# 2020 Glass Recycling Survey

RESULTS

Glass Recycling Coalition | October 2020

# Contents

## Introduction

The Glass Recycling Coalition (GRC) is a mission-centric, impactful organization fostering collaboration across the glass recycling value chain. The GRC is dedicated to breaking down barriers to keep glass in the recycling stream, meet and grow end-market demand and build awareness of glass recycling benefits.

GRC conducts surveys to measure how different members of the glass recycling chain view the current state of glass recycling, with the goal of improving and targeting its services. The following groups were first surveyed in Spring 2017:

- public sector (recycling coordinators and solid waste staff from cities, counties, solid waste districts, and state environmental departments)
- materials recovery facilities (MRFs)
- end market representatives (brands, bottle manufacturers, fiberglass representatives, and processors)

GRC conducted the survey again in 2018 and 2020 to measure changes in attitude, track progress in improving glass recycling, report out on current conditions, and guide the direction of future GRC efforts.

This report presents the results of the 2020 Glass Recycling Survey with a comparison to prior years' results. These findings provide a real-time attitudinal snapshot of how glass is currently recycled, how it is collected and processed, and where it ends up. The findings also show current beliefs about glass recycling from numerous perspectives. Finally, the survey offers insight into the types and extent of glass recycling challenges, as well as interest in tools and financial resources to aid with these concerns.

While the survey focused principally on glass recycling, the recycling industry as a whole has faced many challenges in the past two years, including disruptions in recycling markets and the COVID-19 pandemic. This context is important to consider along with the key findings of the research.

## KEY FINDINGS

The attitudes and experiences about glass recycling found in the previous surveys largely held true in 2020, with some notable changes.

- Concern about glass recycling decreased by 13 percentage points among public-sector respondents from 2018, down from 54% to 41%.  Cost-effectiveness was identified as the top concern.
- Expectations of consumers to be able to recycle glass decreased slightly. Ninety percent of respondents from the public sector indicated that their residents expect to recycle glass compared to 93 percent in 2018 and 96 percent in 2017.
- Respondents care what happens to recycled glass; 65 percent of public-sector respondents and 100 percent of glass industry respondents indicated that recovered glass's final destination is important to them (up from 53 percent and 74 percent, respectively, in 2018).
- Fifty to sixty percent of public-sector respondents facing glass recycling challenges expressed interest in public-private partnerships and grants to improve glass recycling. Glass industry interest in these resources increased to 86 percent this year.
- Public-sector and MRF respondents indicated that end markets and brands/retail outlets should be the primary parties responsible for the cost of collecting and processing recyclables.

## ABOUT THE GLASS RECYCLING COALITION

The Glass Recycling Coalition (GRC) brings together a diverse membership of 35 companies and organizations representing glass container and fiberglass manufacturers, brands that use glass to showcase their products, haulers, processors, material recovery facility and end-markets. The GRC collaborates across the entire glass recycling value chain to break down barriers and build opportunities regionally for glass as a core recyclable, meeting and growing end-market demand and awareness of the benefits of glass recycling.

Established in April 2016, GRC is a non-competitive coalition of U.S. value chain members involved in glass recycling and with a vision that all glass containers are recycled to the highest and best use, maximizing economic, environmental and social benefits in each market. The coalition encourages financially sustainable mechanisms that produce quality cullet and strengthen glass markets. For more information, contact info@glassrecycles.org

**GRC Members:**

Ardagh Group
Balcones Resources
Binder USA
Coca-Cola
Diageo
CP Group
Gallo Glass
Glass Packaging Institute
Heineken
Knauf Insulation
Machinex
Northeast Recycling Council (NERC)
New Belgium Brewing
North American Insulation Manufacturers Association (NAIMA)
O-I
Owens Corning
Rumpke Recycling
Red Wave
Pernod Ricard USA
Pratt Industries
Republic Services
Rocky Mountain Bottle Company
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Southeast Recycling Development Council (SERDC)
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Urban Mining NE
Vitreous Glass CA
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2M Ressources

**Government Advisory Council Members:**

Massachusetts Department of Environmental Protection
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City of Fort Collins Waste Reduction & Recycling
Rhode Island Resource Recovery Corporation
City of Houston Solid Waste Management Department

## Survey Results

The GRC offered the survey to public sector representatives, MRFs, and glass industry members nationwide for five weeks from mid-August through mid-September 2020. Over 6,200 municipal officials, MRF contacts, and glass industry members received an email with an electronic link to the survey; 185 recipients clicked the survey link from these emails. Additionally, the survey was posted on the GRC website and social media pages.

Almost 200 representatives throughout the glass recycling value chain provided their perspectives on the state of glass recycling in the survey. Figure 1 shows the breakdown of respondents amongst the public sector (155 respondents), MRFs (64 respondents), and the glass industry (7 respondents) (note: some public-sector respondents also represent a MRF and are counted under both sectors). Public-sector respondents represented 76 percent of total survey respondents. The 2020 survey received approximately 100 fewer responses than the 2018 survey. However, the proportion of respondents in each sector remained similar.

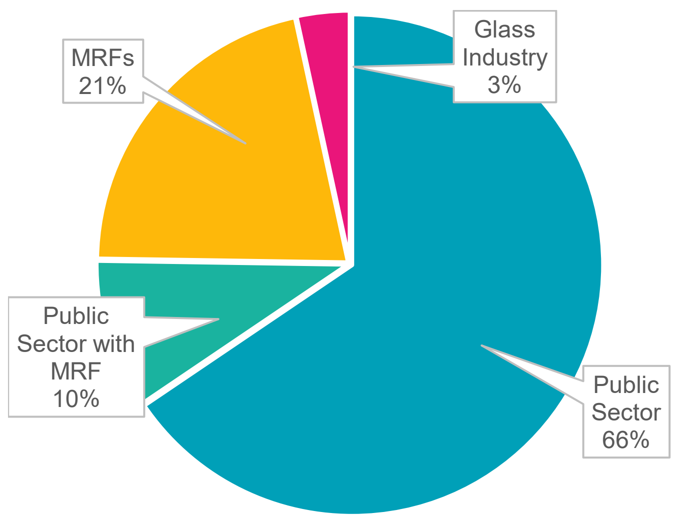


*Figure 1- Breakdown of survey respondents by sector*

Each sector answered a set of questions that pertained to their sector; the survey results are presented in this report by these groups. While a number of questions only pertained to one sector, the survey included common questions across each category to provide comparative analysis. Given the small number of MRF and glass industry representatives that responded to the survey, comparisons can only be made for the survey respondents and may not represent the industry as a whole for those groups. Furthermore, changes in survey results between years are due in part to the variations in survey respondents (e.g., the number of MRF responses more than doubled between 2017 and 2018), not purely changes in the U.S. recycling landscape.

