U.S. EPA

America Recycles

SUCCESS STORIES IN RECYCLING

From the Signers of the America Recycles Pledge

NOVEMBER 2019

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PUBLICATION NUMBER: 530K19004

Introduction

Next year, the U.S. Environmental Protection Agency (EPA) will celebrate its 50th anniversary. In that time, we have made incredible progress cleaning up our air, water, and land. Recycling has been an essential part of that success. In 1970, household recycling was in its infancy - the national recycling rate was less than 10 percent. It was not until 1980 that Woodbury, New Jersey became the first city to offer curbside recycling. Today, recycling programs can be found across the country, and the national recycling rate is over 35 percent!

People want to do their part for the environment including recycling, but it can be difficult to understand what materials can be recycled and where to recycle them. Further, expanding access to recycling and enhancing infrastructure are key elements to improving the recycling system, but financing upgrades can be challenging.

While challenges do exist, on America Recycles Day, it is important to celebrate successes to remind us of the significant progress made by working together. Incredible work to propel the state of recycling into the future is being done across the recycling system from municipalities and materials recovery facilities to technology providers, companies, and more.

The following stories are a small sampling of the many recent successes in the field of recycling. Each story comes from companies and organizations that signed EPA's America Recycles Pledge, and they represent that entity's view of how active participation in America's recycling system has helped that organization. EPA has merely edited for clarity and length. Please note that inclusion of these stories does not constitute an endorsement of any of these entities or their products and services.

Additionally, in honor of Veterans Day occurring at the beginning of America Recycles Week, we asked our pledge signers to provide stories of veterans working in the recycling industry who not only served our country, but also are protecting our environment for future generations. We hope you enjoy reading their stories in the "Voices of Veterans in Recycling" section and remember to thank a veteran for their service.

Voices of Veterans in Recycling

Brian Hawkinson said, "I served as a Field Artillery officer in the U.S. Army from 1978 to 1982. Assigned to the 82nd Airborne Division, I led paratroopers as a Fire Support Team Chief, Fire Direction Officer and Executive Officer of B Battery, 1st Battalion (Airborne), 320th Field Artillery at Fort Bragg, N.C. My first large-scale exposure to the waste management hierarchy occurred there -- retaining used brass shell casings from training exercises to be refurbished and reused in future fire missions. Commissioned as a Second Lieutenant, I rose to the rank of Captain by the end of my active duty service.

Now, I serve as Executive Director, Recovered Fiber, at the American Forest & Paper Association (AF&PA) in Washington, D.C. In this role, I manage issues and programs that promote increased paper recovery for recycling and preserve AF&PA members' access to recovered fiber for use in manufacturing in the U.S. and around the world.

Paper recovery for recycling is an integral part of the industry's raw material supply and continues the industry's legacy of sustainability. Using recovered paper in manufacturing extends the useful life of fiber and keeps paper and paper-based packaging out of landfills. Recovery systems for paper and paper-based packaging are well-developed and widely accessible. And paper recycling is an environmental success story because millions of Americans recycle paper at home, work and school every day."

According to AF&PA, the U.S. forest products industry directly employs 950,000 people in the U.S. and supports 2.5 million jobs throughout the supply chain. Many veterans have experience in operations, logistics, finance and administration – all skills that are relevant to success in some phase of collecting, processing and/or distributing recovered fiber to paper and paperboard mills.

Scott Wiggins, Vice President of Environment, Health & Safety (EHS) at the Institute of Scrap Recycling Industries (ISRI), has appreciated the opportunity to give back both to the industry and to the veteran community since his tenure began in August 2018. Scott leads the team that provides Environmental, Health, and Safety assistance to ISRI member companies, and he credits his 28-year active and reserve career in the U.S. Army with his inimitable ability to understand members' needs and match them productively with the services ISRI offers.

That ability stems from a strong sense of duty and from learning to be adaptable in changing environments as well as working with and leading teams with diverse backgrounds, skillsets and perceptions – much like the many stakeholders that make up the U.S. recycling system. In his short tenure, Scott has learned that recycling is extremely sophisticated – it is not the junk yard he grew up believing was recycling in America.

There are many opportunities for veterans to join the recycling industry, and Scott notes the critical need is at the supervisor or middle manager level. Military personnel receive more leadership training than most, and the industry's priority focus on safety is where veterans can make the most impact. Scott is ISRI's lead for veteran outreach and makes himself available as a mentor and counselor for anyone coming out of active duty that is making the transition into a civilian career and searching for opportunities that make the best use of their skill sets.

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Tim McGowan, a Customer Service Officer (CSO) for Sony Electronics

"I served in the United States Navy from July 1984 until April 1995. The first four years were spent getting my education at the U.S. Naval Academy. The rest of my service time was spent on active duty with responsibilities primarily focused on anti-submarine warfare."

McGowan provides new and existing Sony customers with the best possible service experience related to product information, product use, product support, service requests, and escalations for complaints. His role requires locating and negotiating contracts with multiple service partners using the outsourcing model, with key performance indicators and financial performance specified. This position includes market quality and engineering feedback to local and Tokyo business units, as well as technical support, training, and certification of external partners. As a CSO for Sony, ensuring strong commitment and initiatives for sustainability as well as product compliance by guiding and supporting the team are all critical aspects of the position.

"The first thing that has surprised me about recycling that I learned is how complex the rules are, given the state by state (or Province by Province) regulatory requirements. The complexity and changing environment of these programs truly require full-time monitoring and communication to ensure our company is in full compliance and addressing stakeholder expectations while supporting the company's environmental commitment under the Road to Zero plan."

For Sony, hiring military veterans has proven to be a successful strategy; in addition to gaining high-performing employees, we positively impact local communities. We are grateful for the men and women that have contributed their services and risked their lives to protect our country. With initiative and unparalleled leadership skills and experience, veterans are a great asset, as demonstrated by Tim's leadership at the company. This is a shared value with our recycling partner, Electronics Recyclers International (ERI). "We are proud to count veterans as integral members of our team at ERI," said John Shegerian, Co-Founder, Executive Chairman, ERI. "Since the very beginning days of our company, my fellow co-founders of ERI and myself have made it our core mission to protect people, planet and privacy … and a big part of that is honoring and giving back to the men and women of our armed forces."

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Michael Akers, U.S. Marine Corps 1986-1990, now works as the Operations Supervisor for Sacramento County Department of Waste Management and Recycling.

When asked what he learned about recycling that he'd like others to know, Akers said that the company can generate revenue recycling broken high-density polyethylene residential carts. Recyclers grind them up, and the material is then used to produce new carts.

Uriel Villalpando, U.S. Navy, E8/Senior Chief Navy Diver, 1997-2019, now works as the City of Garland Environmental Waste Services Director.

Villalpando was amazed to learn the impact each and every one of us makes when we commit to recycling and how much this commitment can benefit the economy, the environment, our lives, and our future.

Cory Pestotnik, Iowa Army National Guard, 2008-2016, now works as a Recycling Transfer Station Attendant/Groundskeeper.

When asked what he'd like others to know about recycling, Pestotnik stated, "Recycling is very helpful in diverting materials from the landfill. Also, it's great for the environment. ***Please note that plastic bags do not belong in the recycling. They should be returned to the store from which they came.***"

According to Solid Waste Association of North America (SWANA): With the changing industry, expanding recycling creates more jobs in the U.S. that will help veterans and Americans as they search for new jobs or look to switch industries. Recycling provides many diverse employment opportunities at all levels, including jobs in collection, processing, and preparing materials, which opens opportunities for veterans and Americans at any education or experience level.

Patrick Tierney, Revolution Systems Founder and CEO, graduated from the U.S. Naval Academy and served in the U.S. Navy as a Naval Flight Officer from 1987 to 1994. As CEO of Revolution Systems, Tierney drives strategy for the company, including marketing, sales, product development and manufacturing.

According to Tierney, "The U.S. recycling industry has its roots in World War II, when it enabled U.S. industries to conserve materials and energy to better support the war effort. In today's complex economy, new materials have been developed that hold even more opportunity for jobs and economic value. Plastics are the product of energy applied to oil, impacting our energy balance, as well as increasing our reliance on imports. Paper products reduce the carbon stored in our forests and require fuel and water to produce. Recovered metals, as in World War II, reduce the need to extract and process the ores to make steel and aluminum. Recovering these materials unlocks value that can create new jobs and new products. Veterans are uniquely prepared to exploit these opportunities. The mission-oriented culture, logistics skills and execution focus that veterans learn from their service creates tremendous opportunity to create jobs and reduce costs in the U.S. through better recycling.

Currently, most products are brought to market through a one-way supply chain that starts in the mine or the factory on its way to someone's home or office and then ultimately ends in a landfill. The material and

energy embedded in that product can instead be recovered by recycling. To do that requires extending the supply chain back to the mills or factory, creating jobs in logistics, transportation, sorting, material handling and material processing. In the case of sorting, four to six jobs are created to sort the recyclables of one community of 20,000 people."

Xavier Watson, U.S. Navy, 2002-2006, now works as District Manager, Waste Management Recycling Brevard Material Recovery Facility.

"I served in the United States Navy from 2002 to 2006 where I provided support for the Operation Iraqi Freedom War. During my time in the Navy, I served as an Aviation Support Technician where I worked on aviation equipment, served as a Landing Signalman Enlisted, and as fire and rescue personnel.

Once I left the military, I looked towards a new career. After a few months of searching, I landed a new role as the District Manager at the Waste Management Recycling Brevard Material Recovery Facility. In this role, I manage all site operations, provide monthly, quarterly, and yearly forecasts for the facility, develop the plant staff and workforce through the performance management process, and establish a baseline to monitor overall plant performance.

In addition, I am proud to develop and manage the team, including talent development, performance management, and labor management, develop and manage plant productivity and process improvement plans utilizing continuous improvement techniques, and create a workplace that fosters a stellar safety work record and encourages constant improvement in our safety metrics.

During my time in recycling, I have learned and witnessed what recycling can do for the environment and our planet. I have also learned that ***because you see a number on a bottle does not necessarily mean the item is recyclable. It is important to re-teach what needs to be recycled so that communities make an impact beyond tossing things in containers.***

Recycling is unique and if people take the time to understand the nature and benefits of recycling, it would blow their minds to see the change we can have as an industry. After seeing recycling in action, I do not think the action should be optional. Instead, everyone should be required to recycle, due to the economic and environmental benefits it provides."

According to Waste Management: Due to the change and quality requirements in recycling, WM has expanded its work force by approximately 15 employees to meet material quality standards. WM continues to hire employees to educate the public about recyclable material and what can be, and will be, accepted.

Recycling evolves and the job market expands to create opportunities for veterans and all Americans by giving disabled veterans a place to work. From collecting materials in the house, office or neighborhood, to selling recycled materials, the recycling business is in search of individuals with varying degrees of skill to perform industry jobs.

