

THE 2016 STATE OF CURBSIDE REPORT

REVISED JANUARY 31, 2017

PREPARED BY THE RECYCLING PARTNERSHIP ©2016



Prepared with grant support from EPA Regions 3, 4, and 5. Special thanks to grant managers EPA Region 4.

Lead Researcher: Cody Marshall

Contributing Researchers and Authors: Karen Bandhauer, Liz Bedard, Anne Blindt, Dylan de Thomas, Rachel Eckert, Justin Gast, Jason Hale, Keefe Harrison, Jennie Knowlton, Jeff Meyers, Elizabeth Schussler, Rob Taylor, Steve Thompson

Revised: January 2017

TABLE OF CONTENTS

WHAT IS THE STATE OF CURBSIDE RECYCLING?	4
LET'S MAKE SURE WE'RE ALL SPEAKING THE SAME LANGUAGE	6
METHODOLOGY: PROFILING BROAD U.S. TRENDS BY ASSESSING COMMUNITY SPECIFICS	7
ESTABLISHING POUNDS PER HOUSEHOLD AS A KEY PERFORMANCE INDICATOR	9
ALL RECYCLING IS LOCAL: LOOKING AT RECYCLING COLLECTION	11
KEY DATA POINTS ON THE STATE OF CURBSIDE RECYCLING	12
INDICATORS OF SUCCESS ACROSS DISPARATE REGIONS	16
AREAS OF OPPORTUNITY: WHERE CAN CURBSIDE RECYCLING PICK UP?	19
CONCLUSION	22
APPENDIX A: EXECUTIVE SUMMARY	23
APPENDIX B: 2016 STATE OF U.S. CURBSIDE RECYCLING INFOGRAPHIC	24

WHAT IS THE STATE OF CURBSIDE RECYCLING?

More than ever before, Americans associate recycling as a common, everyday activity. This positive trend is captured in reports such as the 2015 Massachusetts' Statewide Recycling Participation Study¹ citing that 94% of the Massachusetts population reports to “mostly” or “always” recycle. Or the 2015 Shelton Group Study² noting that 78% of U.S. consumers say “recyclable” and “recycled” are their most-favored green terms. Recycling is increasingly becoming part of the American ethos.

But other reports show that the U.S. recycling collection infrastructure doesn't always match those consumer expectations. Per the 2016 Sustainable Packaging Coalition Centralized Study on Availability of Recycling³, only 53% of the U.S. population has recycling automatically provided at their home. And of those homes, only 44% are served by recycling carts, a collection mechanism long recognized as being fundamental to maximizing collection opportunity and efficiency, as well as protecting the safety of sanitation workers.

What's missing? Data to better understand best management practices. Information is needed to clearly assess the current state of curbside recycling in the U.S. Appropriate data and metrics provide the feedback and evaluation mechanism to create effective recycling programs. Clear evidence on how local governments currently serve their citizens, as well as accurate assessments on trends for better recycling systems, are needed to properly inform entities, both public and private, on how best to maximize the ability to recover more recyclables. This assessment does just that.

What is the state of curbside recycling in 2016? It is stronger in some places than in others. It's a dynamic community-level program. It has opportunities abound. This report will both analyze data from the 465 curbside recycling programs from around the country studied, and also draw upon the knowledge, experience and research from the staff of The Recycling Partnership. Unless otherwise noted, all charts, figures and maps in the report are drawn from the data gathered for the project.

-
- 1 John M. Cole and Jeana McNeil, “MassDEP Statewide Recycling Participation 2015 Research Results,” Isurus Market Research and Consulting for MassDEP, September 2015.
 - 2 Shelton Group, “Eco Pulse 2015 Special Report: The Buzz on Buzzwords,” Shelton Communications Group, Inc., 2015.
 - 3 Sustainable Packaging Coalition, “2015-16 Centralized Study on Availability of Recycling,” prepared by RRS and Moore Recycling Associates, Inc., 2016.

STUDYING CURBSIDE RECYCLING COLLECTION TODAY SO WE CAN SHAPE TOMORROW.

Residential curbside recycling is the most convenient and effective way to capture bottles, cans, containers and paper from the home. This report seeks to take a snapshot of the present state of curbside recycling, today, in 2016. The goal of the report is to identify and highlight variables and attributes that pushed programs towards varying degrees of success or, conversely, have held programs back from recovering more of the recyclable materials that are available via this collection stream.

What were some notable trends common across the U.S. curbside recycling system? First, curbside recycling success most often stems from strong community engagement wherein a public action influences recovery in the home. Second, there is a lack of consistency with how communities educate about curbside recycling programs, leading to confusion and frustration regarding understanding what is recyclable and where and how to find program information. Third, and perhaps most importantly, there is no silver bullet, no single characteristic that could be changed, that would allow a struggling program to suddenly transform into one that is best-in-class.

From single-stream collection of recyclables, to making sure that recycling collection is as automatic for single-family homes as trash pick-up, to clear and concise communication about what materials belong in the recycling cart – there are many successful strategies to move recycling forward.

Let's look at some common characteristics that all successful programs have. Let's also examine how to improve participation, recover more material per household to provide a cleaner stream of recyclable materials to the market that needs them.

SNAPSHOT: NATIONAL CURBSIDE RECYCLING FINDINGS

465

CITIES IN THIS STUDY

357

AVERAGE LBS/HH/YR

82%

OF CURBSIDE-COLLECTED
CITIES, WITH SINGLE-
STREAM COLLECTION

54%

OF CURBSIDE-COLLECTED
CITIES, WITH WEEKLY
COLLECTION

\$47

NATIONAL MSW
TIP FEE AVERAGE

LET'S MAKE SURE WE'RE ALL SPEAKING THE SAME LANGUAGE.

FOR READERS OF THIS REPORT, IT WILL HELP TO EXPLAIN SOME COMMON TERMS.

“Automatic collection” means that households in a given community are automatically included in a recycling program, much in the way that almost all communities will automatically provide a means for trash pick-up and hauling.

“Curbside” refers to recycling programs that serve households by collecting recyclables in bags, bins, or carts. Typically, these programs do not include multi-family facilities above four units per building. This report focuses on trends and opportunities for the U.S. curbside recycling system.

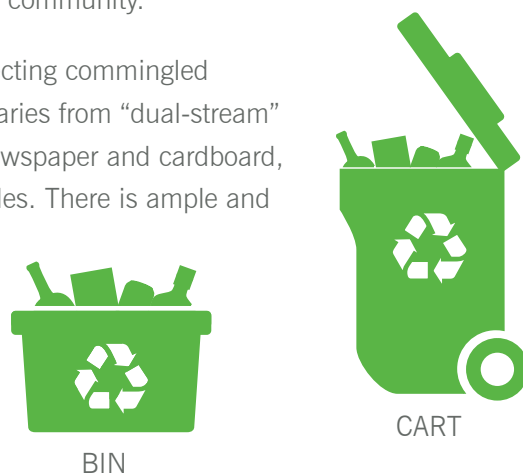
“Opt-in,” or **“subscription service,”** is for communities that require some level of household action or engagement in order to initiate curbside recycling pick-up, whether it be simply calling a city or waste hauler and requesting a cart or bin for recycling, or having to research and contract with a hauler in the area to set up and be charged for the service.

“Public action” is a term that refers to a trigger or tool that a local government implements to influence curbside recycling collection. Examples of this include: licensing agreements or franchises that mandate recycling collection be provided with garbage collection; delivering a container to every home in the community and mandating automatic collection.

“Private hauler” is a company that has been contracted by a city, municipality, or an individual, to provide curbside pick-up service for trash and recyclables.

“Public hauler” are those that are owned and operated by a municipality. This typically means that a city or municipality own and operate the trucks that service a given community.