Figure 2 illustrates where respondents are from in the U.S. Survey participation was highest in the Great Lakes region.

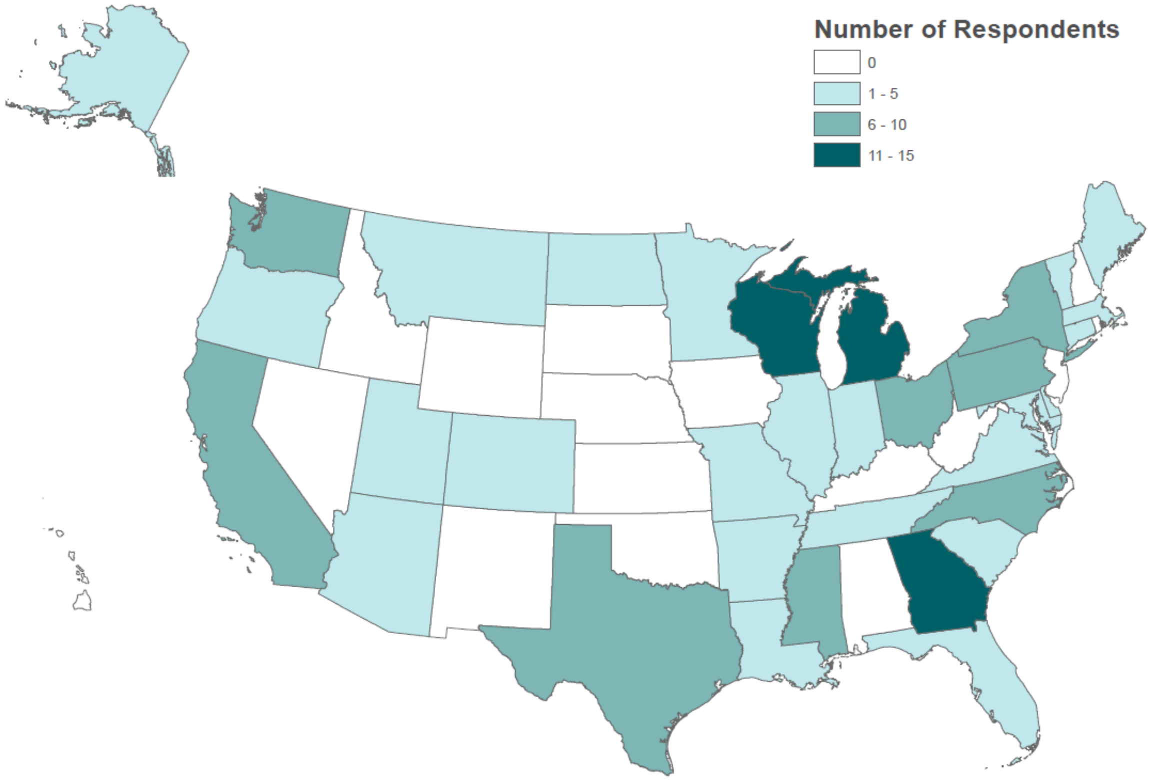


*Figure 2- Geographic Representation of All Respondents*

# Public Sector Responses

## PUBLIC SECTOR

Public-sector representatives from municipalities, counties, solid waste districts, and states provided insight on community recycling programs and the glass recycling challenges they face. Many are the respective policymakers in their jurisdictions, but this characteristic was not measured. Public-sector responses decreased from 203 in 2018 to 155 this year.

### *Community Recycling Programs*

Table 1 and Table 2 show the prevalence of different collection systems used to collect glass in respondents' communities (note that percentages add to over 100 percent because communities may have more than one system for collecting glass). The breakdown of curbside collection systems for glass is similar to those in prior years; about half of respondents collect glass through a single stream curbside program while other collection methods are each used by less than ten percent of respondents. Forty-one percent of respondents do not collect glass through curbside collection; however, over 60% of these respondents collect glass through a drop-off program while the remainder did not indicate having any type of glass recycling program.

At drop off, glass is most commonly collected using source-separated collection (31%) followed closely by single-stream collection (29%). Nearly three-quarters of respondents collect glass through a drop off program. In comparison, more than half of respondents in 2018 reported having glass collection available through a drop off program, though the 2017 and 2018 surveys did not capture the breakdown in drop-off collection methods. Glass may also be collected at curbside in some of these communities, while in others it may be the only collection method used for glass.

*Table 1 Prevalence of different curbside systems to collect glass among public-sector respondents*

| Collection System | Percent of Respondents That Use Collection System | | |
|---|---|---|---|
| | **2020** | **2018** | **2017** |
| **Single stream curbside** | 45% | 55% | 49% |
| **Dual stream curbside** | 5% | 6% | 9% |
| **Glass collected separately at curbside** | 7% | 9% | 13% |
| **Source separated curbside collection** | 4% | 5% | 8% |
| **None** | 41% | | |

*Table 2 Prevalence of different drop off systems to collect glass among public-sector respondents*

| Collection System | Percent of Respondents That Use Collection System |
|---|---|
| | **2020** |
| **Single-stream drop-off** | 29% |
| **Dual-stream drop-off** | 4% |
| **Drop-off for glass-only** | 16% |
| **Source-separated drop-off collection** | 31% |
| **None** | 26% |

Almost 80 percent of public-sector respondents have made changes to their recycling programs in the face of current market conditions (Figure 3). Over half of public-sector respondents have increased recycling education while one-quarter of respondents have changed acceptable recyclables. Several respondents who selected "other" have increased manual sorting to reduce contamination, which was the case in 2018.