According to the Institute for Local Self-Reliance (ILSR), the systematic removal of 10,000 tons of solid waste creates six jobs while the same amount of waste, if recycled, can create jobs for as many as 36 people. That's six times more jobs that can be opened to veterans.

Recycling is expanding in a way that employees can sit behind a desk and operate a computer system while the facility produces recyclables. This creates high-profile, technology jobs for qualified candidates. Due to this ongoing evolution, WM has more direct and indirect jobs at WM Recycling Brevard.

Steve Hasley, U.S. Army, 1982-1988, now works as Materials Recovery Facility (MRF) Manager IV, Houston Westside.

"A decade was spent proudly serving my country in the Army from 1982 – 1988, and in the reserves for four years afterwards. I attended several training schools in Georgia, Kansas and Kentucky before serving my first assignment in Germany with 2/68 Armor, 8th Infantry Division as a Tank Platoon Leader, Support Platoon Leader and Scout Platoon Leader. I also served as a Division Training Officer and a Brigade Plans officer with the 2nd Armored Division at Fort Hood, Texas. I resigned from active duty as a Captain and left the reserves as a Major.

With over 20 years of experience in the recycled paperboard industry, I moved over to Waste Management in 2008. With WM, I have been assigned as a Staff Engineer, Recycling Operations Director, and currently as a MRF Manager.

I now oversee the facility at Houston Westside where no day is the same day. Our manufacturing site teaches me something new every day as I lead production reporting, meet with staff, troubleshoot and problem solve, and handle people issues for my 70 on-site staffers. I work day-in and day-out with my Maintenance Manager, Office Manager, Operations Manager and their teams to lead WPO-related work. We relay important messages, solve problems, address issues, and discuss anything top-of-mind for the week. I proudly lead with the intent to continuously improve our operations."

When asked what he wishes others knew about recycling, Hasley said, "I could talk about this for a long time. At the end of the day, especially with recycling's constant evolution, ***it's important to teach people how to recycle. I've learned that everybody wants to recycle, but they don't know how to do it. People put any and every item in the bin, without knowing that they're causing more harm than help. If I could share one piece of advice, it'd be for people to stick to their community's recycling program. Know what to put in your bin, confirm recyclables, and don't recycle anything that may contaminate the stream."***

"Over the years, recycling has changed, especially since switching to single-stream recycling. These changes have opened the door to employment opportunities for many people looking for an entry level position in this marketplace. Waste Management is a great place to start to learn the business and to be exposed to management opportunities. Employees who have a manufacturing background can bring their expertise to join the ranks of training and mentoring opportunities to help them move up in the company. My team starts with a three-month training program that moves to mentorship, helping individuals advance their careers. From labor opportunities to tech-based jobs, as plants improve with technology, there will be higher-level positions opening for veterans who can maintain new equipment that is coming on line."

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Kevin M. Moran, U.S. Army 1980-1985, Active Reserves 1985-1988, now works as Executive Vice President of Battery Council International.

"I proudly served as an enlisted soldier in the U.S. Army from 1980 – 1985, and in the Active Reserves from 1985 – 1988. I attained the rank of Staff Sergeant. My final active duty assignment was with Task Force 160, which is now designated the 160th Special Operations Aviation Regiment (Night Stalkers). The 160th provides aviation support for the broader special operations community.

I serve as the Executive Vice President of Battery Council International, the North American trade association representing the lead-based manufacturing, supply, recycling and distribution companies. Our mission is to promote the responsible use of lead batteries for all energy storage applications, as well as to represent the industry on environmental, health, safety, economic and other governmental policy issues."

With a recycling rate of 99.3%, lead batteries are the most recycled consumer product in the U.S. This makes the lead battery industry a leader in creating a circular economy and a model for other battery chemistries – and industries – in how to responsibly design, make, use, recycle and remanufacture materials. The lead battery industry is thriving and in 2018 reported nearly 25,000 direct jobs in 38 states, a 20% increase in reported direct jobs since 2016. Nearly 15% of these jobs are exclusively in lead battery recycling. These are traditional manufacturing jobs and compared to other private sector jobs, average salaries are 96% higher for recycling and mining workers and 28% higher for manufacturing workers.

In 2018, the lead battery industry paid $1.7 billion in wages and spent more than $100 million in research and development. Many of the top occupations in the lead battery industry are also occupations that have a high share of green jobs compared with other sectors of the economy because the industry generates an environmental benefit by diverting materials from landfills and re-using materials in a circular economy model. Additionally, a high percentage of occupations are available to workers who have a high school diploma or equivalent, providing a pathway to the middle class.

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East Penn Manufacturing (Rosedale, Md.) operates the largest single-site, lead battery manufacturing facility in the world. Since its earliest days recycling in a one room battery shop in 1946, sustainability has simply been a part of East Penn's core values.

The centerpiece of the company's commitment to the environment is founded in a closed-loop approach to environmental protection. East Penn's sophisticated recycling facility processes approximately 30,000 batteries per day – recycling virtually 100% of each spent battery received for processing. "Think about it. On a Monday, a customer sells us a battery back that's been used, it no longer has life. By that next Monday, that battery is brand new, most of it out of recycled material," said Chris Pruitt, East Penn CEO and President. East Penn is even able to reclaim sulfuric acid from spent batteries for use in new energy storage devices through their innovative, patented process which diverts this material from disposal.

East Penn extends its commitment to sustainability to its employees. East Penn's founder, **DeLight Breidegam, Jr.** (deceased), was an Air Force veteran and understood the support military personnel and their families need. He founded the company after World War II. The company is still privately owned by family members today, and East Penn continues to hire veterans, such as Assistant Plant Manager **Barry Frain**. Frain, Assistant Plant Manager, was in the U.S. Marine Corps and has 30 years of service, including the first Gulf War, several tours of duty in Iraq, and U.S. posts for homeland security. "When I was deployed, East Penn continued to contribute to and maintain health insurance for me and my family. Normally, you would switch to military insurance during deployment, but East Penn's philosophy is that when you are deployed, they don't want you worried about what's happening at home, but instead to focus on where you are. Leadership also checked in with my family while I was gone. It's a support network that's tremendous."

Because of their consistent support, this year East Penn received the Seven Seals Award from the ESGR (Employee Support of The Guard and Reserve). The Seven Seals Award is presented in recognition of significant individual or organizational achievement, initiative, or support.

Whether it's protecting the environment through innovative recycling or supporting the military personnel who work at their facility, sustainability always was and will always be an essential part of East Penn.

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Exide Technologies, a global provider of stored energy solutions, recycles millions of batteries each year and the military veterans in our workforce are an important part of that process.

"At Exide, we value the discipline, skills and experience our military veterans bring to our organization," said Patricia VanDeventer, Human Resources Manager for Exide's battery recycling facility in Canon Hollow, Mo. "Exide provides a veteran-friendly culture, and we actively recruit veterans to fill roles here at our recycling facility."

Exide's employees in Canon Hollow understand how their jobs directly impact protecting the environment. Several veteran employees in Canon Hollow provided their perspectives on the importance of recycling, specifically the recycling of batteries, to our economy and our environment.

Billy Broadhead is the Health and Safety Manager for Canon Hollow. He joined Exide after serving in the U.S. Marine Corps and has nine years of service in active and reserve duty.

"Everyone needs to know and understand how recycling batteries helps the environment," said Broadhead. "The battery recycling industry provides many different jobs that are well-suited for military veterans. Recycling really begins with the employment of those who mine or produce the raw materials, those who work in one way or another to deliver the raw materials (land, rail, water), those who produce the product from the raw materials, those who deliver the finished goods, those who sell the finished goods, and on and on, until the used batteries are delivered to a battery recycler to safely recover raw materials to start the process over again. Recycling provides many different job opportunities and is extremely beneficial to the environment and our U.S. economy."

Shane Anderson served in the Army National Guard for six years before joining Exide as a Transportation Supervisor. He shared his view that "recycling batteries is not only vital to our environmental well-being, but also helps in keeping battery prices sustainable. Many recycling facilities in the U.S. are in areas that do not have many job opportunities. The jobs the recycling industry provides are valuable to individuals and the communities where they live."

Nathanael Loew has been with Exide since 2015 and is an Army veteran with four years of service in Operation Desert Storm. As the Blast Furnace Production Leader, he works alongside fellow Army veteran, **Paul Miller**, who has been with Exide for over 20 years. Miller and Loew experience firsthand the thousands of batteries that are recycled daily in Canon Hollow. "Recycling batteries is a win-win," said Loew. "We keep the batteries out of the environment and recycle resources that can be used to manufacture new batteries, ensuring that we never run out of the raw materials we need to produce new lead batteries to power the world forward."

At **Interstate Batteries Recycling, Tod A. Lyons**, U.S. Coast Guard, 1983-2003, Retired Senior Chief Petty Officer (E-8), now works as Sustainability Program Manager for Interstate Batteries Recycling, LLC (IBR).

While serving in the Coast Guard, Lyons directed and managed crisis communications activities during major search and rescue, homeland security, and drug interdiction operations, as well as for major oil spills, chemical spills and natural disasters like floods and hurricanes around the Western Hemisphere. Lyons's duty assignments included two tours with the Coast Guard National Strike Force, known as experts in oil and chemical spill clean-up and environmental remediation and one of the special forces in the National Contingency Plan. He was also a first responder to the terror attacks on The World Trade Center in New York City in September 2001.

Lyons has been with Interstate for more than 10 years. He serves on the Battery Council International's (BCI) Communications Committee and Lithium Battery Awareness Sub-committee educating people and businesses about lead battery sustainability and the proper handling of all types of scrap batteries. Considered an expert in lead battery recycling, Lyons promotes and markets IBR's sustainability through speaking opportunities, presentations and writing for industry publications. Having a strong command of environmental regulations, he also manages projects to help Interstate comply with federal environmental and transportation laws and provides guidance regarding scrap batteries. Lyons was instrumental in helping the BCI create a lithium battery awareness campaign that educates battery handlers to recognize the differences between lead batteries and lithium batteries for the safety of their own personnel as well as the personnel at lead processors.

When asked about what Lyons wants others to know about his industry, he said, "Lead batteries are a viable, sustainable, back-up storage product that contributes to a circular economy through a closed-loop recycling process. The lead from the battery in your grandfather's pick-up truck may very well be used in lead batteries in today's vehicles. Even electric vehicles, which most consumers believe are run on lithium or other battery chemistries, have a lead battery to power the components like the lights, brakes, windshield wipers, airbags, seat belt pre-tensioners, the entertainment system and the heating/cooling system among other things. Have you noticed when driving or renting a newer vehicle that it seems to turn off when you come to stop lights and intersections? New vehicles have a lead battery using stop/start technology which helps reduce emissions from internal combustion engines. More than 99% of all the lead batteries manufactured are recycled to make new lead batteries. Between 2016 – 2018, Interstate Batteries has recycled more than three billion pounds of lead batteries, thus averaging more than one billion pounds of scrap lead batteries recycled every year. Secondary lead processors are highly regulated, and our lead battery manufacturers are always looking for ways to improve technology to help lead batteries remain sustainable for many years to come.

