

Plastic Recycling Collection National Reach Study:

2012 Update

Technical Review by Scott Mouw and Rick Penner

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Prepared by Moore Recycling Associates Inc. for the
American Chemistry Council

Purpose

The purpose of this project is to report access to recycling of specific types of plastic in the U.S. and to document changes in access since the first reach study was released in May 2011. This report also documents progress toward the goal of curbside collection of all rigid plastics nationwide. The data also provides information that allows stakeholders to focus their efforts toward ensuring access to plastic recycling in under-served areas and to address the essential matter of providing clear, consistent public outreach and education to support and grow successful plastic recycling programs.

Acknowledgements

Moore Recycling would like to thank Scott Mouw, State Recycling Director, North Carolina Division of Environmental Assistance & Outreach, and Rick Penner, President of Emerge Knowledge Design Inc. for performing a technical review of this report. Their comments and suggestions helped improve and clarify this report. Professional review focuses on the performance of professionals, with a view to improving quality and upholding standards. Showing work to others increases the probability that weaknesses will be identified and improved. Mr. Mouw and Mr. Penner were able to spot weaknesses while supporting the overall methodology. Both have now unconditionally accepted the following report. We greatly appreciate their time and thoughtful efforts.

Moore Recycling would like to thank the Plastics Division of the American Chemistry Council (ACC) for funding this project.

Methodology

This report used the 2010 U.S. City and County Populations data from the U.S. Census Bureau. Over 62% of the total U.S. population resides within the nation's incorporated cities, and the remaining population is in the unincorporated portions of our country. To break it down further, 53% of the population is found in cities with a population of 10,000 or more, 9.3% in cities with a population less than 10,000, and the remaining 37.7% resides within the unincorporated areas.

This update used the same methodology as the 2011 report: documenting a high percentage (>80%) of the most populous communities and a representative sample of the smaller communities. This report documents plastic collection for 3,903 cities and counties, representing 84 percent (160,861,752) of the U.S. population living in incorporated areas and 82 percent (95,559,284) of those living in unincorporated areas. We did not exhaust the total number of communities that had available information while doing the research, but limited ourselves once we reached a sample size of over eighty percent.

The results in this report include updated plastic collection program types only from communities that were not already collecting plastic beyond bottles in 2011, and cities not captured in 2011. The results include updated or new data for 1806 cities, most with a population of 10,000 or more, and a random sample of cities with a population less than 10,000, as well as 824 counties. It is possible that we have overstated access to recycling of non-bottle rigid plastic, but only if a significant number of communities that had been collecting plastics beyond bottles stopped doing so; we do not believe this to be the case. The trend is toward increasing the types of plastic included in programs, not decreasing them. It is also possible that we have understated access to recycle bulky rigid plastics if programs that already collected non-bottle containers added these items. The other difference between this report and the 2011 report is that we used the 2010 U.S. Census data, rather than 2008.

Using the internet and phone calls we determined which plastics were collected in each city and county's primary recycling program. Specifically, the study first looked at each community's access to curbside recycling; if no curbside program was in place, we looked for access to other collection programs such as municipal drop-off, subscription¹ or dirty material recycling facilities (MRFs)². We did not gather data for deposit programs or retail drop-off programs.

Our data collection form allowed us to record for each community the *Plastic Collection Program* type (defined on page four) as well as any *Specific Material* types accepted. *Specific Materials* were

¹ Curbside programs offered for a monthly fee to which a resident must subscribe.

² Curbside programs where all waste is combined and brought to a facility where recyclables are pulled from the waste.

generally recorded in addition to a type of *Plastic Collection Program* (e.g., “All Bottles and Containers & Specific Plastics,” such as expanded polystyrene [EPS] blocks or film). They are also used for the rare program that only accepts *Specific Materials* (e.g., high-density polyethylene [HDPE] bottles and containers only).

We recorded any exclusions from *Plastic Collection Programs*, such as EPS, film, or polyvinyl chloride (PVC), and other product categories such as toys, motor oil bottles, etc.

We applied the results for the cities with a population of 10,000 or more and for the random sampling of small cities to their respective population segments. We applied the results from the counties surveyed to the unincorporated population.