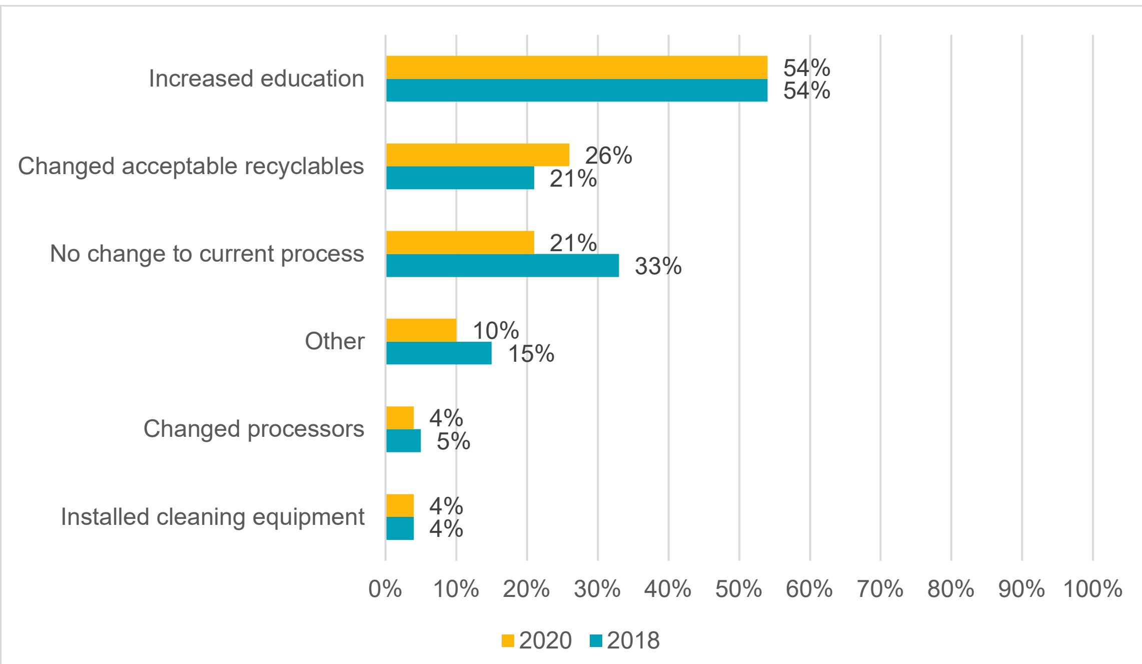


*Figure 3 Changes made to public sector respondents' recycling programs in response to current market conditions*

Residents overwhelmingly want to recycle glass: 90 percent of public-sector respondents indicated that residents in their community expect to recycle glass. The public sector's responses illustrate the influence of their residents in their decisions around recycling. When asked for the top reason glass should be kept in recycling programs, "Residents want to recycle glass" (selected by 36 percent of respondents) most commonly selected. This was the top reason chosen in 2017 and 2018 as well.

The influence of residents' concerns is not specific to glass recycling but to recycling programs on the whole.

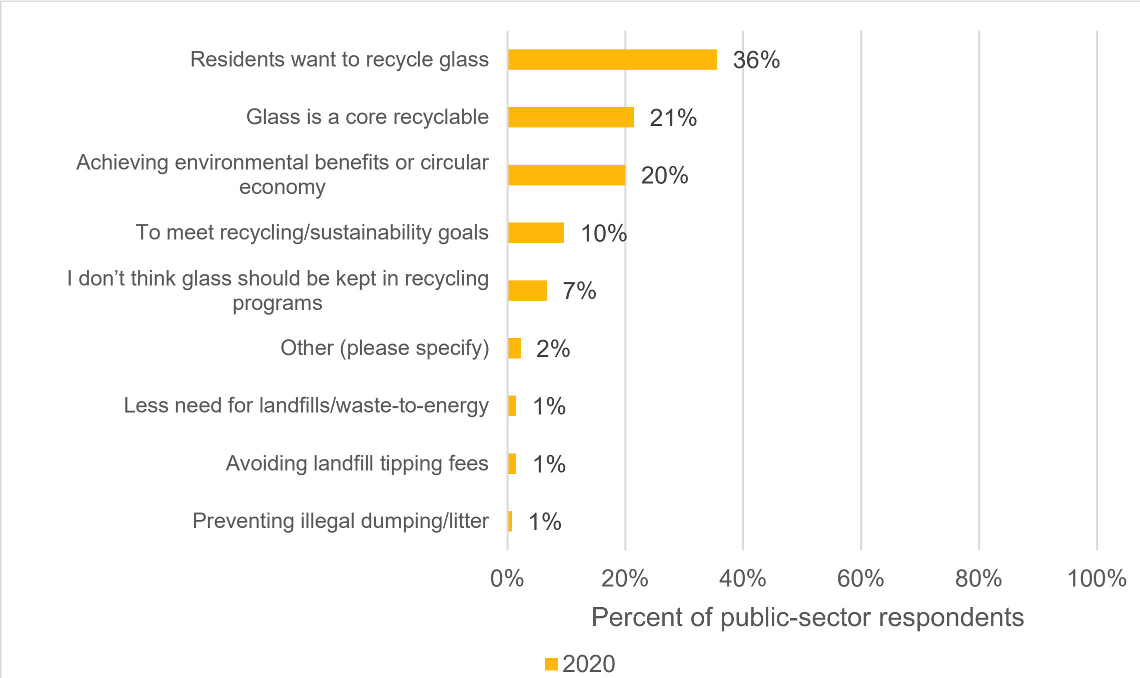


*Figure 4 Public-sector respondents' top reasons glass should be kept in recycling programs.*

When asked for the top three program priorities for recycling in their community (Figure 5), respondents most commonly selected "resident satisfaction" (55 percent of respondents). The top reasons to keep glass in recycling and recycling program priorities were largely consistent with responses from 2017 and 2018, however, the percentage of respondents who chose each of these responses has shifted. A lower percentage of respondents identified resident satisfaction (55%) and sustainability/recycling goals (47%) as top priorities while a higher percentage of respondents are prioritizing a reduction in contamination.

