THE RECYCLING PARTNERSHIP

2019

West Coast Contamination Initiative Research Report

Lead Author:
Asami Tanimoto

Contributing Researchers and Authors:
Anthony Brickner, Allison Francis, Nick Isbister, Samantha Kappalman, Vincent Leray, Cody Marshall, Scott Mouw, Elizabeth Schussler, Dylan de Thomas, Laura Thompson, and our partners at Avencore Group, Boisson Consulting, C+C, Cascadia Consulting, Martha Burwell Consulting, More Recycling, Myers Research, OpinionWorks, Recyclist, and Stephen Groner Associates.

Cover Photo:
Recycling facility workers sort recyclables.

Acknowledgements
The Recycling Partnership would like to thank the local recycling programs, haulers, MRF operators, state agencies, and state recycling organizations for the data they provided for this report and for making time to meet with The Recycling Partnership staff and consultants. The residents of California, Oregon, and Washington who participated in surveys and focus groups also gave invaluable insights into the motivations and barriers to recycling.

Release date: April 2020

Introduction

Contamination is at the core of the issues that face recycling today. Contamination happens when non-recyclable items are mixed in with recyclables or when recyclable items are prepared the wrong way and then put in someone's curbside recycling. Contamination in curbside recycling makes it difficult and sometimes dangerous for workers and harmful to equipment to deliver the good recyclables from household to market. The environmental promise of recycling becomes realized when those items – cans, bottles, boxes, cartons, paper, and other containers – are transformed into new products and take the place of virgin materials extracted from the ground. But this environmental promise becomes less efficient and more costly if recycling carts are filled with trash and other items that do not belong there.

Contamination in recycling took the spotlight when China began to change their import policies to ban certain materials and place stringent criteria on imported recyclables. China was a primary market for recyclables for West Coast states, and with the subsequent market crash for these materials, recycling programs in these states were hit hard.

As a result of contamination, trucks and equipment may be damaged and workers may be at a higher risk for injury when trying to maintain equipment. In addition, processors may need to hire more staff to pull out these contaminants before they get to the processing equipment and slow down the line so that materials can be pulled out properly, equipment may need to be shut down more frequently for maintenance, processors may need to pay more disposal fees to get rid of these contaminants, and contamination may cause a buyer to look elsewhere for a cleaner material. **The Recycling Partnership estimates that contamination costs the U.S. recycling system at least $300 million every year. These additional costs and loss of income incurred by the processor are passed down to the hauler, community, and residents, which can impact a community's ability to provide recycling services.** When contamination is decreased – or quality of the recyclables is improved – there is a compounding positive impact to the fate of the collected materials and the financial well-being of the system that benefits all stakeholders.

As part of The Recycling Partnership's West Coast Contamination Initiative, research and surveys were conducted to better understand the state of residential curbside recycling in California, Oregon, and Washington and to identify the gaps and leverage points to reduce contamination in residential recycling in these states. Insights into increasing the quality of recyclables collected at the curb will help drive the circular economy, create a healthier environment, and build stronger communities.

Executive Summary

The Recycling Partnership conducted research and surveys in 2019 to better understand the state of residential curbside recycling in California, Oregon, and Washington. Cities with populations of more than 50,000 people[1], residents from these cities, and material recovery facilities (MRFs) in California, Oregon, and Washington were surveyed. Additional surveys and focus groups were conducted based on learnings from the initial research. The goals of the report are to summarize the findings from these research and surveys and to share identified opportunities to reduce contamination in the single-family curbside recycling stream.

Positive attitude and infrastructure support recycling on the West Coast

In California, Oregon, and Washington, almost every city with populations of more than 50,000 people has a single-family curbside recycling program. These states have policies that propelled recycling service to become the norm in populated areas. There is also high interest among residents to protect the environment, reduce trash, and to do the right thing. Conditions and attitudes are the foundations for successful recycling behavior, and they exist in this region.

There are opportunities and challenges to reducing contamination from the residential recycling stream because:

- Key program-specific measurements are currently not consistently tracked.
- Residents are not aware of what can be recycled curbside, even those who think they know how to recycle.
- Highly diverse communities need tailored approaches to educate the various segments of the community.
- Multifamily is a growing sector with lagging recycling infrastructure and understanding of best practices for education and outreach.
- Recycling programs are stretched thin due to competing priorities, low funding, and tight markets. Resources available to educate residents and measure progress are limited.
- There is fragmented collaboration between local programs, haulers, MRFs, and state agencies.

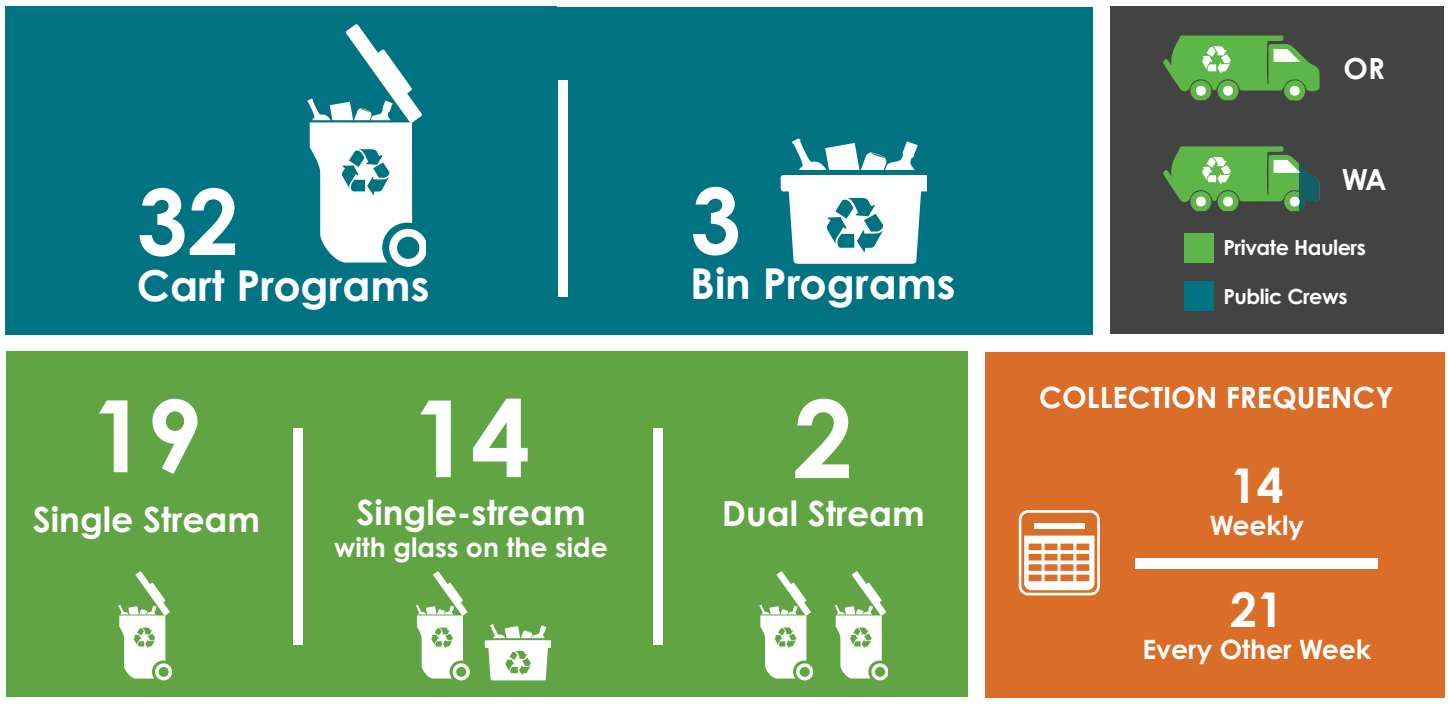
These barriers are really opportunities for improvement. While city and county programs around the country are implementing strategies for improvements, it is not always clear which tactics are working effectively. The Recycling Partnership tests, measures, and researches approaches to help overcome these barriers and offers grant funding, technical support, and free resources to help reduce contamination in residential recycling.

