

White Paper: The State of Paper Cup Recycling

January 27, 2022

1. The Evolution of Paper Cup Recovery Efforts

Residential Paper Cup Recycling in the US

In 2011 the Foodservice Packaging Institute (FPI) formed an alliance of restaurant and foodservice packaging industry leaders to investigate how paper-based single-use foodservice packaging could become more widely recycled. A series of studies indicated that at least half the packaging generated by foodservice locations makes its way back to the home. In the case of paper cups, sources suggest that as much as 70% leave the store.¹ The Paper Recovery Alliance (PRA) was formed with the initial task of benchmarking the types of paper cups in use, where cups are used, and where cups end up at 'end-of-life'. If most single-use cups are taken to home or work, cup collection at the store will have limited impact. The PRA determined that the best opportunity for paper cup recovery efforts would be through existing residential recycling programs, whether curbside or drop-off.

FPI's research showed that paper cups were treated differently than other types of paper foodservice packaging in residential recycling programs. While pizza boxes, paper bags, and molded fiber trays were generally accepted by most recycling programs, paper cups were usually explicitly excluded. Emmet County, Michigan started an initiative to collect and recycle cups in 2009, becoming the first location in the US to do so.

Emmet County provides a unique example of several key elements coming together at the right time. The county started by identifying end markets first. The local Materials Recovery Facility (MRF) was already sorting polycoated aseptic and gabletop cartons and marketing these to a tissue-producing mill in a nearby county. After discussion with the county, the mill agreed to experiment and try using cups along with the cartons. In order to get the community involved, the county developed educational materials about cups and added these to grocery store shelves where aseptic and gabletop cartons were sold. A local artist developed a series of sculptures composed of recycled materials that were available on request for public and private events, creating substantial word-of-mouth publicity that paper cups could now be recycled. Emmet County was initially hesitant to add cups to local programs because of limited space at the MRF, but ultimately interest from the purchasing mill provided enough encouragement to continue. The county now collects cups through residential curbside, business curbside, schools, and special events.²

Other early adopter cities such as Seattle and New York City followed suit, introducing paper cups into residential recycling in the 2010-14 period.³ San Francisco added cups to residential recycling programs in 2017.⁴

FPI continued to improve understanding of the potential for paper cup recovery from the residential stream by conducting a variety of studies on contamination, MRF material flow, and bale composition. With the additional knowledge generated, it was evident that paper cups could be a viable target for recovery through residential recycling programs. FPI understood that identifying end markets for recovered cups was the first step and began discussion with mills across the US to explore their ability to process paper cups.

With end markets under development, the next step was to expand 'supply.' FPI developed a program called Community Partnerships that engages local communities, encouraging them to include foodservice packaging in curbside recycling. The program will help communities:

- Conduct outreach to stakeholders such as MRFs, waste haulers, and end market buyers;
- Collect data on recycling stream composition and other metrics; and
- Develop communications and messaging to complement education and outreach done by the community.

Communities are also eligible for grants to assist with resident education on the additions to the program, as well as reducing contamination. This program indirectly benefits local MRFs that receive materials from the curbside programs, and ultimately end market buyers.⁵

Since 2017, FPI's Community Partnerships program has added paper cups to curbside recycling programs for approximately four million households, in the following locations:

- Washington, D.C. (launched 2017)
- Louisville, KY (launched 2017)
- Chattanooga, TN (launched 2017)
- Denver, CO (launched 2018)
- Sioux Falls, SD (launched 2019)
- Clark County, IN (launched 2019)
- Kent County, MI (launched 2020)
- St. Lucie County, FL (launched 2020)
- Athens-Clarke County, GA (launched 2020)
- Lansing, MI (launched 2021)
- East Lansing, MI (launched 2021)
- Atlanta, GA (launched 2021)
- Dekalb County, GA (launched 2021)
- Detroit, MI and surrounding metro area (launched 2021)
- Madison, WI (launched 2021)

Successful Community Partnership programs have developed a knowledge base that is used to support new programs in other communities. Active programs share insights on communications campaign development, data collection, reducing contamination, and the like as new communities incorporate paper cups into their curbside recycling programs.⁶