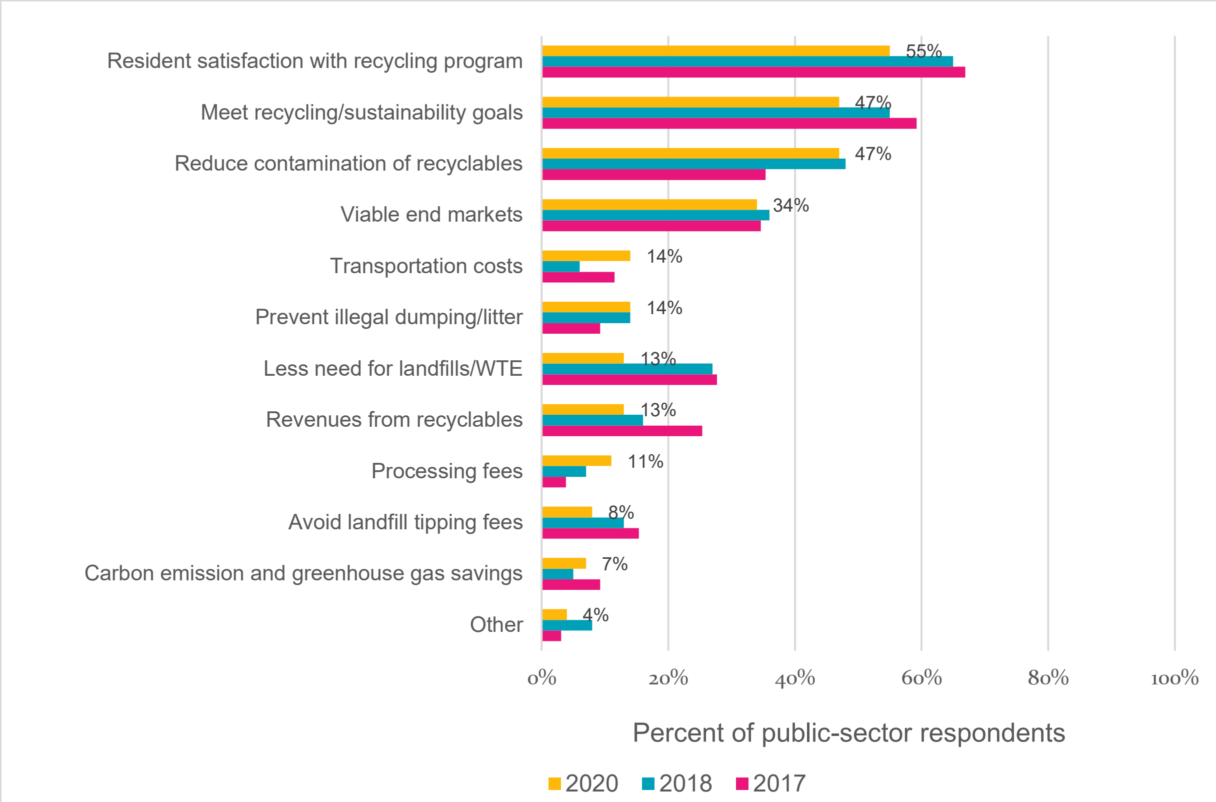


*Figure 5 Public-sector respondents' top priorities for community recycling programs*

Table 3 illustrates which member(s) of the recycling value chain public-sector respondents suggested should cover the cost of collecting and processing recyclables. Respondents were asked to rank their answer in order of the primary responsible party from one (most responsible) to six. End markets were the highest-ranked party followed closely by brands and retail outlets.

*Table 3 Public-sector respondents' ranked choices of which group should be the primary responsible party for covering the costs of recycling.*

| Responsible Party | Average Rank |
|---|---|
| **End Markets** | 2.5 |
| **Brands/retail outlets** | 2.6 |
| **MRFs** | 3.6 |
| **Residents** | 3.7 |
| **Cities/Counties** | 3.9 |
| **Haulers** | 4.3 |

### *Final Destination of Glass*

Sixty-five percent of public-sector respondents indicated that the final destination of their community's glass is "very important" or "somewhat important" to them (Figure 6), up from 53 percent in 2018.

Eighty-one percent of public-sector respondents know the final destination of the glass recovered in their community. Another sixteen percent of respondents do not accept glass in their recycling programs, and the remainder do not know the destination of their collected glass for recycling.

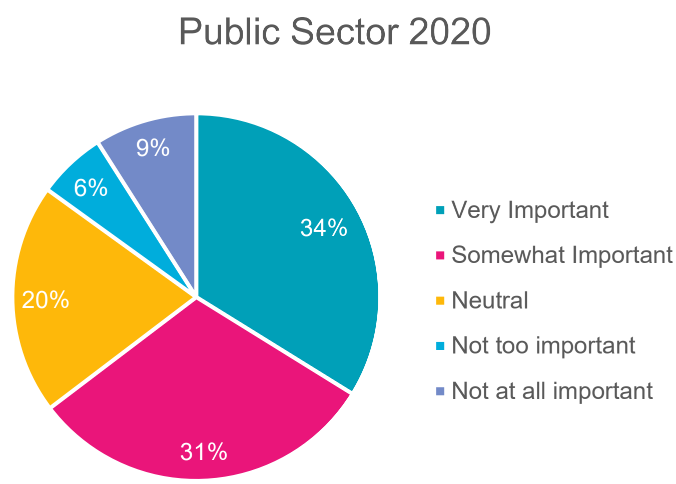


*Figure 6 Importance of the final destination of glass recovered by community recycling programs to public-sector respondents*

### *Glass Recycling Concerns & Opportunities*

Forty-one percent of public-sector respondents indicated that they have some concerns with glass recycling, down from 54 percent of public-sector respondents in 2018 and 63 percent of respondents in 2017. Table 4 details the challenges that these communities face. Asked to select their top challenge with glass recycling, the most prevalent challenge among these respondents is cost-effectiveness, with 23 percent of this group indicating they have a concern relating to cost-effectiveness (note that in past years, respondents were asked to select all challenges that apply). Other main concerns pertain to end markets (for instance, they have no or few end markets nearby, or their nearby end markets will not consistently accept their community's glass) and contamination.

*Table 4 Percent of public-sector respondents facing specific glass recycling challenges in their community. Note that the 2020 survey asked respondents to identify their **top** glass challenge, while surveys in prior years asked respondents to identify **all** glass challenges that applied to their community.*

| Glass Recycling Challenges | % Public-sector Respondents Identifying *Top* Glass Challenge | % Public-sector Respondents *Facing Challenge in Their Community* | |
|---|---|---|---|
| | 2020 | 2018 | 2017 |
| **Contamination issues** | 14% | 34% | 60% |
| **End markets (e.g. few/unreliable options)** | 20% | 22% | 82% |
| **Cost-effectiveness** | 23% | 22% | 45% |
| **Hauler/MRF stopped accepting glass** | 7% | 14% | 16% |
| **Processing capability** | 5% | 12% | 22% |
| **Hauler raised price to keep glass in the program** | 3% | 12% | 16% |

Respondents who expressed concerns with glass recycling were asked about their interest in financial resources. Over 60 percent of this group expressed interest in grants and public-private partnerships, down from over 70 percent of public-sector respondents in 2017 (Figure 9). Most respondents who selected Other indicated a need for non-financial resources.