Keys to successful recycling programs include:

- **Measuring data, like participation rate, annual tonnage, and inbound contamination rate, for each recycling program stream to identify effective outreach and evaluate progress.**
- **Partnering and sharing data/resources between stakeholders to reduce the burden on any one part of the system and motivate system-wide improvement. Common issues across the region are an opportunity to collaborate on education programs with less cost to each stakeholder.**
- **Developing clear, specific, and consistent messaging so residents know what to do.**
- **Supporting community recycling programs with more funding and technical assistance – especially education and outreach.**

1 The studies did not evaluate residential recycling programs in small cities and rural areas or focus on multifamily recycling.

Figure 1: Curbside Recycling Program Structure in California, Oregon, and Washington Cities with Populations of More than 50,000 People



Source: The Recycling Partnership West Coast Resident Survey 2019

State of Curbside Recycling on the West Coast

In 2019, The Recycling Partnership commissioned a series of research and surveys in California, Oregon, and Washington to better understand the state of residential curbside recycling in these states. As a starting point, cities with populations of more than 50,000 were selected. Stakeholders of the recycling system in these cities – city staff, haulers, MRFs, and residents – participated in surveys and interviews. During our surveys and interviews with the recycling stakeholders listed above, we observed that there are numerous reasons why contamination may be happening. By surveying city programs, MRFs, and residents, we can start to see the trends and themes to help programs find the paths to tackling contamination. What did we learn? How can research data shape future studies and educational programs? These questions will be explored in this report. A description of each study and a summary of data collected in these studies are provided in **the addendum to this report**.

Residential Recycling Infrastructure

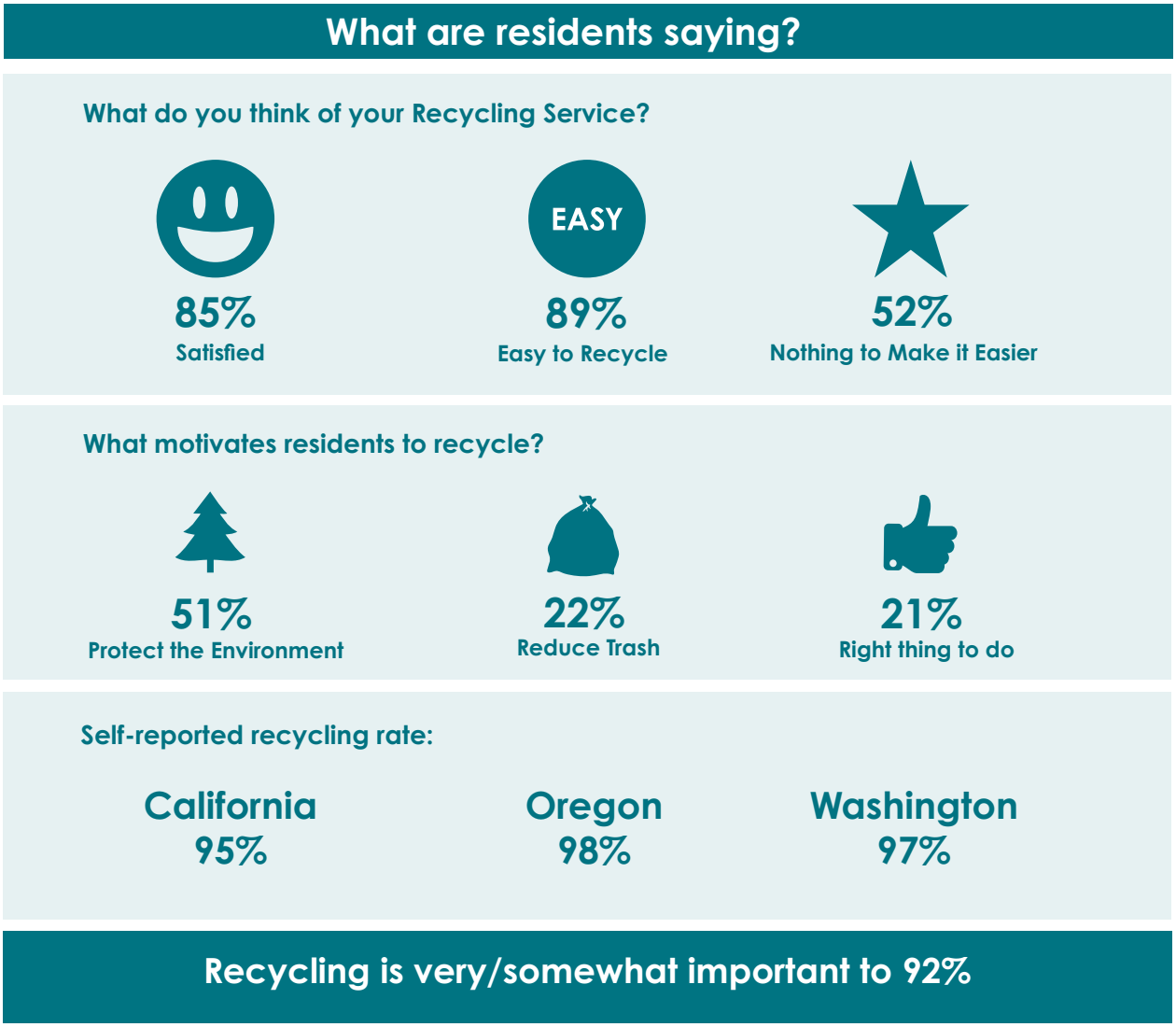
First, let's look at the curbside recycling infrastructure. Nearly every city with a population of more than 50,000 has a curbside single-family recycling program. In addition to the curbside program, these residents have access to recycling centers to drop-off materials, collection bins at retail locations, or collection events for certain hard-to-recycle items. In California and Oregon, there is also a redemption system for beverage containers. The focus of this report is on single-family curbside recycling programs, but more information on the beverage container redemption programs can be found in **the addendum** as it is an important part of the recycling system.