With natural elements, minerals and resources diminishing throughout the world, it is important that we find ways to get the most life expectancy out of a product. Recycling extends the life of many products such as metal, plastic, rubber, paper and more, thus creating job opportunities for veterans and others in every state in the U.S. and around the world. In the recycling industry, the three Rs - Reduce, Reuse and Recycle – offer employment in skilled and unskilled positions to manage the use of raw material to produce new goods. For those of us with a heart for the environment, it makes sense to safely recycle everything we can to make the best use of the diminishing resources we have and protect our environment for generations to come."

Success Stories in the Recycling Industry From the Signers of the America Recycles Pledge

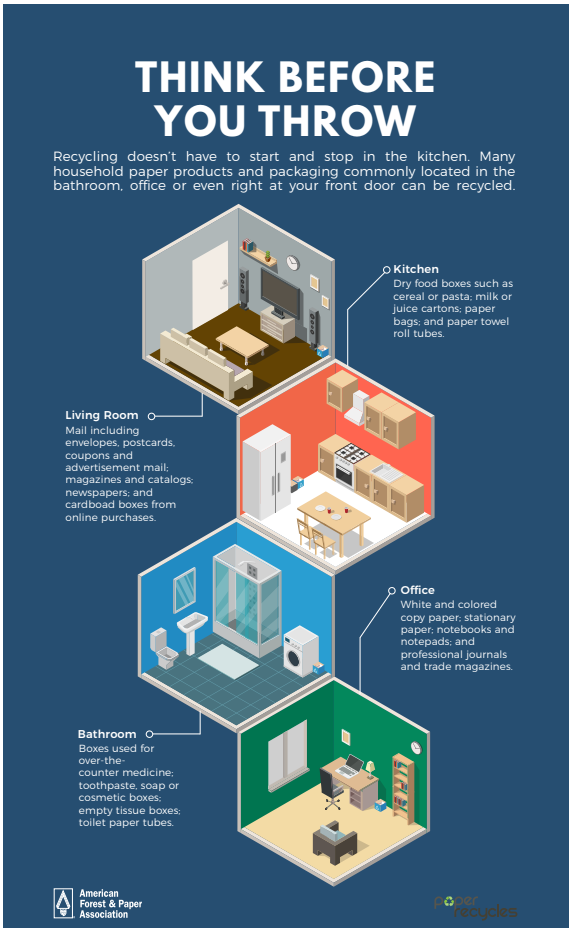
The **American Chemistry Council's Flexible Film Recycling Group (FFRG)** represents the entire polyethylene (PE) value chain, from major resin producers, manufacturers, and recyclers to brand owners. The FFRG's hallmark initiative, the Wrap Recycling Action Program (WRAP), is a national public awareness and outreach program designed to empower motivated stakeholders to reach a common goal: to make plastic film packaging a commonly recycled material with a strong and ever-growing recycling rate.

Primary Goals:

- Double the recycling of PE film packaging to two billion pounds by 2020.
- Significantly increase public awareness of how and what PE film packaging is recyclable.
- Increase public engagement in film recycling.
- Increase end use demand for to post consumer recycled content film by WRAP stakeholders.

FFRG is partnering with stakeholders throughout the country to implement WRAP campaigns and programs to educate and engage more consumers and businesses in effective programs to recycle plastic bags, product overwraps and other PE film packaging. Visit: Plasticfilmrecycling.org for an array of communications resources and tools to support recycling outreach efforts.

According to the **American Forest & Paper Association**, paper and wood products manufacturers have historically applied sustainable business practices to support a strong market for paper recycling, reduce negative environmental impact and ensure the natural resources used in their products are available for generations to come. That commitment is returning positive results, recorded under AF&PA's **Better Practices, Better Planet 2020 (BPBP 2020)** initiative, one of the most extensive sets of sustainability goals established for a U.S. manufacturing industry.



BPBP 2020 challenges the industry to improve operational performance across the value chain from raw material sourcing to manufacturing to end of life disposition of the industry's products. The U.S. paper recovery for recycling rate's record high 68.1% level in 2018 signifies commitment and progress. Member companies are eager to improve that metric and under BPBP 2020 have set a target to exceed a 70% paper recovery for recycling rate, among other goals.

Paper recycling is an American success story illustrated by data and supported by industry and consumer commitment to increasing the quality and quantity of paper recovered for recycling. ***Prior to the record high of 68.1% in 2018, the paper recovery for recycling rate had exceeded 63% for each of the last 10 years. Additionally, the 2018 recovery rate for old corrugated containers reached a record 96.4%, with an average of 92.7% for the last three years.*** According to the EPA, more paper and paper-based packaging is recovered for recycling from municipal waste streams than aluminum, steel, glass and plastics combined.

The paper and wood products industry's voluntary investment in building the commercial paper recovery infrastructure and the commitment by millions of Americans who recycle at home, at work or at school every day are central components to a resilient recycling system.

AF&PA's efforts to build a resilient system to effectively recycle paper and paper-based packaging include producing educational materials. Statistics, research reports and how-to-guides found there can be used to start and improve paper recycling. Additionally, the association is an inaugural funder of The Recycling Partnership, which provides technical assistance and free customizable consumer educational materials to community recycling programs nationwide. Visit: paperrecycles.org.

The **Aluminum Association** strives to collect back as much aluminum as possible. In most industrial markets (transportation, building and construction, etc.), recycling rates exceed 90%. In fact, 75% of all aluminum ever produced is still in use today. However, there is significant room for improvement in the consumer recycling space, particularly aluminum cans. ***Each year in the U.S., roughly 45 billion cans – more than $800 million worth of aluminum – end up in landfills, the equivalent of eleven 12-packs of cans for every person in the country.***

Consumers recycle aluminum cans at nearly double the rate of glass or plastic bottles and the average recycled content for an aluminum can produced in the U.S. recently rose from 70 to 73%, compared to 23% for glass and 3% for plastic. In addition, aluminum can scrap is dramatically more valuable than glass or plastic in the recycling bin. Because of this, aluminum effectively subsidizes the recycling of less valuable material in the recycling stream.

- Transparent Reporting: Each year, the association and the Can Manufacturers Institute (CMI) release a new set of sustainability key performance indicators for the aluminum can – to educate policymakers and the broader public on recycling efforts and progress.
- Policy Advocacy: The association and CMI advocate for policies at the federal, state and municipal level to improve the quality and quantity of recycled aluminum recovered. For example, the association and CMI have successfully opposed several statewide efforts to weaken deposit programs that would lower recycling in those states.
- Recycling Infrastructure and Education: Member companies also support recycling programs at the local and national level to drive recycling, including through work with The Recycling Partnership. The industry is working on a program to increase recycling by providing funding for modernized eddy currents at municipal recycling facilities nationwide that would enable increased collection of aluminum cans.

Learn more: aluminum.org/canadvantage

AMERIPEN (American Institute for Packaging and the Environment) represents the North American packaging value chain by providing public policy makers with fact-based, material neutral, scientific information. With over 18 different recycling definitions in the U.S., and more across the globe, AMERIPEN released a deep dive into packaging recovery definitions to help provide further insight into the legal and normative frameworks to inform how to define recycling. The association also convened stakeholders, including many of the pledge signatories, to explore strategies that could be collectively pursued to address some of the common recovery challenges facing packaging. These workshops addressed innovation and financing needs amongst other topics. Feedback has been incorporated into AMERIPEN's 2020 strategy. More information can be found at: ameripen.org/page/Publications under Salon Reports.

Battery Council International, a not-for-profit trade association representing lead battery manufacturers, recyclers and suppliers, is committed to sustainable development by fostering progress in the economy, environment, and society.

Lead batteries keep society mobile and connected – they are in 275 million vehicles in the U.S. and support a communications infrastructure of over one trillion dollars. BCI's goal is to achieve 100% recycling of lead batteries, and with its 99.3% recycling rate, that goal has been essentially realized.

Lead batteries are the most recycled consumer product in the U.S. This makes the industry a leader in creating a circular economy and a model for other battery chemistries in how to responsibly design, make, use, recycle and remanufacture materials. ***Every new lead battery is comprised of up to 80% recycled material. All battery components – lead, plastic and sulfuric acid – can be recycled and reused.***

Lead batteries are safely manufactured and recycled through a state-of-the-art "closed-loop" process that keeps more than 1.7 million tons of lead batteries out of U.S. landfills annually. It is one of the world's most successful examples of a circular economy. The lead battery industry's commitment to efficient recycling methods ensures that lead batteries are an essential part of an energy storage mix to achieve a cleaner, greener future.

A steady supply of recycled lead battery components allows lead battery manufacturers to use safe, sustainable practices to make new batteries. A nation-wide infrastructure of state laws, high recycling awareness and the economic value inherent in lead battery components ensures consumers and industries return spent lead batteries to the collection system, which in turn supplies manufacturers with a reliable stream of materials for reuse.

BCI's website and its communication initiative for policymakers provide extensive information about recycling lead batteries. The BCI site is intended for consumers, and Essential Energy Everyday is for policymakers. Both sites present information on how the recycling process works including diagrams and videos. Additionally, due to the risk of fire and explosion associated with lithium-ion batteries, especially when they enter the lead battery waste stream, BCI has created training materials for use at the retail level to inform handlers on how to recognize and remove lithium-ion batteries from the lead battery recycling stream. Visit: batterycouncil.org and essentialenergyeveryday.com

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Can Manufacturers Institute (CMI) has a long-standing commitment to increase the recycling rate of aluminum beverage cans and steel food cans. CMI focuses on the consumer recycling rate of cans shipped in the U.S. that reach the smelter and are ultimately turned into new cans or other useful, recyclable products. Aluminum cans are the most recycled beverage container in the world. Like aluminum beverage cans, steel food cans can be recycled forever without any loss in quality and have high recycling rates.