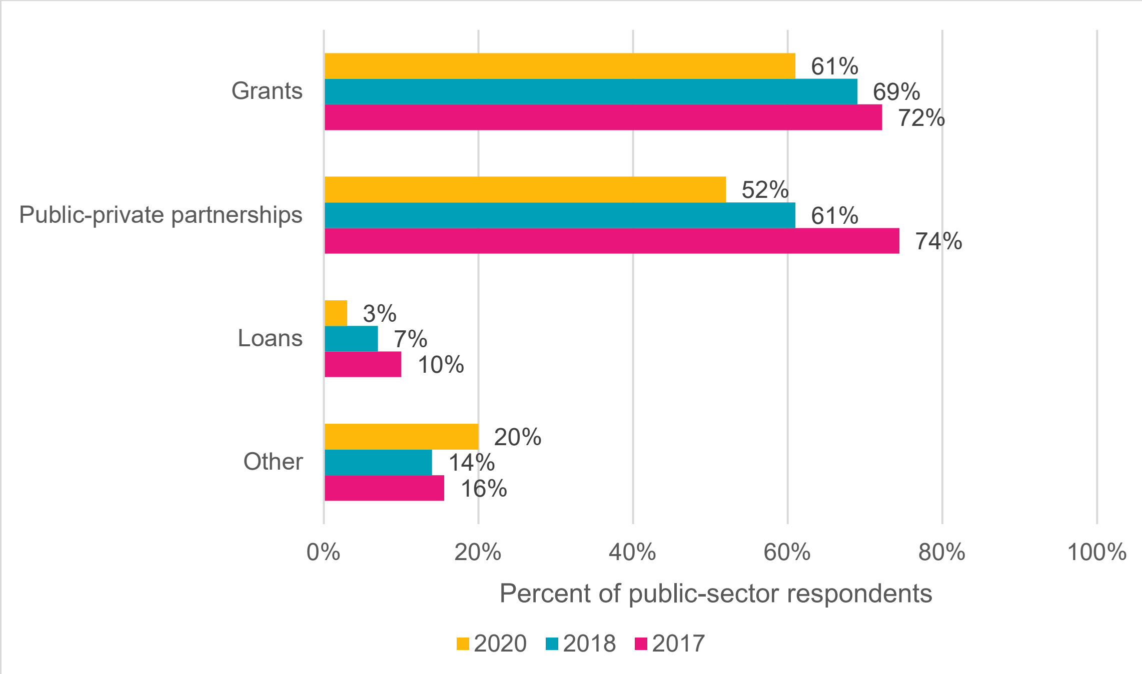


*Figure 7 Interest in certain financial resources from public-sector respondents facing glass recycling challenges*

Respondents facing glass recycling challenges were also asked to select tools or information that would be useful to increase quality glass recycling in their community. The top tool, selected for the third year, was types of glass end markets (Table 5). Over 65 percent of these respondents indicated that webinars and presentations are the best way to share these tools and information; this preference holds true from past years' responses (Table 6).

Public sector respondents were asked if they have explored opportunities for regional engagement to improve glass recycling in their community (Table 7). Thirty-one percent have not pursued such opportunities. Twenty-nine percent have but have not yet had success, while another ten percent have benefited from regional engagement.

*Table 5 Percent of public-sector respondents experiencing challenges with glass recycling that would find the following tools to be useful*

| Tool/Information | 2020 | 2018 | 2017 |
|---|---|---|---|
| Types of end markets that are available for glass | 44% | 45% | 54% |
| Information on grant funding for glass recycling | 38% | 44% | 45% |
| Best practices in glass recycling collection or processing | 34% | 43% | 50% |
| Case studies of local governments making glass recycling work | 32% | 45% | 40% |
| Information about glass recycling for legislators/decision makers | 22% | 44% | 29% |
| Breakthrough ideas in glass recycling and recovery | 22% | n/a | n/a |
| Options for preserving glass in recycling collection | 17% | 24% | 40% |
| A list of top considerations when making recycling program changes | 17% | 19% | 16% |
| Process of how glass is recycled into new containers | 10% | 14% | 20% |
| Other | 14% | 12% | 12% |

*Table 6 Preferred platforms for sharing tools and information among public-sector respondents experiencing challenges with glass recycling*

| Platform | 2020 | 2018 | 2017 |
|---|---|---|---|
| Webinars/presentations | 66% | 72% | 77% |
| Email alerts | 63% | 68% | 58% |
| Newsletters | 44% | 45% | 45% |
| Social media | 15% | 22% | 13% |

*Table 7 Public sectors' experiences with regional engagement to improve glass recycling*

| Response | 2020 |
|---|---|
| Yes, and it has been helpful | 10% |
| Yes, but we have not had success yet | 29% |
| No | 31% |

# Glass Industry Responses

## GLASS INDUSTRY

Representatives from the glass industry answered several of the same questions as the public-sector. Glass industry responses consisted of six cullet processors, two end markets, and one "other" type of glass industry.

### *Who should pay for recycling?*

Table 8 illustrates which member(s) of the recycling value chain glass industry respondents suggested should cover the cost of collecting and processing recyclables. Respondents were asked to rank their answer in order of the primary responsible party from one (most responsible) to six. Not surprisingly, respondents ranked each party in generally the opposite order as the public sector; cities/counties were the highest-ranked party followed closely by residents.

*Table 8 Public-sector respondents' ranked choices of which group should be the primary responsible party for covering the costs of recycling.*

| Responsible Party | Average Rank |
|---|---|
| **Cities/Counties** | 2.9 |
| **Residents** | 3.0 |
| **MRFs** | 3.6 |
| **Haulers** | 3.7 |
| **Brands/retail outlets** | 3.7 |
| **End Markets** | 4.1 |

### *Why should glass be recycled?*

When glass industry respondents were asked to select their top reason that glass should be kept in recycling programs, they most commonly selected “glass is a core recyclable” which was tied as the top reason with “consumers want to recycle glass” in 2018 (Figure 8).