In most West Coast cities, private haulers collect single stream recyclables in carts and most residents are automatically enrolled in recycling service. However, there are communities that collect in bins, separate glass from the rest of recycling, separate paper and cardboard from containers, or rely on MRF equipment to sort all recyclables from mixed waste collection methods. At the time of the survey, 41 communities said that they either changed or were considering changing their material list to react to the shifting market, make recycling simpler for their residents, and reduce contamination. There was no evidence that communities with different collection methods or reduced material lists were able to manage contamination better, but, with time, communities will continue to share proven strategies. Some characteristics of the residential curbside landscape are shared in the infographics on the previous page. Methodology and data from the city survey are available in **the addendum**.

Resident Attitudes Towards Recycling

West Coast states, cities, and counties have built a strong recycling culture. Our resident survey showed that more than 95% of residents in these surveyed cities recycle and that recycling is important to 92% of them. Some of the key motivators for recycling for individuals surveyed are to protect the environment, reduce trash, and to do the right thing. An overwhelmingly 85% of residents said that they feel satisfied with their recycling service and 89% of residents find it easy to recycle. Conditions and attitudes are some of the first steps to successful recycling behavior. This strong recycling culture is an important foundation on which to build and improve the quality of material collected. Methodology and data from the resident survey are available in **the addendum**.

Figure 2. Resident Attitudes Toward Recycling and Motivations



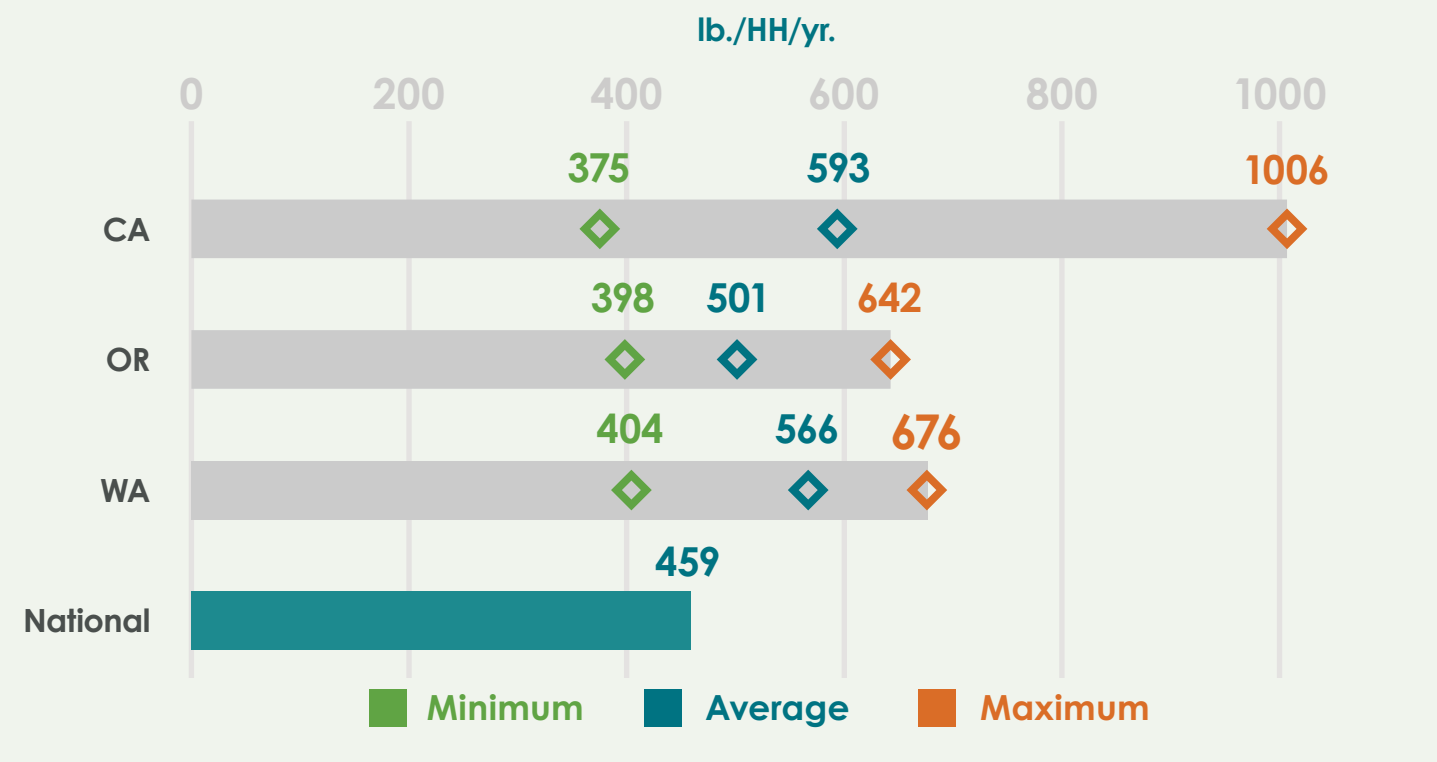
Source: The Recycling Partnership West Coast Resident Survey 2019

How are Programs Performing?

On average, surveyed California cities reported that they collect 593 pounds per household per year (lb./HH/yr.) in their curbside recycling stream. For Oregon and Washington, this number was 501 lb./HH/yr. and 566 lb./HH/yr., respectively. Nearly all of the cities that reported their annual tonnage provide recycling service or have policies that enable recycling service automatically to garbage customers and the majority are collecting more than the national average of 459 lb./HH/yr., as reported in **The Recycling Partnership's 2020 State of Curbside Recycling report**. Because program attributes (i.e., frequency of collection, container types, single stream vs. dual stream, who is hauling, cost of recycling service, size of recycling carts, etc.) between these cities are similar and there were not enough program-specific data points available, attributes that lead to higher or lower performance could not be identified with statistical significance.