The aluminum beverage can continues to outperform other material types on each of the industry's four sustainability key performance indicators (i.e., consumer recycling rate, industry recycling rate, recycled content, and value per ton). ***The consumer recycling rate increased 4.7 percent between 2017 and 2018 to 49.8 percent, bringing it just under the 20-year average.*** The aluminum beverage can's average recycled content also recently increased from 70 percent to 73 percent after updating a survey of aluminum suppliers. The most recent recycling rate for steel food cans reported by the Steel Recycling Institute is 71 percent, which makes it the most recycled packaging in America. This recycling rate is more than 2.5 times higher than that of most other packaging options. Examples of CMI's recycling activities to date include:

- Enhancing Infrastructure: CMI wrote an article in Recycling Today about how operating a second aluminum recovery line (i.e., eddy current) in material recovery facilities can divert an additional 30,000 pounds of aluminum per month on average. The cost of installing a second aluminum recovery line can be recouped in less than six months because of the high value of aluminum.
- Enhancing Measurement: Each year, CMI and the Aluminum Association update the four sustainability key performance indicators for the aluminum can to educate policymakers and the broader public on recycling efforts and progress.
- Education and Outreach: CMI is a founding member of The Recycling Partnership, which has served more than 1,000 communities to increase and improve recycling. Also, CMI partnered with the National Association of Convenience Stores to issue a toolkit that provides guidance to retailers on how to implement a recycling program.

Learn more: cancentral.com/sustainability.

★★★

The Coca-Cola Company launched the World Without Waste Initiative in 2018 – a system-wide effort to design more recyclable packaging, increase collection and partner with communities, non-governmental organizations (NGOs) and even competitors to reduce packaging waste. The company's goal is to help collect and recycle a bottle or can for every one sold by 2030. The Coca-Cola Company is committed to making all packaging 100% recyclable by 2025 and creating bottles and cans with an average of 50% recycled content by 2030.

In 2009, The Coca-Cola Company introduced PlantBottle™, the first fully recyclable PET plastic bottle made

with up to 30% plant-based materials. Additionally, in 2020, DASANI will introduce HybridBottle™, a new bottle that combines plant-based resin (PlantBottle) and Recycled PET. Coca-Cola Freestyle™ is an example of package-less delivery. DASANI PureFill™ water dispensers – an evolution of the successful Freestyle platform – gives consumers the ability to fill and refill personal bottles with ultra-filtered, still, flavored and sparkling DASANI water. Coca-Cola has invested more than $12 million in innovative partnerships that bring curbside recycling programs to communities, help educate Americans on where to recycle, and support large-scale recycling infrastructure.

Through partnerships with The Closed Loop Fund, The Recycling Partnership, Keep America Beautiful and others, Coca-Cola has helped support the placement of one million recycling bins in more than 1,400 communities that divert an estimated 800 million pounds of recyclables from landfills annually.

In 2019, the company launched #CocaColaRenew to tackle some of the barriers to recycling in the U.S. by inspiring people to think differently about packaging waste and reimagine the possibilities of recycled plastic through a series of community events, programming and marketing. The Coca-Cola Foundation supported Ocean Conservancy and its Trash Free Seas program, which works to invest in trash collection and recycling systems to make sure trash never gets in the ocean. Additionally, Coca-Cola is the leading sponsor of the International Coastal Clean Up, which mobilizes thousands of volunteers, including the company's own associates, around the world to participate in cleaning up coastlines and waterways each year. Learn more: coca-colacompany.com/content/dam/journey/us/en/private/fileassets/pdf/2019/Coca-Cola-Business-and-Sustainability-Report.pdf#page=17

Full Dasani innovation lineup: https://coke.box.com/s/iuaamiqy4a8pk8onkdhn5rpu2ee8w3g1

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For **Delta Institute**, waste reduction is the cornerstone of its mission and has been a core programmatic scope since inception. Delta Institute has expertise in multiple waste and materials types including muncipal solid waste; construction and demolition waste; and household hazardous waste, such as electronics, biomass, and wastewater. Delta serves local governments and works with businesses, industries, and institutions to reduce waste and, where possible, transform environmental liabilities to economic assets. Additionally, Delta Institute has worked with numerous facilities to improve waste management and help clients achieve Leadership in Environmental Energy Design ratings at landmark Chicago facilities, such as the Merchandise Mart, Field Museum, and Prudential Plaza, which are complex ecosystems within themselves.

Overall, Delta Institute has diverted more than 65,000 tons of materials from landfill—instead helping find secondary markets, compost, or reuse for these valuable resources. Delta Institute collaborates with communities throughout the Midwest to solve complex environmental challenges. The institute worked and partnered with 179 communities last year.

As part of strengthening secondary markets for reclaimed materials, Delta has successfully implemented many waste reduction and deconstruction projects to build the capacity of municipal, county, regional, and corporate partners to manage their waste better and more effectively, including collaborating with midwestern buildings (http://bit.ly/demystifyingwaste), working with the City of St. Louis on a demolition handbook (http://bit.ly/STLDecon), and providing a toolkit for using storywood for designers, architects, and developers (http://bit.ly/StoryWoodTool).

★★★

The **District of Columbia Department of Public Works (DC DPW)** has established the goal of achieving a citywide waste diversion rate of 80% by 2032. Specifically, with respect to recycling, DC seeks to reduce contamination to 12% to improve the quality of recyclables and increase the volume of recyclables collected through increased participation.

In fiscal year 2018, the District introduced foodservice packaging to materials accepted for recycling and rolled out a multi-media "Waste Less, Recycle More" outreach campaign, which resulted in a 9.5% increase in the volume of recyclables collected and an eight-percentage point decrease in contamination.

This fall, DPW conducted a multi-media campaign, which included a "Feet on the Street" education component to help reduce contamination in residential recycling collections, with a focus on keeping plastic bags, wraps, and films out of recycling bins. DPW inspectors were armed with "Oops" tags to place on bins found to contain non-recyclable items. The tagging campaign was conducted on routes that have been reported to have high contamination by collection crews.

Other components of the campaign included a mailer to all DPW-serviced households, advertisements on buses, metro railcars, bus shelters, bike share shelters, and unveiling two DPW trucks with messaging about not bagging recyclables.

DPW also has commenced visually inspecting recyclables at its transfer station, reclassifying contaminated portions of recyclables loads as trash, and plans to use intelligence gained to implement ongoing, targeted tagging and outreach campaigns. Learn more: www.zerowaste.dc.gov

★★★

Two **Dow** employees have sparked a new initiative to increase awareness of Store Drop-Off Recycling Programs and educate more people about hard-to-recycle materials. Dow Marketing Director Heather Turner posted a video about the items she was recycling via a local Store Drop-Off location, which prompted Dow Marketing Manager Chris Gandy to do the same. In a matter of days, the two videos generated more than 6,000 organic combined views on the employees' personal social media channels.

Recognizing the instant reach of these social media posts and the potential impact of this type of campaign, a team at Dow developed and launched the #RecycleChallenge to make the public aware of the Store Drop-Off Recycling Program and educate them on how to use it.

To date, the #RecycleChallenge has generated more than 60,000 video views. The challenge has been accepted and embraced by business leaders within Dow, Kellogg's, Berry Global, Charter NEX, Nova Chemicals, DuPont, the American Chemistry Council, Sonoco, WayFair, BNP Media, and many more.

The notion of ending plastics waste is woven into the very fabric of Dow. It is the passion that is driving its *design for recyclability* mindset. And it is the motivation that is encouraging its workforce to become ambassadors for change. This is why Dow started the #RecycleChallenge, a public awareness campaign that transcends any one company or any one industry.

★★★

Since inception, **EcoRich's** efforts as a company have been geared toward increasing awareness of composting as a practice. On-site composting is what truly defines the EcoRich mission. The machine's range is 20 pounds to 2500 pounds per day. EcoRich intends to show the world that on-site composting is the most efficient and beneficial way to recycle food waste. Final product soil amendment helps to enrich soil the way nature intended.

To pursue this goal, EcoRich continuously participates in a variety of public forums, including fairs,

conventions, and webinars. The company has organized several free composting classes with the New York City (NYC) Parks Department, where anyone who would like to attend can sign up online and show up to learn. EcoRich has worked with several reputable organizations and companies to plan community outreach events that push the benefits of composting.

EcoRich was selected as one of the finalists of the NYC Zero Waste Challenge, which provided the opportunity to work with the NYC Mayor's offices Technical Division, Sanitation, and NYC Housing Authority in order to compost waste at the Brownsville Housing Complex. In this project, the company was able to continually educate and work with residents, many of whom were not aware of composting in general. ***Lastly, in 2018 alone, the products EcoRich sold could keep 120 tons of food waste out of landfills.*** The company has done this all while continuing to promote composting at the source and showing people the wonders of waste. The project with the NYC Parks Department was quite successful, as EcoRich organized free composting classes and got a 100-pound per day composter up and running at the facility at Randall's Island. The work with the Brownsville Housing Complex offered plenty of valuable insight into compliance rates for organized composting efforts and total average output for an entire apartment complex. EcoRich continues to offer free tours of its composters at different sites to show individuals how simple and effective large-scale composting can be. Next, EcoRich is installing a machine at a college in New Jersey. Visit: ecorichenv.com/commercial-composter

★★★

The **End of Waste Foundation** hopes to divert waste from landfills and increase glass and aluminum recycling rates to 85% by 2030 through its technology platform and Distributed Shared Responsibility system. ***With partners Momentum Recycling and Rocky Mountain Bottle Company, End of Waste Foundation has officially traced and subsidized through its blockchain platform, the recycling of over 2,000 tons of glass in the state of Colorado. With the contributions from sustainability-minded businesses, the foundation has returned more than $8,000 to its recycling partners, as of September 2019.***

Its Distributed Shared Responsibility system gives all stakeholders responsible for the product's lifecycle role and empowers the community to divert waste from landfills and into the recycling stream. Learn more at: endofwaste.com.

★★★

The **Foodservice Packaging Institute (FPI)** is working to tackle one of the industry's greatest challenges – increasing the recovery of foodservice packaging through recycling and composting.

- FPI launched the Paper Recovery Alliance (PRA) in 2011 and the Plastics Recovery Group (PRG) in 2012 to increase recovery of paper and plastic foodservice packaging like cups, take-out containers, pizza boxes, and paper carryout bags.
- In 2014, the Foam Recycling Coalition was launched to increase recycling of foam polystyrene cups and containers.

- In 2018, the Paper Cup Alliance formed specifically to accelerate the growth in access to recycling of paper cups in the U.S.

These groups work with stakeholders throughout the recovery value chain on aligning the supply chain, expanding the collection and processing infrastructure, identifying new end markets, and educating and engaging consumers to increase recovery and minimize contamination.

The PRA/PRG's Community Partnership Program supports communities in adding foodservice packaging to residential recycling programs with grant funding, technical assistance and other resources. The program confirms end markets for the material, works closely with the MRF on operational aspects and assists communities in their outreach to residents. ***Since Fall 2017, FPI has launched five community partnerships, with each showing exciting results within the first year. These partnerships have provided access to recycle foodservice packaging for nearly two and a half million people across the country.***

FPI's Foam Recycling Coalition has awarded 13 grants across the U.S. and Canada to support the recycling of foam polystyrene cups and containers, increasing access to foam recycling for over three million people and recycling nearly 300,000 pounds of foam in the last year alone. Learn more at: RecycleFSP.org and RecycleFoam.org

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Beginning in early 2018, the **Illinois EPA** focused on developing consistent statewide residential curbside recycling messages to minimize contamination and increase recycling participation throughout the state. Consistent with these goals, the Illinois EPA created a singular curbside recycling guide website that provides all Illinois residents a uniform and accurate source for what is and is not acceptable in their curbside recycling bins, regardless of waste hauler. The Illinois EPA also developed an interactive online mapping tool that directly connects residents with drop-off locations for the recyclables that are not accepted in their curbside bin or for those residents who do not have a curbside recycling service offered in their area.