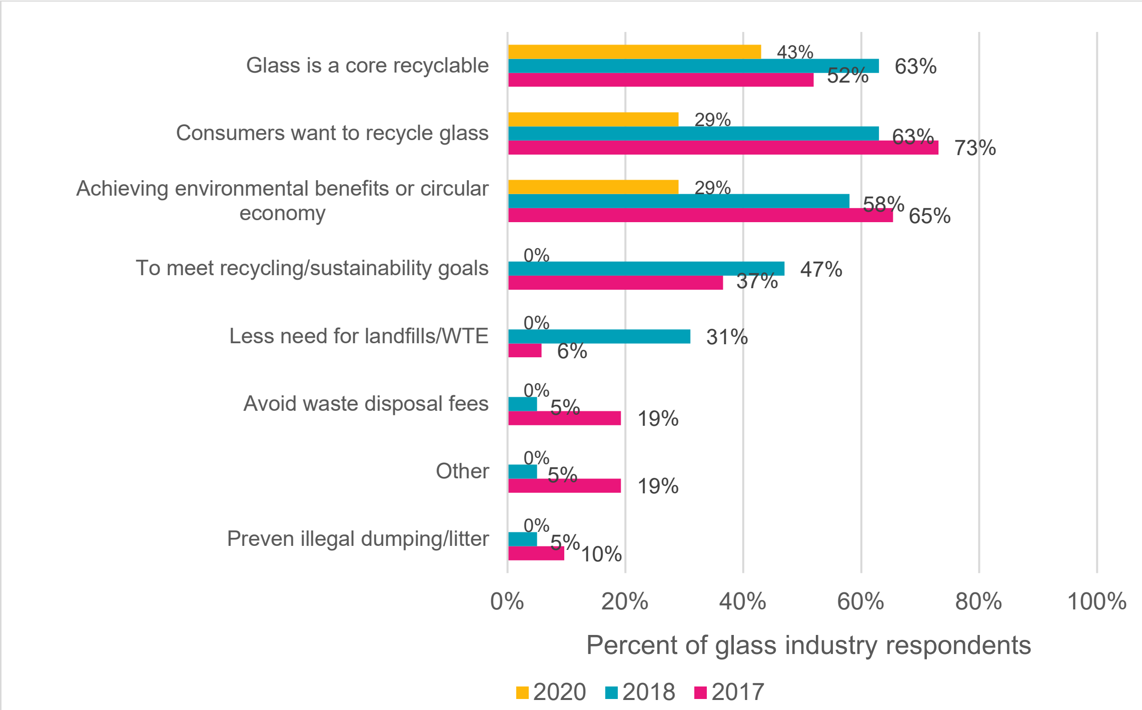


*Figure 8 Glass industry respondents’ top reasons glass should be kept in recycling programs*

### *Final Destination of Glass*

Glass industry respondents also revealed that they are concerned with the final destination of recovered glass; 100 percent of glass industry respondents rated the final destination of recovered glass as “very important” or “somewhat important” (Figure 9).

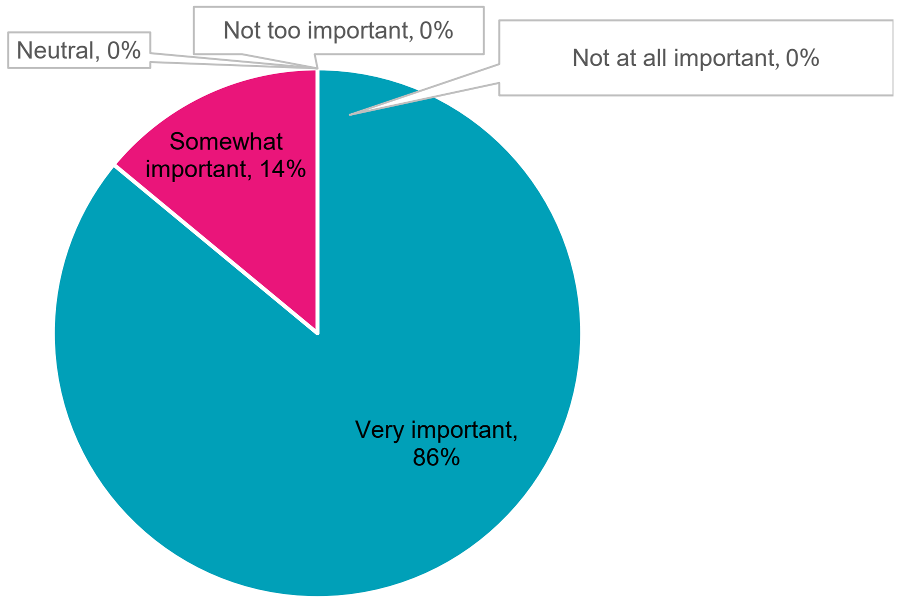


*Figure 9 Importance of the final destination of glass recovered by community recycling programs to glass industry respondents*

Glass industry respondents were also asked about their interest in financial resources to improve glass recycling. The glass industry, like the public-sector, expressed more interest in public-private partnerships and grants than in other types of financial resources with 86% of respondents selecting each of these resources. (Figure 10).

Glass industry respondents were asked if they have explored regional engagement opportunities to improve glass recycling in their community (Table 9).

Eighty-six percent have benefited from regional engagement efforts, while fourteen percent have explored opportunities but not yet had success.

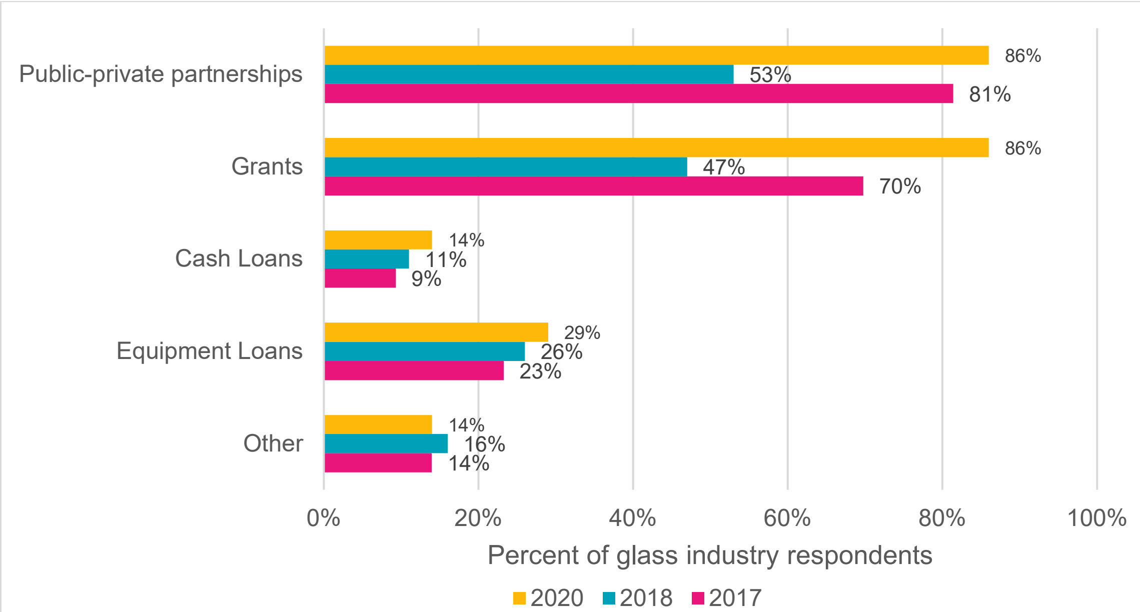


*Figure 10 Interest in financial resources from glass industry respondents*

*Table 9 Glass industry experiences with regional engagement to improve glass recycling*

| Response | 2020 |
|---|---|
| **Yes, and it has been helpful** | 86% |
| **Yes, but we have not had success yet** | 14% |
| **No** | 0% |

# Material Recovery Facility Responses

## MRFS

Materials Recovery Facility respondents provided a glimpse into how recycled glass is currently processed and where it is sold. MRF responses decreased from 82 in 2018 to 44 this year.