Annual tonnage alone, however, does not show the level of success of a recycling program. Without knowing how much recyclables are available from these households, we don't know how well the recyclables are being captured by these programs. Nationally, a household generates 768 lb./HH/yr. of recyclables on average.[2] Some West Coast communities are collecting more than 768 lb./HH/yr. So, we can assume that these communities must be generating more recyclables than the national average. Let's also assume for a moment that the surveyed cities do generate 768 lb./HH/yr. of recyclables and that the per household collection rate of curbside recycling contained no contamination. Subtracting the average annual collection rate from the generation rate still leaves more than 1 billion pounds of recyclables not captured curbside annually in California. Some of the beverage containers may be captured through redemption in California, but according to data from CalRecycle, 390,000 tons per year of redeemable containers are not collected curbside or through redemption channels statewide in California.[3] The same calculation for Oregon and Washington leaves about 300 million pounds of recyclables per year that are not captured curbside. Even the highly praised Oregon Bottle Bill program does not capture all of its covered containers, with an analysis of its reports showing that more than 172 million bottles were not redeemed in 2018.[4] There is still a significant number of recyclables that can be captured from households on the West Coast.

Figure 3: Average Per Household Collection of Recyclables from Single-Family Residences in California, Oregon, Washington, and the U.S.



Source: The Recycling Partnership West Coast City Survey 2019; The Recycling Partnership 2019 State of Curbside Survey

2 The Recycling Partnership. 2020. State of Curbside Report. February. **www.recyclingpartnership.org/stateofcurbside**

3 CalRecycle. 2019. California's Beverage Container Recycling and Litter Reduction Program Fact Sheet. August. **https://www2.calrecycle.ca.gov/Publications/Details/1658**

4 OBRC. 2019. Oregon Beverage Recycling Cooperative 2018 Annual Report and Q1-Q4 Reports. **https://obrc.com/Reports**

Snapshot of Household Recyclables in Greater Portland Region

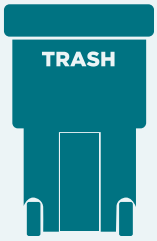
Where might recyclables go from an average single-family home in the greater Portland metro region? In that region, a resident may put their recyclable materials in their commingled recycling cart, a separate glass bin, trash cart, or redeem at a store or redemption center. Based on a generation study done in the Portland metro region, extrapolated using data from the Metro regional government's annual tonnage data, and beverage containers collected through the state's redemption program, a single-family household in the Portland metro region generates 594 lb./HH/yr. of recyclable materials. Approximately 78% of those materials are captured either curbside or through bottle redemption programs. These numbers were estimated using data provided by the Metro regional government, Oregon Department of Environmental Quality, Oregon Beverage Recycling Cooperative, and field sampling. By tracking data from various programs that collect recyclables from a household, a recycling program can evaluate the performance of the program and identify where to focus their future education and outreach.

594 lbs
of recyclable materials generated per household per year

78%
materials captured curbside or through redemption programs

Of this 594 lbs of recyclables:

418 lbs
go into curbside recycling



132 lbs
go into the trash

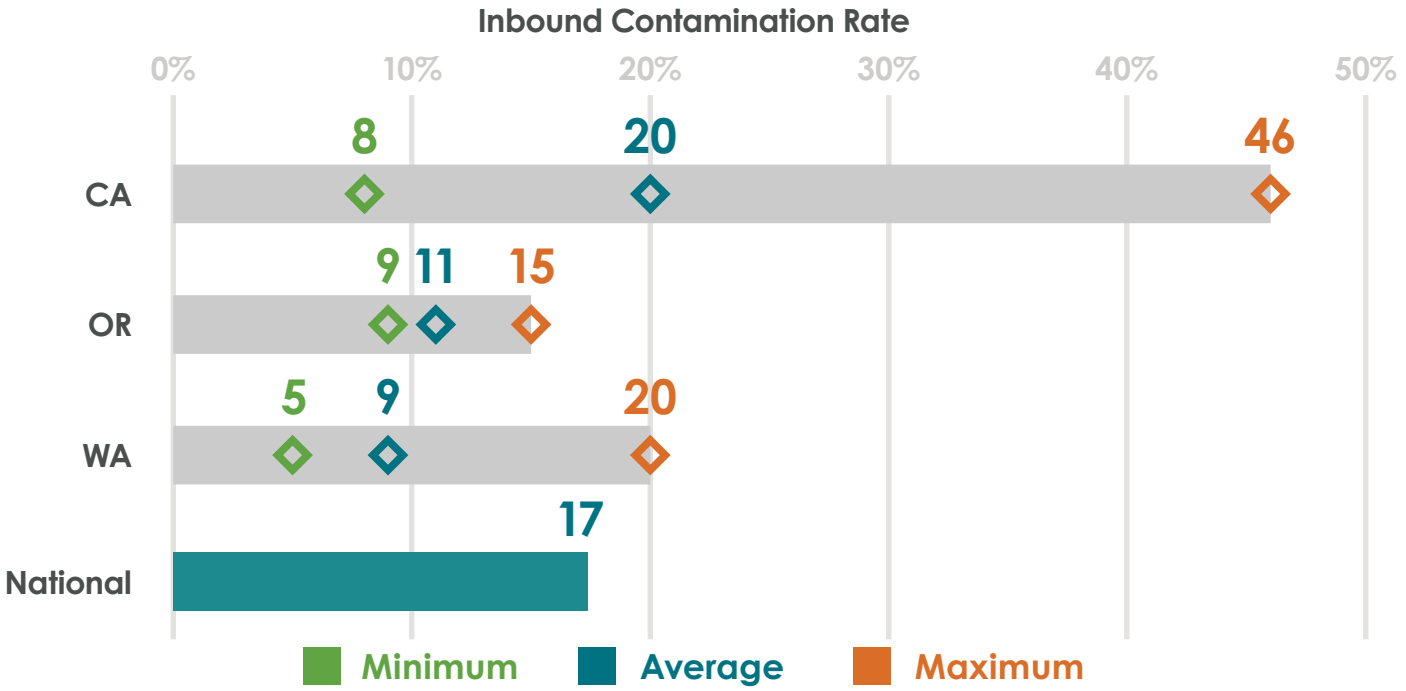
44 lbs
collected at redemption centers

Source: Greater Portland Region Generation Study 2019

Contamination of the Curbside Recycling Stream

Annual collection rates described in the previous section include contamination – as a result, we also asked the cities for their inbound contamination rate. Inbound contamination rate indicates the amount of materials not accepted by the local curbside recycling program that was collected from households and transported to the MRFs. California cities reported inbound contamination rates of 8-46%, with an average of 20%. Oregon and Washington cities' inbound contamination rates averaged 11% with a range of 5-20%. From the 2019 city survey, statistically significant correlation between program attributes and inbound contaminations could not be inferred because of the small number of available data points. Later in this report, we will examine other factors that may be contributing to contamination.