We have results for all the *Plastic Collection Program* categories for each of the population segments surveyed. These results do not include the exclusions to any particular program. In order to account for additional material types accepted or excluded, we applied that data to the Specific Material types, i.e. PET³ bottles/jars/jugs, etc. Moore Recycling used the same eleven Plastic Collection Program types for this study as for the 2011 study, as illustrated in the following table: Plastic Collection Program Definitions.

³ Polyethylene terephthalate

Plastic Collection Program Definitions

Plastic Collection Program	Definition
All Plastic	All bottles and caps, All non-bottle rigid containers (includes cups, trays, boxes, clamshells, tubs, pots, lids, deli containers, carton, blister), All bulky rigid plastic (includes carts, crates, buckets, baskets, toys, lawn furniture) Includes film (bags, wraps) and EPS
All Rigid Plastic	All bottles and caps, All non-bottle rigid containers (includes cups, trays, boxes, clamshells, tubs, pots, lids, deli containers, carton, blister) May also include film or EPS All bulky rigid plastic (includes carts, crates, buckets, baskets, toys, lawn furniture)
All Bottles and Non-Bottle Rigid Containers	All bottles and caps, All non-bottle rigid containers (includes cups, trays, boxes, clamshells, tubs, pots, lids, deli containers, carton, blister)
All Bottles and Non-Bottle Rigid Containers & Specific Plastics	All bottles and caps, All non-bottle rigid containers (includes cups, trays, boxes, clamshells, tubs, pots, lids, deli containers, carton, blister) May also include film and/or EPS
All Bottles	All bottles with a narrow neck or screw top and their caps
All Bottles & Specific Plastics	All bottles with narrow neck or screw top and their caps, plus specific plastic types May also include film and/or EPS
CRV Only	California Redemption Value (CRV) plastic beverage containers
CRV Bottles & Specific Plastics	CRV plastic beverage containers, plus specific plastic types May also include film, EPS, and/or other non-CRV plastic)
PET & HDPE Bottles Only	PET & HDPE bottles and caps
PET & HDPE Bottles & Specific Plastics	PET & HDPE bottles and caps, plus specific plastic types May also include film, EPS, and/or other bottles
Other Specific Plastics	Other specific plastics outside of previously defined categories

Findings

We found that at least 94% of the U.S. population has access to PET and HDPE bottle and cap recycling and just over 57% has access to, at least, all plastic bottles and all non-bottle rigid containers. We identified over 1,400 cities and 300 counties in the U.S. that collect all non-bottle rigid containers.

Plastic Collection Program	Percentage of US Population with Recycling Access
All Plastic	3.7%
All Rigid Plastic	14.8%
All Bottles & Non-Bottle Rigid Containers & Specific Plastics	7.7%
All Bottles & Non-Bottle Rigid Containers	30.9%
All Bottles & Specific Plastics	1.7%
All Bottles Only	12.9%
PET & HDPE Bottles & Specific Plastics	5.7%
PET & HDPE Bottles Only	16.5%
All CRV Bottles & Specific Plastics	0.1%
All CRV Bottles Only	1.0%
Other Specific Plastics	0.3%
No Plastic Program	4.7%

94%
 Access to
 PET & HDPE
 Bottle and
 Cap
 Recycling

57%
 Access to
 All Non-
 Bottle Rigid
 Container
 Recycling

For more information on non-bottle rigid plastic recycling, please reference the *2011 National Postconsumer Non-Bottle Rigid Plastic Recycling Report* (see Resources).

The following table indicates recycling access to Material Types. The percentages include the Specific Plastics collected by communities less any exclusions.

Material Type	Percentage of US Population with Recycling Access
HDPE bottles/jugs & jars with caps	94.2%
PET bottles/jugs & jars with caps	94.0%
PP⁴ bottles/jugs & jars with caps	72.5%
LDPE⁵ bottles/jugs & jars with caps	72.1%
PVC bottles/jugs & jars with caps	71.8%
Other bottles/jugs & jars with caps	69.3%
HDPE non-bottle rigid (cups/tubs/containers)	62.3%
PET non-bottle rigid (trays/clamshells/cups)	61.8%
PP non-bottle rigid (cups/tubs/containers)	58.4%
LDPE non-bottle rigid (tubs/lids)	57.6%
PVC non-bottle rigid (blisters/clamshells)	57.0%
Other non-bottle rigid	54.7%
PS⁶ non-bottle rigid (cups/bowls/clamshells)	53.7%
EPS food service	31.1%
Bulky Plastic (toys/buckets/crates/drums)	18.6%
EPS packaging shapes	12.2%