### *Glass Processing*

MRF respondents were asked which type(s) of processing system they operate for glass (Figure 11). The most commonly used processing system by MRF respondents is single stream or mixed recyclables; 50 percent of MRF respondents use single-stream processing for glass (regardless of whether they use additional glass cleaning equipment).

Thirty-six percent of MRF respondents have additional glass cleaning equipment. Figure 12 shows the types of glass cleaning equipment these respondents use; most (69 percent) use glass breakers. Another nine percent of MRF respondents indicated that they do not have additional glass cleaning equipment but would consider it, and five percent have already considered additional equipment but determined it too costly.

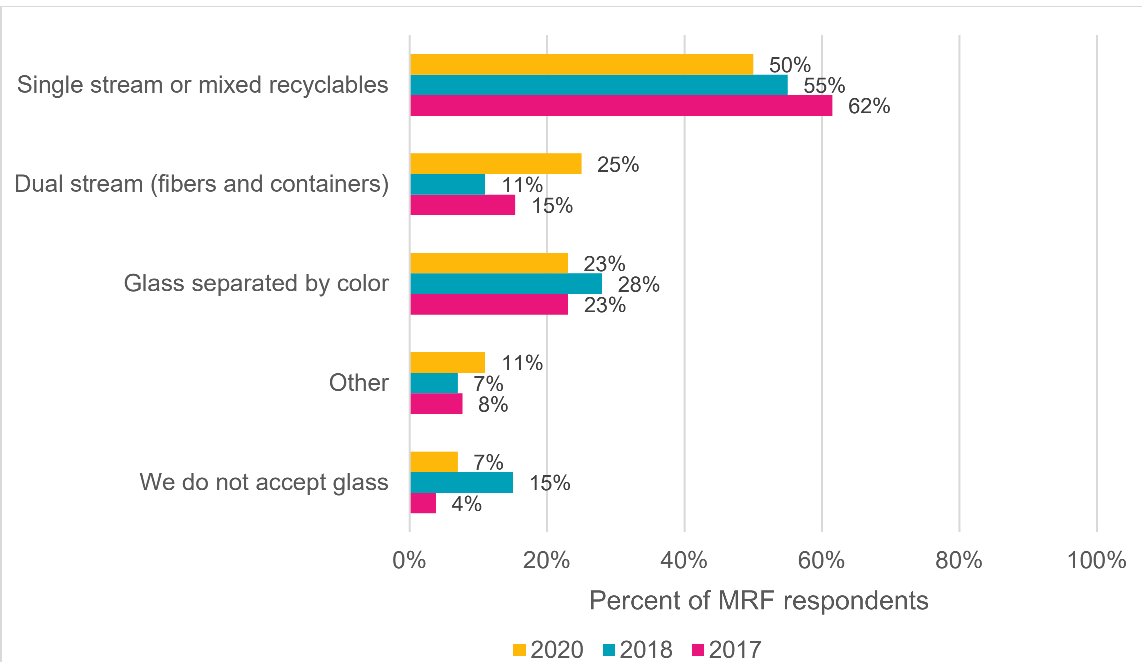


*Figure 11 Processing systems used by MRF respondents for glass*

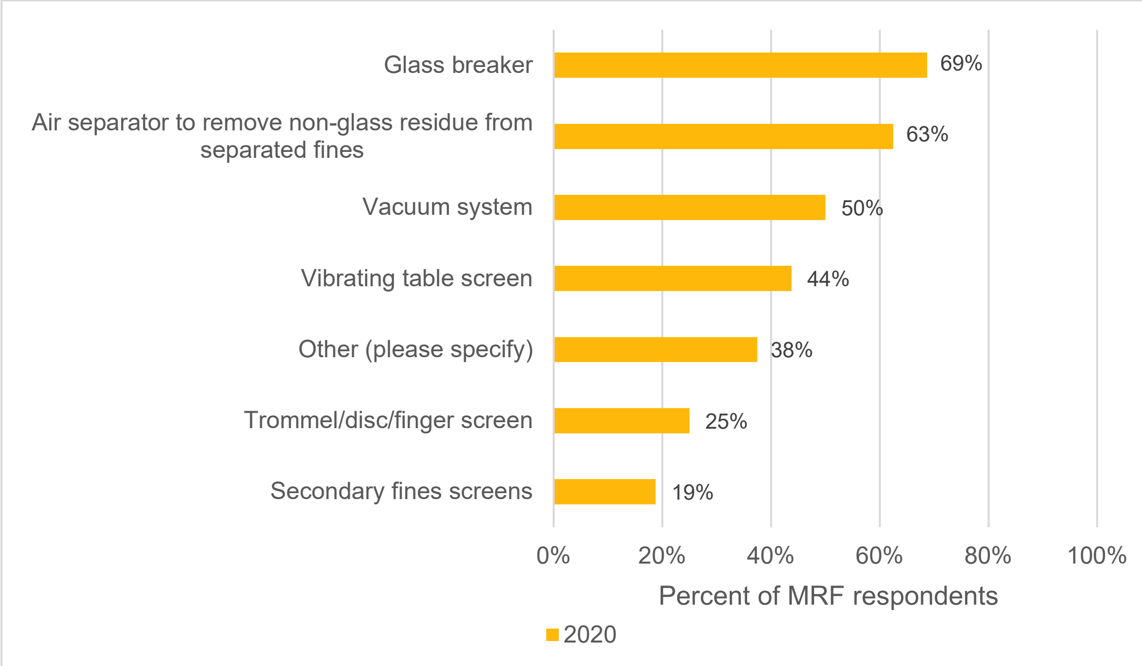


*Figure 12 Additional glass clean up equipment used by MRF respondents*

When asked about changes made to recycling operations in the face of current market conditions (Figure 13), only 23 percent have installed cleaning equipment. Most commonly, MRFs have increased recycling education, with 55 percent of MRF respondents doing so. Thirty percent of MRF respondents have made no changes in response to market conditions.