The Illinois EPA surveyed the state's 12 MRFs that accept material from Illinois curbside recycling programs, which were used to populate the Curbside Bin Recycling Guide website. If the materials are not accepted in the curbside recycling bin, but are still recyclable, the Recycling Guide website links to the Beyond the Bin Map where residents are able to find drop-off sites in their area. ***The Agency also surveyed all 102 Illinois counties to determine drop-off locations to populate the interactive map.*** The websites were launched on America Recycles Day in 2018 along with multiple press releases, news and radio interviews, presentations at conferences, and social media posts that promoted correct recycling.

To measure the impact of these efforts, Illinois EPA directly contacted each MRF to determine their contamination rate and actions undertaken to decrease contamination. Learn more: /dataservices.epa.illinois.gov/recycle/curbside-bin-recycling-guide.html and illinois-epa.maps.arcgis.com/apps/webappviewer/index.html?id=8faa7bd1614b468488382aeaaa41a7be

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The Institute of Scrap Recycling Industries (ISRI) is the Voice of the Recycling Industry™, promoting safe, economically sustainable, and environmentally responsible recycling through networking, advocacy, and education. ISRI members collect, transport, process and broker valuable, specification-grade recycled commodities used as raw materials by manufacturers around the globe, including steel mills, foundries,

paper mills, consumer-packaged goods producers and plastics formulators. Last year, ISRI's members processed 138 million metric tons of materials that are economically competitive and environmentally-friendly manufacturing feedstock alternatives to carbon-intensive virgin materials.

The recycling industry today is vibrant, innovative and competitive and provides key solutions to global environmental and economic issues. ***In the U.S., recycling directly and indirectly supports more than 531,000 well-paying jobs, while generating nearly $110 billion in economic activity and $13 billion in federal, state and local tax revenue.*** Recycling also supports a cleaner environment: scrap materials are environmentally preferable and energy-efficient feedstock supplies more than 40% of global manufacturing needs, saving as much as 75% in greenhouse gas emissions and as much as 95% in energy savings. Recycling also plays a key role in the global circular supply chain where everyone can play a role in protecting the environment by purchasing products made from recycled content and properly recycling materials to limit contamination.

ISRI is a proud partner of the U.S. EPA America Recycles dialogue, which is one way the organization collaborates across recycling stakeholder groups to build awareness about the importance of recycling and grow opportunities for recycling success. For example, ISRI last year hosted an MRF Summit, which included recyclers, brand designers, MRF operators and community recycling directors. Among the results of this forum, the group has continued with development of a model contract for MRFs and recyclers to improve flexibility to deal with changes in commodity markets while improving contamination rates. In addition, they are working together to revise specifications for materials coming into MRFs, which supports the greater likelihood that recycled commodities can be marketed and used in manufacturing. This is vital because successful recycling requires market demand. ISRI is actively working with brand owners, manufacturers, engineers and designers to promote the use of recycled content in their products, as well as the recyclability of those products at the end of their life.

Additionally, launched more than 30 years ago, the ISRI Design for Recycling® initiative encourages manufacturers to consider the ultimate destiny of their products during the design stage of a product's development. The ISRI Design for Recycling® Award has been presented to companies in the consumer electronics, packaging, environmental technologies, furniture and office products industries and organizations that demonstrate a commitment to making consumer products recyclable and reducing environmental risks from their products.

Finally, ISRI is proud to be a member of the Department of Energy's REMADE Institute, a 50 million-dollar, multi-year effort to drive advanced manufacturing within the U.S. This effort will provide new opportunities for the use of recyclable materials in manufacturing, also supporting a greater focus on Design for Recycling® principles. To learn more, visit isri.org.

★★★

Keep America Beautiful (KAB) Goal Statement: We are consuming the planet's scarce resources rapidly and need to understand how waste prevention, re-use, and recycling in terms of both quality and quantity can be improved. Through consumer education, the loop can be closed and fewer valuable resources needlessly wasted.

KAB provides affiliate communities, and the public at large, with tools and resources to effectively educate citizens about how to recycle correctly. Moreover, KAB ensures more public spaces have recycling bins, thus increasing the opportunity to recycle away from their homes.

These efforts help KAB reach the following goals:

- Improve recycling behavior by 5% annually in affiliate communities by 2020;

- Improve recycling quality by 3% annually in affiliate communities by 2020; and
- Provide public space recycling access to an additional one million people by 2020.

Additionally, through KAB's public service advertising campaign – "I Want To Be Recycled" – and the Keep America Beautiful® America Recycles Day® program, KAB continually reinforces that people can contribute to a circular economy and provide raw resources to create something new when they recycle.

KAB has worked with corporate partners and foundations over the past decade to provide public space recycling infrastructure grants. For more than 13 years, The Coca-Cola Foundation has worked with KAB to donate recycling bins to more than 1,000 communities across the country. Over the history of the program, more than 37,000 public space recycling bins have been awarded, providing opportunities for recycling on-the-go to more than two million people daily, with the potential to reduce approximately 27.5 million pounds of carbon emissions and saving the equivalent of over six million gallons of gasoline during this time period. This is not to mention the public space program which focused exclusively on parks and recreational areas that distributed more than 4,300 recycling bins, reaching more than 190,000 people daily through 190 grants from 2013-2017. Through ARD, KAB annually promotes recycling and serves as a catalyst for numerous special event recycling programs, resulting in the collection of hundreds of tons of recyclables.

ARD celebrates the benefits of recycling and provides an educational platform that motivates people to recycle, influencing recycling behaviors at work, at home, and on the go. Through ARD events on or around November 15th, KAB's vast network of affiliates and partners connects with local communities to directly engage millions of people to recycle 365 days a year. ARD inspires communities to directly engage their residents to help them understand the economic, environmental and social benefits of recycling, and provides an educational platform to raise awareness about the value of reducing, reusing and recycling – every day – throughout the year.

In 2018 alone, ARD volunteers and participants recycled more than 271,000 pounds of recyclables; collected more than 1 million pounds of e-waste; and collected more than 389,300 beverage containers for recycling. Visit: americarecyclesday.org; berecycled.org; and bingrant.org.

★★★

Less than a year after merging, **Keurig Dr Pepper (KDP)** introduced its *Drink Well. Do Good* corporate responsibility platform, which included a comprehensive set of unified goals for the new company. Some were recommitments of previously stated goals, and some were brand new, aggressive targets the company intends to reach as KDP. They include:

- By the end of 2020, 100% of Keurig K-Cup® pods will be recyclable following full conversion in the U.S. Canada reached this important milestone in 2018.
- 100% of packaging will be converted to recyclable or compostable materials by 2025.
- Across the packaging portfolio, 30% post-consumer recycled content will be used by 2025.
- Sending zero waste to landfill across operations by 2025.

KDP is introducing its first Keurig brewers made with PCR content in the Canadian market.

KDP set its goals with an intent to keep pace with the industry and lead where possible while ensuring clear guide paths to success in the timeframes that were mapped out. Currently, KDP is making steady progress in all areas with clearly defined goals, but with eliminating packaging waste being top priority, KDP has made significant progress in those areas. ***Specifically, all K-Cups® will be recyclable by the end of 2020, and when that transition is completed, over 90% of the entire portfolio will be recyclable, on track to meet the goal of 100% recyclable or compostable packaging by 2025***.

KDP is continuously working to ensure that packaging materials are optimally designed to be the highest possible value for recycled plastic buyers. The company is replacing dark-colored plastics, making bottle labels and caps compatible with bottle recycling processes and engaging in significant consumer education

campaigns on how to “recycle right” with NGO and municipal partners to reduce contamination in the recycling stream. Learn more: keurigdrpepper.com/CR.

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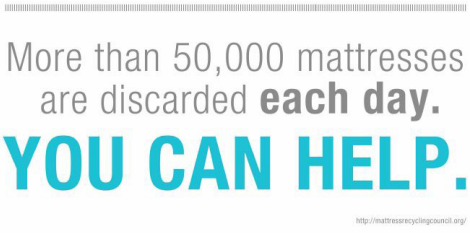
Members of the **Materials Recovery for the Future (MRFF)** collaborative share a simple vision: Flexible plastic packaging (FPP) is recycled curbside, and the recovery community captures value from it. Currently in the U.S., FPP is typically not collected in curbside recycling programs, and the few communities that do only collect PE film. PE film is also collected for recycling at drop-off locations across the country, but that does not provide a recycling solution to the other types of FPP in the packaging stream.

To realize this vision, MRFF is conducting a pilot with a Pennsylvania-based MRF to demonstrate that FPP can be collected curbside, effectively sorted and baled at an MRF, and turned into new products. To prepare for the pilot, MRFF conducted extensive research on MRF sortation equipment. Since MRFF’s inception in 2015, the collaborative has been researching potential domestic end markets for the material. MRFF is continuing this research in parallel with the pilot.

The MRFF collaborative published research results in 2016 demonstrating that flexible plastic packaging can be effectively sorted and baled at a MRFF. In 2020, MRFF will publish research results from the pilot along with recommendations for other MRFs interested in implementing FPP recycling. To help ensure a successful pilot, the MRFF collaborative worked with the pilot MRF to develop consumer-facing educational materials that explain what types of flexible plastic packaging can go in the recycling carts. The MRF is sharing these materials only with the communities they service to avoid confusing residents not serviced by this MRF. If the pilot can demonstrate the economic and environmental benefits of collecting FPP, it can help make the case for upgrading MRFs in communities. Learn more at: materialsrecoveryforthefuture.com/

★★★

In the U.S., an estimated 15 million mattresses are discarded every year, or an average of 50,000 per day. The **Mattress Recycling Council (MRC)** is a non-profit organization formed by the mattress industry to operate recycling programs in the U.S. in those states that have enacted mattress recycling laws. The program is currently running in Connecticut, California and Rhode Island. Each state’s program is funded by a recycling fee that is collected when a mattress or box spring is sold. ***Each year, more than 1.5 million mattresses are recycled by MRC, diverting 52 million pounds of useful materials from the waste stream.***



More than 80% of mattress components can be recycled, diverting valuable resources from local landfills. The most prominent commodities extracted include: foam and quilt panels (used in carpet padding), metal springs (sold to scrap metal markets) and wood (used as mulch or as an alternative fuel resource).