“Single-stream” collection of recyclables is the practice of collecting commingled recyclable materials all in one container at the curbside. This varies from “dual-stream” or “multi-stream” collection, which aggregates fiber, such as newspaper and cardboard, and bottles, cans and other containers in two or more receptacles. There is ample and ongoing research about the comparative efficacy and financial and environmental benefits of each method of collection, but was outside the scope of this research.



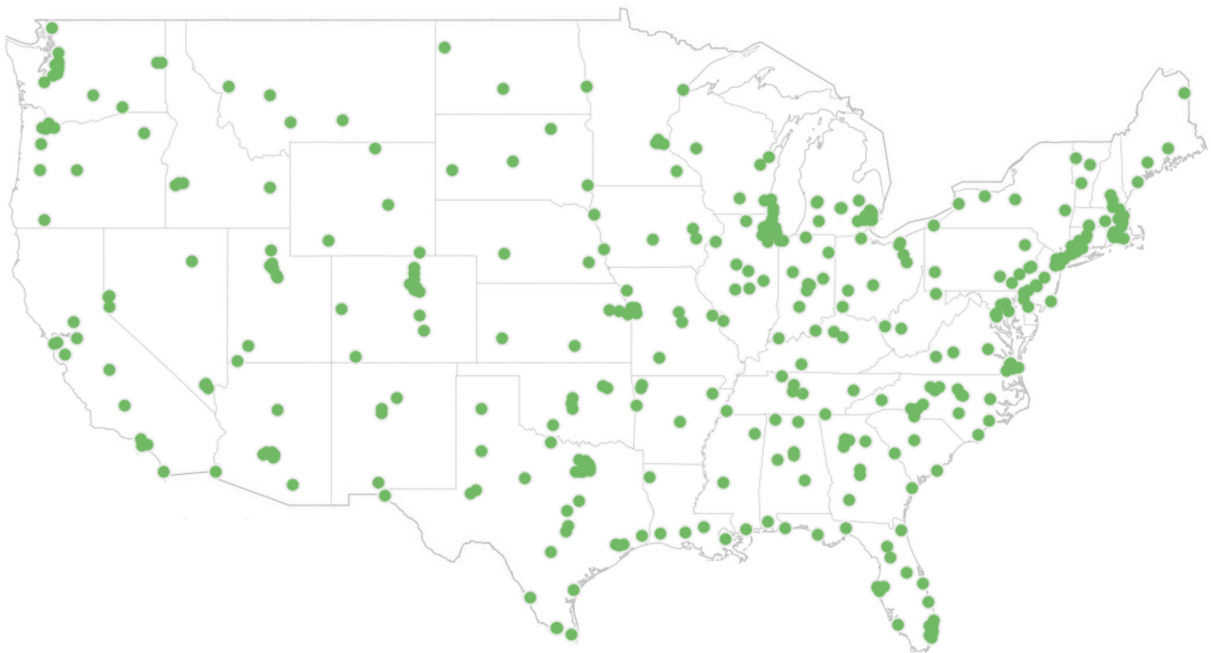
METHODOLOGY:

PROFILING BROAD U.S. TRENDS BY ASSESSING COMMUNITY SPECIFICS.

The curbside recycling analysis in this study represents 465 incorporated communities geographically dispersed throughout the U.S. The cities represented include: at least three incorporated areas in each state, other than Alaska and Hawaii; 250 of the largest cities in the country, by population; and each state capital. At least 20% of the homes eligible for curbside service (one to four units) are represented in each of the 10 EPA Regions. In all, this study represents 28% of the homes in the U.S. that could potentially receive curbside recycling service, and represents a selection of communities reflective of the diversity of curbside programmatic attributes.

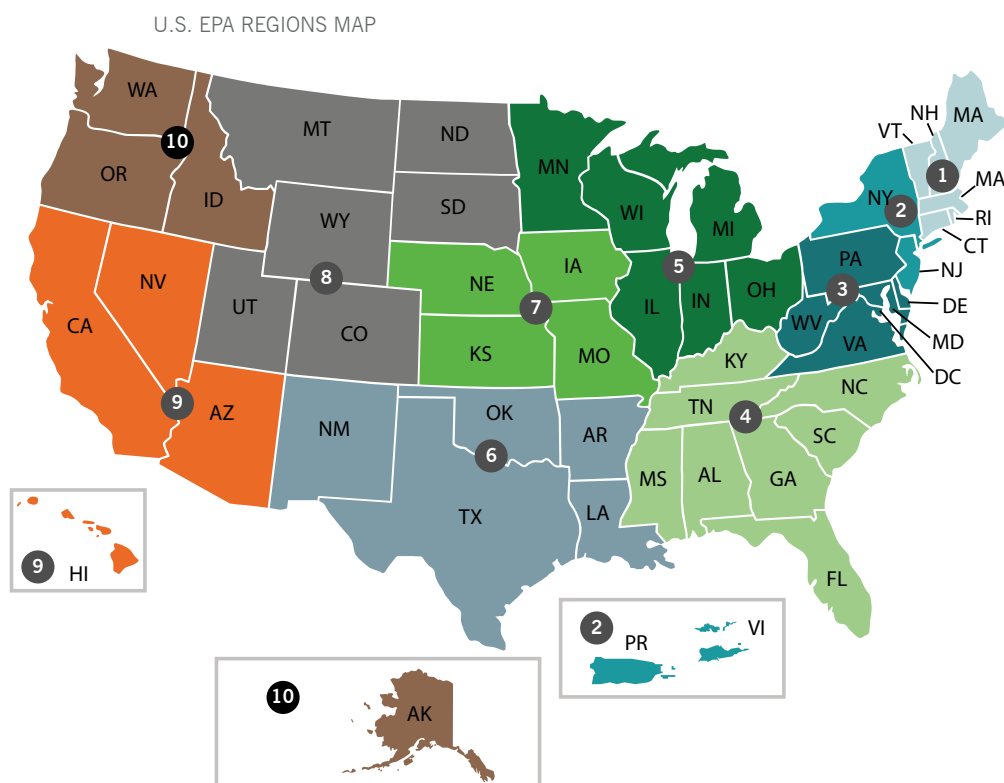
While the selection of communities presents a statistically significant grouping, it is not a picture of the curbside recycling industry in total. Because the report includes the 250 most-populous cities, as well as every state capital, there may be a slight overrepresentation in the states that have more of the highly-populated municipalities. Many of these populous areas have more developed programs, which may have lead to an increase of the amount of recyclables collected reported from each state.

U.S. CITIES ASSESSED FOR THIS REPORT



When considering this sample of curbside recycling programs and the attributes that influence program performance, it is important to remember that all recycling programs are managed at the local level. There are approximately 20,000 incorporated communities⁴ in the U.S., each with their own governing bodies, each making unique solid waste and recycling decisions. The 465 curbside recycling programs in this study are not a representative sample of all the curbside programs in the U.S. Because there are numerous programmatic variables among cities and curbside recycling management systems this study provides a strong cross-section. The results are indicative of curbside recycling programs in the country and how certain attributes can affect performance.

Much care was given to ensure the accuracy of the information. The curbside attributes for each community were first evaluated via each community's website. Each community was then contacted to assess the accuracy of posted information and to dig deeper into programmatic specifics. Roughly 80% of the communities participated in these phone conversations. Four communities asked to be removed from the study and were. In some instances, conversations with materials recovery facility (MRF) operators and/or regional EPA offices were conducted. A rigorous evaluation was undertaken by The Recycling Partnership staff and outside technical sources including the opportunity for each state recycling or solid waste office to review and comment on the data.



4 National League of Cities, "Number of Municipal Governments & Population Distribution" using U.S. Census Bureau data, 2007.