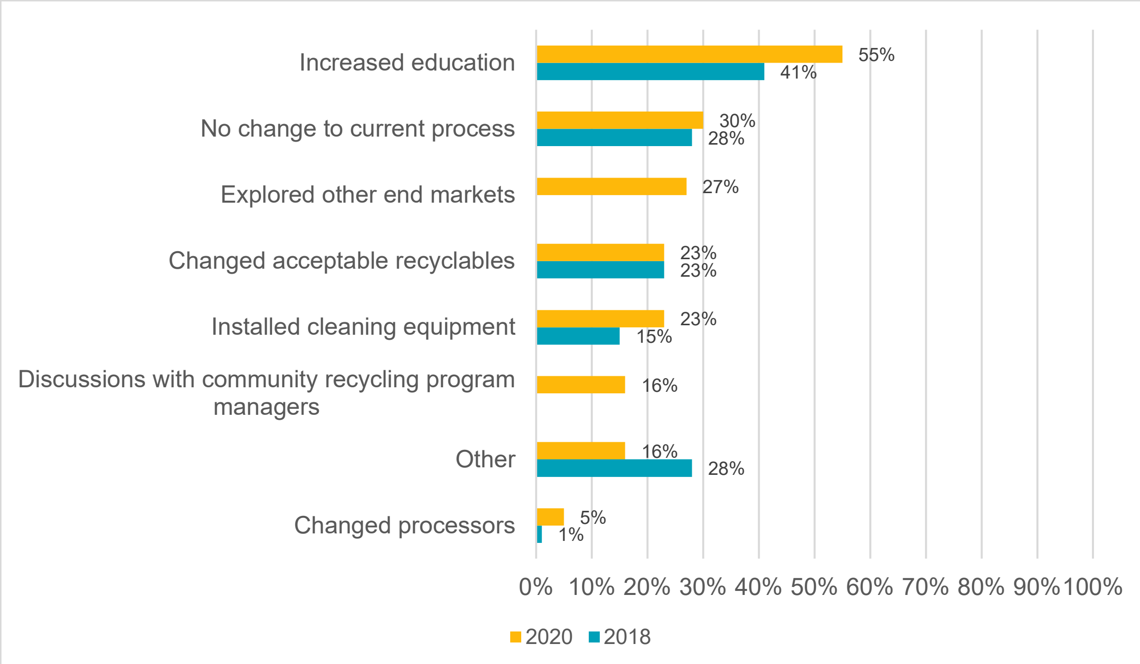


*Figure 13 Changes made to MRF respondents' recycling operations in response to current market conditions*

### *Destination of Collected Glass*

MRF respondents were asked to provide the end use of the glass processed at their facility (Table 10). MRFs most commonly send their glass-to-glass processors, while other glass end uses each receive material from less than ten percent of MRF respondents. For a longer-term view of glass uses, 59% of MRF respondents indicated they have had a consistent outlet for glass over the past five years, 14% have had an outlet for the past year, and the remaining respondents have been unable to find a consistent market or any market at all.

*Table 10 Final destinations of glass processed by MRF respondents.*

| Glass End Use | % MRF respondents, 2020 |
|---|---|
| **Glass processor** | 61% |
| **Roadbed aggregate** | 9% |
| **Glass manufacturer** | 7% |
| **Alternative daily cover** | 7% |
| **Unknown** | 7% |
| **We don't accept glass in our recycling program - it goes to the landfill as garbage** | 7% |
| **Fiberglass plant** | 2% |

MRF respondents provided their top factor determining where they sell their glass (Table 11). As in previous years, the top factor selected suggest that respondents prioritize cost. While public-sector respondents reported that people's desire to recycle glass is a primary reason that glass should be recycled, MRF respondents did not reveal a similar pressure in decision-making to act on customer's desires. In fact, no MRF respondents indicated that customer expectations for recycled glass to be used in glass manufacturing is a top consideration in determining where they sell their glass (only 5 percent did so in 2018). MRF representatives who responded with "other" specified that they only have one outlet for their glass.

*Table 11 Determining factors of where MRFs sell their glass*

| Determining Factor of Where Glass is Sold | % MRF Respondents, 2020 |
|---|---|
| **Financial factors (transportation cost, highest price paid per ton/lowest cost per ton, etc.)** | 41% |
| **Any option for recycling glass is acceptable, as long as it isn't landfilled with garbage** | 18% |
| **Processor will take all glass I bring** | 14% |
| **Highest and best end use** | 11% |
| **Most glass yielded (recovered)** | 5% |
| **Other (please specify)** | 5% |
| **Landfilling is most convenient or cheapest option** | 2% |
| **Landfill construction material substitution (ADC, road base, French drains) fulfills recycling obligation** | 2% |
| **N/A: We don't accept glass in our recycling program** | 2% |
| **Contractual obligations** | 0% |
| **Customer expectations for recycled glass to be used in glass manufacturing** | 0% |

### *Who should cover costs?*

Table 12 illustrates which member(s) of the recycling value chain MRF respondents suggested should cover the cost of collecting and processing recyclables. Respondents were asked to rank their answer in order of the primary responsible party from one (most responsible) to six. Like the public sector, MRF respondents ranked brands/retail outlets and end markets the highest.

*Table 12 MRF respondents' ranked choices of which group should be the primary responsible party for covering the costs of recycling.*

| Responsible Party | Average Rank |
|---|---|
| **Brands/retail outlets** | 2.6 |
| **End Markets** | 2.9 |
| **Residents** | 3.3 |
| **MRFs** | 3.9 |
| **Cities/Counties** | 3.9 |
| **Haulers** | 4.0 |

## Conclusion

While attitudes about glass recycling have held mainly true since 2017, several shifts may be emerging. Public-sector respondents face high expectations from their residents to recycle glass, though the percentage who do so has decreased over the years. Similarly, the portion of public-sector respondents expressing concerns with glass recycling has diminished in each survey (this year, less than half of this group). Cost of glass recycling is the top challenge public sector respondents face, and is the top priority when MRF respondents choose an outlet for their glass. Lastly, while previous surveys found the vast majority of respondents to believe the costs of recycling should be shared among members of the recycling value chain, the 2020 survey revealed that public-sector and MRF respondents believe brands and end markets should be the primary party to fund programs while the glass sector ranked the public sector as the top responsible party. GRC will continue to monitor changes in perceptions on end markets, provide educational resources for recycling program managers, and work regionally to overcome glass recycling barriers across the glass recycling value chain.