MRC supports this effort by investing in research to identify new end markets to increase recycling rates, improve the efficiency of used mattress collection, and help MRC’s recyclers identify mattress dismantling and recycling best practices. The program officially began operating in May 2015 in Connecticut, in California in December 2015, and in Rhode Island in May 2016. ***MRC collected 4,500,000 mattresses***

program-wide through the end of 2018, resulting in MRC's recyclers diverting 67,000,000 kilos of material from landfills through reuse, recycling and biomass.

In each state where mattress recycling laws have been enacted, MRC:

- Collects a fee that is charged to consumers in each state at the time of purchase that funds the cost of operating and administering that state's program.
- Provides no-cost and accessible state-wide opportunities for residents to discard their used mattresses.
- Provides no-cost collection of discarded mattresses from solid waste facilities.
- Provides solid waste facilities suitable storage containers and transportation of discarded mattresses.
- Provides MRC-financed transportation and recycling of mattresses and box springs.
- Publicizes the program to consumers and affected businesses.

To promote mattress recycling in the states where it operates, MRC provides a comprehensive education and outreach program targeting both consumers and the industry. MRC created the Bye Bye Mattress brand with a unique logo and website to help consumers learn about mattress recycling and how to access the program. Consumer education efforts include: point-of-sale materials, public service announcements, and paid advertising campaigns, including radio, television and billboards, social media/digital campaigns, and community outreach. An online locator allows consumers to search for nearby mattress recycling locations or upcoming events. Bye Bye Mattress also operates a toll-free number.

MRC targets mattress manufacturers and retailers to educate them about their legal obligations related to registration, fee collection and other requirements under each state law. Industry outreach includes: monthly program updates, press releases, news articles, marketing materials, paid advertisements, participation in industry conferences and events, and both digital and social media campaigns. Details can be found at MattressRecyclingCouncil.org and ByeByeMattress.com

★★★

In 2017, **Monroe County, NY** Executive Cheryl Dinolfo launched the ambitious Refresh Recycling campaign aimed at refreshing conventional wisdom on recycling. The timing of this campaign was critical, if not fortuitous, as it preceded an unexpected and dramatic downturn in the recycling industry. This event suddenly catapulted Monroe County's education and outreach program strategy to the forefront to ensure the viability of one of New York State's oldest curbside recycling programs. Monroe County's *Refresh Recycling* Program has contributed to higher-quality materials being collected at the curb and ultimately processed at the County's recycling center and sold by Waste Management. The ongoing success of the County's recycling program is due, in large part, to the success of the *Refresh Recycling* campaign.

In 2018, international restrictions placed upon materials for recycling led to chaos in recycling markets throughout the U.S. For Monroe County's successful 25-year recycling program to endure, it had to be composed of the cleanest -- and most correct -- stream possible.

The County, using internal resources and working in cooperation with contract partner Waste Management and numerous community leaders and stakeholders, created the Refresh Recycling education and outreach campaign, with emphasis on accurate and uncontaminated recycling.

- Using custom illustrations, the *Recycle Right Sign Suite* was made available via free download in English and Spanish. The signs have been downloaded over 900 times by municipalities and residents throughout the US and Canada.

- Two videos – *Recycling Right* Begins With You and the Monroe County ecopark were produced, which have been viewed over 6,000 times since November 2018.
    - *Recycling Right* received a national Telly Award for exceptional production.
- Residential recycling magnet – to insure conformity, used illustrations from the *Recycle Right* sign project. 5,000 have been circulated.
- Electronic newsletter – distributed monthly to 8700+ residents.
- Plastic Bags and Film – With the NYS Plastic Bag ban looming in March, 2020 and bags and film a major contaminant of the recycling stream, the County's energies are concentrated on promoting reusable bags and the recycling of existing bags and film, with a new quick-reference card and distribution of reusable bags.
- Monroe County Recyclopedia – a 38-page document available online only that answers a myriad of questions regarding what can and cannot be recycled in Monroe County.

Currently, contamination in Monroe County is estimated at approximately 10 percent, considered an exceptional statistic for a municipality of 750,000 residents. In 2010, Monroe County's diversion rate was 16.5 percent; in 2016, 26 percent; and in 2018, 40 percent of all waste generated in Monroe County was diverted from a landfill. By 2025, Monroe County hopes to achieve a diversion rate of 60 percent.

Learn more: Monroe County Recycling: www2.monroecounty.gov/des-residentialrecycling.php; Recycle Right Sign Suite: www2.monroecounty.gov/des-recycle-right-signs; and Residential Recycling Magnet: www2.monroecounty.gov/des-magnet.

★★★

The **National Waste and Recycling Association (NWRA)** proudly represents the private sector waste and recycling industry that is essential to maintaining the quality of American life. The delivery of waste and recycling services impacts every American in their homes, in their businesses and wherever they go. With 700 members, NWRA speaks on behalf of 70% of the waste and recycling sector. The association strives to protect the environment through its commitment to advancing safe, economically and environmentally sustainable materials management.

Through its Recycling Committee, NWRA develops resources to support members' efforts to help consumers develop better recycling habits and reduce contamination. NWRA has prepared issue briefs, infographics, and other materials designed to support members. As the recycling landscape changes, NWRA, through its Recycling Committee publishes issue briefs with the information for NWRA members.

NWRA collaborates with other recycling stakeholders by focusing on areas that affect the recycling industry. In partnership with recycling stakeholders, the association produced a Think Twice infographic to reduce recycling contamination by reminding consumers to think twice before they recycle. NRWA works jointly on sharing information about lithium batteries that are impacting the safety of curbside recycling. The association is working on updating guidelines for designing recycling contracts which were developed in conjunction with SWANA.

NWRA encourages improving recycling infrastructure and education by sponsoring recycling awards. Each year, the association recognizes innovators and leaders in the industry. Awards are given to companies and organizations that make substantial contributions to recycling through partnerships, public education, and

innovative recycling facilities. NWRA also created an infographic to illustrate how materials are processed from a single stream recycling program. Learn more:

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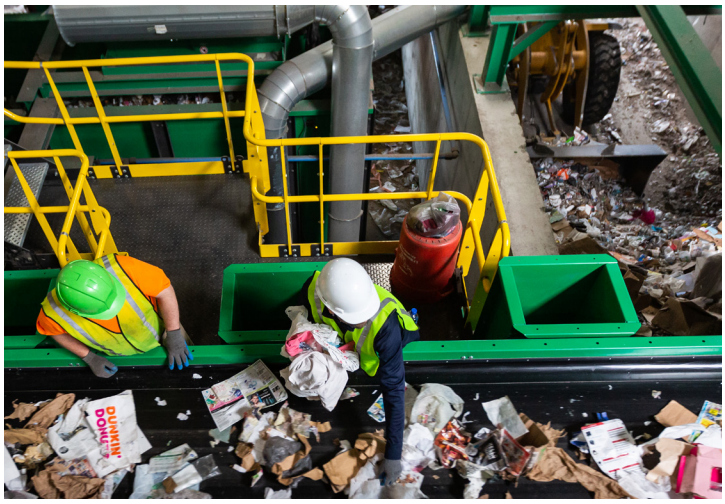

Tackling plastic pollution is an urgent priority for **Nestlé**. The company's vision is that none of its packaging, including plastics, ends up in landfill or as litter. In 2018, Nestlé announced its commitment to make 100% of its packaging recyclable or reusable across its global portfolio by 2025. To achieve this, Nestlé is: eliminating non-recyclable plastics, encouraging the use of plastics that allow better recycling rates, and eliminating or changing complex combinations of packaging materials. Recognizing that 100% recyclability will not solve the plastic waste problem, the company set out a broader plan that includes pioneering alternative materials, partnering with others to shape a waste-free future, and driving new behavior. These new commitments build on previously existing goals to minimize the use of packaging material. Nestlé is on track to reach its objectives to avoid the use of 140,000 metric tons of packaging materials by 2020, versus a 2015 baseline.

Nestlé is making progress towards its packaging goals. ***Since 2015, Nestlé has avoided more than 118,710 metric tons of plastic packaging across the globe through designing more efficient packaging.*** Nestlé is using a higher proportion of recycled content. Nestlé Waters North America will use 50% recycled PET plastic (rPET) across its domestic packaging portfolio by 2025. In 2019, the company's Poland Spring® brand launched Origin, a water bottle crafted from 100% recycled food-grade plastic and announced its goal to convert the entire brand to 100% rPET by 2022. Nestlé is also designing new products, like its new Starbucks® Creamers, to be 100% recyclable including caps and shrink sleeve labels. Nestlé's efforts to reduce plastic waste extend beyond its brands to its business operations where all 4,200 Nestlé facilities have restricted the use of single-use plastic items.

Tackling pollution requires a holistic approach, which is why Nestlé is working with governments, NGOs, suppliers, waste managers, retailers and other companies to take meaningful actions. One collaborative project, MRFF, is researching the technical and economic feasibility of sorting flexible plastic packaging for recovery. Initial results showed that high-tech optical sorters can effectively separate flexible plastic packaging. Now the group is partnering with J.P. Mascaro & Sons in Berks County, Pennsylvania to pilot single-stream curbside recycling of flexible plastic packaging. In March 2019, Nespresso, the New York City Department of Sanitation, and Sims Municipal Recycling (SMR) announced Nespresso's 1.2 million-dollar commitment to better enable the recovery of its aluminum coffee capsules through New York City's curbside recycling program. In addition to capsules, the commitment will allow SMR to better sort and capture lightweight aluminum items and turn them into new products. For more information on what Nestlé is doing to tackle packaging waste, visit: nestle.com/ask-nestle/environment/answers/tackling-packaging-waste-plastic-bottles.

★★★

The **NYC Department of Sanitation** provides curbside and containerized collection of dual stream recycling to all eight and a half million residents in New York City, regardless of dwelling type. Weekly collection of commingled paper and cardboard in one stream; and commingled metal, glass, plastic and beverage cartons in a second stream, is provided to high-rise complexes, brownstones, single-family homes, and other types of housing. The Department also serves schools, public institutions, and government agencies with curbside recycling collection.

Between fiscal years 2012 and 2019, the diversion rate reflecting recycling and other diversion activities deemed reportable by City Law for residential and institutional collection has increased from almost 15% to over 21%. DSNY continues to work towards increasing diversion through expansion of curbside organics collections and support for marketing and outreach to promote traditional recycling, electronics recycling, textile recovery, and materials reuse. Today, NYC collects more recyclable metal, glass, plastic and paper than at any point in the last decade. This is a testament to the continuous progress the Department seeks to achieve through programmatic and outreach work.