ESTABLISHING POUNDS PER HOUSEHOLD AS A KEY PERFORMANCE INDICATOR.

One key metric used to identify curbside recycling performance is the evaluation of pounds of recyclable materials collected per household, per year (lbs/hh/yr). This metric is referred to throughout the document and calculated by taking the annual curbside tons, converting to pounds and dividing by the total number of homes in the community that are eligible for curbside service.

For example, if a city that recycles 20,000 tons of material annually from their curbside program and has 100,000 homes, but only 40% of the homes are signed up for the service, the total lbs/hh/yr would be 400 because the calculation includes all 100,000 homes, not just those that are serviced or participating.

$$\frac{\text{Annual Curbside Recycling Tons} \times 2000 \text{ LBS}}{\text{Total Single-Family Homes in Community}}$$

This metric is used to understand what communities are producing per home on average. This includes those homes that recycle everything possible as well as those homes that do not recycle.

This is not to be confused with pounds per household served, or pounds per household participating, both of which measure the pounds of recyclables of the single-family households that use the service, as opposed to the entire curbside population of a given municipality.

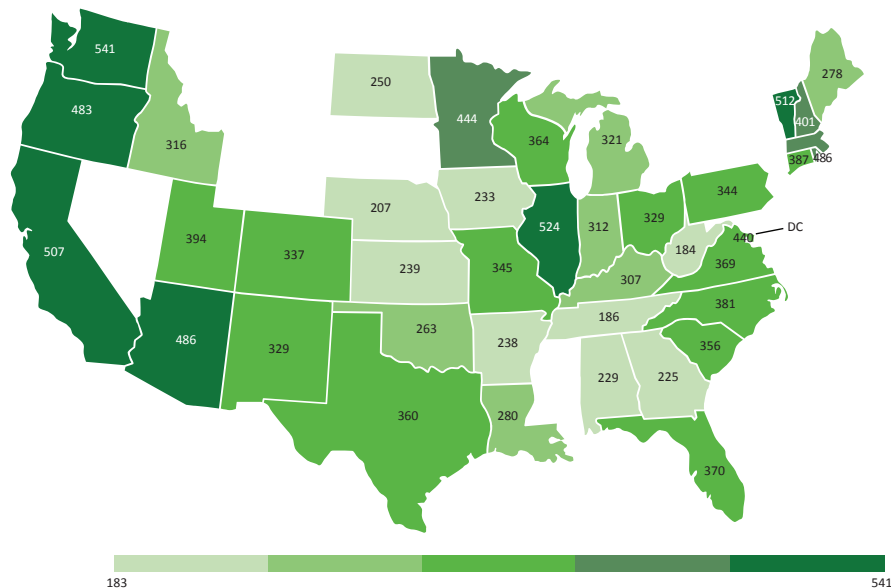
The average pounds per household metric provides consistency when comparing performance among communities and provides a budgeting figure for communities to use when expanding curbside recycling.

If the city could not provide the number of single-family homes (classified as one to four units) in the community, or a city representative could not be reached, data from the U.S. Census Bureau American Community Survey⁵ was used to establish the number of homes eligible for service.

5 U.S. Census Bureau American Community Survey (ACS) 2015 Data Release.

In some cases, communities provided recycling tonnage figures that may have included drop-off, multi-family, or commercial weights together with curbside tonnage throwing off the lbs/hh/yr figures. To minimize miscalculation, outliers were disregarded.

STATE RECOVERY OF SURVEYED CITIES



NATIONAL AVERAGE: 357 LBS/HH/YR

WASTE CHARACTERIZATIONS AND RECOVERY RATE STUDIES HAVE SHOWN U.S. HOUSEHOLDS ANNUALLY GENERATE BETWEEN 800 AND 1,000 POUNDS OF RECYCLABLES THAT COULD BE PLACED IN A RECYCLING CONTAINER.⁶

- The states that are shaded out did not have enough data points to show an average lbs/hh/yr at the state level.
- This is a national average of the surveyed cities, not a true national average of all cities in the U.S.
- When reporting residential curbside tonnage, there are always outliers due to the inability of communities to separate the curbside tonnage from other recycling program weights. In this case, outliers were removed by applying statistical methods including test methods.

6 Scott Mouw and Rob Taylor, "Seeing the Peak," Resource Recycling, May 2016

ALL RECYCLING IS LOCAL

LOOKING AT RECYCLING COLLECTION

The responsibility of who collects the curbside recycling in the U.S. differs greatly depending on the part of the country is being studied. The only standard is that there is no standard. This is important because this has numerous effects on how local entities plan, measure and pay for recycling around the country and challenging to analyze varying programmatic attributes as they relate to performance.

Further distinctions exist when considering state and regional perspectives. For instance, Florida, Indiana, Kentucky and Oregon are typically overseen at the county level, while Ohio, Virginia and parts of California have authorities that oversee multiple jurisdictions.

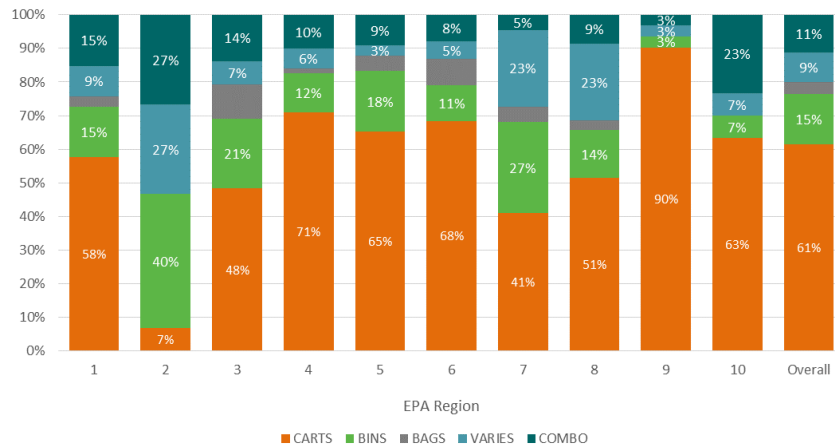
In both the Southeast and Northeast, the most popular service has communities collecting recyclables automatically using municipal staffers and public-owned equipment or contracting with one private hauler to provide collection for an entire community.

In the West, communities in Colorado find opt-in most preferable, either through franchise or an open-market approach, and communities in Oregon, Nevada, and Washington typically hold franchising or licensing agreements with specific haulers. And in most of those states and regions, there are outliers to what is “standard.”

There appears to be no correlation to effective collection of recyclables and whether the material was collected by private or public entities. There is, however, a correlation between the amount of material recovered and how the systems are established and managed.

KEY DATA POINTS ON THE STATE OF CURBSIDE RECYCLING

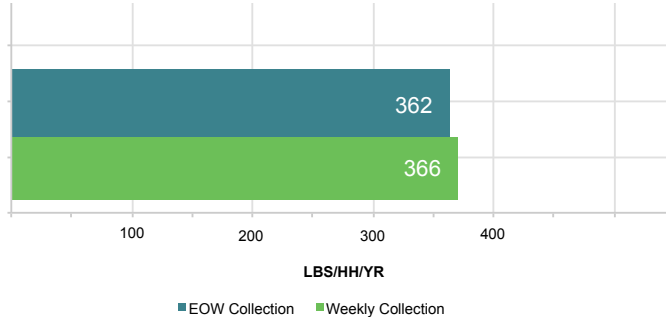
% DISTRIBUTION OF CITIES BY CONTAINER TYPE



CONTAINER TYPE BY REGION

Curbside carts were found to be the predominant collection method in seven of the 10 Regions, being used in 61% of the overall surveyed cities. Bins were used in as many as 40% of the communities in Region 2 and as little as 3% in Region 8 and 15% overall. Bags were still being used in 4% of the surveyed communities.