Residential Paper Cup Recycling in Canada

Ontario, the largest province in Canada (40% of total population) was home to one of the first curbside recycling programs in North America, the Blue Box program, launched in 1981. Since 2002, recycling in Ontario has been based on a stewardship approach where the cost of recycling programs is a shared between producers and municipalities.⁷ Municipalities are required to accept a shortlist of recyclables but can also add items of their choice, which has led municipal programs that vary widely across the province. For example, while the City of Toronto did not accept paper cups in September of 2021, the cities of London and Waterloo did.⁸

In June 2021 Ontario finalized legislation to implement a full Extended Producer Responsibility (EPR) program that will bring a number of changes to recycling in Ontario. It will standardize the items collected across the province; provide recycling in small communities and rural areas that have not had access to date; and will expand the types of buildings to be served by recycling programs (to include multi-family and retirement residential, schools, and public areas). Items accepted will be expanded to include many

single-use foodservice items such as paper cups, paper plates, stir sticks, and the like. The transition to the new program will start with select municipalities in 2023 and is expected to be complete by 2025.^{9,10}

The province of British Columbia was the first in Canada to initiate a full EPR program in 2014. This led to the addition of many types of packaging to curbside recycling, and programs were made consistent across all jurisdictions in the province. As a result, polycoat items such as paper cups and aseptic and gabletop cartons have all been accepted in curbside, multi-family, and drop-off locations for some time.¹¹

Commercial Paper Cup Recycling

Starbucks, the US's second largest quick-serve chain, may have been the first to start thinking about how to make single-serve beverage cups more sustainable. As early as 2006, Starbucks began working with the US Food & Drug Administration (FDA) to allow 10% post-consumer recycled fiber in food contact paper cups. Between 2009 and 2011, Starbucks held several large "Cup Summit" symposiums to generate new ideas and initiate change, in order to meet an internal goal that all of Starbucks cups should be reusable or recyclable by 2015. The symposiums included representatives from all parts of the paper and plastic cup value chain, from municipalities and raw material suppliers through cup manufacturers, and retail and beverage businesses.¹²

At that time, Starbucks implemented in-store recycling in 18 markets and initiated three recycling pilot programs across the country. Starbucks tested the compatibility of post-consumer cups in paper recycling operations at a number of paper mills and demonstrated that used paper cups can be recycled into new paper cups. Eventually, collection efforts from stores were discontinued, however, as contamination was a significant problem and costs were higher than expected. At this point, Starbucks publicly supported FPI's activity in paper cup recycling and encouraged other foodservice organizations to get involved via FPI. Starbucks then began to invest in a broader approach to recycling, focusing on all foodservice packaging including cups, and committed to rolling the program out in stores across North America.¹³

The buzz generated by Starbucks activity during this period encouraged other organizations to take action. In 2010 Green USA's 'Coalition for Resource Recovery' (CoRR) began a pilot project in Manhattan with the objective of recycling paper cups and fast food packaging. CoRR collaborated with the Pratt Institute and The New School, collecting foodservice packaging from The New School's café and paper hot beverage cups from seven Starbucks' stores in Manhattan. The educational institution designed collection bins and implemented consumer education in the form of posters and tabletop signage. While this effort did not progress beyond the pilot project, it did generate valuable learning regarding the technical aspects of repulping and recycling paper cups due to the volume of material that was collected.¹⁴

Canada's largest coffee chain, Tim Hortons, tried an alternative approach to paper cup recycling in 2011. Using Nova Scotia as a test region, Tim Hortons began to collect paper cups at over 150 stores in the province. A partnership was developed with a regional molded fiber producer that tested methods to turn paper cups into molded fiber take-out trays. The "Cup-to-Tray" program had some success in the region and Tim Hortons became the first quick-service restaurant in Canada to 'close the loop' and recycle used cups into another product.¹⁵ Since that time, Tim Hortons has implemented a number of other initiatives to collect and divert cups from restaurants across the country.

Early efforts at commercial recycling of paper cups were well received by consumers at the time. Though many did not survive long term, the ground work was laid for more recent advances. In December 2018, a Denver-area hauler and MRF operator announced they would begin accepting cups generated by coffee shop customers in the area in the commercial recycling stream.