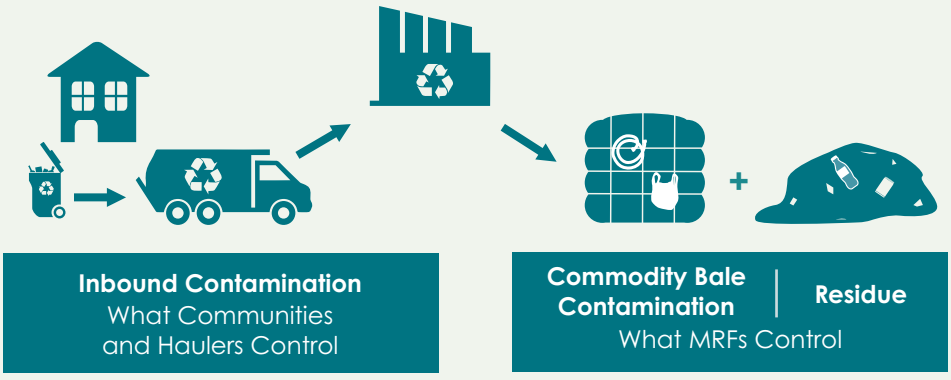
Figure 4: Inbound Contamination Rates Found in California, Oregon, & Washington Cities



Source: The Recycling Partnership West Coast City Survey 2019; The Recycling Partnership 2019 State of Curbside Survey

Why Inbound Contamination? Why Not Residuals?

Contamination of the residential recycling stream may be measured as the inbound contamination of loads that are collected from residents and delivered to the MRF, contaminants included in bales produced by the MRF, or MRF residuals after processing. The Recycling Partnership recommends that communities measure inbound contamination of materials delivered to the MRF to evaluate their programs and education efforts. In The Recycling Partnership's 2020 State of Curbside Recycling **report**, The Partnership calls on all U.S. curbside recycling service stakeholders to be precise and consistent in adopting the term inbound contamination to measure and specifically differentiate contaminants in collected material from residues in MRFs. By focusing on inbound materials, communities can make major strides in addressing the contamination issue using proven best management practices. The other two metrics for contamination are best left for the MRF to address.



So, what are the most prevalent and/or problematic contaminants in residential curbside recycling streams? The figure below shows the top five contaminants that cities and MRFs identified in the 2019 surveys. We can see some common concerns between the cities and MRFs and across the region. Plastic bags ranked in the top five for all groups. Needles are also a common issue across MRFs in the three states. These common issues provide an opportunity for states, cities, and MRFs to collaborate on messaging to residents across the entire West Coast. Providing the same messaging where residents live, work, study, shop, and play will help to ensure positive actions as a result of those messages.

Figure 5: Top Issue Contaminants Identified by Cities and MRFs

	California		Oregon		Washington	
Rank	**Cities**	**MRFs**	**Cities**	**MRFs**	**Cities**	**MRFs**
1	Plastic bags	Needles	Non-program plastic	Plastic bags	Plastic bags	Plastic bags
2	Film	Flammables	Plastic bags	Needles	Non-program plastic	Needles
3	Non-program plastic/food/ garbage	Batteries	Film	Clothing/ bedding	Garbage/food/ shredded paper/ foam	Tanglers
4		Hazardous waste	Garbage	Glass		Food/liquid
5		Plastic bags	Foam	Tanglers/ garbage		Garbage

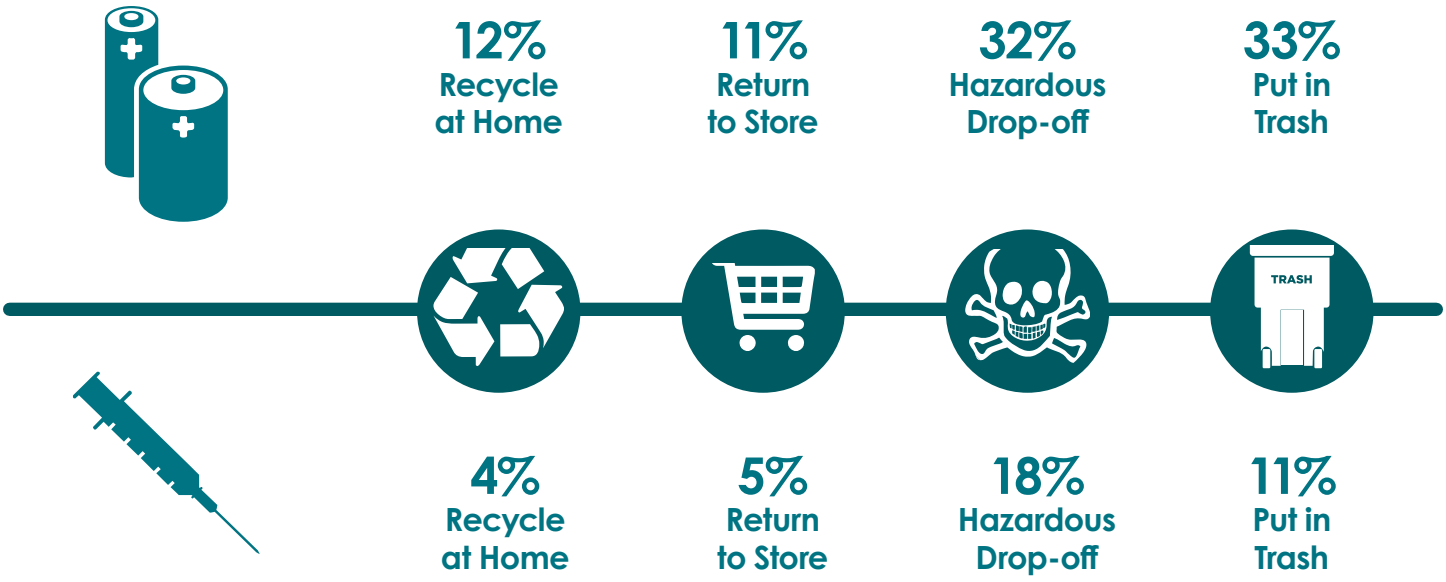
Source: The Recycling Partnership West Coast City and MRF Surveys 2019