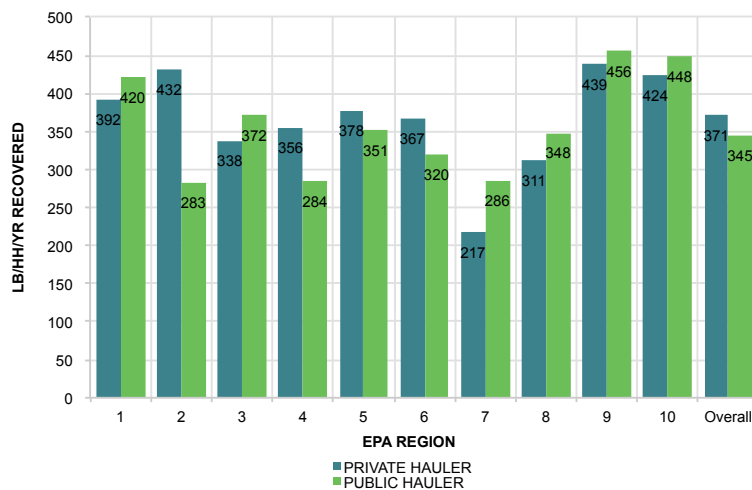
LBS/HH/YR RECOVERY BY COLLECTION FREQUENCY NATIONWIDE



COLLECTION FREQUENCY

Comparing the frequency of collection of curbside recycling, the difference between weekly and every-other-week (EOW) pick-up was small, with the average lbs/hh/yr of recyclables collected reaching 366 weekly vs 362 EOW.

LBS/HH/YR RECOVERY BY HAULER TYPE

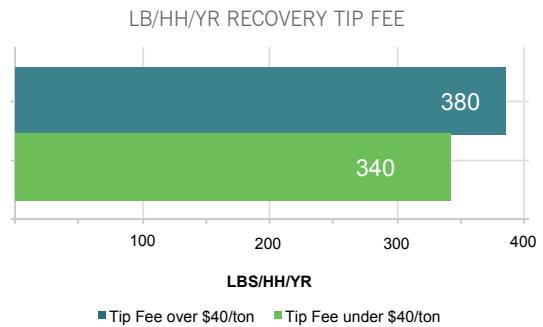


PUBLIC VS. PRIVATE COLLECTION

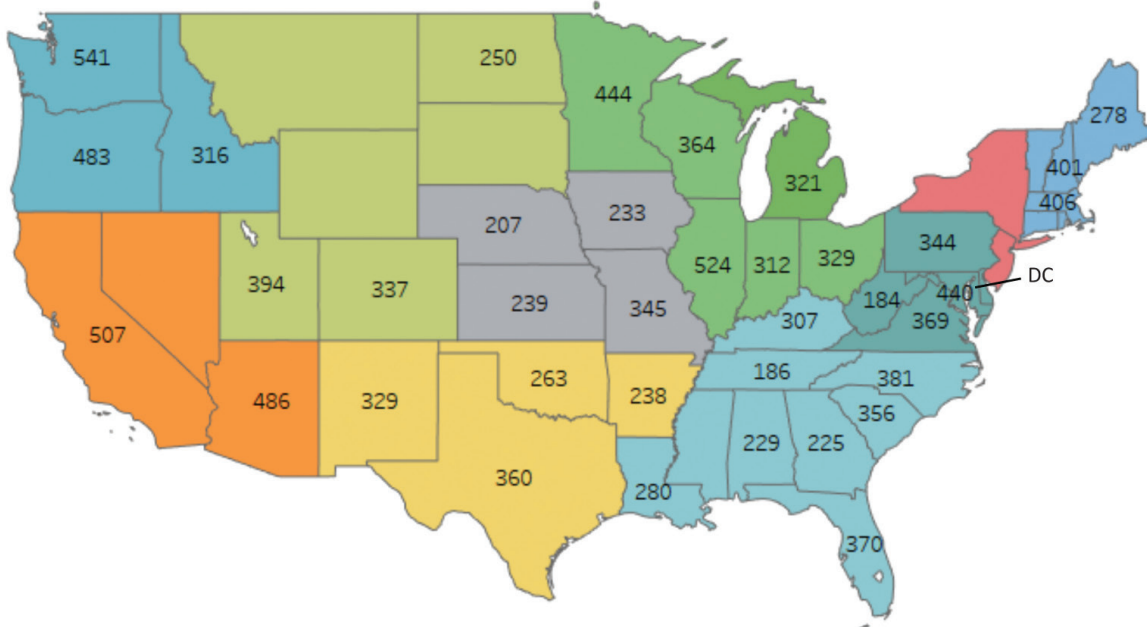
The difference in amount of recyclables collected by public or private entities whether contracted with the community or subscription based was not very large, with 371 lbs/hh/yr collected by private haulers on average against 345 lbs/hh/yr collected by public haulers.

AVERAGE LBS/HH/YR AND MSW TIP FEE BY REGION

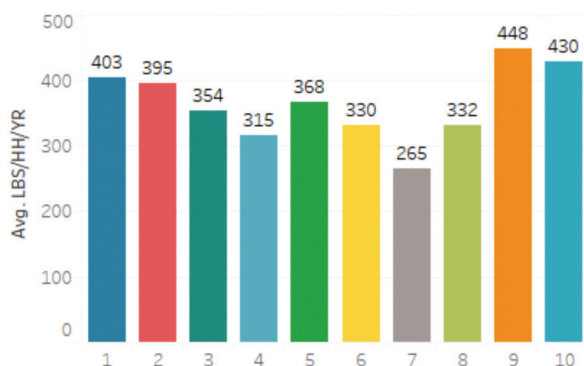
Along with data about curbside recycling efforts, information on the cost of disposal was also gathered. While there is some correlation between high tip fee and high recovery rates, as shown in the regional bar charts below, it was not a 1:1 correlation. For example, when the tip fee was over \$40/ton, municipalities averaged 380 lbs/hh/yr. When it was below \$40/ton, the average was 340 lbs/hh/yr, a spread that was smaller than expected. This was largely due to a number of municipalities in high-tip fee environments with low recovery rates, as well as municipalities in low tip fee environments having high recovery rates. More detailed research on this specific topic is needed to draw further conclusions.