A recent example of the progress made towards accomplishing Department goals is the Manhattan Paper Challenge. In spring of 2019, the Department launched this unique outreach campaign focused on facilitating behavior change at the neighborhood level to help increase participation in its curbside collection programs, specifically focused on paper. The challenge is a competition aimed at increasing paper recycling rates by putting all neighborhoods in Manhattan in a contest to see which neighborhood could achieve the highest rate increase in paper recycling. The three neighborhoods with the highest rate increase received quarterly awards and grand prizes – a valuable incentive for residents.

The Department runs an ambitious number of programs and activities that support its goals and strengthen recycling. One of the more determined avenues of improving recycling has been through schools, with the Zero Waste Schools Program. The Zero Waste Schools program aims to divert all recyclable waste in participating schools and reaches over 60,000 students. ***In its third year, the Department's Zero Waste Schools online portal features zero waste curricula and other resources for teachers and has grown to include over 740 schools, or 40% of all NYC Department of Education schools.***

The Department has also launched the Zero Waste Building Maintenance Training program to help building maintenance staff run outstanding recycling programs. Through a combination of classroom instruction, field trips and practical activities, participants learn proper recycling procedures, develop skills to troubleshoot common recycling issues, and leave the course ready to teach others about recycling. Visit: www1.nyc.gov/assets/dsny/site/about/strategic-plan

★★★

The **North Carolina Department of Environmental Quality's Division of Environmental Assistance and Customer Service (DEACS)** is a non-regulatory division offering technical and financial assistance to businesses, manufacturers, local governments, institutions, economic developers and citizens in environmental management. Specifically, the Recycling and Materials Management Section in DEACS promotes and supports local recycling programs and helps expand recycling infrastructure through training, technical assistance, and grant programs to expand services and grow the state's recycling economy.

The N.C. Recycling and Materials Management Section is addressing the major market shifts and industry impacts with a multi-pronged approach that seeks to develop and expand recycling markets, reduce contamination of the recycling stream, and assist communities and businesses in finding solutions to changing market conditions. To address the issues of recycling contamination, N.C. set a goal to work with industry leaders and provide training and resources to local governments, recycling hauling companies,

recycling processors to provide clear, consistent messaging about recycling. Collective outreach with consistent messaging across the state helps reduce confusion and gives residents confidence in North Carolina's recycling system.

- ***Provided $511,000 in recycling business development grants to 17 N.C. recycling companies, creating 38 jobs and generating more than $1.3 million in new, private business investments.***
- ***Provided $468,000 in grant funding to 32 local governments to improve and expand recycling programs and increase public awareness of recycling.***
- Hosted three anti-contamination workshops with more than 150 communities, haulers, and recycling companies attending.
- Provided market updates and technical assistance at more than 50 conferences, regional meetings, and events across the state.
- Produced free anti-contamination toolkits for communities, haulers and recyclers to help educate customers about what does and doesn't belong in the recycling cart.
- Developed and executed the Recycle Right N.C. campaign including training and outreach materials designed to help communities get positive, clear and consistent messages out to the public about recycling.
- Provided free graphic design support for local governments to assist with the development of brochures, mailers, and oops tags.

On Sept. 9, 2019, NC, with 215 local governments across the state, launched Recycle Right N.C. The 10-week public education campaign is designed to encourage North Carolinians to recycle right by knowing which items are recyclable and which are not. The goal is to recover more valuable materials like cans, bottles, and paper while reducing the amount of non-recyclables in the recycling bin. ***Since the launch, DEACS' Recycle More NC Facebook page has reached more than 600,000 people and generated almost 20,000 responses, likes or shares.*** Communities across the state have shared the posts and engaged with their residents directly. In addition, local governments have used the media to highlight positive recycling stories. Haywood, Greene and Brunswick Counties passed Council resolutions in support of the campaign. Working with local partners, the campaign aims to create a more resilient recycling industry, conserve North Carolina's natural resources and boost the local economy. Visit: recyclemorenc.org/

The goals for the **Northeast Recycling Council, Inc. (NERC)** are to improve and expand recycling and recycling markets in the 11 Northeast states (Conn., Del., Maine, Md., Mass., N.H., N.J., N.Y., Penn., R.I., and Vt.). Initiatives driving recycling market development and purchasing of products with post-consumer recycled content (PCR) include:

- Developed model procurement specifications for several products, and worked with state agencies to adopt;
- Research and education to increase use of recycled content in glass containers;
- Developed a comprehensive directory of PCR end-markets in region;
- Unique regional blended value of an MRF ton study and report;
- Day-long workshop about PCR in road and infrastructure projects;
- Launched series of webinars about using recycled content in road and infrastructure projects.

Initiatives supporting increased residential recycling and improved quality include:

- Co-sponsoring a workshop with The Recycling Partnership in May 2019, whose 80 attendees were primarily municipal recycling coordinators;
- Hold two conferences annually, highlighting issues and solutions for the recycling industry.

- Hundreds of participants have joined NERC webinars addressing residential recycling, best management practices, and contracting;
- Written and published several best management practice publications, tip sheets, and educational resources. Learn more: nerc.org

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"Tackling plastic waste is one of my top priorities and I take this challenge personally…We are doing our part to address the issue head on by reducing, recycling and reinventing our packaging to make it more sustainable, and we won't stop until we live in a world where plastics are renewed and reused."
– Ramon Laguarta, PepsiCo Chairman and CEO

PepsiCo is striving to do its part to help build a world where plastics need never become waste. In September 2019, the company set a new target to reduce 35% of virgin plastic content across its beverage business by 2025, which equates to the elimination of 2.5 million metric tons of cumulative virgin plastic. Progress will be driven by increasing use of recycled content and leveraging alternative packaging materials, such as aluminum and glass. Additionally, through the expansion of PepsiCo's growing SodaStream business, an estimated 67 billion plastic bottles will be avoided through 2025 by empowering consumers to switch to reusable bottles. Other key 2025 goals include striving to design 100% of packaging to be recyclable, compostable, or biodegradable – currently at 89% across the PepsiCo global portfolio – and striving to use 25% recycled content in its plastic packaging. The company continues to partner with industry peers to coalesce around shared progress. These initiatives are critical to achieving sustainability goals and reducing the company's environmental footprint.

PepsiCo is proud that by 2020, the company's premium water brand LIFEWTR will be packaged in 100% rPET in the U.S., as the company's Naked Juice brand currently is, and bubbly will no longer be packaged in plastic. Additionally, PepsiCo successfully converted non-recyclable shrink sleeves on all 28-ounce Gatorade and 89- and 118-ounce Tropicana labels to 100% recyclable. As one of the largest users of rPET globally, learnings from these projects will be critical in company efforts to further transition its global beverage portfolio.

Throughout its snacks portfolio, PepsiCo continuously seeks opportunities to "right-size" packages, which can reduce the volume of plastic used by up to 10%. The company is also beginning to roll out an innovative new process called "charge compaction" that further reduces the plastic required for bags while delivering the same volume of snacks. This also enables transport of more bags in each truck. These activities contribute toward carbon emission reductions from the snacks packaging portfolio.

PepsiCo and The PepsiCo Foundation are accelerating efforts to boost recycling rates across the world. ***Between July 2018- July 2019, the company pledged over $51 million globally in partnership initiatives to organizations, including The Recycling Partnership, The Closed Loop Fund, and the Alliance to End Plastic Waste, among others.*** These organizations foster a more robust recycling infrastructure in the U.S. and around the world through curbside recycling, marine debris clean-up, and manufacturing technology and product innovation.

Educating and engaging consumers on recycling are important components of the PepsiCo Recycling program. Recycle Rally is a free recycling program designed to inspire K-12 school teachers, students, and their communities to recycle by providing educational materials and resources such as recycling bins to make recycling more engaging and convenient. **Since its inception in 2010, the program has recycled more than 515 million post-consumer containers and placed 8,700 recycling receptacles throughout all 50 states.** Learn more: pepsico.com/sustainability/sustainability-reporting

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In 2016, the city of Phoenix launched the Reimagine Phoenix initiative with a goal to achieve a 40% waste diversion rate by December 2020. With guidance from the city's elected leaders, **Phoenix Public Works** identified a three-pronged approach to achieve this waste diversion goal: to enhance solid waste services; to expand recycling education and community outreach; and to foster public-private partnerships.

Since the launch, Phoenix Public Works has made impactful strides in these three actionable areas by implementing new programs and innovative ideas under the leadership of Public Works Director Ginger Spencer. From establishing recycling Eco Stations throughout the city to investing in infrastructure upgrades to the city's recycling center and everything in between, Spencer has been focused on surpassing the national waste diversion rate average of 34% and remains steadfast in attaining the ultimate goal of 40% by the end of 2020. With expertise and support from the Public Works staff, the city of Phoenix is well on its way to reaching that goal.

To date, Phoenix has achieved a 36% waste diversion rate through the implementation of different waste diversion programs.

- 2017 – Eco-stations were strategically placed throughout the city to provide convenient drop-off points for recyclables from businesses and multi-family housing dwellers.
- 2017 – The city's Compost Facility was completed, allowing the city to divert 55,000 tons of green organics every year.
- 2018 – Together with The Recycling Partnership, the city launched the Oops/Shine On outreach program, an interactive recycling outreach to reduce contamination using informational tags to educate residents.
- 2018 – A partnership with Goodwill of Central Ariz. offers a free pilot clothing/textile curbside collection program that will soon expand citywide in November 2019.
- With a no-interest loan from Closed Loop Fund and additional investments from a municipality partner, one of Phoenix's recycling facilities will undergo infrastructure and equipment improvements starting October to help reduce recycling contamination.

Some of the activities that have contributed greatly to the City's recycling efforts:

- Oops/Shine On program uses visual audits and engagement in a five-week span to target specific neighborhoods with high contamination rates and educate them on how to recycle right by leaving an Oops or a Shine On tag. There has been a 50% improvement in contamination rates since implementation in 2018.
- The Zero Waste Assistant is a desktop app for the public who may be confused about what materials can go in the recycling container. By typing the questionable material, the app determines whether it can be placed in the recycling container or not. If not, the app provides options on proper disposal of the material.
- The city's recent pilot curbside clothing collection with Goodwill of Central Ariz. has amounted to 19,640,000 pounds of materials diverted from the landfill from January 2019 to July 2019. Learn more at phoenix.gov/recycle.

The **Plastics Industry Association (PLASTICS)** aims to transform plastics manufacturing and its supply chains to include greater use of recycled content, better design for recycling and overall sustainability in manufacturing by giving members the tools and resources to not only adapt, but to thrive, in this changing environment. To achieve this goal, PLASTICS aims to educate members about opportunities to set and advance sustainability goals, connect the supply chain to accelerate that work, and communicate the innovative work our members are doing to advance recovery and address pressing environmental issues like marine debris.