In early 2020, the City of Vancouver, Canada initiated a pilot study in which coffee cups are collected in specially designed bins in commercial buildings in downtown Vancouver. The pilot is part of an existing recycling program in BC called 'Return-It' that recovers 12 types of beverage containers, along with a range of other hard-to-recycle products.¹⁶ The pilot has been on hold as a result of the

pandemic, but the city plans to relaunch the program in the spring of 2022.¹⁷

Currently most global foodservice organizations, including many FPI members, are actively working to reduce waste and improve the sustainability of single-use packaging. The current packaging sustainability goals of several of the largest US foodservice organizations are outlined in more detail below.

2. Processing Cups at the Materials Recovery Facility (MRF)

Recovered Paper Grades and Cups

The vast majority of paper cups on the US market are made from solid bleached sulfate (SBS) white paperboard fibers with a polyethylene (PE) coating. Wax coated cups are virtually extinct and while new types of coatings that may be more readily recycled by mills are starting to emerge, market penetration of the new coatings is very low in the US (coatings are discussed in more detail below).¹⁸

Post-consumer cups may be found in several of ISRI's (Institute of Scrap Recycling Industries) standard grade designations, including:¹⁹

- #37 Sorted Office Paper (SOP)
- #52 Aseptic Packaging and Gabletop Cartons (Cartons)
- #54 Mixed Paper (specifically Residential Mixed Paper (RMP))
- #56 Sorted Residential Paper & News (SRPN)

Comparison of the annual **production volume** of each of these grades in the US in 2020, relative to cups, shows the following:²⁰

• #54 Residential Mixed Paper	4,055,000 tons
• #37 SOP	2,555,000 tons
• #56 SRPN	1,961,000 tons
• #52 Cartons	630,000 tons
• Post-Consumer Cups	683,000 tons

After collection in the residential recycling stream, used cups, cartons, and other paper products are transferred for sorting at a MRF (Materials Recovery Facility). The easiest pathway for cups to follow at the MRF is through the paper line to the Mixed Paper grade. The vast majority of MRFs that accept cups pack them in Mixed Paper, although small quantities may end up in SOP or SRPN. Anecdotally, at least one MRF has occasionally directed cups to SOP bales. A few MRFs pack a carton bale which, when cups are included, becomes described as a 'mill specific polycoat' bale, a bale that is not standard, but specific to a particular mill end-user.²¹

Since 2018, a number of larger mill companies that do not buy grade #52 Cartons have announced they will accept cups in Mixed Paper. Among the small number of US and Canadian mills that buy cartons, several have indicated that they will accept cups in the carton bale. In effect, cups are similar to other paper-based polycoated food packaging such as ice cream tubs and frozen food boxes in that they are a good source of high quality SBS for mills, when the mills can handle the poly coating. It is possible that in future, a 'polycoated paperboard packaging' grade could be developed and paper cups could be included in that grade.²²

Flow of Paper Cups through the MRF

When a MRF is interested in adding a new item such as paper cups to its list of explicitly accepted materials, there are a number of issues to consider. A successful cup recovery effort will have at least 3 elements. First, demand from an end market buyer for the targeted paper grade must be assured.

Second, in order to maximize potential volume, the MRF needs to partner with the local municipality and provide public education to develop awareness about the opportunity to recycle a new item such as cups through residential programs. Finally, the MRF must anticipate how the new item will flow through sorting operations to become part of a recovered paper grade, taking size and shape of the targeted material into account as well.²³

In the past, conventional wisdom held that when cups were 'sorted' at the MRF, flattened cups would remain in the paper stream while 3-dimensional cups would flow to the container line. Numerous flow studies have now shown that while paper cups may move through the MRF in different ways, the vast majority of cups actually flow to the container line. Percentages vary with MRF practices and equipment, but recent studies have shown that typically around 70% to 90% of 3-dimensional cups flow to the container line, while around 60% to 80% of flattened cups do so.²⁴

The destination success rate is influenced by the fiber/fines screening technology in place at the MRF, but size and weight of the cup may be more important than whether it is 3-dimensional. Once a cup is on the container line, it can easily be identified and sorted to be included in mixed paper, cartons, or other paper grades. Alternatively, cups can be intercepted along with other fiber on the container line and redirected to the paper line.