⁴ Polypropylene

⁵ Low density polyethylene

⁶ Polystyrene

Although the percentages reflect any exclusions, we were not able to account for some of the more general exclusions, such as “no automotive fluid/hazardous material,” because they do not fit into any of the Material Types above. We did find that 12% of the population with access to the recycling programs above, are asked not to include automotive/hazardous materials containers in their programs. We noted other exclusions, such as “no clamshells/take-out containers” or “no cups,” but determined they were not material because we found so few instances of recycling programs using these exclusions.⁷

While we tracked curbside collection of plastic film and bags, we did not include it in this report as most consumer film and bags are recycled through the over 15,000 retail drop-off programs located across the U.S. For information on access to Film and Bag recycling, please reference the *Plastic Film and Bag Recycling Collection: National Reach Study* published in April 2012 (see Resources).

Because we did not separately collect information on deposit programs, it is likely that access to recycling PET bottles is higher than indicated. We found that in certain deposit states, such as Maine, residents are specifically asked not to place PET bottles into the curbside recycling program but are instead encouraged to collect and redeem their PET bottles through the deposit programs.

⁷ For example, we found a total of 59 communities that indicated they do not accept clamshells; of those, 45 have bottle programs that do not include clamshells: 36 were PET and HDPE bottles only, 8 were All Bottles, and 1 was CRV only.

Observations

While collecting the data for this study we noted several trends with respect to the kinds of materials accepted for recycling (as illustrated in the tables on pages 5 and 6), such as the ease in locating information, states/regions with few recycling programs and those with many programs, as well as the terms used in describing acceptable materials.

Education and Outreach

The majority of cities and counties continue to use resin identification codes (RIC) to describe acceptable materials for recycling. It is quite common to see education such as...

*The following plastic items can be placed in your green recycling cart
Please clean or rinse before recycling*

All plastic jugs

All plastic laundry product bottles

#1 Peanut Butter and Condiment Jars

Plastic Frozen Juice Containers

All plastic dairy tubs (ice cream, sour cream, cottage cheese, yogurt, etc.) and their lids. Remove lids and place in the cart separately

All #1 plastic clamshell containers including berry containers

All other plastic containers #1-#7

In this often repeated case, the use of descriptions is helpful, but the use of the numbers (RIC) is unnecessary and can be confusing because all plastic containers are one of the 7 resin types. The RIC does not affect the recyclability of the product. In this case, using the RIC discourages the public from participating in plastic recycling because they believe they have to check every plastic container to see if it has a number. Use of the RIC also perpetuates the public's belief that only some of their containers can be recycled, whereas in this case, all plastic containers can be included. Using the RIC in a more restrictive program—such as a bottles-only program—may encourage people to over-recycle because they see the chasing arrows and numbers on other products that are not accepted in the program.

Some communities appropriately choose to use the RIC selectively, to either include or exclude a specific material, in order to meet their buyers' specifications. These selective instances are far less common than the "1 through 7" example noted above.

There are some good examples of public education: those illustrating materials accepted through photos and a brief, clear description. Here is an example from Metro Nashville (Nashville & Davidson County), Tennessee:



Providing photos, as shown in this example, and avoiding the use of the resin code, gives very clear direction to the residents participating in the recycling program. Please see the Resources section for links to examples of other effective community education programs.