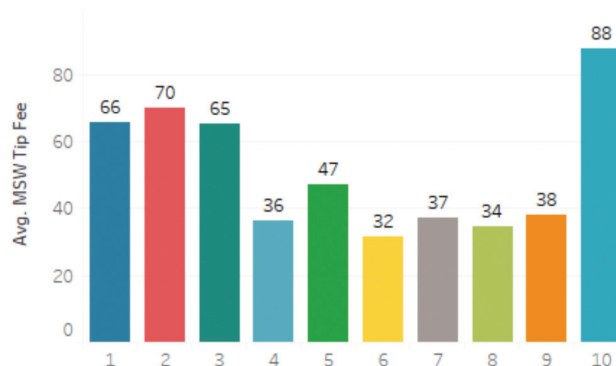
STATE RECOVERY AVERAGES LBS/HH/YR BY EPA REGIONS



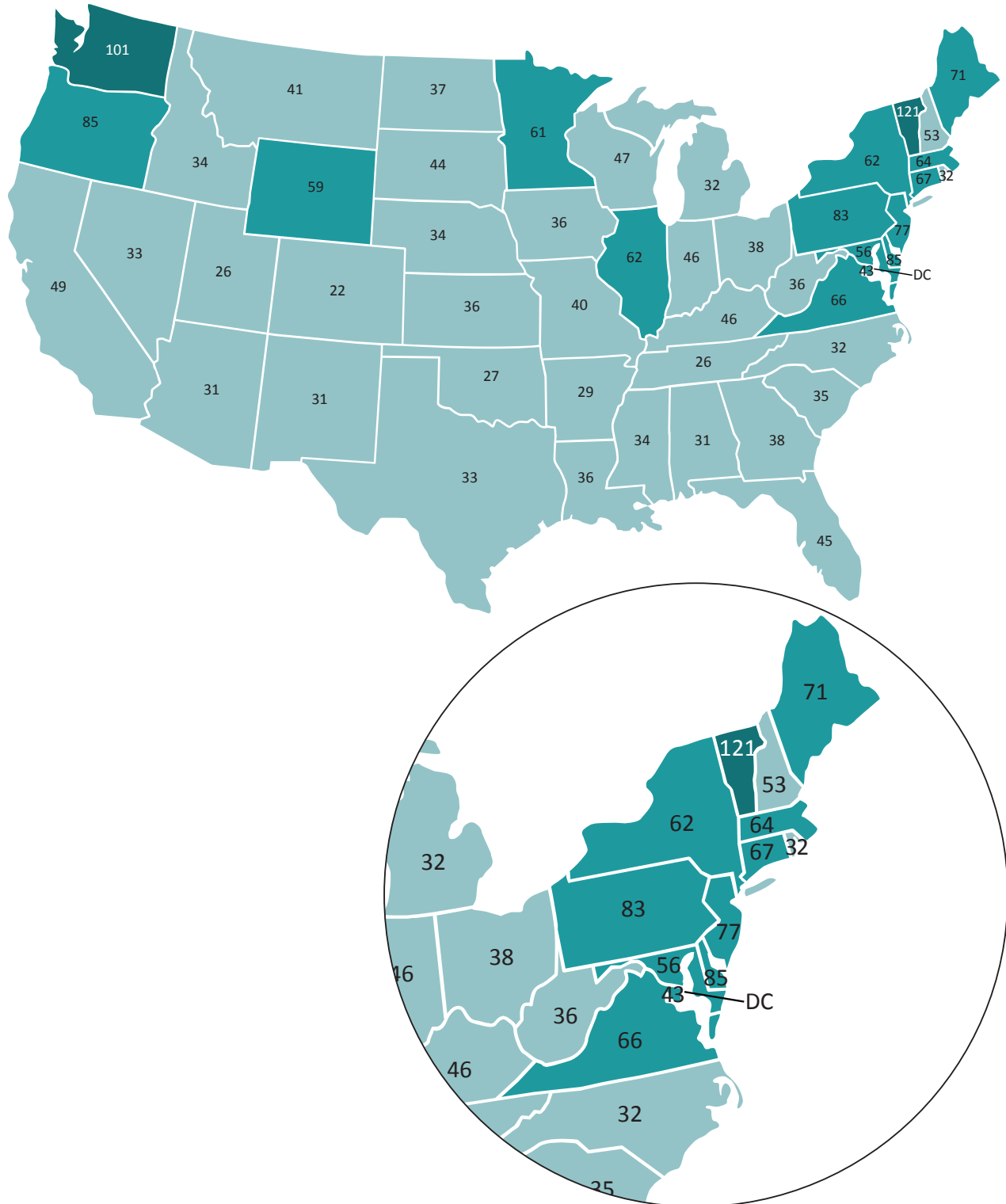
RECOVERY AVERAGES LBS/HH/YR

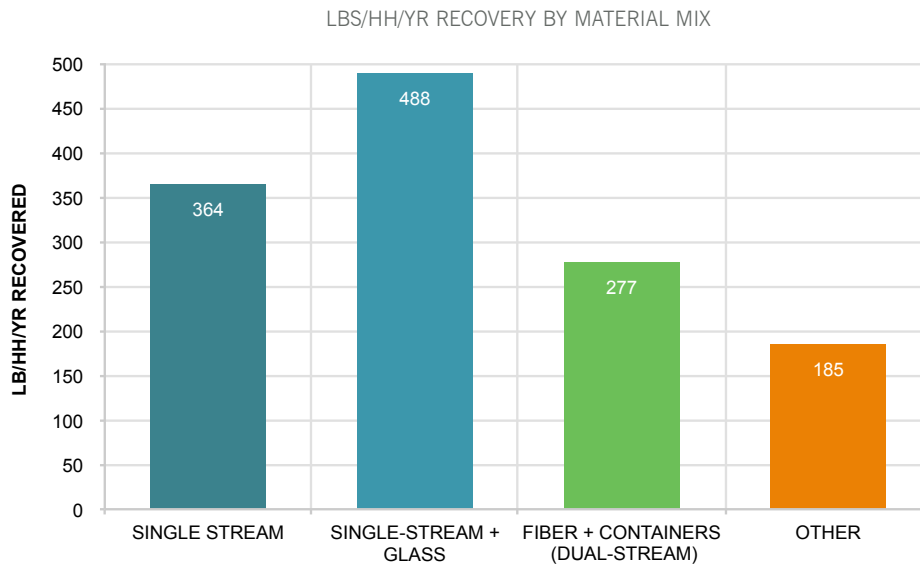


MSW TIP FEE AVERAGES \$/TE



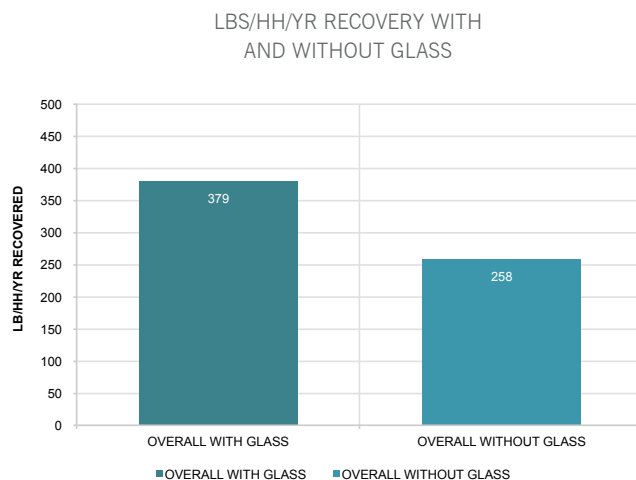
AVERAGE MSW TIP FEE BY STATE





LBS/HH/YR ON AVERAGE

One of the data points that had the greatest variance in the cities that we studied was material mix. Single-stream collection of curbside recyclables garnered a national average of 364 lbs/hh/yr, while fiber and containers collected separately (often known as dual-stream) garnered almost a hundred pounds less, with 277 lbs/hh/yr. Single-stream with glass collected in a separate container amassed 488 lbs/hh/yr. While this method, also known as single-stream plus glass, has been found to be effective in some communities, it should be noted that the high figure was weighted by other factors that influence greater resident participation. These include community and private hauler licensing agreements that trigger recycling collection when garbage pick-up is contracted, or making recycling collection an automatic service for every household.



CLARIFYING GLASS AND RECYCLING METRICS

When measured by weight, glass makes up a substantial portion of the recycling stream, frequently ranging from 15 to 25% of single-stream collection. Unfortunately, some programs are unable to accept glass at the curb, which obviously influences the pounds of recyclables recovered by household. On average, programs that accept glass recover 379 lbs/hh/yr and programs that do not accept glass average 258 lbs/hh/yr.