Plastic bags are problematic for many MRFs because they wrap around the sorting equipment at the MRF and prevent the equipment from sorting materials properly. MRF operators need to shut down the recycling line to cut off bags that have wrapped around equipment. There are costs associated with preventing the bags from getting to the equipment, maintaining the equipment, and landfilling the bags. There is also a risk of injury to workers as they are maintaining the equipment. Needles are also a serious threat to worker safety at MRFs and ranked very high in all three states. There are MRFs that have successfully implemented a combination of worker safety programs, partnerships with pharmacies, and resident education in their cities to reduce accidents involving needles – but regardless of these actions, needles remain a high priority issue for most MRFs. Another concern for California MRFs is fire. There have been multiple fires in MRFs and trucks from lithium-ion batteries and other flammables, causing costly damage to equipment and putting workers in danger. If the damage to a MRF is extensive enough that it needs to be rebuilt, MRF workers may lose their jobs and haulers may need to drive farther to another MRF. During an interview, one MRF in California reported that in addition to rebuilding their facility after a fire, their insurance premium tripled. These factors put a strain on the recycling system and contribute to costs that may need to be passed down to haulers, communities, and residents. The other contaminants, including the most commonly identified plastic bags, cause MRF equipment to run less efficiently and create more residual waste for the MRF.

Residential Recycling Behaviors

Why are plastic bags, needles, and batteries ending up in the recycling stream? To help understand resident behavior, we asked residents of California, Oregon, and Washington how they get rid of certain recyclable and non-recyclable materials in their households. The results showed that some residents are mistakenly recycling plastic bags (up to 50% in programs that do not accept bags), needles (4%), and batteries (12%) in their curbside recycling. Residents need reminders that these items do not belong in curbside recycling, and outreach specific to a single item is recommended. If cities or haulers are not aligned with the MRF on top-issue contaminants, it is unlikely that education efforts will be focused on them. The Recycling Partnership has a **MRF Questionnaire form** available online that cities can use to identify issues together with the MRF operators. Survey results for the entire list of materials can be found in **the addendum**.

Figure 6: How West Coast Residents are Disposing of Batteries and Needles



Source: The Recycling Partnership West Coast Resident Survey 2019

The resident surveys show that residents have good intentions; they want to recycle, recycle everything they can, and recycle the correct way. But residents appear to be confused, especially with the wide variety of plastic packaging that is used today. Common quotes from those who put plastic bags and other plastic items not accepted by their local program in recycling carts included:

- "All plastics are recyclable."
- "I always assumed that if an item had the recycling symbol on it, that it was ok to put in the blue recycling cart."
- "I want to make sure I'm recycling everything I can."
- "I assumed the recycling process will sort it out if it is a problem."

Although a large portion of residents said that they will either look for more information or trash the item if they are not sure whether the item is recyclable, some of these misunderstandings cause people to go ahead and recycle what they should not.

Deep Dive into Plastic Bag Recycling Behavior

Cities and MRFs from all three states ranked plastic bags in their top five issue item list. Plastic bags cause MRF operators to shut down the recycling line many times a day to cut off bags that have wrapped around equipment. This maintenance shut down reduces throughput for a facility, raises cost of labor to sort materials and maintain equipment, increases waste coming out of the MRF, and puts workers at risk of injury when they are performing maintenance.

Across multiple residential surveys, 25% to 50% of residents surveyed said that they put plastic bags in their recycling cart. This behavior was less prevalent in Oregon (on the lower end of that range) but in California, especially in Southern California, more than half of survey respondents put plastic bags in curbside recycling, even where their local programs do not accept them. Based on surveys focused in Southern California, we found that the majority of residents think plastic bags are accepted in their curbside recycling program, regardless of whether plastic bags are actually accepted by their program.

This behavior is driven by the misunderstanding that all plastics are recyclable, the chasing arrows means the item is recyclable curbside, recycling more is better, and the recycling system will fix mistakes that the residents make. These well-intentioned participants said that just finding out that plastic bags cannot be placed in the recycling cart was motivation enough to change their behavior. So, awareness-raising alone can result in a large improvement in behavior. The Recycling Partnership has seen measurable reductions in plastic bags from curbside recycling after conducting education campaigns specifically asking residents to not put bags in their recycling carts and to not bag their recyclables. Survey participants also revealed that a reminder that they are “helping to keep communities cleaner and healthier for the people, plants, and animals that live there,” was also motivation to engage in correct recycling behavior.

While recycling solutions must be local, all states surveyed for this initiative agree that plastic bags are a top issue. A coordinated effort among the three states, their cities, haulers, and MRFs will be key to effectively and efficiently reduce plastic bags from curbside recycling.

Where Are People Getting Information?

Communication is an important part of reducing contamination. Although 85% of residents surveyed feel satisfied with their recycling program, they feel that more information on what, where, and how they can recycle is the number one thing that would make recycling easier for them. Surveys showed that residents look for recycling information online most frequently. It is important that the material lists are clear and consistent between the hauler and local program websites. During interviews with city recycling coordinators on the West Coast, some cities shared that they are investing in searchable databases of materials for their websites so their residents can find out if a specific item is recyclable. According to Recyclist, a California-based company that creates websites and recycling guides for municipal recycling programs and haulers, between 2018 and 2019 twice as many cities signed up for new websites and recycling guides from them and they saw a 75% increase in municipal recycling website traffic. The majority of this traffic comes from search engines embedded in the municipal recycling websites, indicating that more residents are seeking out accurate local recycling information. Residents in focus groups wanted a quick guide, like a mailed infocard or magnet, showing what is and is not accepted in the local recycling program. The Recycling Partnership has seen during multiple projects with communities across the U.S. that residents also respond well to non-web-based information on cart tags and mailers, and they are especially important for community members that do not have easy access to the Internet. We also heard during focus groups that residents want a quick guide, like a mailed infocard or magnet, showing what is and is not accepted in the local recycling program.

Figure 7: Suggested Improvements to Curbside Recycling Programs by West Coast Residents

Source: The Recycling Partnership West Coast Resident Survey 2019

Contributing Factors to Contamination in Curbside Recycling

In California, Oregon, and Washington, there are strong curbside recycling programs, and residents are motivated to recycle. But there are still a lot of materials that could be collected, and contamination could be reduced. Surveys and interviews with recycling stakeholders revealed some key opportunities to improve these curbside recycling programs. Lack of program-specific data tracking by local recycling programs, resources, coordinated partnership between stakeholders, and awareness among the residents on what is and is not accepted by their curbside program are contributing factors to contamination in curbside recycling.

