigid Plastic Container Recycling Rate for Compliance Purposes for 2009

In this report DEQ is announcing that its determination that the aggregate recycling rate for rigid plastic containers for compliance purposes for 2009 will be above 25%. There are some new economic factors that will probably lead to declines in certain types of plastic recycling, but DEQ believes that these will be more than balanced out by new factors causing increases in recycling.

1. Reduced prices.

The factor that most threatens to reduce the recycling rate for rigid plastic containers is the strong decline in the prices paid for recycled plastic which occurred in the fall of 2008. In the space of less than two months, the prices paid for many types of plastic containers fell on the order of 80%.

The reduction in prices paid will most affect the specialty recyclers, as they will be less likely to search for an accept containers if the price they receive is not adequate to pay for their cost of collecting, processing, and shipping the plastic. For example, the low prices have already led to a temporary suspension of the "Plastic Roundups" offered by the Master Recycler Program in the greater Portland area. However, certain collection programs are likely to continue even with the lower prices, such as the recycling of plastic flower pots and trays from large nurseries. DEQ estimates that collections by the specialty recyclers might be reduced by as much as 1,800 tons in 2009 from the levels reported in 2007.

2. Bottle Bill changes.

The redemption of soft drink containers may continue to slide in 2009 as it did in 2005 - 2007, but there is some indication that return rates began increasing again towards the end of 2008. However, the big change that will happen is that water bottles are added to the bottle bill as of January 1, 2009. DEQ estimates that only about 33%

2007/2009 Rigid Plastic Container Recycling Rates

of water bottles are being recycled under curbside programs, but that the combined recycling and redemption rate will climb to above 60% after water is added to the bottle bill. Water bottles are very light, so this will not add as much to the plastic tonnage as some people might expect, but DEQ estimates that plastic recycling will increase under the bottle bill by 1,200 to 1,800 tons in 2009 as compared to 2007. This is just the net overall recycling increase, and does not include an estimated 1,400 tons of water bottles that are expected to switch from curbside recycling to bottle bill redemption in 2009.

The reduction of price paid for recycled plastic should have little effect on plastic recovered under the bottle bill. Bottle bill plastic is much cleaner and less contaminated than most post-consumer plastics collected through other methods, and so commands a premium price and is easier to sell in depressed market conditions. The beverage distributors will continue to redeem and collect beverage containers as required under the bottle bill, and recycling is the only practical and legal method for them to handle those containers.

3. Curbside recycling increases.

As jurisdictions have changed from bins to roll carts for collecting recyclables and have added tubs, pails, flower pots, and other non-bottle plastic containers to their curbside programs, the amount of plastic they collect has substantially increased. Portland is the last major jurisdiction to adopt roll carts for their recycling program, doing so in 2008. This change is expected to produce more than 1,000 tons of rigid plastic containers in 2009 as compared to 2007. In addition, large jurisdictions such as Hillsboro, Bend, and Gresham implemented their programs midway through 2007. Having a full year of collection in 2009 should add another close to 250 tons for these programs when compared to 2007. These numbers do not subtract out the estimated 1,400 tons of water bottles that are expected to switch from curbside to bottle bill redemption in 2009, since those containers will continue to be recycled.

The reduction in price will probably not have much effect on the curbside recycling of plastics. DEQ is not expecting any program to discontinue collecting rigid plastic containers, and under state law any containers that are source-separated and then collected for recycling must be recycled. DEQ believes that although the price paid for plastic may be reduced, that rigid plastic containers will continue to have a market and get recycled.

The declining economic conditions might also affect how many plastic containers people purchase and use. Sales of some consumer goods packaged in rigid plastic containers are expected to decline, or at least not increase as fast, due to the recent economic downturn. However, DEQ sees no reason why this would effect recycling any differently than disposal, and the proportion of containers that people chose to recycle vs. dispose of should remain the same in spite of the economy. Thus, the absolute tons of plastics recycled and disposed might decrease due to economic conditions, but the recycling rate should not be affected very much, if at all.

Based on this analysis, DEQ believes that the aggregate recycling rate for compliance purposes for rigid plastic containers will remain above 25% through 2009. Plastic container manufacturers and product manufacturers can rely on this determination to assure compliance with Oregon's rigid plastic container law for the year 2009.

For more information, contact Peter Spendelow at Oregon DEQ, Solid Waste Policy and Programs, 811 S.W. 6th Ave., Portland, OR 97204; phone 1-800-453-4011, ext. 5253, or (503) 229-5253, or by email at spendelow.peter@deq.state.or.us.

¹ The rigid plastic container portion of the law, as amended by subsequent Oregon legislatures, can be found in Oregon Revised Statutes (ORS) 459A.650 to ORS 459A.665. Additional requirements for labeling plastic containers are found in ORS 459A.675 to 459A.685.

² A different methodology was used to estimate generation in 2006, as explained in endnote 3. If instead the regression analysis graphed in Figure 3 were used in 2006, the estimates for 2006 would have been 60,687 tons generated, 17,675 tons recycled, and 43,012 tons disposed in 2006, for a recycling rate that year of 29.1%.

2007/2009 Rigid Plastic Container Recycling Rates

³ As noted in endnote 2, a different method was used to estimate disposal and generation in 2006. This method involved calculating the average annual percentage increase in container disposal from 2000 through 2005, assuming that generation increased by this same percentage in 2006 from 2005, and then subtracting the 2006 recovery tonnage to estimate 2006 disposal. Using this method in 2007 would result in estimated generation of 66,080 tons in 2007. Subtracting the 19,887 tons recycled then gives 46,192 tons being disposed, or a recycling rate of 30.10%.