INDICATORS OF SUCCESS ACROSS DISPARATE REGIONS

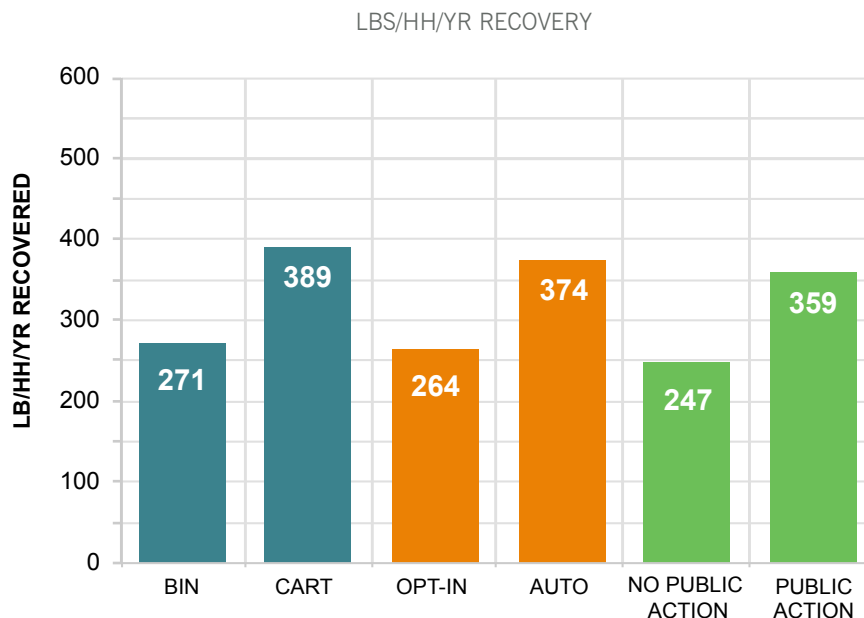
To determine which best practices result in the most pounds per household recovered, we examined 20% of the top-performing communities (collecting 400 lbs/hh/yr and higher). As stated before, there was not one individual attribute that indicates success, but several that affect performance and trends became evident. The majority of the highest-performing programs collect material single-stream, collect curbside recycling automatically, use an automated cart-based system, and have public engagement that influences curbside recycling to occur in their community.

SINGLE-STREAM

Of the top performing communities in the survey, 96% collected material single-stream. As noted before, the average lbs/hh/yr for the U.S. was 357, but there were communities that collected considerably more than that, some in excess of 500 lbs/hh/yr. Single-stream collection of recyclables does tend to get the most weight on average (364 lbs/hh/yr), when compared against other collection methods.

AUTOMATIC COLLECTION

Of the communities surveyed with over 400 lbs/hh/yr recovery averages, 93% provide service to their residents automatically, meaning each single-family residential unit located within a given



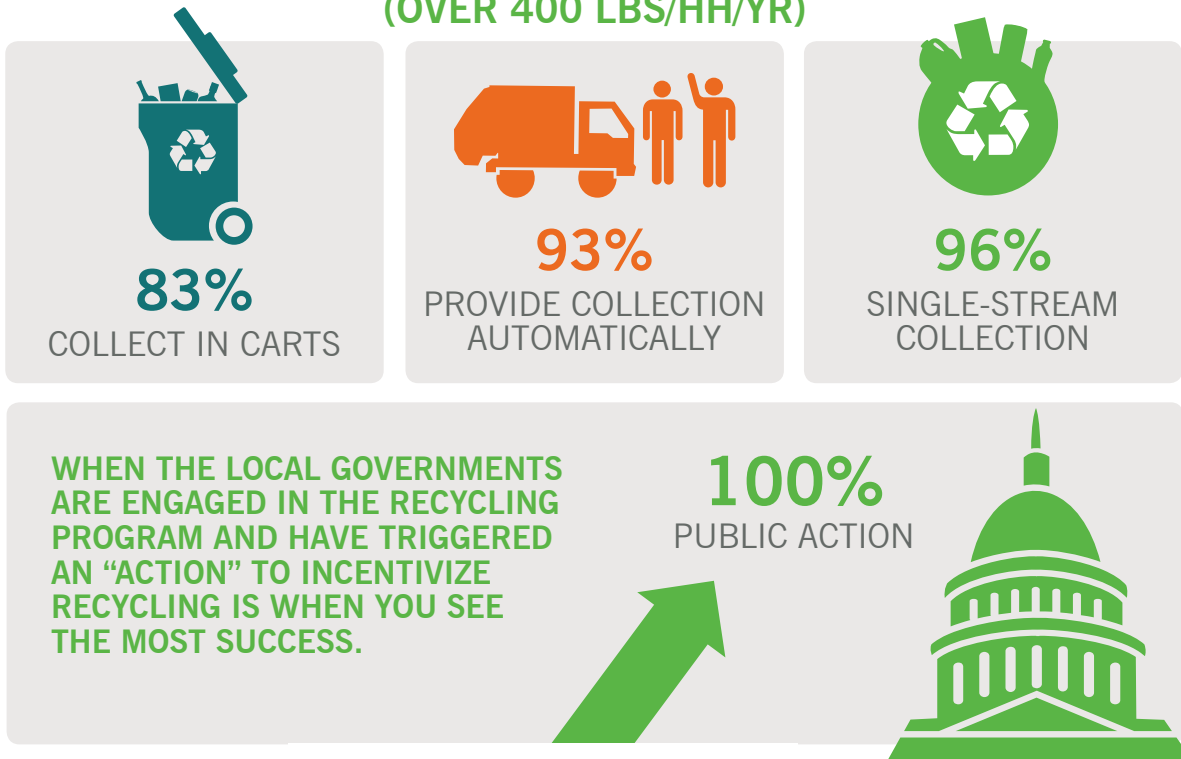
jurisdiction is provided a collection receptacle and is included in a regularly scheduled collection route without the need for the resident to take any action.

The alternative is an “opt-in” style system where the resident must take action on their own to receive service. This type of system averages 264 lbs/hh/yr nationally. Opt-in programs can be successful with additional policy provisions, such as making recycling service mandatory when opting-into trash service, bundling garbage and recycling together with a cost structure that stays the same if recycling is refused, or changing to an “opt-out” method. Without those provisions, however, opt-in/subscription-style systems can create an undue burden on the average citizen of a community.

CART-BASED COLLECTION

83% of the top-performing communities collect recyclables using wheeled carts with lids with the large majority being 95 gallons. These carts do not only provide more capacity for those residents that are currently recycling to recycle more, but convenience for those that do not recycle to start participating.

PROFILE OF THE HIGHEST-PERFORMING CITIES SURVEYED (OVER 400 LBS/HH/YR)



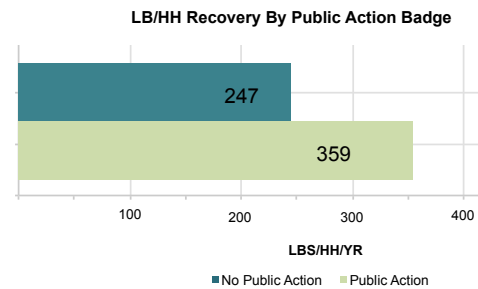
PUBLIC ACTION

The most successful programs are seen when local governments are engaged in the recycling program and have triggered an “action” to incentivize recycling. When evaluating the communities with over 400 lbs/hh/yr, 100% of those communities implemented some type of action that influenced curbside collection to occur in their community. The community can influence recycling in a few different ways, such as creating a licensing agreement or franchise that bundles garbage and recycling or providing recycling service to every home automatically without a special “sign-up.”

For example, consider two cities where both have “opt-in” style programs requiring residents to request trash and recycling service via a private hauler. City A has a local ordinance mandating that recycling is automatically offered with trash service. City B has no local ordinance to mandate that haulers offer recycling, thus leaving it completely open as to how service providers decide to offer recycling. While on the face, it appears that City A and B have the same type of program, City A will almost always have a more successful curbside program diverting more lbs/hh/yr.