Programmatic Metrics, Resources, and Partnerships

The Recycling Partnership believes in the power of measurement to help shape programs and outreach efforts. Participation rates[5], annual tonnage, and inbound contamination rates are key metrics to help evaluate curbside recycling programs. Tracking these metrics for curbside recycling programs separately from other recycling streams consistently leads to actionable insights. As with **The Recycling Partnership's 2020 State of Curbside Recycling report**, these measurements to evaluate curbside recycling programs were not available from most surveyed West Coast cities as shown in the figure below.

Figure 8: Portion of Communities Tracking Single-Family Curbside Recycling Program Data

Metric	Available Data
Participation rate	Less than 3% of surveyed cities
Annual tonnage	Less than 25% of surveyed cities
Inbound contamination	Less than 15% of surveyed cities

Source: The Recycling Partnership West Coast City Survey 2019

There are many reasons why these metrics are not regularly tracked. Often metrics, and specifically tonnage, is bundled and tracked across all programs, meaning single-family curbside tonnage is mixed with multifamily and drop-off tonnages. Other reasons include lack of resources – including both staff time and money. Some cities don't have a full-time (or even a part-time) recycling coordinator, and measurement can be expensive. But for many cities, there are other competing priorities to recycling like other waste streams (especially organics) and recycling from other sectors (such as commercial), that take the focus away from single-family curbside recycling. These priorities are sometimes driven by local and state regulatory requirements and focus on diversion as the key metric.

Occasionally another stakeholder, such as a hauler or a MRF operator, may already be tracking some of these metrics for their business needs or could help gather the data. We observed during interviews with stakeholders that better coordination, partnership, and sharing of basic program data among stakeholders is a clear opportunity for improvement up and down the West Coast.

Key Programmatic Metrics:

- Participation Rate
- Monthly Tonnage
- Households Served
- lb./HH/yr. (derived from monthly tonnage and households served)
- Inbound Contamination

5 The percentage of households that put out a recycling cart at least once a month or over two to three collection cycles.

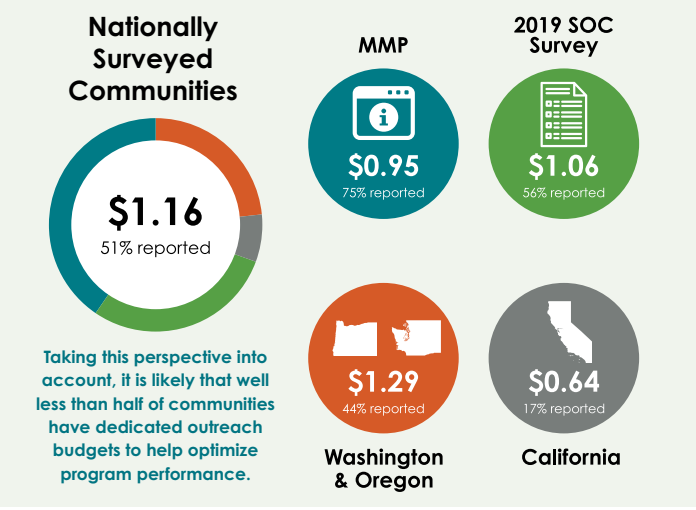
Awareness, Diversity, and Transient Populations

According to residents surveyed, there is lack of awareness of what can and cannot be recycled at their curbside – even by those who think they know how to recycle. There are many packages with metal and plastic components that add to this confusion. The variation in accepted materials among community recycling programs within the same region causes confusion between residents who live, work, study, shop, and play in different cities. Many communities feel that they are doing a lot of outreach and education, but residents are not absorbing the information. With the threat of contamination, it is easy to bombard residents with a laundry list of things they should and shouldn't do when recycling. This creates an information overload. Although it takes more effort and time, messages need to be designed to be clear, consistent, and actionable. Ten messages on one material will only succeed in none of the messages being absorbed by residents.[6]

As with measurements, more staff and money are needed to effectively educate residents. A small percentage of cities shared their education budget with us, which ranged from 10 cents to almost $7 per household per year. Sometimes the responsibility to educate is shared with the hauler, and often cities do not have specific education budgets for single-family curbside recycling. Not having a dedicated budget makes it difficult to create effective messages.

More communication is needed, but a blanket message for all types of residents is also not effective in these diverse states. A report from the Brookings Institution states that Latino populations are highly represented in California and Asian populations are highly represented in California and Washington.[7] It is also estimated that Latinos will make the majority of California's population by 2042, with Los Angeles, Riverside, and San Diego counties having the highest concentration of the Latino population.[8] In California, 45% of Latino and 56% of Asian residents we surveyed wanted more information from their community programs. Community programs' need for multilingual support will increase as states require more multilingual education to residents.

Figure 9: Curbside Programs Outreach Budgets per Household



MMP - Municipal Measurement Program

SOC - State of Curbside

Highly-diverse communities need different approaches to educate the various segments of the community. Simple translations are not enough; context and cultural representation is needed. The percentage of residents putting plastic bags in curbside recycling was consistently higher for the Asian and Latino segments of the population based on the resident surveys. During focus groups, we observed that Latino and Asian residents were less aware that bags are not accepted curbside, and generally less aware of which materials can/cannot be recycled. The underlying misunderstandings, attitudes, and motivations appeared to be the same as the rest of the population, and more than half of the focus group attendees indicated that they would change their behavior because of the new knowledge gained at the focus groups of what not to recycle and why. Almost half of focus group residents wanted more details on why they should change their behavior. Compared to white focus group participants, however, the Asian and Latino focus group participants said that they rely more on visual cues like charts/lists provided by their recycling programs or symbols on the item to determine whether the item is recyclable. A literature review of multicultural behavior change strategies demonstrated that identifying and engaging with segments of communities that are struggling with recycling knowledge will help shape a more appropriate education and outreach approach for them.

Another challenge to education is a diverse and transient multifamily housing population. Although the focus of this report was on single-family recycling, recycling coordinators and education specialists frequently mentioned the difficulty of educating the multifamily sector. This difficulty is likely to increase, given that multifamily is a growing sector in many cities. While many multifamily buildings lack the basic infrastructure to allow residents to recycle, the high turnover of multifamily dwellers and often a more diverse demographic of residents also makes education and outreach a challenge.