MRFs have begun to invest in optical sorting and robotics in order to improve their ability to sort paper cups, foodservice packaging, and other smaller volume types of paper packaging. Technology investment has been gradual to date, and primarily focused on optical sorting, due to low Mixed Paper prices at this time and the need to develop end markets that accept polycoated paper packaging such as cups. With much improved prices for Mixed Paper (and Old Corrugated Containers) in 2021, growing investment in optical sorting as well as robotics is expected.

In Mixed Paper, cups account for a small percentage of the bale, typically less than 0.5% of the bale by weight. To decrease the number of cups going into Mixed Paper, a handful of MRFs have decided to positively sort cups by picking them from the fiber and/or container line and re-directing them into the carton bunker. Cups that are positively sorted into a carton bale will typically account for 10% to 25% of the bale of combined polycoated paperboards.²⁵

Challenges in Paper Cup Recycling

As with all recovered paper grades, a higher quality bale improves value and marketability. In the past, many MRFs were opposed to accepting cups and other foodservice materials due to concern about food contamination. More recent observation has shown that by the time the cup makes it to the MRF, liquids are usually gone. Cups may be accompanied by plastic lids, straws and stir sticks, but plastic components are also present on other types of paper packaging. MRFs have improved processes to remove more plastic from the paper stream, and mills are able to handle the small volume of such plastic items in recovered paper.²⁶

In most of the US, the decision on what to include in curbside recycling is up to local municipalities. As manufacturers and legislators look to improve sustainability in packaging and expand recycling of small volume package types, these policies are expected to evolve over time in favor of including cups and other polycoated packaging in curbside recycling. A few states in the Northeast, such as Massachusetts, Rhode Island, and Connecticut, have recycling guidelines that do not include cups and other polycoated paper packaging (such as aseptic and gabletop cartons) on the list of mandatory materials that must be collected in curbside recycling. Municipalities ultimately make the final decision however. Many encourage recycling of other items such as cartons, #3 through #7 plastic containers, telephone books, textiles, and discarded mail.²⁷

MRFs may generate cups from commercial or residential sources: some combine the streams for sorting while others sort the streams separately. Either way, the volume of cups is low enough that MRFs are unable to measure the volume of cups from either source, or attach a cost to sorting and baling cups specifically. MRFs with greater volumes of cups may sort cups as a separate grade or as part of a carton/cup bale. Ultimately, which grade to target is a business decision made by the individual MRF. When there is a positive business case, MRFs may aggregate cups and sell as a higher-value grade.²⁸

3. Technical Considerations in Paper Cup Recycling

SBS fibers are among the highest quality paper materials available for recycling. As recovery rates for all paper grades continue to rise in the US, while supply declines, cups could be an excellent additional source of high-quality fibers for the paper industry. In particular, as the supply of printing and writing paper declines, reducing supply of recovered paper for tissue mills, demand for fiber from cups in Tissue & Towel production will likely increase.^{29, 30}

Cup Construction – Coatings

There are two types of paper cups with PE coating: 'poly 1-side' cups have the poly coating applied only to the inside of the cup only and 'poly 2-side' cups have the coating is applied on both sides of the paper substrate before it is made into a cup or container. Poly 1-side cups are typically used for hot beverages. Poly 2-side cups are often used for cold beverages so that the coating on the outside of the cup prevents condensation from softening the cup wall during use. The vast majority of paper cups are poly 1-side cups used for hot beverages. Hot cups are typically made using a PE coating because it can withstand high temperatures without breaking down.

The challenge for mills in using cups and other polycoated paper packaging has always been the time required in the hydro-pulper to remove the paper fiber from the poly layer. A poly 1-side paper cup requires considerably less time for separation from the fiber and creates less waste in the pulping process in comparison to a poly 2-side cup.³¹

Innovation in Cup Coatings and Materials

With the growing importance of sustainability in packaging, the pace of innovation in all types of packaging is increasing. In an effort to produce a more sustainable 'to-go' cup, many alternative types of cup materials and barrier coatings have emerged. In 2018, Closed Loop Partners initiated a competition, the Next Generation Cup Challenge, to accelerate the process of cup innovation. By early 2019, 28 candidates with innovative cup ideas had been selected and 12 winners were announced. Of the 12 winning designs, 3 companies proposed reusable cup systems and several in Europe offered new bio-degradable, plant-based materials for cup construction. One of the US winners produces cups and other foodservice packaging made from molded fiber. The remaining participants proposed alternative barrier coatings to PE that are more easily recyclable and/or compostable.³²

The most common alternatives to PE coatings are polylactic acid (PLA) and water-based aqueous coatings. PLA is a 'bioplastic' made from plant-based materials such as sugar, corn starch, cassava, sugar cane, and sugar beet. When selected as a cup coating, the rationale is usually that it is derived from renewable biomass, not fossil fuels, and may be compostable and/or biodegradable. Yet recycling is a higher and better use than composting because the long fibers in the cup are recycled and used in a new product.

Aqueous coatings, or water-dispersed emulsion polymer coatings, can be used when the barrier layer does not require structural integrity on its own. Aqueous coatings are easier for mills to repulp and recycle than PE coatings because water is part of the paper-making process.³³ US packaging producers continue to develop new substrate materials and coatings for cups and other foodservice packaging that are marketed as more sustainable and environmentally-friendly. However, market penetration is likely still very low as no data appears to be available to measure this trend.

4. End Markets for Recovered Cups

End Markets in North America

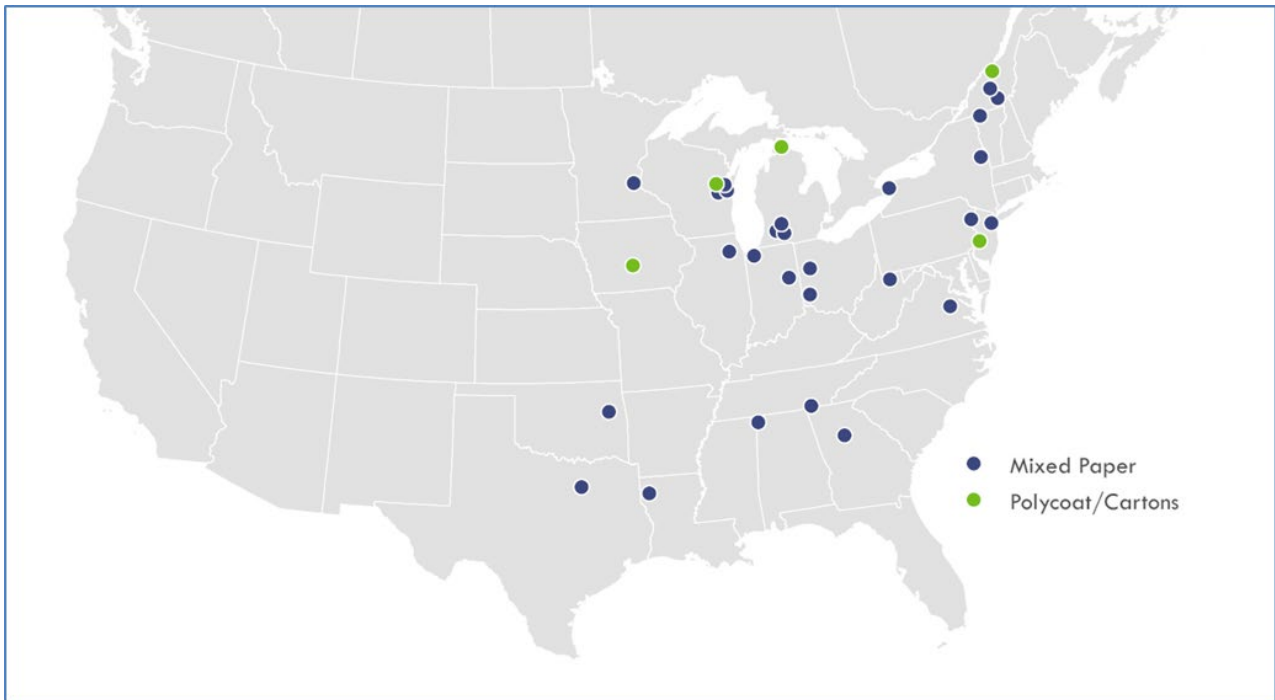
The end market mills accepting paper cups include producers of:

- Tissue and towel products
- Recycled paperboard (food and other goods packaging)

- Containerboard (for brown corrugated boxes)
- Recycled market pulp

Prior to 2018, very few North American mills explicitly accepted cups in Mixed Paper. Given FPI's long-standing focus on developing domestic end markets for foodservice packaging, it engaged in several years of outreach and dialog with US mills and provided data and material to mills for testing. Numerous mill trials were conducted. As a result of FPI's efforts, individual mill commitments, and the growing interest across the value chain in more 'circular' packaging alternatives, paper cups are currently accepted at 31 North American mills that consume Mixed Paper bales, and 5 domestic end markets that consume polycoated bales. (see Figure 1 below)

Figure 1: End Markets for Paper Cups in North America, 2022



Source: FPI, 2021

In December 2021, a group of prominent paper mill companies that buy recovered paper signed a “declaration of acceptance” and announced their commitment to increasing the recycling of paper cups. The companies involved include Essity, Georgia Pacific, Graphic Packaging International, Great Lakes Tissue Company, ND Paper, Pratt Industries, Sustana Fiber, and WestRock. This group accounts for 75% of Mixed Paper demand in the US and Canada and represents 31 paper mills that now actively accept cups in Mixed Paper. Senior executives acknowledge that cups provide high quality fiber.³⁴

Appendix A provides several case studies of mills that accept paper cups, describing the volume of material processed and the grades that cups go into. Appendix B contains a list of mills that accept paper cups, and indicates the relevant recovered paper grades for cups. As is the case with all recovered materials, it is necessary to check with mills within the shipping range of any specific MRF in order to determine the status of paper cup acceptance at any point in time.

As is typical for all recovered paper grades, the larger the quantity of material a MRF produces on a

regular basis, the more interested mills will be in the material. This is an area where brokers can be very useful as they frequently accumulate recovered paper from multiple sources in order to ship larger quantities to mills. A list of brokers who deal in recovered paper grades that may contain paper cups is provided in Appendix C

Export Markets

Exports have always been an important part of the US market for recovered paper. In 2020 almost 34% of recovered paper collected in the US was exported to Mexico, Canada, Asia, and other parts of the world, down from 37% in 2019. Exports of recovered paper are declining overall, and Mixed Paper exports in particular are declining at a faster rate. In 2019, 39% of Mixed Paper was exported relative to the 37% for total recovered paper. In 2020, 34% of both total recovered paper and Mixed Paper are exported. This suggests the importance of developing US markets for Mixed Paper which includes polycoated paper packaging such as cups.³⁵

Mexico and Asia are the most important export markets for recovered paper grades containing paper cups, with Korea, India, and Thailand the largest country buyers in Asia. Although the volume of Mixed Paper exported is still substantial, it is particularly important that exporters to Asia ensure the receiving country allows bales that contain post-consumer paper cups.

The primary use of recovered paper cup-containing grades in Asia is for tissue and towel, but in India they are used for printing and writing papers. In Mexico, the primary users are tissue mills, but some paperboard mills are exploring use of the grade.

Export of recovered paper is a specialized part of the paper recycling business and a large percentage of it is handled by export brokers. There are a number of export brokers that handle poly-coated paperboards and have expressed an interest in handling recovered paper cup grades. A list of these brokers and their contacts appear in Appendix C. Although none are headquartered on the west coast of the US, they all operate in that region as well as throughout the US. In addition to export, these companies are also domestic brokers that can be helpful with sales in the US.³⁶

5. Looking Ahead

As consumers and activist groups pressure large chain restaurants and consumer packaged goods brands to make packaging more recyclable, there is growing interest and activity in paper cup recycling. Foodservice organizations, communities, and consumers alike have expectations that more types of single-use packaging should be recycled more often in future. The response from many restaurant brands and other foodservice operators has been to develop sustainability goals for the organization, in which packaging plays a major role. Sustainability goals relating to packaging, including cups, are shown below for some of the largest foodservice operators in the US:³⁷

- **McDonald's:** Goal to source 100% of guest packaging from renewable, recycled or certified sources and to recycle guest packaging in 100% of McDonald's restaurants, by 2025.
- **Starbucks:** Working to reduce waste and promote reusability, Starbucks will be testing recyclable and compostable cups in select cities worldwide in 2022. Starbucks currently uses 10% post-consumer fiber in hot cups, as well as recycled content in paper shopping bags, napkins and cup sleeves.
- **Restaurant Brands International (Tim Hortons, Burger King, Popeye's):** Working with suppliers to innovate and reduce the use of packaging, transition to more sustainable materials, and help guests to reuse and recycle.
- **Inspire Brands (Dunkin'):** Majority of packaging currently has one or more sustainability attributes. 100% of packaging is recyclable where facilities exist, 30% of packaging is made with recycled content, 35% is compostable, and 30% is biodegradable.

- **Delaware North (hospitality & foodservice management):** Goal is to source 100% of single-use packaging products in the US from materials that are recyclable, renewable, compostable or contain post-consumer content, by 2025. Will prioritize products with environmentally sound certifications such as Forest Stewardship Council or Biodegradable Packaging Institute.

The impact of meeting the goals outlined on foodservice packaging is something that will develop and will be monitored over time. Another factor that has impacted recycling over the past two years is the pandemic. We know that residential waste collection volume has increased substantially since spring 2020 while commercial volume has declined due to the surge in 'working-from home' (WFH) among office workers. With more residents at home all day, and greater use of take-out restaurant meals vs. dine-in, the volume of foodservice packaging being disposed at home may well have increased. In addition, consumers may have heightened awareness if their curbside programs do not include foodservice and paper cup recycling.

The increase in WFH trend is expected to gradually diminish over the next year or two as workers return to the office, however, it seems likely that not all will return to the office. The percentage who continue to WFH will most likely stay higher than it was pre-pandemic, implying that volumes of residential waste will remain at higher levels than pre-pandemic. This suggests a potential increase in the volume of cups available from residential sources – unless home workers have switched from take-out beverages to making their own. No data is available yet to determine the impact of many factors on cups in the residential recycling stream, however, if WFH remains high, past estimates of cup residential recycling potential may need to be revised upwards. At the same time, when workers do begin to return to the office, the opportunity to discover the types of recovery processes that work best in restaurants and workplaces will open up.

6. Conclusions

While developing the processes needed to recycle paper cups from the curbside recycling has taken considerable time and research, FPI has now built a solid foundation and will continue to expand this initiative. In the last 2-3 years, significant progress has been made in adding cups to residential recycling programs, and identifying end-markets at mills. At least 20 residential curbside programs across the US, representing hundreds of communities, now explicitly accept cups. A total of 31 individual paper mills, plus 1 building product manufacturer, now accept cups. This suggests a significant opportunity to continue the expansion of cup recovery through residential recycling programs.

At the majority of MRFs, cups currently go into Mixed Paper bales, while a small number of MRFs do a positive sort into a carton and cup bale. The growth of optical sorting is helping to reduce the cost of positive sorting, but the most challenging issue at the MRF is the length of time it takes to build a bale, given the low volume of cups and similar material such as cartons. An opportunity to improve volume through development of a polycoated bale grade is apparent.

As the use of alternative barrier coatings to PE begins to expand, cups and other polycoated packaging will eventually become easier for mills to manage. Market share of alternative coatings for cups is too low for measurement in North America at present, but the growth of more easily recyclable coatings and cup materials in Europe suggests there is potential for widespread adoption in the long term.

APPENDIX A:

CASE STUDIES OF MRFs ACCEPTING CUPS

WestRock Recycling, Chattanooga, TN

End market: WestRock Chattanooga paper mill, who accepts paper cups in Mixed Paper bales

Plant size: Medium (4,000 to 7,500 tons per month range)

Paper grade sold: #54 Mixed Paper

Sorting method: Manual sorting on the paper line. Sorting paper cups and other SBS food service paper containers.

Residential / Commercial inbound material: 40% residential, 60% commercial, which is higher than normal on the commercial side. However, paper cups are primarily originating from the residential single stream program.

Other observations: Currently cup volume is not measured due to limited volume. Investment in sorting automation would be considered if the volume could increase to the 50 tons/month range.

WestRock Chattanooga is very unique, having the end market and processing facility located in the same city. This is a great example of how to start small and grow using the resources and synergies within a major paper company.

GFL – Alpine Recycling, Denver, CO

End market: Domestic paper mill

Plant size: Large (7,500 tons per month or more)

Residential / Commercial inbound material: 65% residential, 35% commercial. Paper cups are coming from their residential single stream program.

Paper grade sold: #52 Aseptic Packaging and Gable Top Cartons

Sorting method: Mechanical sorting using robotics through artificial intelligence

Other observations: GFL Denver avoids typical foodservice containers due to high contamination concerns, but does include aseptic packaging (Tetra Pak), clean ice cream cartons, and clean popcorn tubs.

Millennium Recycling, Sioux Falls, SD

End market: Domestic paper mill

Plant size: Small (2,000 to 4,000 tons per month)

Residential / Commercial inbound material: 65% residential, 35% commercial. Paper cups are coming primarily from their residential single stream program.

Paper grade sold: #54 Mixed Paper

Sorting method: Manual, leaving paper cups in the Mixed Paper stream. On the processing side, they leave any clean paperboard products including SBS cartons, paper cups, and plates in the Mixed Paper stream.

Other observations: Two critical components for the MRF's success were establishing a consistent sales market through WestRock's St. Paul, MN mill and working with the local Sioux Falls municipality to add paper cups to the recyclable material list. Adding paper cups to the Mixed Paper stream did not add cost to the MRF and was a simple and effective solution. Millennium Recycling is proactive in its resident communication, utilizing its website, blog, and social media. The MRF makes a commitment to ongoing education regarding acceptable recyclables, including paper cups.

APPENDIX B:

North American Paper Mills/Manufacturers that Accept Paper Cups

Paper Mills:

Cascades, Ashland, VA – Mixed Paper (opening in 2022)
Cascades, Niagara Falls, NY – Mixed Paper
Cascades, Kingley Falls, QC – Mixed Paper

Essity, Barton, AL – Mixed Paper
Essity, Menasha, WI – Mixed Paper
Essity, Middletown, OH – Mixed Paper
Essity, South Glens Falls, NY – Mixed Paper

Georgia-Pacific, Green Bay, WI – Mixed Paper
Georgia-Pacific, Muskogee, OK – Mixed Paper

Graphic Packaging International, Battle Creek, MI – Mixed Paper
Graphic Packaging International, East Angus, QC – Mixed Paper
Graphic Packaging International, Middletown, OH – Mixed Paper
Graphic Packaging International, Kalamazoo, MI – Mixed Paper

Great Lakes Tissue, Cheboygan, MI – together with Aseptic Packaging and Gable-Top Cartons

Green Bay Packaging, Green Bay, WI – Mixed Paper

ND Paper (sourcing via ACN), Fairmont, WV – Mixed Paper

Pratt, Conyers, GA – Mixed Paper
Pratt, Shreveport, LA – Mixed Paper
Pratt, Staten Island, NY – Mixed Paper
Pratt, Valparaiso, IN – Mixed Paper
Pratt, Wapakoneta, OH – Mixed Paper

Sustana (Breakey Fiber), Levis, QC – together with Aseptic Packaging and Gable-Top Cartons
Sustana (Fox River Fiber), DePere, WI – together with Aseptic Packaging and Gable-Top Cartons

WestRock, Aurora, IL – Mixed Paper
WestRock, Battle Creek, MI – Mixed Paper
WestRock, Chattanooga, TN – Mixed Paper
WestRock, Dallas, TX – Mixed Paper
WestRock, Eaton, IN – Mixed Paper
WestRock, Missisquoi, VT – Mixed Paper
WestRock, St. Paul, MN – Mixed Paper
WestRock, Stroudsburg, PA – Mixed Paper

Building Materials:

Continuous Materials, Des Moines, IA – together with Aseptic Packaging and Gable-Top Cartons

**APPENDIX C:
Export Broker Contacts**

Ekman Recycling Group
Wall Township, NJ
Brian Heckel
brian.heckel@ekmangroup.com
732-202-9500

Federal International
St. Louis, MO
Sam Still
samstill@federalinternational.com
314-721-3377

GP Recycling (Georgia Pacific)
Jericho, NY
Mike Belus
mike.belus@gapac.com
516-770-1030

The Paper Tigers, Inc.
Schaumburg, IL
Nick Halper, President
NHalper@papertigers.com
847-919-6500

Wilmington Paper
Pine Brook, NJ
Brett Lurie
BML@WPCRMS.com
973-445-2382

FOOTNOTES

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