Some communities collect single-stream plus glass in a separate container. Those communities surveyed with this material mix averaged 488 lbs/hh/yr, exemplifying of how one attribute cannot impact success alone. While these programs show high performance, when digging deeper, there are other factors in place in the locales that use that style of collection. Often the communities using this method implement hauler licensing agreements that obligate haulers to offer recycling collection with garbage collection.

LBS/HH/YR RECOVERY PUBLIC ACTION



AREAS OF OPPORTUNITY

WHERE CAN CURBSIDE RECYCLING PICK UP?

While one conclusion of this report would be that there is no one solution to fix all ailing curbside recycling programs, another would be that not all regional assumptions are borne out. There are numerous areas where curbside recycling programs can be supported and grown around the U.S. In researching this report, as well as using experience of The Recycling Partnership staff, we identified plentiful aspects that could be improved with the following actions.



YOU CAN'T MANAGE WHAT YOU DON'T MEASURE

Data is imperative to program success and planning. In some communities, data tracking is embedded in programs, in others there is not an institutional knowledge or collection of information. At a minimum, communities should know and report to the state, the following information:

- Number of households (single-family and multi-family)
- Number of households serviced by curbside collection
- Materials accepted in program
- A breakdown of annual tonnage by program:
 - Curbside
 - Multi-family
 - Commercial
 - Drop-off

Once that information is gathered, analysis of the types of investments needed in each region to improve program performance can be accomplished. For example, a municipality could identify the number of homes that may not have service and identify the capital and operational budgets needed to get these households service.



AUTOMATIC SERVICE

How can programs be sure they serve all the citizens in their care? By providing the same level of access to all. As shown in the data collected for this report, opt-in or subscription service underperforms in comparison to automatic collection, and pulled in almost 100 lbs/hh/yr less on an annual basis.

Adopting automatic collection is one of the simplest strategies identified by this report to improve program performance. No matter which type of collection method a program is using, whether it be public or private, single-stream or dual-stream collection, bin or cart, moving to automatic collection should be the norm. And if a community does have opt-in service, it should be automatic -- if a resident signs up for garbage service, recycling collection is bundled with it.



CONSISTENT MESSAGING

“What is recyclable?” is a central question among program participants and program coordinators and is one of the most widely varying answers in the survey. For example, we identified 13 different methods used to describe the types of fiber that is accepted in different curbside programs, 16 distinct ways plastic packaging was characterized, seven disparate manners that metallics were described, and seemingly endless combinations of describing the full material mix that is accepted. Harmonization of accepted program materials across communities and regions is essential to robust public participation without unnecessary and potentially damaging confusion.



CONSISTENT INFORMATION

Both from the research collected and in our experience, many communities and municipalities do not provide easy-to-access and easy-to-understand recycling-related information. The reasons behind this are as numerous as the communities identified in this study. From websites that need updating to a simple lack of staffing, to out-of-date or missing literature, many communities need to seek out and use available tools and resources to update the recycling-related information offered to the public.



BINS TO CARTS

Moving from bins to curbside rollcarts for the collection of recyclables is another key area that provides consistently higher weight of materials. Carts brought in over 100 lbs/hh/yr above the average weight from bins (389 lbs/hh/yr vs. 271 lbs/hh/yr, respectively) annually. In a community of 50,000 homes, that equates to almost 3,000 new tons each year.



HUB & SPOKE

In regions that are not well-served by MRF infrastructure, as well as in areas of the country that currently lack recycling collection to support MRFs, pooling and hauling of materials can help the economics behind curbside recycling service. This concept is called “hub-and-spoke” referring to the ability for smaller or more remote communities, or “spokes,” to connect to a larger community or city, which acts as a central pooling “hub.” This is a well-established concept for garbage collection and management. Not every community has a landfill, so they use transfer stations.

This widely accepted practice should be mirrored for recycling collection and management. Communities should use existing transfer station infrastructure to add space and equipment for recycling transfer, and if it does not exist, funding should be made available for the development of spokes for recycling. In some parts of the U.S., for example Regions 6, 7, and 8, the hub-and-spoke model has started to gain traction and by adopting this strategy, communities in more rural areas can gain access to the efficiency benefits.



MRF-SHEDS

The health of the recycling industry is inexorably connected to the MRFs that sort out all recyclables collected curbside throughout the U.S. These MRFs are often fed from multiple cities, with each managed independently. A MRF-shed is a way of framing regional systems of MRFs, allowing for consistency of language throughout a region's programs, and allowing for consistency of how materials are promoted.

While a MRF may have a set list of key marketable recyclable materials, it's not uncommon for different cities to have differing acceptable material lists. This variability within a region can lead to consumer confusion as they travel between home, work and play, and it can equate to a contamination problem for these systems of MRFs. Just as a watershed can draw or collect water through a geographic region, so, too, can a MRF-shed draw recyclable materials to it. MRF-sheds can also consume different materials depending on the region, which, in turn, has influence on accepted materials in municipal curbside collection programs. Thinking about MRF infrastructure in this way can provide for markets the ability to plan for existing streams of feedstock.



WAKING THE SLEEPING GIANT OF MULTI-FAMILY RECYCLING

While this study focuses on curbside recycling, during the research it became clear that there is a great opportunity to understand and improve the other major form of residential recycling – multi-family collection. The 465 communities in this study have roughly 36 million residential units. Of that 36 million, only 25 million are eligible for curbside collection, leaving 30% of the homes in these communities out of this assessment.

Multi-family homes do not have a consistent collection system in this country and are thus difficult to measure. While some local governments have strong multi-family collection programs, many more do not because they are often considered “commercial” properties. Furthermore, without regulations from the local entity, many are built with little room for collection containers or lack proper access to collection vehicles. Some states, such as California, have implemented strategies to ensure these homes are provided recycling service, but the large majority of the country still needs support in this area.

Understanding the best management practices for multi-family collection is an essential step forward. This should be coupled with funding to support local governments in the operation of multi-family programs around the country.

CONCLUSION

Residential curbside recycling is the most convenient way for a resident of any community to recycle and the most effective way to capture bottles, cans and paper from the home. However, local government solid waste and public works departments need more support, both financially and in regional strategic planning.

Individual attributes like container type, tip fee, and service type cannot alone affect recovery. Rather, it is a mix of best management practices and tools which communities need to boost performance. Some of those practices include:

- **Public Action:** Communities need proven strategies such as delivery of recycling carts to every household and ensure equal availability to recycling collection service as garbage.
- **Local-Level Information:** Communities need access to techniques that provide better customer service to residents who need quick answers online or via phone.
- **Measurement and Data:** Simple and consistent programmatic measurement protocols and reporting at the state level to truly understand the scope of work that is needed to grow recovery.
- **Supporting Broader Pockets of Collection:** And we need to focus on MRF-sheds through hub-and-spoke infrastructure to ensure every region of the country has an efficient and effective pathway to deliver collected materials to a stable market.

It is important to note that the key attributes highlighted in this research are the most straightforward program metrics to extrapolate. Continued research and stronger reporting is needed to understand attributes such as: how specific educational pieces influence recovery; how established programs affect success over time; the quality of material collected; cost benefit analysis of certain attributes; and how particular funding mechanisms or policy drivers may influence success.

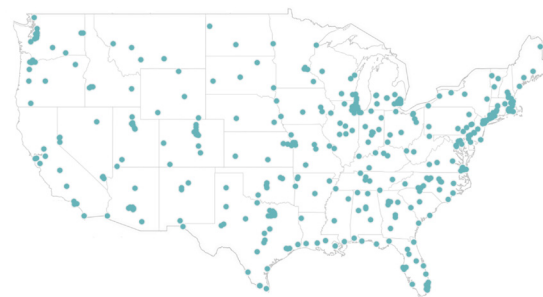
The recycling industry relies on these communities for good-quality supply of materials. At the same time, local governments have competing programmatic priorities with constrained budgets, and there is a lack of staffing to make these much-needed improvements. This research has identified the attributes that can and will drive recovery, but the attributes do not drive recovery alone. More strategy is needed to make system-wide improvements. To reach EPA's 2017-2022 recovery goals and individual community goals, tools and resources must be provided at the state and local level.