6 Heath, C., & Heath, D. 2010. Switch: How to change things when change is hard. Toronto: Random House Canada.

7 Frey, William H. 2019. Six Maps that Reveal America's Expanding Racial Diversity: A pre-2020 Census look at the Wide Dispersal of the Nation's Hispanic, Asian and Black Populations. September 5. https://www.brookings.edu/research/americas-racial-diversity-in-six-maps/

8 Christie, Jim. 2007. California's population to hit 60 million by 2050. July 9. https://www.reuters.com/article/us-california-population/californias-population-to-hit-60-million-by-2050-idUSN09300912200707097feedType=RSS

Conclusion and Next Steps

West Coast states have built a strong recycling culture. While they are collecting more recyclables than the national average, there are materials not being captured. If we do not continue to provide clear messaging to residents, contamination will continue to be and will grow as an issue. The studies and interviews discussed in this report gave clear areas of opportunities for improvement. Residents want to recycle and feel it is an important way to protect the environment. There is overwhelming alignment amongst stakeholders regarding the top contamination issues. Plastic bags, needles, and batteries are top priority contaminants that need to be addressed. The lack of program-specific data, limited resources, and the pervading confusion around what can and cannot be recycled are challenging, but not unbeatable. These common barriers indicate that there is an opportunity for all stakeholders to come together and fix this problem.

Here are approaches that The Recycling Partnership and others have tested and proven:

Turn Data Points into Action

Cities, counties, and haulers collect some data as well as report data to state offices. It is important to understand what metrics are being collected, what stakeholder tracks these data points, and who holds the power to turn that data into action. Tracking program-specific data (participation rate, annual tonnage, and inbound contamination rate) and coordination among stakeholders are key factors to effectively and efficiently improving the quality of the recycling stream. Cities and counties that can isolate curbside tonnage from other recycling streams and track contamination over time can see trends in their program's efficiency. This data can then be used to focus their education and outreach efforts, allowing the local program to make the education effort actionable and make the most out of the available resources. However, many local programs do not track metrics at the program level. Often only landfilled trash weights and diversion are reported.

It is imperative that program-level metrics are tracked monthly and, at a minumum, annually. As these metrics become more readily available, community programs, states, and industry partners can start identifying clear factors causing problems in recycling and solutions for programs to adopt. One free tool that can help community programs track this data is the **Municipal Measurement Program** (MMP). It allows programs to monitor changes in performance over time and receive tailored recommendations for program improvements.

Resources Go Further with Collaboration

Collaboration and coordination between stakeholders will help get the necessary data, identify the messages that will help improve the local recycling system, create consistency in messaging across stakeholders, and reduce stress on any one stakeholder group. The Recycling Partnership hosted workshops in Los Angeles and Portland in 2019. 90 people representing cities, counties, state agencies, state recycling organizations, haulers, and MRFs in California, Oregon, and Washington attended the workshops. There was positive energy in the room and a strong willingness to share and learn success stories from each other. A platform to share resources and to generate connections so that stakeholders can better collaborate in the future is not often available, but necessary.

State recycling offices nationwide are building creative new opportunities to grant dollars for cities to improve the quality of material collected at the curb. If not providing dollars, states are facilitating stakeholders to pull resources to help everyone's dollar go further. The Recycling Partnership has seen success with statewide collaboration in Massachusetts, Minnesota, Ohio, Tennessee, and Texas. In Ohio, the state agency, solid waste districts, MRFs, and cities are all working together to message to residents and measure the impacts. Each stakeholder has something to gain and each community program has improved quality at less cost than they would have paid individually for a full education program. States and regional governments should double down on their efforts and promote a more coordinated collaboration and resource sharing platform for recycling stakeholders.

Be Clear and Consistent

Residents need and want more information about which items to recycle, where to recycle, and how to recycle the item properly (clean, remove lid/cap, bag/don't bag, etc.). As shown with the plastic bag example, the misunderstanding around accepted plastics is an opportunity to implement clear messaging. Clear, simple, and consistent messaging is needed for residents to understand and retain the information. Surveys showed that charts with pictures of items are helpful, like the infocards shown here, but icons need accompanying phrases to make the messaging clearer. The Recycling Partnership offers a **free toolkit** and a **resource library** to reduce contamination using clear, simple, consistent messages.

Our anti-contamination toolkit also provides step-by-step best practices for 1) mailing annual reference infocards, 2) providing direct feedback at the cart using tags and rejection of services, 3) targeting the most problematic contaminant with an issue-specific mailer, and 4) enhancing these tools with consistent signage across the community. Large interventions using these resources have worked across the country, and focus groups showed that people are willing to change their behavior.

More Technical Assistance and Funding is Needed for Local Recycling Programs

More funding and technical assistance is needed to support community recycling programs, especially to create and deliver effective outreach and education. Public-private partnerships are key to a more impactful, robust recycling system. More details on funding needs for local government solutions can be found in **The Recycling Partnership's 2020 State of Curbside Recycling report** and the **Bridge to Circularity report**.

Survey results and anecdotal information from recycling program coordinators indicate that access to recycling is less universal for multifamily households in these medium to large cities and where there is recycling access, contamination is high. Educating this transient population, who may come with knowledge of different city programs, is difficult. To make messaging more clear, simple, and consistent, The Recycling Partnership created a **free online sign builder** and is currently testing interventions around the country to develop best management practices for this sector. We hope to have more information on how to improve recycling on multifamily properties in the near future.

There are also many households in smaller cities and rural areas that were not represented in these surveys. In Oregon and Washington, more than 60% of households are in smaller cities or unincorporated areas that were not part of the surveys. Although the majority of households in California were represented in the surveys, there are more than 300 incorporated cities and many unincorporated areas in California that were not represented. According to discussions with state agencies and county staff, many rural communities appear to not have access to recycling, even to a drop-off location, and their capacity to create education and outreach programs is limited. The Recycling Partnership offers an **Anti-contamination Toolkit** for drop-off facilities focused on clear signage.

As we assess the contamination issues on the West Coast, they are not unlike the pain points many programs are feeling across the country. However, with this strong recycling foundation, free flowing program level data tracking, and coordinated messaging efforts, we can start realizing the environmental promise of recycling and upon its improvement, drive the U.S. from a make-waste economy to a circular economy.

Free Resources from The Recycling Partnership

- **Anti-contamination Toolkit**
- **West Coast Resource Portal**
- **Municipal Measurement Program (MMP)**
- **State of Curbside Report**
- **Bridge to Circularity Report**
- **DIY Signs**
- **Social Media Toolkit**
- **Campaign Builder**

Addendum

- **West Coast Contamination Initiative Studies and Surveys Referenced in This Report**

THE RECYCLING PARTNERSHIP