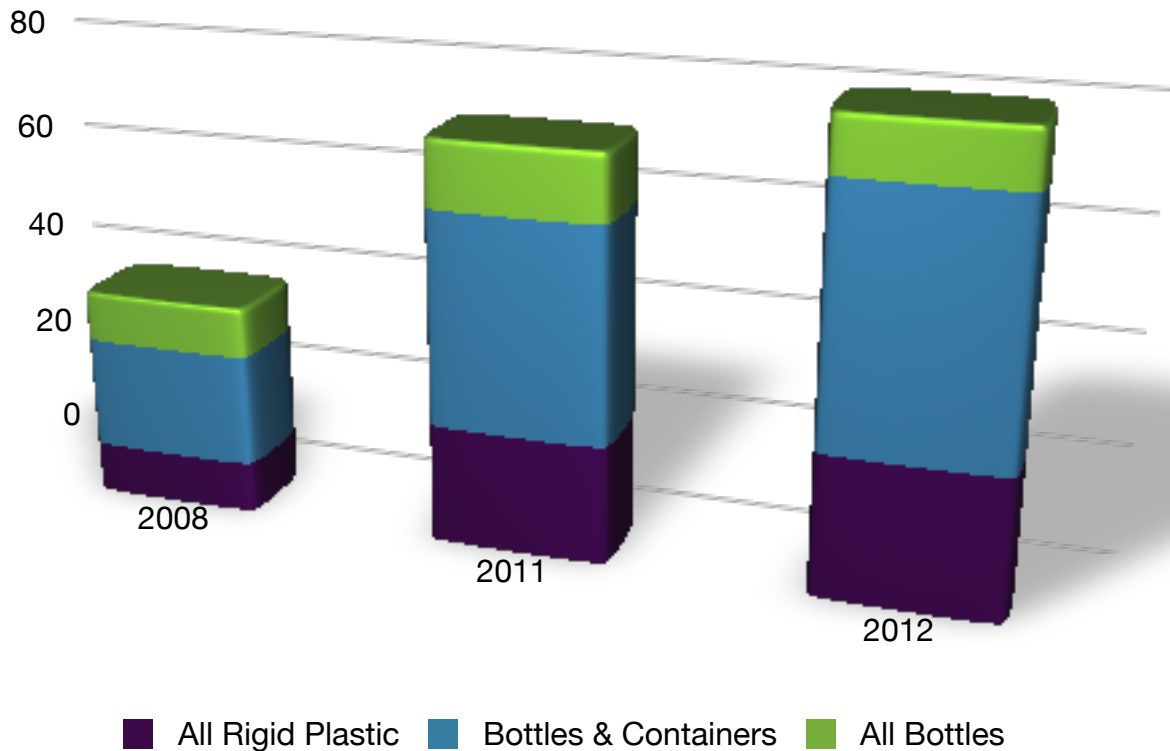
Regional Differences

We found that, in general, it was much more difficult to obtain recycling collection data for unincorporated areas than for the cities. In general, the larger the city or county, the more likely data could be located online. Some of the states with the weakest outreach for both incorporated and unincorporated areas were Kentucky, Louisiana, Mississippi, Texas, Oklahoma and New Mexico. It was difficult to obtain recycling information for the unincorporated areas of Connecticut and New Hampshire, but their city information was fairly thorough. Conversely, a number of states, including California, Florida, Virginia, South Carolina, Pennsylvania, Oregon, Washington and Wisconsin, had easy-to-find, online information about their recycling programs. Surprisingly, recycling education information was easily found for Georgia and Alabama, even though access to recycling in those states is fairly limited.

Regionally, the West Coast has the broadest access to plastic recycling. The East Coast has fairly good access, as do the states of Wisconsin, Utah, and North and South Carolina. The states with the lowest access to plastic recycling are Arkansas, Alabama, Louisiana, Oklahoma, Mississippi and Texas.

There continues to be significant growth in the collection of non-bottle rigid plastics. When Moore Recycling Associates surveyed the 100 most populous cities in November 2008, only 29 cities provided access to non-bottle rigid plastic recycling. That number grew to 59 cities in 2011 and currently stands at 70. (Today, as in 2008, all of the 100 most populous cities collect at least PET & HDPE Bottles.).

100 Most Populous Cities: Plastic Recycling Collection Programs



Conclusions

The following are conclusions of the authors of this study based on our professional judgment.

The study results show that there is widespread access to plastic bottle recycling, yet the recycling rate for PET and HDPE bottles is only 30 percent. Clearly access does not always correlate with optimized collection, in which programs would employ best management collection techniques, conduct consistent and strong outreach, and provide incentives to participate, or even truly service all points of generation. For example, many large municipalities may collect a broad spectrum of plastics, but the collection is only available through curbside service to single-family homes, leaving multifamily homes without effective access (except possibly through drop-off sites, which are less convenient and generally attract fewer participants). Or communities may not provide recycling access at non-residential locations (e.g., restaurants, hotels, office buildings, athletics facilities, entertainment venues, parks). A future study could further explore the access to recycle for multifamily homes. Performing this study on an on-going basis will allow us to measure where the U.S. has improved in plastic collection and where we still need to focus our time and energy.