These tools and resources take time, funding, and partnership. States and Regions can target grants to support the key attributes highlighted in this research, but grants will go further and support recovery faster, when leveraged with other industry partners throughout the supply chain all while building better educational and operational tools, focused programmatic reporting mechanisms, and holistic system solutions to ensure curbside collection is an effective piece of every community's sustainable materials management.

APPENDIX A:

EXECUTIVE SUMMARY

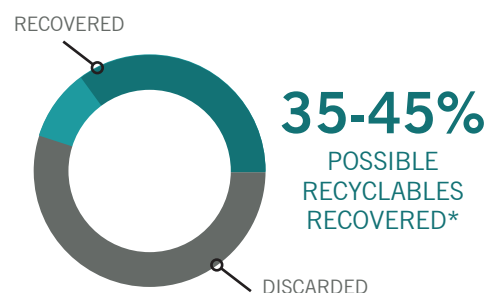
The 2016 State of Curbside Report is a snapshot of the performance of curbside recycling programs in a number of key communities across the U.S. **Over 400 cities were profiled** to understand key recycling program attributes and to evaluate their performance in recovering household recyclables at the curb. This type of performance **data is critical to build a national understanding of the recycling landscape**, to create key learnings of why some programs perform better than others, and to create a future **roadmap of strategic changes** needed to help the system to reach its full potential in supporting the transition to a circular economy and a holistic sustainable materials management approach.



Data collected about these geographically diverse programs included frequency of collection, container type, municipal solid waste tip fees, material mix, collection approach, and program ownership for the purposes of **understanding program performance**. The Partnership then used a pounds per household per year metric to consistently place all programs on a uniform footing for measuring their curbside recovery.

Several key conclusions regarding data and program performance are presented in this report, which include:

- **Waste audits have shown that single-family homes generate between 800 and 1,000 pounds of recyclable packaging per year.** The simple average from this research showed a recovery of **357 pounds per household per year**, suggesting an average recovery of 35-45% of possible recyclables in the home for the profiled cities. **The opportunity to recover more is clear.**
- **There is no single program feature that drives program performance, but rather it is a combination of factors that build off one another.** However, some key indicators of successful programs emerged, with almost all top-performing programs sharing the following four characteristics:

CART-BASED
COLLECTIONAUTOMATIC
SERVICE FOR ALL
RESIDENTSSINGLE-STREAM
COLLECTIONCOMMUNITY ACTIONS
THAT RAISED THE
PRIORITY OF RECYCLING

- **More optimization is possible to help underperforming communities build off the success of stronger programs.** For example, hub-and-spoke models will grow in importance in moving forward to manage costs while increasing collection.

Growing the recovery of packaging will take a strategic systems approach of **expanding best practices through partnership**. To accelerate this process, communities will continue to need dedicated technical support and resources from the NGO community, state offices, and other groups and teams to make step changes and drive program improvements. Through better data, the **roadmap to grow packaging recovery rates** across the country can be created. **Simply put, what gets measured, gets managed.**

APPENDIX B:

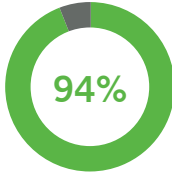
2016 STATE OF CURBSIDE REPORT



Recent studies have identified the need for continued growth and support of curbside recycling.

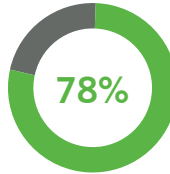
CONSUMERS WANT TO RECYCLE

94% Massachusetts residents report to “mostly” or “always” recycle¹



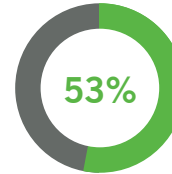
CONSUMERS VALUE RECYCLING

78% report “recyclable” and “recycled” are their most-favored green terms²



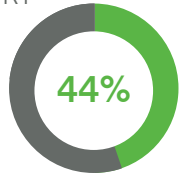
ACCESS IS LIMITED

Only 53% of US population have curbside recycling provided automatically³



MOST PROGRAMS NEED SUPPORT

Only 44% of the single-family population with curbside recycling have a cart³



METHODOLOGY and KEY FINDINGS

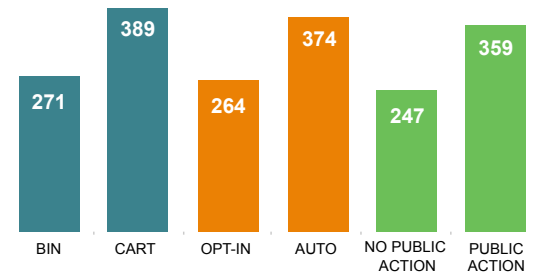
This study evaluated 465 incorporated communities representing

- At least 20% of the homes eligible for curbside service in each of the 10 EPA Regions.
- 28% of the single family (1-4 units) homes in the U.S. that could potentially receive curbside recycling service.

AN AVERAGE OF
357 LB/HH/YR
RECYCLABLES ARE RECOVERED



SUGGESTING ONLY
35-45%
OF POTENTIAL RECYCLABLES
ARE COLLECTED



AREAS OF OPPORTUNITY - STEPS TO INCREASE RESIDENTIAL RECOVERY

PUBLIC ACTION



AUTOMATIC SERVICE

Creating a licensing agreement that bundles garbage and recycling to every home automatically is one of the simplest strategies identified to improve program performance.



MEASUREMENT AND DATA

At a minimum, communities should know and report to the state, the following info:

- 1 - Number of households with curbside collection
- 2 - Materials accepted in program
- 3 - Breakdown of annual tonnage by program:
 - Curbside
 - Multi-family
 - Commercial
 - Drop-off

LOCAL-LEVEL INFORMATION



CONSISTENT INFORMATION

Many communities need to seek out and use available tools and resources to update or include information to better tell the public what to recycle at the curb.



CONSISTENT MESSAGING

Uniform communication of accepted program materials across communities and regions is essential to robust public participation without unnecessary and potentially damaging confusion.

SUPPORTING BROADER POCKETS OF COLLECTION



MRF-SHEDS

It's not uncommon for different cities to have differing acceptable material lists. This can lead to consumer confusion as they travel between home, work and play, and it can equate to a contamination problem for these MRFs.



HUB & SPOKE

Pooling and hauling of materials can help the economics behind curbside recycling service. Communities should use existing transfer station infrastructure to add space and equipment for recycling transfer.



COLLECTION IN CARTS

Carts brought in over 100 lbs/hh/yr above the average weight from bins (389 lbs/hh/yr vs. 271 lbs/hh/yr, respectively) annually.



MULTI-FAMILY RECYCLING

Multi-family collection is largely underserved with little consistency in collection methods. More research is needed to understand best management practices.

Published December, 2016.

DISCLAIMER: The data, insights and conclusions in this document are based on primary research conducted by The Recycling Partnership. The conclusions and views expressed in this document do not necessarily reflect the views of our funding partners. To learn more, please contact us at info@recyclingpartnership.org.

About The Recycling Partnership

The Recycling Partnership (recyclingpartnership.org) is a national nonprofit transforming recycling in towns all across America. At The Recycling Partnership, we believe that recycling is fundamental to a healthy environment and economy. Every day, we work hand-in-hand with communities and companies, continuously innovating to improve recycling systems. Because when we do, jobs are created, our environment is protected, and communities thrive.

Since 2003, we have been delivering solutions for measurable change through collaboration, assistance, and data. This important work is made possible through grants and support from these funders:

