Closing the Loop on Cups: Collective Action to Advance the Recovery of Paper Cups in the U.S.

NEXTGEN CONSORTIUM

Table of Contents

About the Center for the Circular Economy

The Center for the Circular Economy (“The Center”) is the innovation arm of Closed Loop Partners, a leading circular economy-focused investment firm in the U.S. The Center executes research and analytics, unites organizations to tackle complex material challenges and implement systemic change that advances the circular economy. The Center brings together designers, manufacturers, brands, recovery systems operators, trade organizations, municipalities, policymakers and NGOs to create, invest in and support scalable innovations that target big system problems.

About the NextGen Consortium

The NextGen Consortium is a multi-year, global consortium that aims to address single-use foodservice packaging waste by advancing the design, commercialization and recovery of foodservice packaging alternatives. The Consortium works across the value chain—with brands, municipalities, material recovery facilities and manufacturers—to ensure we provide viable market solutions that scale throughout the supply chain and bring value to recovery systems globally.

Closed Loop Partners’ Center for the Circular Economy manages the NextGen Consortium. Founding Partners Starbucks and McDonald’s lead the unprecedented pre-competitive collaboration amongst consumer brands committed to advancing circular solutions for food-service packaging. The Coca-Cola Company and PepsiCo are Sector Lead Partners. Yum! Brands, The Wendy’s Company and JDE-Peets are Supporting Partners. World Wildlife Fund (WWF) is an Environmental Advisory Partner.

MANAGING PARTNER

CLOSED LOOP partners

FOUNDING PARTNERS

SECTOR LEAD PARTNERS

Coca-Cola North America

PEPSICO

SUPPORTING PARTNERS

Yum!

KFC

Pizza Hut

Taco Bell

Habit Burger Grill

Wendy's

JDE Peet's

ADVISORY PARTNER

WWF

Dear Reader,

To-go paper cups are ubiquitous, everyday items that we all interact with. They are also a highly visible representation of our disposable, take-make-waste culture. Every year, we use an estimated 250 billion cups globally[1]—the majority of which end up in landfills after a single-use.

By opting to use reusable cups—often made of durable plastic, steel or glass—we can keep cups in use for longer, when the appropriate systems are in place, rather than relying on the constant extraction of virgin resources and the energy intensive production to create new disposable cups. However, there are still moments when reusable cups are forgotten at home or paper cups are used for spontaneous coffee runs. In these moments, we must ensure the value embodied in paper cups—specifically the high-quality fiber—is recovered, rather than wasted in the landfill.

Founded in 2018, the NextGen Consortium, a multi-year, global consortium across brands and stakeholders in the cup value chain, takes a multi-pronged approach to addressing cup waste holistically:

1. Advancing reusable cup systems that keep cups in service for multiple uses;
2. Exploring material science innovations that enhance the recoverability of cup materials and;
3. Strengthening materials recovery and recycling infrastructure to recapture and recycle more cups after use.

Through this approach, the NextGen Consortium has identified that innovation and collaboration among key players is crucial. Only through a concerted and collective effort can we hope to develop and implement a more circular system for cups, mitigating the negative environmental impact of these ubiquitous items.

In this report, we focus on the third lever of our approach, materials recovery and recycling, by assessing critical nodes of the paper cup recovery value chain—paper mills, material recovery facilities, brands, consumers and local communities—to demonstrate how, together, these stakeholders can sustain a market for paper cup recycling. Each has a unique and critical role to play in enabling cup recycling.

As we work towards a circular economy, we must design and implement every aspect of new systems thoughtfully to align operational realities and consumers' propensity for convenience. This report builds on existing industry research, such as works authored by Moore & Associates and the Foodservice Packaging Institute (FPI). This report, in particular, aims to shed light on the challenges and opportunities related to paper cup recycling, spotlighting where there are success stories so as to encourage others to follow suit.

Presently, only 11 percent of communities in the U.S. publicly accept cups in their recovery operations.[2] This poses a significant barrier to cup recycling, as residents have few options to properly recycle their used cups. However, there are some promising signs. More than 30 paper mills in the U.S. are willing to purchase bales of recycled materials that contain recovered cups, creating the demand to pull cups through the recovery system.

To build on this momentum, in 2023, the NextGen team, in collaboration with Moore & Associates and FPI, identified more than 15 additional mills across North America that are interested in testing cup acceptance or that can process cups today. This new interest is a tremendous endorsement for the work that is taking place, and we hope will catalyze significant movement further upstream on cup acceptance in communities in the months and years ahead. We will keep stakeholders informed as we make progress on this important initiative with mills.

We hope that this report on the collaborative effort it takes to address cup waste in the U.S. serves as inspiration for forward-thinking organizations looking to more circular solutions.

Sincerely,

Kate Daly
Managing Director & Head of the Center for the Circular Economy at Closed Loop Partners

Part 1

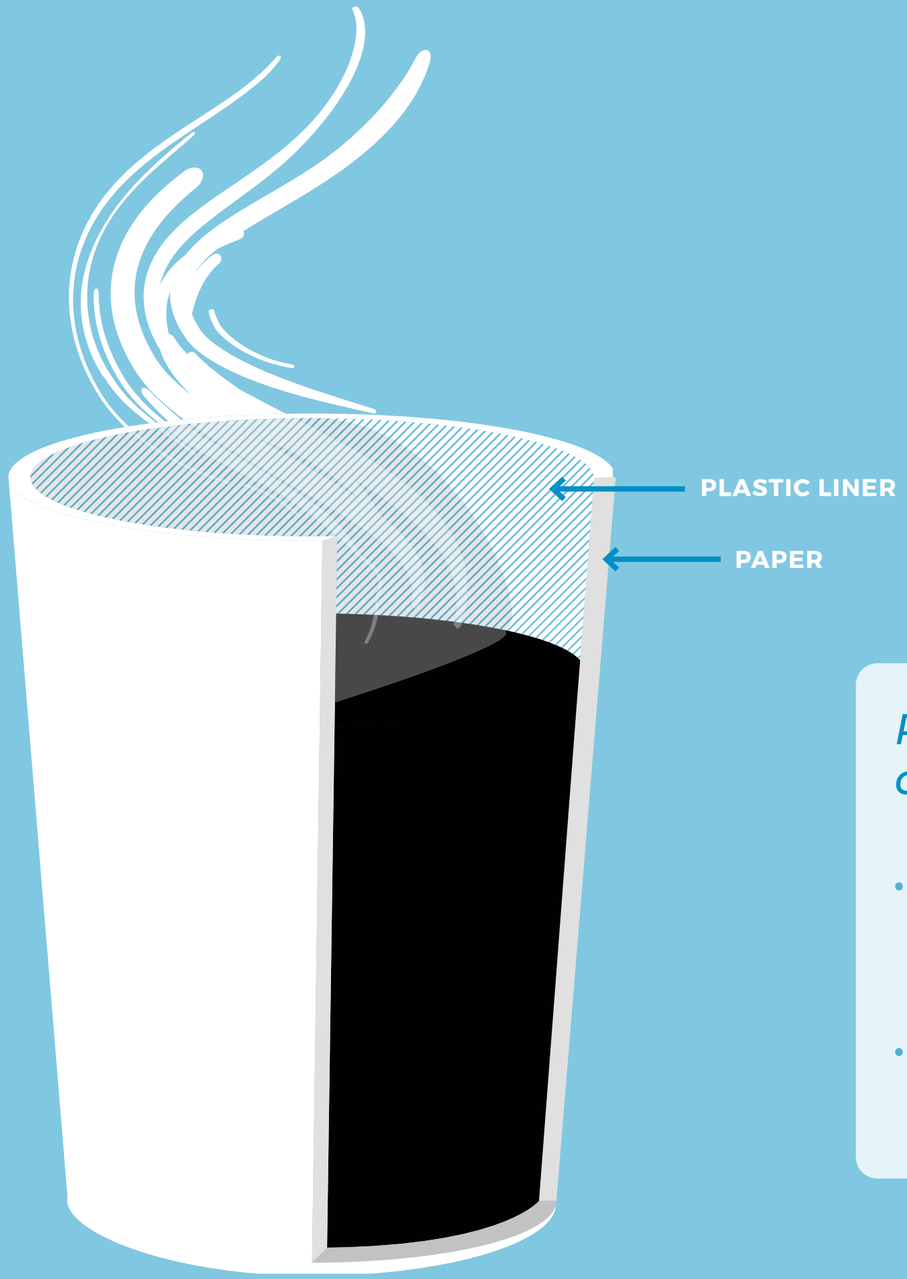
Confronting the Cup Conundrum

What's the challenge with paper cups?

Every day, **millions of people** around the world drink from **paper cups**, also known as fiber cups. Most of these single-use cups are made of paper with a plastic-based liner or coating that helps prevent leaking and retain heat or cold for the beverage. Typically, the liner is made of polyethylene (PE) plastic. While the PE-liner has historically been cited as an impediment to widespread recyclability, as this report will explore, there is increased momentum around recycling cups and proven value in doing so.

Paper cups are safe, functional and convenient—so much so that **globally, it is estimated that as many as 250 billion cups**[3] are distributed and disposed of each year—in cafes, restaurants, event venues, movie theaters, schools, hospitals and other locations.

Yet, the convenience of paper cups comes at a cost to the environment. While many paper cups are manufactured using responsibly-sourced fiber and are potentially recyclable, in reality, today the vast majority end up in landfills, wasting valuable resources.



Paper cups at a glance

- The typical paper cup is roughly composed of **95 percent paper**, while the rest is made up of a **thin plastic coating**.
- Today, **more than 30 paper mills** accept paper cups for recycling.[4]

How does the NextGen Consortium approach the challenge of cup waste?

There is no single solution to addressing cup waste today. Different kinds of cups may be better suited to different occasions and contexts. For example, someone drinking on-the-go will likely have different requirements to transport their beverage than someone looking to consume a beverage in a café or a restaurant.

The NextGen Consortium takes a holistic, multi-pronged approach to addressing cup waste through three key levers:

KEY LEVER 1

Reuse Models

Advancing reusable cup systems that keep cups in service for multiple uses

KEY LEVER 2

Material Innovation

Exploring material science innovations that enhance the recoverability of cup materials

KEY LEVER 3

Materials Recovery & Recycling

Strengthening materials recycling and recovery infrastructure to recapture and recycle more cups after use

While lever 1 and 2 are equally important in advancing cup circularity, lever 3 is the focus of this report.

KEY LEVER 1

Reuse Models

Advancing reusable cup systems that keep cups in service for multiple uses

Reuse models shift us away from the conventional take-make-waste approach of material usage and toward a circular economy. By transitioning away from single-use cups to more durable cups that can be washed and used multiple times, reuse models support and facilitate a more sustainable system for businesses and the planet.

Our Approach

Since 2018, the NextGen Consortium has been researching and testing reusable cup solutions that make reuse easy and accessible for customers.

In 2019 and 2020, the NextGen Consortium launched a series of reusable cup pilots in cafés throughout the San Francisco Bay Area, collaborating with reusable cup companies to advance and refine the cup solutions. The lessons learned from these in-market tests are presented in NextGen's report, Bringing Reusable Packaging Systems to Life, which shared key findings to support brands and innovators launching reuse programs.

What We Learned

We gathered some key insights from our in-market tests of reusable packaging systems:

- **Multi-brand programs** increase consumer awareness and comprehension.
- **Shared infrastructure** is important for collection, distribution and cleaning to increase efficiencies and reduce costs.
- **Returns must be easy and convenient for customers**—financial incentives can help.
- The system must be **inclusive and accessible** to all types of consumers.
- **High rates of return** are essential for reusable packaging to be better for the environment than single-use alternatives.
- Packaging must be **designed for durability and to be recovered** at the end of its useful lifespan.

What's Next

We see experimentation as a critical precedent to scale. Reuse is no simple feat, and testing market fit and operational alignment is an important step to expand reuse responsibly and mitigate unintended consequences that can happen without a measured examination of new systems. But isolated, small-scale experiments will not get us there. Closed Loop Partners runs multi-brand reuse tests through its Center for the Circular Economy to identify tactics that are proven and ready to scale, as well as models that require further tweaking and iteration to deliver the expected environmental and financial outcomes.

While we work to scale proven solutions, we continue to de-risk systems that need refinement. Our in-field deployments intentionally mimic large-scale, cross-brand implementation, but in a controlled manner. The insights and data gleaned from these tests are key stepping stones to new rounds of implementation and scale.

Bring-Your-Own (BYO) Reusable Cups

Harnessing the value of existing assets

While we work to de-risk and mature reusable packaging systems that require infrastructure and operational alignment, there is an immediate opportunity to reduce the number of single-use cups in circulation. In parallel to our work to advance borrow and return systems for cups, the NextGen Consortium is studying and deploying interventions to support and motivate customers to use their own reusable cups. By refilling our cups, we avoid the extraction of virgin resources and the energy intensive production to create new disposable cups.

The NextGen Consortium's consumer studies have found that nearly one in five customers in the U.S. reuse their own cups "on-the-go"—this includes refillable thermal cups, dine-in ceramic mugs and reusing single-use cups.[5] Interestingly, this reuse behavior trends highest at convenience and gas stations.

The implications of such practices could be paramount: **increasing BYO cup rates by even one percentage point nationwide could save tens of millions of cups from going to landfill**.[6] This demonstrates the considerable opportunity to grow these numbers through collective action, including fostering more consumer engagement channels, incentive systems and educational strategies to promote a culture of "bringing your own" reusable cup.

KEY LEVER 2

Material Innovation

Exploring material science innovations that enhance the recoverability of cup materials

The materials that comprise a product play a large role in determining its overall environmental impact. An emerging cohort of circular economy-minded designers are focusing on material science innovation and rethinking inputs that go into manufacturing products, such as cups. This innovation includes light-weighting the materials that comprise the current paper cup (i.e., using less PE and less fiber, or using more post-consumer recycled content) and exploring alternative cup liners that use cutting-edge materials, including bio-based ones, to improve the cup's recoverability, repulpability and, in some instances, compostability.

Our Approach

The NextGen Consortium's work on material innovation began in 2018 with the NextGen Cup Challenge—an open, global design competition that received nearly 500 submissions of innovative cup solutions. Today, the NextGen Consortium continues to identify and support the development of alternatives to the PE-lined cup.

What We Learned

We have learned many critical lessons along our cup innovation journey. Most notably, that replacing the PE liner is often more complicated than a simple, drop-in substitution and requires rigorous testing and evaluation to uncover qualified solutions:

- **Commercial scalability must be considered:** A positive outcome at lab or pilot-scale operation for some of these innovative solutions may not always immediately translate to success on commercial-scale equipment. Constant iteration is needed for market-viable solutions, and the NextGen Consortium works with brands, converters and innovators to understand what needs to be true for the industrial-scale application of new technologies.
- **Brand performance standards must be met:** At a minimum, alternative cup solutions need to meet the same level of performance as the current PE-lined cups. The NextGen Consortium works with third-party performance testing labs to evaluate the performance of new cup solutions and ensure they meet and/or exceed stringent brand-set performance standards.
- **Misleading recyclability claims must be put to the test:** Many packages claim to be recyclable but have not completed the technical and in-market testing to ensure that those claims are true. The NextGen Consortium works with recyclability labs, such as Western Michigan University's Paper Pilot Plant, as well as paper mills and materials recovery facilities (MRFs), to ensure that qualified cup solutions can be effectively repulped, recycled and recovered.
- **Potential unintended impacts must be addressed:** New material substitutions might have unintended consequences, including upstream impacts related to material sourcing and downstream impacts as the new materials align or misalign with the recycling system. The NextGen Consortium works with several testing partners and our Environmental Partner, World Wildlife Fund, to identify and evaluate system-wide impacts of potential new materials.

What's Next

The NextGen Consortium is always on the lookout for innovative material solutions to replace the PE liner that also meet complex requirements across diverse regions, brands and manufacturers. The Consortium provides guidance and support to qualified innovators and solutions, including access to performance and recyclability testing and in-market testing opportunities.

We welcome you to get in touch with our team here to learn more about our work and how to get involved.

KEY LEVER 3

Materials Recovery & Recycling

Strengthening materials recovery and recycling infrastructure to recapture and recycle more cups after use

While it is imperative that we prioritize the development of reusable cup models and encourage the continued exploration of material science innovations to make the cup more recoverable, it is equally important to strengthen existing materials recovery and recycling systems. This will allow us to recapture and recycle more of the paper cups that are already in circulation today.

Our Approach

The NextGen Consortium works with strategic partners to better understand and align the cup recovery and recycling ecosystem—collection in cities, sortation in MRFs and processing—so that more cups can be recovered and recycled into new products.

We work on accelerating the recovery of both paper cups with PE liners, used for hot and cold drinks as well as polypropylene (PP) plastic cups, used for iced drinks. Although we continue to evaluate the recovery of PP cups, the focus of this report is explicitly on paper cup recovery.

About this report

This report shares various activities from across the NextGen Consortium to increase the recovery of paper cups, drawing on the Consortium's work and collaborations with the FPI and other organizations, as well as facilitation of infrastructure workshops with dozens of industry participants. The report uses industry data and research, critical stakeholder insights and illustrative case studies to highlight what has worked to date and what needs to be true to improve cup recycling outcomes in the future.

The objectives of this report are to:

- **Provide visual representations and an overview of how paper cup recovery and recycling works in the U.S. today and who is involved, while also exploring critical challenges and opportunities**
- **Highlight essential data and insights that help to align the paper cup value chain and accelerate progress towards cup recovery**
- **Mobilize stakeholders to increase paper cup recovery in the U.S.**

Further updates on the NextGen Consortium's collective progress are provided on our website here.

Acknowledgements

To complement our proprietary research, several publicly available resources have played a fundamental role in the creation of this report. Notably, our collaborators at FPI have put out numerous publications over the last several years to help define and set the landscape for cup recovery.

A selection of these publications are listed below and are referenced or cited throughout the report:

- *The State of Paper Cup Recycling by FPI and Moore & Associates (2022):* This report provides an overview of the paper cup recycling landscape and its evolution over the last several years in the U.S. and Canada. The report documents progress to date on community programs, technical considerations at the MRF and an overview of end market acceptance.
- *FPI: Joint mill declaration of paper cup acceptance (2021; updated in 2022):* A written commitment from 12 paper and packaging companies representing more than 30 mills to accept paper cups in their residential mixed paper, sorted residential papers & news or carton bales. The mixed paper consuming mills represent more than 75 percent of U.S. and Canadian mixed paper demand.
- *FPI: Paper Cup Alliance Website:* The website features links and resources including the publications listed above, as well as detailed information on their Community Partnership Programs, research including contamination studies and MRF flow studies and other resources.
- *American Forestry & Pulp Association (AF&PA): Design Guidance for Recyclability (2021):* AF&PA developed a user friendly design guidance tool for paper-based-packaging to help meet recyclability requirements. This guide is complemented nicely with AF&PA's *frequently asked question sheet* for mills on paper cup recycling.
- *How2Recycle Guide to Recyclability:* This program helps guide brands and packaging companies on how to make their packaging more recyclable and eligible for on-pack labeling.

Part 2

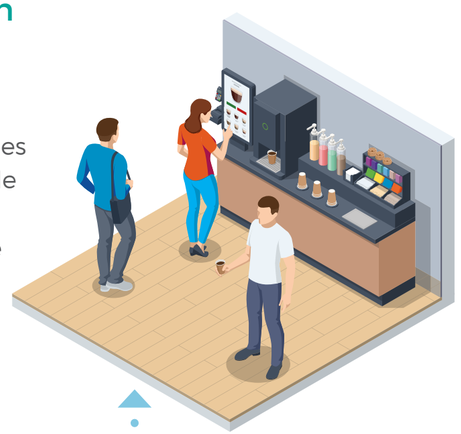
Visualizing the Path of Paper Cup Recovery

What's the current lifecycle of a paper cup from consumption to disposal?

1

Consumers purchase a beverage, which is consumed from a paper cup

Once an individual finishes their beverage, they generally throw the paper cup in the trash, which goes to landfill, or they can recycle it. In some cases, people can compost their cups depending on the product's material composition and composting infrastructure available in a particular location.



2

Some paper cups are collected at the curb for recycling

If a community accepts paper cups in the recycling stream, the cup is included with other recyclables in a bin or cart. A recycling hauler will then collect the recyclables and deliver its contents to a MRF where the cups can be sorted and processed for recycling.

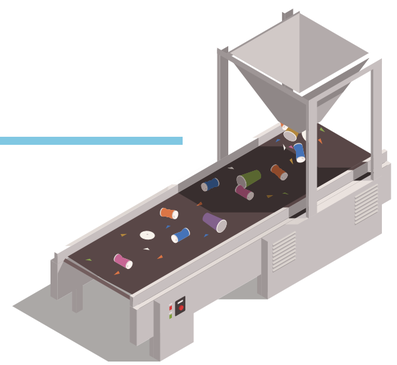
Paper cups can enter the recycling system through both commercial and residential recycling channels.

3

Cups are sorted into different streams of recyclables at materials recovery facilities

When paper cups are delivered to a MRF along with other recyclables, they are sorted by the MRF operator into different streams of recyclables, which are dependent on the facility's set up and availability of end markets.

Depending on market demand, cups can be routed to bales of mixed paper, sorted residential paper & news (SRPN) bales, or carton bales through technological or manual methods.



4

Cups are recycled into new products at paper & pulp mills

If cups make it into bales of mixed paper or cartons, MRFs can sell the bales to one of the 30 mills in North America that accept cups in mixed paper, SRPN bales, or the five mills that accept cups in carton bales.

The mills then process the cups and other fiber into recycled content for new products of various kinds, including corrugated and paperboard boxes, tissue paper, building products, recycled fiber pulp and even cupstock to make new paper cups.

What's the landscape for paper cup recovery in the U.S. today?

Paper recycling has long been successful in the U.S. According to The American Forest & Paper Association (AF&PA), in 2022, more than 50 million tons of paper were recovered for recycling in the U.S.—this represents a recycling rate of roughly 68 percent.[7] Nearly half of recycled paper in 2022 was converted into containerboard, which is used to make cardboard boxes, while other recycled paper is used for products such as tissue, cups, boxboard and newsprint, among other categories.[8]

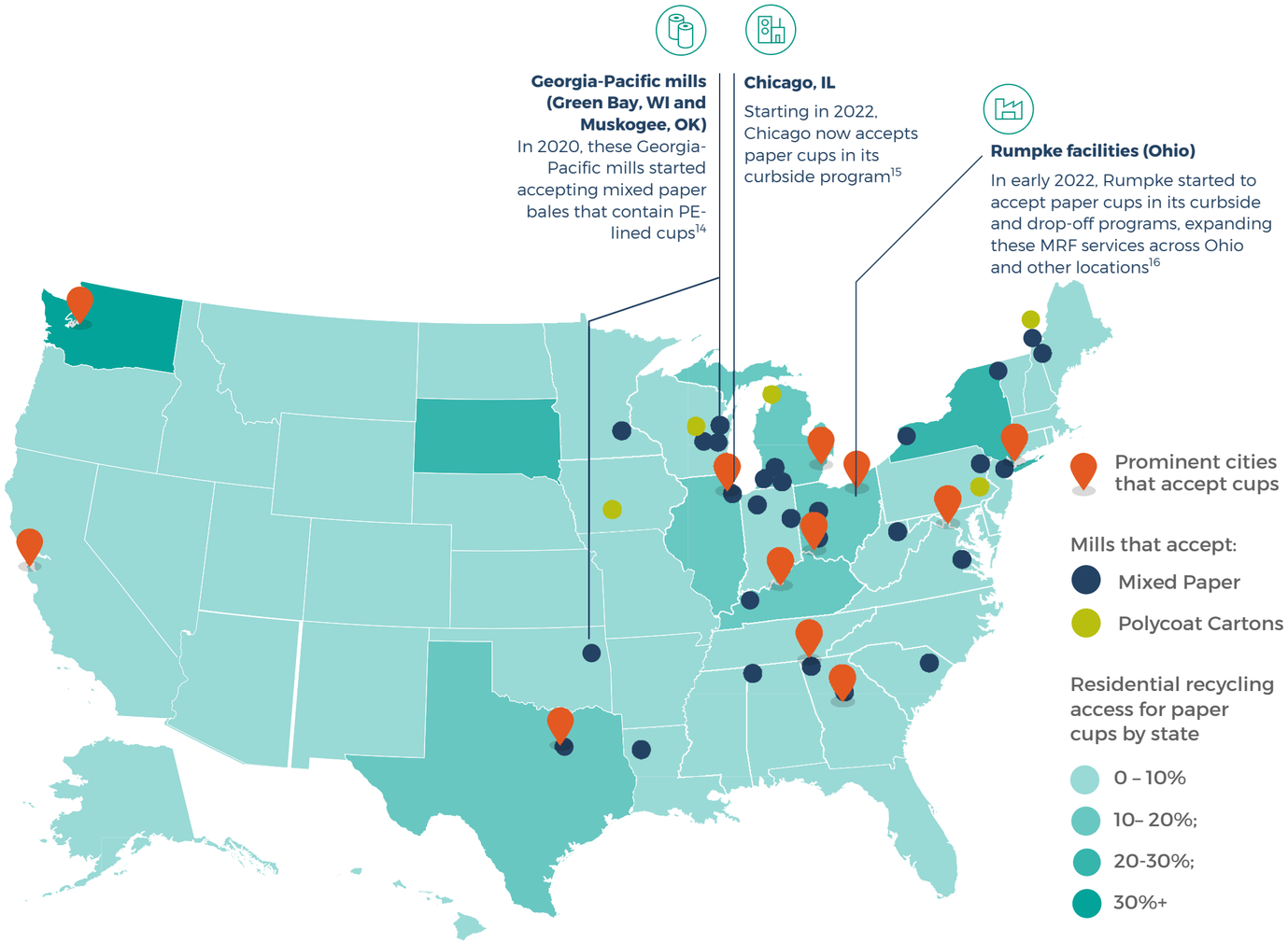
While paper cups are a relatively small percentage of the total waste stream by volume, they are a highly visible waste item[9] with the majority ending up in landfill today. A growing number of food and beverage brands and retailers are motivated to find recycling solutions for the single-use cup.

>11% of households have access to residential cup recycling programs[10]

24 of the top 100 cities in the U.S. by population accept cups in their recycling program[11]

30 mills accept cups in bales of mixed paper[12]

Another five mills accept cups in "carton" bales of aseptic and gable top containers[13]



The NextGen Consortium, in partnership with FPI and Moore & Associates, has made important headway in 2023 by identifying more than 15 additional mills across North America that expressed interest in testing paper cups or that can process them today. We hope that this progress catalyzes a ripple effect leading to expanded cup acceptance and strengthened end markets.

Who are the key stakeholders in recovering paper cups today?

Paper Mills

purchase, repulp and reprocess bales of recovered paper that can be used as feedstock for various products.

Mills are the engine that keeps the paper recycling system going, without them you wouldn't be able to recycle paper packaging products.

- **Call to Action:** Conduct recycling tests on paper cups to determine if the fiber can be captured without any negative operational impacts at their facilities

Brands

use paper and other materials for packaging, and can create demand for recycled paper by procuring recycled content for use in their packaging.

- **Call to Action:** Source recycled paper content when procuring their cups and other packaging, among other activities

Consumers

purchase their beverage in a paper cup and dispose of them in the trash, or put them in the recycling bin depending on the materials recovery infrastructure and education available locally.

- **Call to Action:** Bring their own reusable cups when they can and to check local recyclability options and guidance when using disposable cups

Materials Recovery Facilities

sort recyclables into different marketable materials. In some communities, fiber products like paper cups can go into an aseptic/carton bale, or mixed paper bale depending on the nature of a MRFs sorting equipment and availability of end markets.

- **Call to Action:** Conduct material flow studies to determine where best to site interventions for cup sortation and to collaborate with mills and communities to expand acceptable recycling lists as more mills accept cups

Communities

determine what materials, including cups, are accepted in recycling programs. Some cities such as New York have sanitation departments that directly manage their own collection of recyclables while others contract out collection to service providers.

- **Call to Action:** Engage with MRFs and mills to evaluate feasibility of adding cups to accepted recyclables list

Why expand paper cup recovery in the U.S.?

Early adopters have proved the value of recycling paper cups. Traction around cup recyclability in the U.S. has laid the foundation for further expansion

A growing number of paper mills accept and can successfully reprocess cups

Paper cups are typically made of long, bleached fibers that enhance the strength and quality of new products made of recycled fiber. Today, more than 30 domestic paper mills[17] have the capability to process post-consumer paper cups and turn them into valuable fiber materials for manufacturing new products, including tissue paper, pulp, cups, corrugated and paperboard boxes and building boards; thereby, creating a market for recycling paper cups.

Major cities in the U.S. now promote cups as recyclable

As stakeholders across the recycling value chain recognize the value of collecting and recycling paper cups, a growing number of cities and counties in the U.S., including Atlanta, Chicago, Denver, Detroit, Seattle, San Francisco, New York, Louisville, and Washington, DC have added paper cups to their lists of acceptable recycling items.[18] This trend highlights the growing importance of recycling and sustainability in communities across the country.

Consumers overwhelmingly believe that their cup can be recycled

A national survey commissioned by the NextGen Consortium revealed that nearly three quarters of respondents believed their single-use paper cup could be recycled.[19] However, there is still a significant gap between the consumer desire to recycle and available recovery infrastructure today. Efforts are underway to drive momentum for municipalities, MRFs and paper mills to accept cups.

Part 3

Mobilizing Stakeholders to Increase Paper Cup Recovery

Paper Mills

What role do paper mills play in cup recycling?

Paper mills play a critical role in the cup recycling process. Mills reprocess cups and other paper-based packaging into new materials. Over the past several years, the NextGen Consortium has engaged several recycled paper mills to better understand the impact that the PE liner in traditional paper cups has on reprocessing. Some mills do not have the requisite technology or pulping process and duration to recover the fiber in paper cups. However, a growing number of mills now accept cups for reprocessing into new materials such as recycled paperboard, containerboard or tissue.[20]

How do mills work?

At the mill, recycled paper feedstock is put into a pulper where it is blended with water and other substances supporting the breakdown of materials. In the repulping process, the ingredients are agitated to help separate the paper from the non-paper items (i.e., PE liners, tape, small metal items). The resulting slurry is then screened to remove any unwanted items before being cleaned and fed to the paper machine. In this process, recovered fiber is used to make new packaging with varying amounts of recycled content including 100 percent recycled paper content or a mix of both recovered and virgin fiber.[21]

According to the U.S. Environmental Protection Agency, fiber can be recycled up to seven times before it becomes too short for use in new products.[22] Paper with long cellulose fibers are generally more valuable in the recycling process as those fibers can be converted into products that require either long or short cellulose fiber.[23] Paper cups are typically made of these valuable long cellulose fibers as part of a solid bleached sulphate (SBS) paperboard grade.[24]

For a more detailed overview of the paper recycling process please refer to The American Forest & Paper Association's Design Guidance for Recyclability.

Paper Mills

Where do paper mills stand on accepting recovered paper cup materials?

Cups are often cited as "difficult-to-recycle" or "hard-to-recycle,"[25] but the current state of cup recovery is much more nuanced. An increasing number of paper mills publicly accept cups for recycling—according to FPI:

- **30 mills** accept cups in **bales of mixed paper** (which represents more than one third of the mills that consume mixed paper in the U.S.).[26]
- Another **five mills** accept cups in **carton bales** of aseptic and gable top containers.[27]
- In addition to the paper mills accepting cups, **two building board product plants** accept cups in a polycoated pack.[28]
- Some other paper mills accept paper cups in sorted residential paper & news (SRPN).[29]

Cups bring value to mills because they contain high-quality fiber[30] that mills can use in their manufacturing.

What's in a residential mixed paper (RMP) and sorted residential paper & news (SRPN) bale?

In 2021, Moore & Associates conducted research on 90 MRFs to determine the breakdown of mixed paper bales in terms of residential mixed paper and SRPN.[31] We summarize their findings in the table below.

	RMP Composition	SRPN Composition
Old Newsprint (ONN)	10-15%	20-25%
Old Corrugated Containers or Cardboard (OCC)	<5% to 30-40%	<10%
Freesheet (mail, office papers)	10-15%	15-25%
Coated and uncoated mechanical papers	10-15%	15-25%
Other paperboards/boxboards, coated and uncoated	20%	15-20%
Prohibitives	7-8%	15-20%

In 2022, the NextGen Consortium supported a bale composition study on a smaller scale, executed by Resource Recycling Systems (RRS), of three domestic MRFs that process materials from communities that accept paper cups. In these composition studies, **at MRFs in communities that accept cups, we found that paper cups represented less that 0.25 percent of the total bale by weight on average**.[32] To see a more robust breakdown of this composition study, please see the Appendix.

What's in a carton bale?

According to the ISRI scrap specifications, aseptics and gable-top cartons are those that "consist of liquid packaging board containers including empty, used, PE-coated, printed one-side aseptic and gable-top cartons containing no less than 70 percent bleached chemical fiber and may contain up to six percent aluminum foil and 24 percent PE film. Prohibitive Materials may not exceed two percent; Outthrows plus prohibitives may not exceed five percent."[33]

Paper Mills

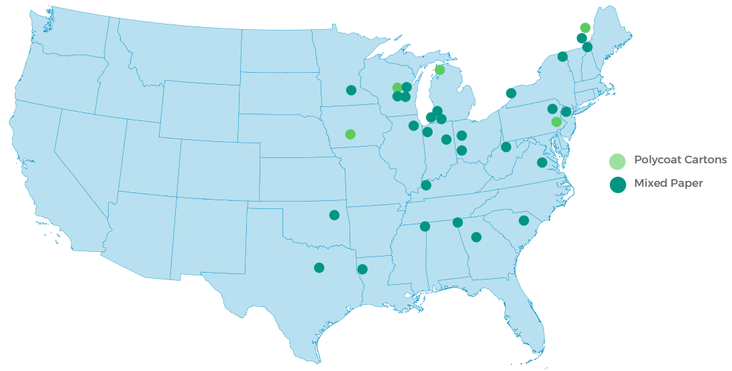
How many mills accept paper cups in their feedstock today?

As previously mentioned, according to the FPI, there are 30 mills in North America that accept paper cups in bales of mixed paper; five mills accept cups in carton bales.[34]

In 2021, FPI helped to organize a group of mills to sign a joint declaration to accept and recycle paper cups.[35] This public reaffirmation of cup acceptance was an important signal to MRFs, cities and other stakeholders that cups are a desirable commodity and can be recycled.

The mills that currently accept paper cups are located in the Midwest, Southeast and Northeast. There are no mills in the western U.S. that currently accept cups. The NextGen Consortium continues to engage mills about the potential for reprocessing cups in an effort to expand the list of available end markets domestically.

According to FPI, the 30 mills that accept paper cups in mixed paper represent 75 percent of U.S. mixed paper demand[36]



As described above, a growing number of mills accept cups with mixed paper or cartons, but none of these mills are west of Dallas. While there are mills in other regions such as the Midwest and Southeast that accept cups, MRFs that sell recovered paper to these mills also supply mills that do not accept cups—and it can be cost-prohibitive for MRFs to create separate bales for different customers.

The NextGen Consortium, in partnership with FPI and Moore & Associates, has made important headway in 2023 by **identifying more than 15 additional mills across North America that are interested in testing cup acceptance or that can process cups today**. We hope that this progress catalyzes a ripple effect leading to expanded cup acceptance and strengthened end markets.

Key Challenges & Opportunity Areas

While more and more domestic mills are accepting cups in bales of mixed paper or cartons, hurdles to widespread recovery still exist. The following are some of the more prominent challenges faced today, but that also equally represent areas of opportunity:

- **Processing equipment and technology vary by mill** and not all mills are equipped to effectively process paper cups with PE-liners.
- **There are no mills in the western U.S. that currently or publicly accept cups**, leading to no domestic market in this region for cups.
- **Export markets for mixed paper bales may classify cups as a contaminant**, presenting a barrier to cities on the East and West coast that rely on these markets. This area is a strategic priority both to understand opportunities in export markets and identify new local end markets that might be available.
- **There is no end market for the plastic PE liner**, which goes to landfill.

Paper Mills

Case Study: Sonoco accepts paper cups at South Carolina mill

*In July 2022, Sonoco announced it would accept paper cups in bales of mixed paper at its paper mill in Hartsville, South Carolina. The NextGen Consortium supported cup trials with Sonoco. We discuss with **Scott Byrne, Director, Global Sustainability Services at Sonoco** how the organization made this decision and what considerations companies might want to take when exploring the recyclability of different types of packaging.*

1. Who is Sonoco and what are you focused on?
Sonoco is a South Carolina-based global packaging company with more than 20 mills worldwide. Among our packaging products, we manufacture rigid paper cans, steel cans, thermoformed plastics and other packaging formats. Sonoco is uniquely positioned as a leading recycler, paper mill operator and paper packaging converter, in addition to other formats, to help push the industry to look towards future innovations and grow end-of-life solutions across the entire paper value chain.

2. How do you typically approach recycling of new products at your mills?
After validating that our mills could recycle rigid paper cups in residential mixed paper, we decided to further demonstrate the ability to recycle other similar polycoated fiber-based containers through the post-consumer mixed paper stream.

3. Where do you currently accept paper cups?
Hartsville, South Carolina. and we are exploring other Sonoco mills as well that use residential mixed paper.

4. What are some of the steps you took to determine that accepting cups wouldn't create new challenges for your mill?
With support from the NextGen Consortium, we conducted two main activities to assess how cups might behave. First, we conducted lab-based testing of both single- and double-sided polycoated fiber cups. Second, and after we were confident that the cups would not pose any issues to our equipment, we ran a large-scale trial whereby we dosed in nearly 20 tons of cupstock and cups into our pulper alongside other mixed paper, increasing the volume relative to other materials to test the system and upper bounds of materials we'd anticipate receiving if we accepted cups. Based on those results, we felt confident that cups could be included in our accepted materials list and we were thrilled to have the mill listed alongside others on FPI's end market map of mills that accept cups.

5. What about your other paper mills?
Before we broadly accept cups at more of our mills, we'd want to distill our findings from the Hartsville location and consider any additional steps those mills would need to take to feel confident in accepting cups. This might include additional lab-and mill-based trials.

Paper Mills

Case Study: Sonoco accepts paper cups at South Carolina mill

6. Any advice you'd give to other mills considering including cups?
Every mill is slightly different, from their equipment to operating conditions to inbound material mix. Testing to those conditions is a key proof point in determining what might work best in that location.

7. What's next for Sonoco in its efforts to improve polycoated paper recycling?
Sonoco is a founding member of the Poly Coated Paper Alliance that kicked-off in March 2023, which aims to increase widespread end-market acceptance of polycoated paper packaging products. We are collaborating with like-minded member brands and industry leaders on developing improved and harmonized data, updated design guidelines, expanded end market acceptance and upgraded mill specifications, among other initiatives.

Paper Mills

How can paper mills test for cup acceptance?

There are several trials that companies, manufacturers and mills can conduct to confirm that cups can be effectively reprocessed.

Lab-based recycling trials

Some mills have onsite testing facilities that they use to evaluate how different packaging formats might behave in their production systems. For example, whether the PE liner in a cup is removed in the repulping process.

In addition, certain labs, such as Western Michigan University's Pilot Plant labs (WMU), North Carolina State University – Pulp and Paper Technical Services Program, and University of Wisconsin, Stevens Point, Wisconsin Institute for Sustainable Technology – Paper Testing Services, conduct repulpability and recyclability trials for different types of paper packaging to determine compatibility. These tests assess different indicators such as recovered fiber yield, recycled paper quality, and the presence of stickies (tacky substances that can contaminate recycled paper). To pass, paper packaging needs to score above certain benchmarks for all of those key categories (i.e., WMU's fiber yield benchmark is >80 percent).[37]

Larger-scale mill trials

While lab-based tests can provide confidence that packaging (in this case, paper cups) can be repulped and recycled, confirmational testing at the mill is recommended to ensure compatibility.

In recent years, several mills have undertaken commercial-scale cup trials to evaluate recyclability. In these tests, mills add cups at varying percentages of the total feedstock (for example five to 10 percent of total inbound) to test how cups impact operational performance and the quality of the resulting output. Mills may look for a number of different indicators to assess how materials are behaving during the tests, including the presence of rejects, quality of recycled paper (i.e., stickies or specks in recycled paper), energy usage, or issues in the pulping or screening systems among others.

What do mills need to accept paper cups?

In general, mills that accept cups in mixed paper bales have similar characteristics:

1. Continuous Running Time:
Most pulpers run continuous and can loop some material back to the pumper for more dwell time. The drum pulp is a continuous pulper that helps the fiber separate from the plastic liner and other contaminants.

2. Requisite Equipment:
They have the requisite de-trashing, screening and cleaning equipment to remove the plastic liner (and other non-fiber materials) from the pulp.

Paper Mills

In the field: Western Michigan University's (WMU) paper pilot plant tests recoverability of traditional PE-lined cups and alternative NextGen Consortium cups

Test Results: Traditional PE-lined cup passed the recovery test

In 2020, the NextGen Consortium commissioned WMU to conduct a repulpability and recyclability study of the common PE-lined fiber cup as part of their SBS-E Certification.[38] The test has two parts: "Repulpability Process" and "Recyclability Process". *The cup passed the test, demonstrating a fiber yield of 89 percent (well above the 80 percent threshold).*

	Results
For both treated and untreated, were the substrate, samples, specimens appropriate?	✓
Fiber yield greater or equal to 80%?	✓
Operational impact acceptable?	✓
Product performance acceptable?	✓
Product appearance/spot count acceptable?	✓
Overall pass/fail by trial	**PASS**

Test Results: NextGen Consortium cups with alternative liners can further improve the recovery of paper

The recovery of paper (fiber yield) in the repulping process is a critical indicator for packaging recoverability. While the traditional PE-lined cup has a fiber yield well above WMU's 80 percent threshold, some NextGen Consortium cups with alternative liners perform even better, behaving more like uncoated paper in the recovery process.

Below is the summary of results:

Cup liner	Fiber yield demonstrated at WMU
Alternative bio-based extrusion coatings/ liner	80-95%
Alternative aqueous coatings/liners	90-99%
Molded fiber	**Possible to acheive up to 99% fiber yield** with the right choice of internal barrier coating.

Paper Mills

In the field: Georgia-Pacific opens cup recycling opportunities at two mills

In September 2020, Georgia-Pacific announced that it is accepting mixed paper bales that contain single-use PE-coated paper cups at its recycled paper mills in Green Bay, Wisconsin, and Muskogee, Oklahoma. This announcement followed two years of collaboration with FPI and the NextGen Consortium and extensive repulping trials at the two mills.

During these repulping trials, Georgia-Pacific tested various levels of cups as a percentage of the total mixed paper bale (two to ten percent) to determine if the pulpers could process cups. There were not any observed issues with repulping the material or with system operations, nor was there an increase in system rejects (fiber, debris or stickies) to outside of normal variation. The composition of the finished stock was not affected.

The trials demonstrated that the Green Bay and Muskogee mills could effectively repulp PE-coated cups as part of mixed paper and screen out PE coatings, while recovering the valuable cup fiber to contribute to making napkins and paper towels.

"Since our facilities in Green Bay and Muskogee started accepting PE-coated paper cups, we have not experienced a significant change in the mixed paper supplied to these mills. We continue to support PE-coated paper cup acceptance."

– John Salvador, Director, Stewardship & Sustainability, Georgia-Pacific

Georgia-Pacific

Paper Mills

Call to action

When in doubt, test! Conduct repulpability tests on paper cups to determine if the fiber can be captured without any negative operational impacts

Data-informed decision making is key. For mills that currently do not accept cups, the NextGen Consortium offers support to run tests to understand if cups can be repulped at the relatively low percentages in which they occur under current market conditions (i.e., well less than one percent of total feedstock).

We welcome you to get in touch with our team here to learn more about our work and how to get involved.

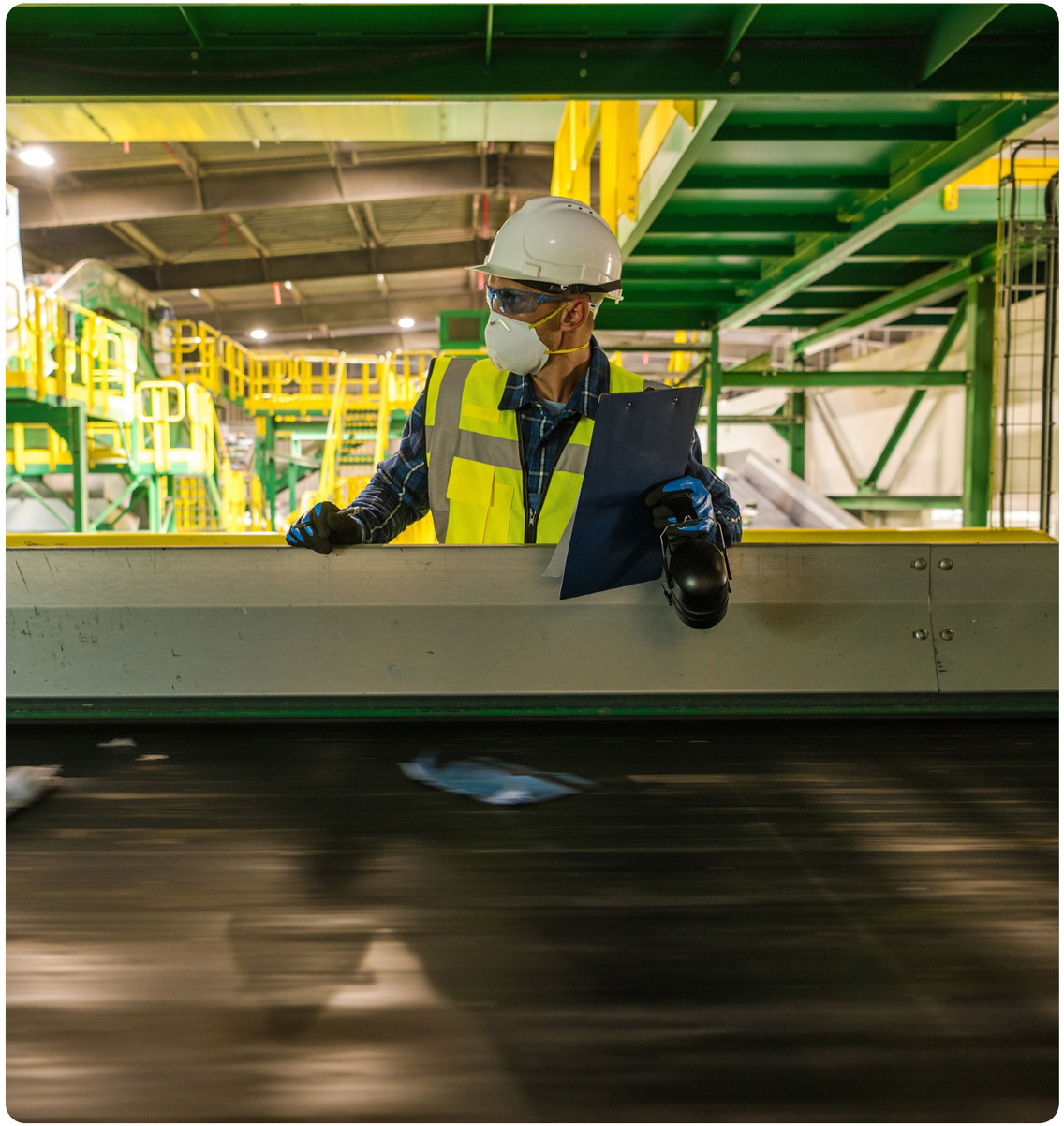
Amplify best practices: Publicize and create market signals to broader industry if you can accept cups at your facilities

From the NextGen Consortium's conversations with mills across the U.S., we know some of them currently process cups in mixed paper without any negative impacts to operational performance and paper quality. Those mills should consider making their acceptance of cups public, which could come in the form of signing FPI's paper mill statement, if they have not done so already. A public statement is a strong signal to MRFs and communities that cups are wanted and can be reprocessed.

Materials Recovery Facilities (MRFs)

What role do MRFs play in paper cup recycling?

MRFs play a critical role in sorting recyclables into marketable bales. Through a combination of screens, optical and robotic sorters, and human labor, MRFs separate and sort materials into bales that are marketed and sold to recyclers (such as paper mills). In this role, MRFs serve as an intermediary between the accepted recyclables in their local community and the end markets for those items, ensuring that everything that can be recycled is delivered to reprocessors. To maximize efficiency and profitability, MRFs seek to minimize the amount of non-recyclable materials that might contaminate the recycling stream and cause operational impacts like damaged screens, which are a cost for MRFs to dispose.



Material Recovery Facilities

How are paper cups sorted at the MRF?

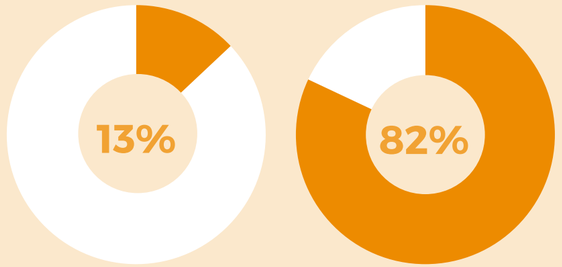
When the NextGen Consortium started working on paper cup recycling infrastructure in 2019, we hypothesized that if cups entered a MRF in a flattened form, they would likely flow with other paper items into the mixed paper line and not into the container line. If cups did end up on the container line, they would need human or technical sortation to move them into a confirmed marketable bale on the container line (potentially a carton bale), or back into the fiber line for additional sorting. Otherwise the cups will end up in residue and be disposed.

The Consortium has since tested that hypothesis and partnered with FPI and RRS to run several MRF studies to evaluate how cups flow through MRFs. During these tests, paper cups were tagged with radio-frequency identification (RFID) tags to trace their movement through the MRFs. Both flattened and non-flattened cups were used.

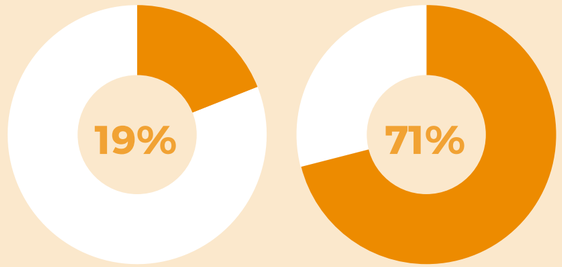
When the NextGen Consortium started working on paper cup recycling infrastructure in 2019, we hypothesized that if cups entered a MRF in a flattened form, they would likely flow with other paper items into the mixed paper line and not into the container line. If cups did end up on the container line, they would need human or technical sortation to move them into a confirmed marketable bale on the container line (potentially a carton bale), or back into the fiber line for additional sorting. Otherwise the cups will end up in residue and be disposed.

Cup sortation results

On average, and across trials at three MRFs, we found that most cups traveled with the container line, some to the fiber line and the remainder to residue.[39]



Approximately **13 percent** of 3D (i.e., non-flat) cups were sorted to the fiber line, and roughly **82 percent** to the container line.



Approximately **19 percent** of flattened cups were sorted to the fiber line, and roughly **71 percent** to the container line.

The Consortium has since tested that hypothesis and partnered with FPI and RRS to run several MRF studies to evaluate how cups flow through MRFs. During these tests, paper cups were tagged with radio-frequency identification (RFID) tags to trace their movement through the MRFs. Both flattened and non-flattened cups were used.

The NextGen Consortium's testing disproved our initial hypothesis and illustrated that some form of sortation via technology (e.g., robotic sortation) or manual labor is needed to divert cups back to the mixed paper line or potentially into a cup/carton bale. The good news is we have high confidence where most cups go.

Due to the small volume of cups that MRFs may receive, investing solely in cup sortation may not be economically viable and requires situational investigation. As an example, some MRFs may be able to leverage existing equipment or innovations that can remove paper products from the container line and back into fiber. Others can explore installing or repurposing robotics to help boost material recovery volumes. Each MRF might have a slightly different configuration however, so bespoke assessment and innovation is likely required.

Material Recovery Facilities

Case Study: A statewide effort – Rumpke leads statewide effort for paper cup recycling across Ohio, Kentucky, Indiana and West Virginia

In early 2022, Rumpke, a large privately-owned residential and commercial waste and recycling company, added disposable paper cups to the list of accepted materials for recycling in their facilities across Ohio, Kentucky, Indiana and West Virginia. Alongside paper cups, Rumpke will now also accept aluminum cups and plastic PP cups.

The paper cups handled at Rumpke facilities will be transported to nearby paper mills that publicly accept paper cups. These cups will then be processed into new materials, such as cardboard boxes and paperboard. This demand from end-users, such as paper mills, helps move material along the recycling value chain, in doing so, diverting meaningful volumes of cups from landfill and keeping valuable materials in play.

"Rumpke is constantly looking for ways to advance our recycling program and grow our acceptable materials list to help our customers meet their personal and corporate sustainability goals. We have been at the forefront of the circularity conversation, working with manufacturers and end users to ensure our customers' material has a beneficial second life. The addition of fiber, plastic and aluminum cups to our program, is another great example of all parties coming together to meet a need from consumers and satisfy a demand from end users for more material."

– Jeff Snyder, Director of Recycling at Rumpke

RUMPKE® Waste & Recycling

Material Recovery Facilities

Call to action

Collaboration is critical: MRFs should work with their mill customers and communities to consider how they might expand acceptable recycling format lists

There is a growing number of mixed paper mills that accept bales of recycled feedstock that include paper cups. MRFs located in regions such as the Midwest or Southeast U.S., should consider what it might take to include cups in their acceptable recycling formats list. Rumpke is an excellent example of a MRF that saw an opportunity to expand its recycling program to include cups due to nearby end markets accepting the materials. MRF acceptance of cups is a critical step to expanding community access for cup recycling. In regions with few or no paper mills that accept mixed paper, exploring opportunities for mechanically sorting cups into other marketable bales, such as carton bales with an end market could be a viable option.

Conduct cup sorting tests: MRFs can explore confirmational testing to evaluate optimal location to sort cups

The NextGen Consortium, FPI and RRS conducted MRF flow studies to illustrate how cups move through a MRF. For MRFs interested in cup recycling, we recommend conducting necessary confirmational testing to understand how cups flow at those facilities, where and what kind of innovations might be required to effectively direct them to the appropriate bale, and at what cost. This information helps to justify improvements to existing performance within the MRF by leveraging current technology or investing in new sortation equipment or labor to capture cups. Previous composition studies indicate that cups are a very small percentage of total recycled fiber (less than 0.5 percent), which may impact targeted innovations across communities and mill customers.

Sharing is caring: Share success stories to help inspire other MRFs to explore cup recycling

Several MRFs have demonstrated the ability to successfully process and sort cups to a marketable bale with an accepted end market (i.e., mixed paper or cartons). These success stories can help create a pathway to widen the aperture and volume of material recovery programs. MRF experiences, therefore, including the successes and challenges, are critical insights to elevating industry practices and evolve industry standards.

We welcome you to get in touch with our team here to learn more about our work and how to get involved.

Communities

What role do communities play in paper cup recycling?

Communities help determine what materials, including cups, are accepted in recycling programs. Some cities such as New York have sanitation departments that directly manage their own collection of recyclables while others contract out collection to service providers.

Who has access to paper cup recycling today?

The Sustainable Packaging Coalition defines residential recycling access as "the percentage of U.S. residents with recycling programs available for certain packages in the communities where they live."[40]

In 2022, the NextGen Consortium and FPI commissioned a study on paper cup recycling access, which found that **approximately 11 percent of households in the U.S. had access to residential recycling programs that accept cups**.[41] By comparison, corrugated boxes can be recycled in more than 87 percent of communities while HDPE bottles, jugs and jars, and plastic containers have recycling access in 87 percent of communities.[42]

Currently, the 11 percent access figure is well below the 60 percent threshold needed to designate an item as widely recyclable. While there has been considerable improvement, a consistent demonstration of widespread interest and collaboration in this space is needed.

Several large cities across the U.S. such as **Atlanta, Chicago, Denver, Detroit, Louisville New York, San Francisco, Seattle, New York** and **Washington, DC** currently accept cups. Of the top 100 cities in the U.S. by population, approximately a quarter currently accept cups in their residential recycling stream.[43]

Learn more here about how FPI worked with cities to add cups to their accepted recycling materials lists.

~11%

of households in the U.S. had access to residential programs that accept cups in 2022

Communities

What are the challenges and opportunities related to increasing access to cup recycling in communities across the U.S.?

CHALLENGES

Adding new items to accepted lists in recycling programs takes time, as cities want to ensure there are viable markets for the material.

Brands, industry groups, recyclers and other organizations across the cup recovery value chain play an important role in promoting cup recovery and recycling efforts. One way they can do this is by educating their local governments and stakeholders to expand cup recovery. For example, the state of Oregon issued a call for information in February 2022 to help determine which materials to include or exclude on statewide recycling lists by July 2025, which will ultimately inform their final decision on whether or not to accept cups.

After point of sale, cups can be challenging to collect due to their dispersion across multiple locations. In the U.S. more than three quarters of to-go hot beverage cups leave the retail environment—that is, individuals consume their beverages away from the store.[44] This figure is even higher in quick service restaurant (QSR) environments.[45]

To effectively capture cups after use, collection channels must be established in places like offices, homes and parks, among other areas. In the U.S., paper cups are generally not separately collected in retail locations due to lack of storage space and the additional cost and operational challenges of separate collection.

Coordination and alignment among stakeholders in the recycling value chain can be complex, as each community has nuanced management practices.

Cities, for example, may be served by multiple MRFs that sell to different mills. And the geographical proximity of these communities to mills that accept cups can vary significantly. Every actor along the value chain needs to be aligned if we are to increase access to cup recovery. This means that the city, the MRFs that serve the city and the paper mill must align on adding cups to an expanded acceptable for recycling list. This process takes time and coordination.

OPPORTUNITY

Shifting consumer behavior around recycling is challenging and requires significant investments in educational resources and campaigns. If cups are listed as accepted recyclable items, it is important for cities to amplify and promote their recyclability in a clear manner. By effectively communicating the importance of cup recycling and providing clear instructions on how to dispose of them, cities can help to "nudge" individuals to recycle these cups.

In designing the social and behavior change communications to engage communities, city recycling teams will need to consider how and where beverages are consumed (and the cup disposed). For example, if a beverage is consumed at home, an individual could put the cup in the recycling bin. If consumed at work or elsewhere, the recycling pathway and communications approaches will need to be determined. Designing and meeting the existing consumer experience will be critical to recapturing the paper cup.

Communities

Case Study: FPI's Community Partnership Program drives better recycling outcomes for foodservice packaging

Since 2017, The Foodservice Packaging Institute's (FPI) Community Partnership Program has been leading engagements with communities across the country to expand residential recycling and composting programs to include foodservice packaging such as paper and plastic cups, takeout containers and pizza boxes.

Through these engagements, FPI collaborates with stakeholders including community representatives, local MRFs and end markets to ensure that more foodservice packaging is effectively recovered and that residents are informed on proper disposal practices for packaging waste.

Prominent community partners include Washington D.C., Atlanta and Detroit, among several others. A fundamental component of the programs is driving not only new recycling access, but also fostering more active resident participation. Educating residents about recyling reduces contamination at recycling facilities, lowers costs and helps to drive stronger recycling rates.

The impacts of the program have been significant. Since the program began, **these community partnerships have enabled recycling access for foodservice packaging to 6.9 million additional households in the U.S**. Further, the program has helped decrease contamination substantially.

For example, in Chattanooga, contamination rates were nearly cut in half, post-engagement. This enables facilities to capture more highly valued recycled materials, such as cups.

For more information on FPI's Community Partnership Program, please visit their website.

FPI FOODSERVICE PACKAGING INSTITUTE®

"The Community Partnership Program is an expansion of our foodservice packaging recovery efforts that begun in 2011 to focus on residents and expand their ability to recycle more everyday items. Through our program, not only are we diverting more foodservice packaging from landfills for millions of residents, but we are helping the system capture more high-value materials and convert them into better uses."

- Natha Dempsey
President of
Foodservice
Packaging Institute

Communities

Call to action

Teamwork makes the zero-waste dream work: To achieve their zero waste goals, communities should engage recycling service providers on cup recyclability

Many communities have ambitious goals for increased recovery of resources and prevention of materials going to landfill, where they emit greenhouse gases and represents a lost revenue opportunity. Communities can engage their recycling service providers and MRFs to understand if cups are acceptable in the mills that process the cities' paper. If yes, these regions should add cups to the acceptable lists for recycling and communicate this broadly and consistently to residents. If cups are not accepted by the mills and MRFs, communities should explore if and how this might change. Ultimately, enhancing education, connectivity and communication across the cup recycling value chain is key to keeping these valuable resources out of the landfill.

We welcome you to get in touch with our team here to learn more about our work and how to get involved.

Consumers

What role do consumers play in paper cup recycling?

Consumers purchase their beverage in a paper cup and generally dispose of them in the trash, which then goes to landfill. In cities where cup recycling is available, consumers might place their cups in the recycling bin.

The NextGen Consortium's research unveils insights on consumer purchasing and consumption behaviors

Over the past two years, the NextGen Consortium has surveyed thousands of consumers on how they buy and consume beverages on the go, and what they do with their cups after use.[46] We examined survey results across three types of cups for: 1) hot coffee, 2) iced coffee, and 3) fountain soda. These findings inform not only how to improve recycling and composting outcomes for cups today, but also how to optimize for a more reusable future for them.

>70%

of consumers believe their paper cup, and its components (i.e. lid, sleeve, etc.) can be recycled, although most (>50%) still put their cups in the trash.

This highlights that while most customers believe that their cups can be recycled, only 11 percent have access to those services today.[47] The NextGen Consortium is working to bridge this gap.

Consumers

In the field: What consumers think and do

~40%

of consumers surveyed pick up their coffee at the drive-thru and consume it on-the-go (i.e. ~41% consume their beverage in the car).

Most consumers surveyed purchase beverages in single-use cups on-the-go, during busy moments.

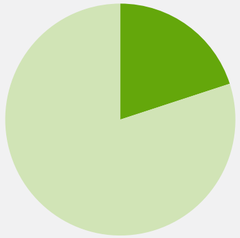
Most consumers surveyed finished drinking their beverage within 30 minutes to one hour, and hold on to their cup less than one hour before disposing it.

~70%

of consumers surveyed throw their cup away at home, at the office or at school.

Approximately 12% dispose of their cup in a sidewalk can/bin.

Roughly 13% dispose it inside or outside the store/restaurant.

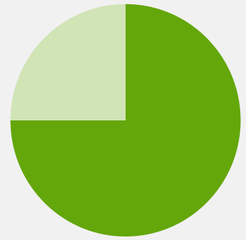


~20%

of consumers regularly use a durable, reusable cup and 10% “almost always” bring a reusable cup with them.

Bringing and reusing your own cup is a small, but growing trend, especially in certain segments.

~13% of consumers purchasing their regular cup at convenience/gas stations vs. other restaurant/coffee shop settings “almost always” bring a refillable cup.



~3/4

of consumers surveyed would prefer to recycle, reuse or compost their cup as opposed to placing it in the trash.

Given the choice, most consumers surveyed would prefer to dispose of their cup responsibly.

Consumers surveyed express an interest in alternative disposal methods to landfill, but do not want to go out of their way to do so.

Consumers

Call to action

The most sustainable cup is the reusable one you already own: When getting your daily coffee or tea to-go, you can bring a reusable cup to cut down on waste.

One established way to reduce single-use cup waste is to "Bring-Your-Own-Cup." Many companies offer such cups for purchase at their locations in creative designs, various sizes and for both hot and cold beverages. Once you choose a cup you love, it can be great to keep your drink warm or cold for an extended period or to protect against any spillage during your commute versus the single-use alternative. Many coffee shops and restaurants offer discounts when you bring your own cup, making it a money-saving choice!

Check your local recycling guidance: If you do opt for a disposable paper cup, be sure to empty any leftover liquid and recycle the cup if your community accepts cups in their system.

Recycling programs can vary state by state or even city by city, so it's essential to check if paper cups are accepted in your local recycling program before tossing them into a recycling bin. It's also important to consider that paper cups often have lids and sleeves, which may be made from different materials so be sure to check the labeling on packaging before tossing materials into the wrong recovery stream and causing costly contamination. The Recycling Partnership's website can help answer questions on what is accepted for recycling where you are.

We welcome you to get in touch with our team here to learn more about our work and how to get involved.

Brands

What role do brands play in paper cup recycling?

Brands play a crucial role in reducing packaging waste. Among other activities, brands can:

- *Create demand channels for recycled content by incorporating more of it in their packaging*
- *Use more sustainably sourced or regenerative materials*
- *Design packaging to be more easily recycled, reused and recovered*
- *Use less materials in packaging through techniques such as lightweighting*
- *Communicate proper disposal methods to their customers*

How brands can commit to reducing packaging waste?

1. SOURCE POST-CONSUMER RECYCLED CONTENT

Brands can make a significant impact by increasing the use of post-consumer recycled content (PCR) in their paper-based packaging. The use of PCR helps to create a market demand for recycled content and strengthen recycling end markets. To catalyze demand, brands should commit to increasing the use of PCR in their packaging. Brands should collaborate with strategic supply chain partners to consider which of their packaging categories can include PCR and set aggressive, yet attainable targets, to help grow these end markets and create new value chains that help pull recycled content through the system. The Association of Plastic Recyclers (APR) Demand Champion program is an example of this theory in action, with its focus on advancing the concept that “Demand creates value and value drives recycling.”

SPOTLIGHT ON NEXTGEN CONSORTIUM FOUNDING PARTNERS

In 2022, Starbucks began introducing hot paper cups with 30 percent recycled content (up from 10 percent).[48] These cups, which will be rolled out nationwide by 2025, will also be lightweighted, using less fiber and plastic liner in their composition.[49]

McDonald’s continues to make significant advancements to ensure that 100 percent of primary guest packaging is sourced from renewable, recycled or certified materials by the end of 2025.[50] By the end of 2022, more than 97 percent of McDonald’s primary fiber-based guest packaging was sourced from recycled or certified sources, including the following schemes: Forest Stewardship Council (FSC); Programme for the Endorsement of Forest Certification (PEFCTM) or PEFC-endorsed national systems.[51]

Brands

How brands can commit to reducing packaging waste?

2. COMMUNICATE IN-STORE WITH CONSUMERS

Brands have terrific channels to communicate with customers on a variety of topics, including what they should do with their packaging when they are done.

Most single-use paper cups leave the store after purchase. Brands can communicate recycling availability to consumers at point of purchase, such as at the counter, drive-thru or mobile pay. This helps to inform the consumer if any of the purchased items come in recyclable packaging in that specific market, such as cups. Retail locations should clearly communicate to consumers how cups should be disposed of (i.e., clean and empty before being recycled). Drive-thru window clings present a great opportunity to engage consumers with this guidance along their journey.

In addition to communication in-store, brands can both collect recyclable packaging in the front- and the back-of-house.

To improve on-site collection (both in the back-of-house and front-of-house), brands should work closely with their commercial haulers in each regional location to understand which types of packaging are acceptable in their local commercial recycling systems. In regions where cups are acceptable, this can be clearly articulated through effective bin signage and in-store messaging, making it easier for customers to properly dispose of their cups.

Case Study: The U.K.'s national cup recycling scheme

One example of a commercial cup recycling program is the U.K.'s National Cup Recycling Scheme. In this program, major brand retailers have installed designated cup recycling bins in stores. Consumers are encouraged to dispose of their cups in these bins, regardless of the brand of origin. Cups are then collected by a participating waste hauler and sent to authorized mills for reprocessing. While this scheme has been successful in the U.K., similar programs have not been launched in the U.S. at scale.

Brands

Why does collaboration with other brands matter?

Many brands face similar challenges when it comes to paper cup recycling. Brands engaging in industry collaborations can:

Demonstrate the high level of commitment and ambition needed

to truly move the needle on global challenges, setting a positive precedent.

Send a unified signal

to the market, generating efficiencies of scale and standardization that incentivize manufacturers, recovery infrastructure and technology to adopt more sustainable practices.

Accelerate progress

by increasing efficiencies through shared resources and insights.

Reframe the issue

beyond short-term fixes to long-lasting, systemic solutions by acknowledging the need for collective action.

Third-party collaborations such as Closed Loop Partners' NextGen Consortium and FPI's Paper Recovery Alliance Plastics Recovery Group (PRA/PRG) are bringing brands together to tackle difficult challenges around cup recovery and show how collaboration can help brands meet their goals faster, together. These groups together are advancing cup recycling as showcased in the examples cited throughout this report, including:

- End market engagement
- Thoughtful cup design and innovation
- Pilots at key nodes of the value chain such as sortation and recovery

Brands

Call to action

Set ambitious packaging targets: Helps hold brands accountable and steer towards a shared goal.

To drive meaningful progress, companies should set specific, time-bound sustainability targets. Tracking and reporting progress towards concrete goals will also help hold organizations accountable and steer them towards real reductions in their plastic and carbon footprint. Ambitious yet feasible targets give brands a practical roadmap while pushing them to make their operations and supply chains more sustainable.

We welcome you to get in touch with our team here to learn more about our work and how to get involved.

Share the knowledge: Share educational materials about recycling, where possible, with customers to help bring them along the journey.

Brands have an opportunity to educate consumers about sustainability. By sharing materials that explain issues like packaging waste, companies can help consumers understand how their own choices make an impact. Simple infographics on packaging or social media posts explaining the environmental costs behind items can nudge consumers towards more sustainable decisions. The more people learn about sustainability, the more they can contribute to the solution. Small bits of education from brands can go a long way in bringing customers along on the sustainability journey.

Join in! Take part in industry-wide collaborations that take a holistic approach to advancing recoverability of valuable materials such as paper cups.

To advance recoverability of materials like paper cups, brands should join collaborative industry initiatives. By working together across sectors, companies can promote standardized labeling, materials and processes that support recoverability. No single brand can overhaul the system on their own, but through industry groups, companies can jointly advocate for policy changes and infrastructure to recover valuable materials. The more brands view waste as a shared challenge, the more progress society can make towards a circular economy.

Conclusion

What's Next?

Looking ahead

As the NextGen Consortium works to reduce foodservice packaging waste, we continue to improve and align recovery and recycling infrastructure across the value chain; from collection, and sortation to processing and strengthening end markets.

In 2023, building on the existing 30+ mills that currently accept paper cups**, the NextGen Consortium made important headway by identifying more than 15 additional mills across North America that are interested in testing cup acceptance or that can process cups today**. This effort was conducted in partnership with FPI and Moore & Associates.

While cups may represent a small portion of the overall recycling stream, they are a highly visible waste item that brands and other stakeholders are taking action to address. Cups contain high-quality fiber that will be valuable to paper mills especially as other paper sources like newsprint and office paper decline. We need the entire value chain to work together to keep these valuable materials out of landfill.

We are thrilled to see early receptiveness and commitment from mills to grow end markets for recycled cups. We plan to continue gaining buy-in from more mills to maximize this momentum in the months and years ahead through collaborative action and expanding our efforts upstream to get more MRFs and communities involved in capturing cups at the source and avoiding waste.

Going forward, we see collaborative action as critical to lasting success. This includes working closely with groups such as FPI, communities, MRFs, mills and other industry stakeholders to keep these materials in play. In the pursuit of a circular future, it takes a village to raise awareness and work together, for there is still much to be accomplished on our journey to improve cup recyclability.

"We know that unprecedented collaboration across all stakeholders—mills, MRFs, brands, cities and more—will be absolutely critical to recovering the value of to-go paper cups. Only by working hand-in-hand, sharing knowledge and combining our efforts can we ensure paper cups avoid landfills and prevent environmental pollution. The NextGen Consortium looks forward to continuing to play a critical role in advancing innovation, testing and cross-industry partnerships to make paper cup recycling a reality. With openness, creativity and teamwork, a solution is within reach."

-Kate Daly, Managing Director and Head of the Center for the Circular Economy at Closed Loop Partners

Abbreviations & Definitions

AF&PA: The American Forest & Paper Association

Contaminant: Any item or material that reduces the quality of paper for recycling or, in large quantities, makes it unrecyclable. Contaminants include metal, foil, glass, plastic, hot melt or pressure sensitive adhesives, food, hazardous waste, carbon paper, waxed boxes and synthetic fabrics. Collecting paper commingled with other recyclables during the collection process may increase contaminant levels. Sometimes referred to as Prohibitives (see definition below)

Containerboard (linerboard and medium [fluted inner layer]): Layers of paper glued together to make corrugated boxes—sometimes referred to as cardboard (the most recycled product in the country)

FPI: Foodservice Packaging Insitute

Mixed Paper: (ISRI Grade #54) A mixture of various paper grades, such as old mail, paperboard packaging, magazines, copy and computer paper, egg cartons and more for recycling

MRF: Materials Recovery Facility

OCC: (ISRI Grade #11 & 12) Old Corrugated Containers

PE: Polyethylene is a type of plastic. This type of plastic usually appears as milky-opaque, opaque, or translucent depending on the thermal history and film thickness of the material

PP: Polypropylene (Resin Code 5), is a type of plastic often used in foodservice packaging

Prohibitive: A prohibitive is any material that, if it exceeds allowed limits, would make recycled paper unusable as the grade specified

Pulp: The solution resulting from blending wood, recovered paper, or in some cases, cotton with water to break it down into individual cellulose fibers. This is the fibrous material used to make paper

RMP: Residential Mixed Paper from curbside collection. It is a sub-grade of #54 Mixed Paper

RRS: Resource Recycling Systems

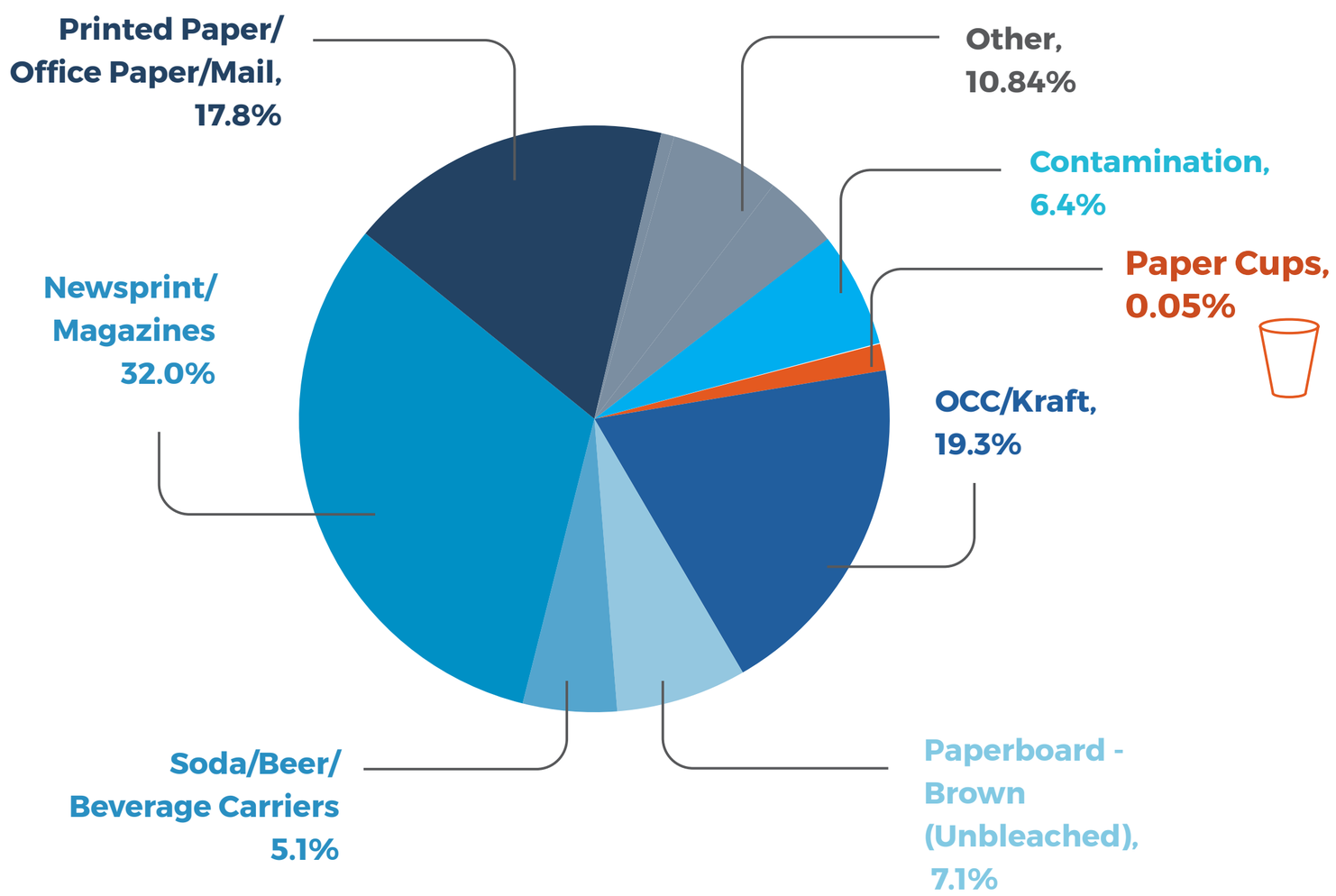
SRPN: (ISRI Grade #56) Sorted residential paper & newspapers

The Consortium: The NextGen Consortium

WMU: Western Michigan University

Appendix

In 2022, the NextGen Consortium supported a bale composition study, executed by RRS, of three domestic MRFs that process materials from communities that accept paper cups. In this study, we found that paper cups represented 0.05 percent of the total bale by weight on average.[52]



End Notes

1. S. Vignieri, “Legacy of the Disposable Cup,” Science 368, no. 6489 (April 24, 2020): 382, https://www.science.org/doi/10.1126/science.2020.368.6489.twil.
2. Resource Recycling Systems (RRS), “Availability of Recycling for Cups & Tubs in the U.S.,” Report sponsors Closed Loop Partners and Foodservice Packaging Insititute (FPI), August 2022.
3. S. Vignieri, “Legacy of the Disposable Cup,” Science 368, no. 6489 (April 24, 2020): 382, https://www.science.org/doi/10.1126/science.2020.368.6489.twil.
4. Moore & Associates and FPI, “White Paper: The State of Paper Cup Recycling,” January 27, 2022, https://static1.squarespace.com/static/5e8221dbc8b11929c3f7eef7/t/61fd9d504264206ae6406d4e/1644010833194/The+State+of+Paper+Cup+Recycling+-+Moore+and+Associates+2022.pdf.
5. Closed Loop Partners, “Bringing Reusable Packaging Systems to Life: Lessons Learned from Scaling Reusable Cups,” January 13, 2021, https://www.closedlooppartners.com/insights/bringing-reusable-packaging-systems-to-life-lessons-learned-from-scaling-reusable-cups.
6. Waste Advantage, “New Infographic Reveals the Waste Mountain of Coffee Cups we Produce Per Year, November 16, 2016, wasteadvantagemag.com/new-infographic-reveals-the-waste-mountain-of-coffee-cups-we-produce-per-year/.
7. The American Forest & Paper Association (AF&PA), “Paper Recycling By the Numbers,” 2022, https://www.afandpa.org/priorities/recycling.
8. Ibid.
9. Waste Advantage, “New Infographic Reveals the Waste Mountain of Coffee Cups we Produce Per Year, November 16, 2016, wasteadvantagemag.com/new-infographic-reveals-the-waste-mountain-of-coffee-cups-we-produce-per-year/
10. Resource Recycling Systems (RRS), “Availability of Recycling for Cups & Tubs in the U.S.,” Report sponsors Closed Loop Partners and Foodservice Packaging Insititute (FPI), August 2022.
11. Closed Loop Partners, Proprietary Independent Research, 2023.
12. Foodservice Packaging Institute, “End Markets for Post-Consumer Paper Cups,” October 2023, https://static1.squarespace.com/static/5e8221dbc8b11929c3f7eef7/t/653153fcb73e0e305760ae2b/1697731581027/End-Markets-for-Paper-Cups.pdf.
13. Ibid.
14. Arlene Karidis, “Georgia-Pacifric Recovers from PE-Coated Cups,” Waste 360, October 8, 2020, https://www.waste360.com/recycling/georgia-pacific-recovers-fiber-pe-coated-cups.
15. Marissa Heffernan, “Chicago begins curbside collection of paper cups,” Resource Recycling, July 17, 2023, https://resource-recycling.com/recycling/2023/07/17/chicago-begins-curbside-collection-of-paper-cups/
16. Rumpke, “Rumpke Expands Acceptable Recycling Items List,” February 1, 2022, https://www.rumpke.com/newsroom/article/2022/02/01/rumpke-expands-acceptable-recycling-items-list.
17. The American Forest & Paper Association (AF&PA), “Are Paper Cups Recyclable,” April 18, 2022, https://www.afandpa.org/news/2022/are-paper-cups-recyclable.
18. Ibid.
19. Closed Loop Partners, “What Happens Next? Exploring what consumers do with their single-use cups after purchase,” Proprietary Independent Research, December 2021.
20. The American Forest & Paper Association (AF&PA), “Are Paper Cups Recyclable,” April 18, 2022, https://www.afandpa.org/news/2022/are-paper-cups-recyclable.
21. U.S. Environmental Protection Agency, “Paper Making and Recycling,” September 1, 2016, https://archive.epa.gov/wastes/conserve/materials/paper/web/html/papermaking.html.
22. Ibid.
23. Ibid.
24. Moore & Associates and FPI, “White Paper: The State of Paper Cup Recycling,” January 27, 2022, https://static1.squarespace.com/static/5e8221dbc8b11929c3f7eef7/t/61fd9d504264206ae6406d4e/1644010833194/The+State+of+Paper+Cup+Recycling+-+Moore+and+Associates+2022.pdf.
25. Brian Taylor, “Does coffee cup recycling have a weak link?,” Recycling Today, July 13, 2022, https://www.recyclingtoday.com/article/coffee-cup-recycling-coatings-collection-retail-quality/.
26. Foodservice Packaging Institute, “End Markets for Post-Consumer Paper Cups,” October 2023, https://static1.squarespace.com/static/5e8221dbc8b11929c3f7eef7/t/653153fcb73e0e305760ae2b/1697731581027/End-Markets-for-Paper-Cups.pdf.
27. Ibid.
28. Ibid.
29. Ibid.
30. Susan Cornish, “Paper cup recycling: Reality or rhetoric,”December 2018, https://www.recyclingtoday.com/article/paper-cup-recycling-reality-or-rhetoric/.
31. Moore & Associates, Proprietary Independent Research, 2021.
32. Resource Recycling Systems (RRS), “Combined findings from three MRF Flow Studies that took place in 2021,” Report sponsors Closed Loop Partners and Foodservice Packaging Insititute (FPI) 2021.
33. ISRI, “ISRI Specifications Update,” https://www.isri.org/news-publications/news-details/2019/12/17/isri-specifications

End Notes

34. Foodservice Packaging Institute, “End Markets for Post-Consumer Paper Cups,” October 2023, https://static1.squarespace.com/static/5e8221dbc8b11929c3f7eef7/t/653153fcb73e0e-305760ae2b/1697731581027/End-Markets-for-Paper-Cups.pdf.
35. Foodservice Packaging Institute, “We Want Your Paper Cups!”, December 2021, https://static1.square-space.com/static/5e8221dbc8b11929c3f7eef7/t/62b4cd972a9bc266e6bbdfae/1656016282422/Pa-per-Mill-Statement.pdf.
36. Foodservice Packaging Institute, “End Markets for Post-Consumer Paper Cups,” October 2023, https://static1.squarespace.com/static/5e8221dbc8b11929c3f7eef7/t/653153fcb73e0e-305760ae2b/1697731581027/End-Markets-for-Paper-Cups.pdf.
37. The American Forest & Paper Association (AF&PA), “Design Guidance for Recyclability,” March 16, 2021, https://www.afandpa.org/sites/default/files/2021-08/AFPADesignGuidanceforRecyclability_FI-NAL_031621.pdf
38. Closed Loop Partners, Proprietary Independent Research, 2023.
39. Resource Recycling Systems (RRS), “Combined findings from three MRF Flow Studies that took place in 2021,” Report sponsors Closed Loop Partners and Foodservice Packaging Insititute (FPI) 2021.
40. Sustainable Packaging Coalition, “Centralized Study on Availability of Recycling” 2020-2021, https://sustainablepackaging.org/wp-content/uploads/2022/03/UPDATED-2020-21-Central-ized-Study-on-Availability-of-Recycling-SPC-3-2022.pdf
41. Resource Recycling Systems (RRS), “Availability of Recycling for Cups & Tubs in the U.S.,” Report sponsors Closed Loop Partners and Foodservice Packaging Insititute (FPI), August 2022.
42. Sustainable Packaging Coalition, “Centralized Study on Availability of Recycling” 2020-2021, https://sustainablepackaging.org/wp-content/uploads/2022/03/UPDATED-2020-21-Central-ized-Study-on-Availability-of-Recycling-SPC-3-2022.pdf.
43. Closed Loop Partners, Proprietary Independent Research, 2023.
44. Closed Loop Partners, “What Happens Next? Exploring what consumers do with their single-use cups after purchase,” Proprietary Independent Research, December 2021.
45. Ibid.
46. Closed Loop Partners, “What Happens Next? Exploring what consumers do with their single-use cups after purchase,” Proprietary Independent Research, 2021-2022.
47. Resource Recycling Systems (RRS), “Availability of Recycling for Cups & Tubs in the U.S.,” Report sponsors Closed Loop Partners and Foodservice Packaging Insititute (FPI), August 2022.
48. Starbucks, “Global Environmental and Social Impact report,” 2022.
49. Ibid.
50. McDonald’s, “Packaging, Toys & Waste,” https://corporate.mcdonalds.com/corpmcd/our-purpose-and-im-pact/our-planet/packaging-toys-and-waste.html#:~:text=Transitioning%20away%20from%20virgin%20fos-sil,Meal%20toys%20around%20the%20globe.
51. McDonald’s “Responsible Sourcing,” https://corporate.mcdonalds.com/corpmcd/our-purpose-and-impact/food-quality-and-sourcing/responsible-sourcing.html#fn6
52. Resource Recycling Systems (RRS), “Combined findings from three MRF Flow Studies that took place in 2021,” Report sponsors Closed Loop Partners and Foodservice Packaging Insititute (FPI) 2021.

CONTACT

All inquiries can be directed to

admin@closedlooppartners.com

closedlooppartners.com

nextgenconsortium.com

linkedin.com/company/closed-loop-fund/

twitter.com/loopfund