Although it was not part of this report because of the differing collection infrastructure, it is also important to document the access to film and bag recycling. For more information, please refer to the *Plastic Film and Bag Recycling Collection: National Reach Study*.

Even with access and collection, plastic materials are often “lost” in the processing system (primarily from being put in with other recyclables, but also ending up as waste residuals)⁸. Lost materials means lost resources and a lower recycling rate. The benefits of recycling are realized when recycled materials replace virgin materials in product manufacturing.

Access to plastic recycling is not enough to ensure high recycling rates and there is much work to be done across the country in providing the public with clear and concise information about recycling programs, especially online. To this end:

- A multi-stakeholder effort is underway to develop a universal language to describe items acceptable for plastic recycling. Creating standardized outreach will help reduce the confusion surrounding plastic recycling collection and increase the capture rate in those communities that do collect plastic beyond bottles.
- To address confusion between MRFs and their buyers, the Association of Postconsumer Plastics Recyclers is expanding its model bale specifications to include non-bottle rigid plastic.

⁸King County, WA Waste Monitoring Program 2006 Material Recovery Facility (MRF) Assessment, OR DEQ Composition Commingled Recyclables Before and After Processing

- Moore Recycling is in the process of evaluating access through an analysis of the categories of plastic bales generated by MRFs across the country, to help tie the access question to the question of which plastic materials are baled and sold after collection.
- Annual plastic recycling reports⁹ work to document which plastics actually get recycled, not just collected or baled.
- A multi-stakeholder effort is underway to document how plastics and other packaging are lost in the material processing system, and how to improve bale quality.

⁹ 2011 National Postconsumer Plastic Bag & Film Recycling Report , 2011 National Postconsumer Non-Bottle Rigid Plastic Recycling Report and 2011 US National Post-Consumer Plastics Bottle Recycling Report

Resources

Plastic Market Information:

www.plasticmarkets.org

Plastic Film, Bag and Wrap Recycling information:

www.PlasticFilmRecycling.org

2011 National Postconsumer Non-Bottle Rigid Plastic Recycling Report:

http://www.moorerecycling.com/2011Non-Bottle_Rigid_Rpt_FINAL.pdf

2011 National Postconsumer Plastic Bag & Film Recycling Report:

<http://plastics.americanchemistry.com/Education-Resources/Publications/2011-National-Post-Consumer-Recycled-Plastic-Bag-and-Film-Report.pdf>

Plastic Film and Bag Recycling Collection: National Reach Study:

<http://plastics.americanchemistry.com/Education-Resources/Publications/2012-Plastic-Film-and-Bag-Recycling-Collection-National-Reach-Study.pdf>

2010 U.S. Resident City Populations for Incorporated Places from the U.S. Census Bureau:

<http://www.census.gov/popest/data/cities/totals/2011/SUB-EST2011-3.html>

2010 U.S. Estimates of the Resident Population for Incorporated Places over 50,000 from the U.S. Census Bureau:

<http://www.census.gov/popest/data/cities/totals/2011/index.html>

2010 U.S. County Populations from the U.S. Census Bureau:

<http://www.census.gov/popest/data/counties/totals/2011/CO-EST2011-01.html>

The following are links to examples of good online recycling public education about plastics recycling:

Pierce County, Washington:

<http://www.co.pierce.wa.us/DocumentCenter/View/4568>

Western Oregon Waste (servicing Clatsop, Tillamook, Yamhill and Polk Counties):

<http://www.westernoregonwaste.com/yamhill/recycling.html>

Sonoma County, California:

http://www.recyclenow.org/recycling/single_stream.asp

Lake County, Illinois:

<http://www.swalco.org/Recycling/Documents/swalco%20recycling%20guidelines.pdf>



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Metro Nashville (Nashville & Davidson County), Tennessee:
<http://www.nashville.gov/pw/recycle/residential/index.asp>