PLASTICS brings together the entire plastics supply chain to drive advances in sustainability and recycling. The association believes taking a systemic approach to using and reusing materials more productively over their entire lifecycles affords the opportunity to improve environmental outcomes, conserve resources and reduce costs. PLASTICS has developed an innovative model for exploring and building new end market opportunities (NEMO) for recycled plastics through connecting the plastics supply chain to solve for common challenges. This model has driven impactful projects such as the End of Life Vehicle (ELV) recycling project, NEMO for film, groundbreaking research on recycled plastics in asphalt, and the Pacific Northwest Secondary Sorting Demonstration Project. As a result of these efforts, members are increasingly making commitments to using recycled content, and advancing circularity.

The NEMO program works to strengthen the secondary materials market. ***In the recently released NEMO for Film Phase II Report, PLASTICS identified 100 million pounds of new annual demand for mixed films.*** The Pacific Northwest Secondary Sorting Demonstration Project aimed to demonstrate what additional volumes for materials could be recovered and additional value created for the recycling system when secondary sorting capability is added at the regional level.

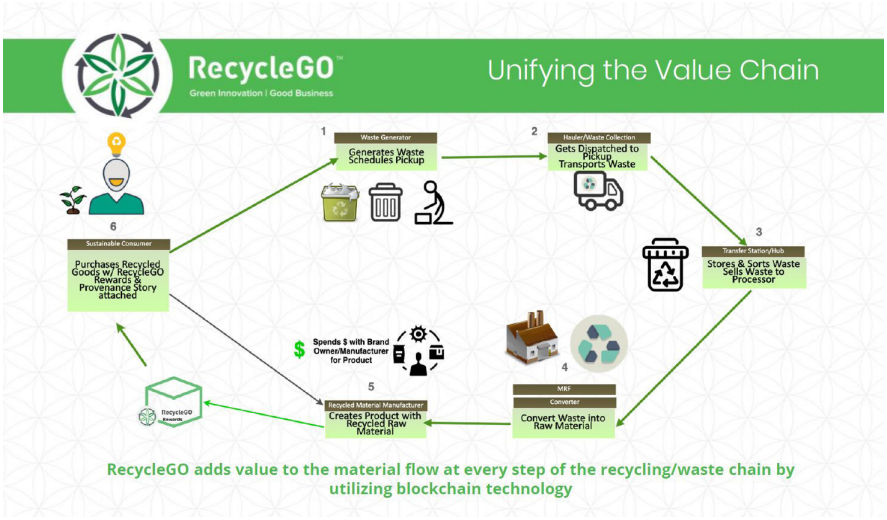
PLASTICS also hosts the Re-focus Sustainability & Recycling Summit, which features thought leaders highlighting how they are pushing the boundaries of sustainable manufacturing through innovation in design, material selection and processing. Learn more:

NEMO: https://www.plasticsindustry.org/supply-chain/recycling-sustainability/new-end-market-opportunities-nemo

Re-focus: https://www.refocussummit.org/

★★★

RecycleGO is a recycling service and technology provider that aims to leverage blockchain and other technologies to improve the recycling system via increased participation, product quality and sustainability throughout the product's life cycle. By tracking recycling activity on a decentralized ledger, RecycleGO establishes transparency and accountability in the recycling system, allowing Waste Haulers to track their material, Municipalities and Corporations to monitor their sustainable impact and Consumers to make responsible choices. As a verifier of recycled material, the company's blockchain can legitimize



deposit return programs and other incentive-based recycling initiatives. The blockchain platform makes recycling easier and more efficient by giving users access to supply chain tracking and verification, operations management, performance reports and insights, resources, and support.

RecycleGO's current software, the dual-system applications Mission Control and Chariot, saves haulers time and money by optimizing their routes and streamlining their backend operations. The company is developing a user app for businesses to arrange on-demand pickups and gain access to real-time materials tracking and recycling data. Once the blockchain platform is fully developed, this next generation recycling supply chain and logistics management system will create a secure, globally-scalable chain of custody ledger for haulers, municipalities and corporations.

By creating a feedback loop for recycling activity, RecycleGO encourages higher quality recycling, which enables processors to produce a higher quality commodity. Chain of custody tracking enables brands to track their product through its life cycle and thus prove their sustainable impact, legitimizing their efforts to an increasingly green consumer market. The Carter Performance Management system allows haulers to manage their fleet and containers with route optimization and GPS tracking, helping avoid unnecessary idling, misplaced containers and routing inefficiencies. Learn more: recyclego.com/what-we-do/

★★★

Revolution Systems, a veteran-founded recycling equipment business, makes convenient, effective and efficient recycling accessible everywhere in the U.S. The company designs, manufactures and sells turn-key sorting systems sized to serve smaller communities. ***Its patented sorting system processes single-stream material for communities with 20,000 to 75,000 people 30% more efficiently, 30% cleaner, in one third of the space, and for one third of the price of a comparable system.*** With the Revolution, smaller communities can eliminate the need for transfer stations and associated transportation of both good and contaminated material, further reducing costs and environmental impact while creating jobs. Revolution-served communities are better able to trace contamination and provide feedback to residents needed to reduce contamination and residue rates. A new product in development will allow the company to serve communities of less than 5000, as well as sports and entertainment events.

Since its founding in 2016, Revolution Systems has sold and installed three systems, each processing different volumes and types of materials while accumulating over 7,500 hours of operation. In Steamboat Springs, Colo., Revolution #1 has recovered over 10,000 tons of recyclable material and created six jobs while eliminating the daily 180-mile trip to Denver for sorting. Sorted material is now shipped directly to mills using backhaul freight, further reducing the carbon footprint. Revolution #2 recovered over 5000 tons of consumer textiles for re-use, creating 10 jobs. Revolution #3, operational in early 2019, created 15 jobs and is recovering 140 tons per week.

Revolution Systems directly improves the U.S. recycling infrastructure by increasing access points, reducing unnecessary transportation, increasing material yields, and increasing transportation system efficiency. A "right sized" sorting system like the Revolution places sorting and recovery centers closer to the communities it serves, increasing consumer convenience and participation. At the same time, local sorting eliminates the need to transfer and transport unsorted material to larger facilities many miles away. Revolution's approach to automation puts more control in the hands of the sorter, creating a "mill ready" product. Locally-sorted material can be transported directly to mills using backhaul transportation, further reducing costs and increasing overall transportation system efficiency.

For more information, see: RevolutionSystems.net.

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The Recycling Partnership is a national nonprofit organization that leverages corporate partner funding to transform recycling for good in cities and towns across America. As the only organization in the country that engages the full recycling supply chain from the corporations that manufacture products and packaging to local governments charged with recycling to industry end markets, haulers, material recovery facilities, and converters, The Recycling Partnership positively impacts recycling at every step in the process.

The Recycling Partnership has served more than 1,300 communities with tools, resources and technical support, helped place nearly 600,000 recycling carts, reached 60 million households, and helped companies and communities invest more than $55 million in recycling infrastructure. Visit: recyclingpartnership.org.

★★★

Solid Waste Association of North America (SWANA) has been at the forefront of increasing municipal recycling for decades. With the recent challenges facing this system, SWANA is leading efforts not only to increase recycling, but to recycle right. Having higher quality recyclable materials at the curb increases the amount of material that can effectively be transformed into new products, while also making it more financially viable for those collecting, separating and selling the material. Communities and individual awareness play a large role in this, which is why SWANA has worked to ensure everyone knows how to #RecycleRight.

SWANA's other major goal is to raise awareness about the true state of recycling, as well as what changes would be effective to keep it truly sustainable. The association has worked to educate the public, lawmakers, and local, state and federal agencies that recycling is not in crisis, but there are improvements that should be made.

SWANA's role as an educational resource and advocate has guided its work over the past year. This included providing interviews and background information to dozens of journalists throughout the U.S., and other countries, developing resources to provide balanced information to those researching the topic, and working to fight misinformation about the state of recycling.

In addition to working with journalists, SWANA has educated members of Congress, state environmental agencies, and municipal officials about recycling and how they can support efforts to improve it. This has been accomplished through briefings, meetings, letters, and regular communications to provide accurate and up-to-date information. SWANA has distributed materials such as flyers and infographics, developed numerous social media posts and blog entries, and created many articles, resources, and videos to support municipal and national recycling programs.

To develop consistent messages for key recycling issues, SWANA has developed a free, downloadable media kit to educate journalists writing about this issue. This includes a "Myths vs Facts" flyer that succinctly addresses misconceptions that are commonly reported. SWANA's Applied Research Foundation recently published an important report on the status of curbside recycling and how it was affected by the China National Sword policies to help guide decision-making at the local, state, and national levels. Materials are available on SWANA's dedicated recycling clearinghouse page: SWANA.org/recycle.

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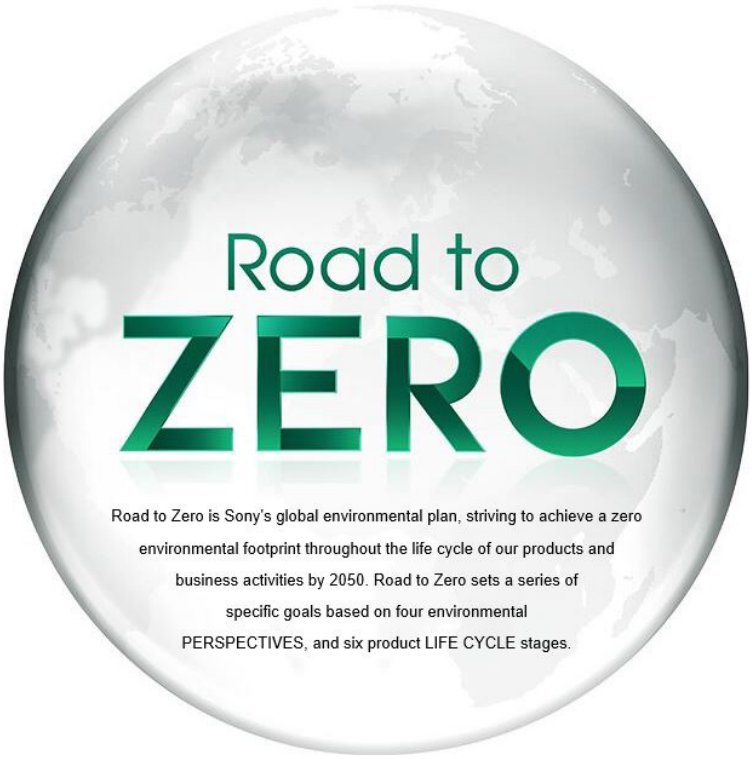
Sony has found value in preserving a healthy natural environment. A healthy environment promotes fulfilled lifestyles of today and tomorrow. Sony's Road to Zero global environmental plan is aimed at such a goal and is backed up by measurable targets in five-year increments aimed at "zero impact" by the year 2050. Learn more: sony.net/SonyInfo/csr/eco/RoadToZero/gm_en.html



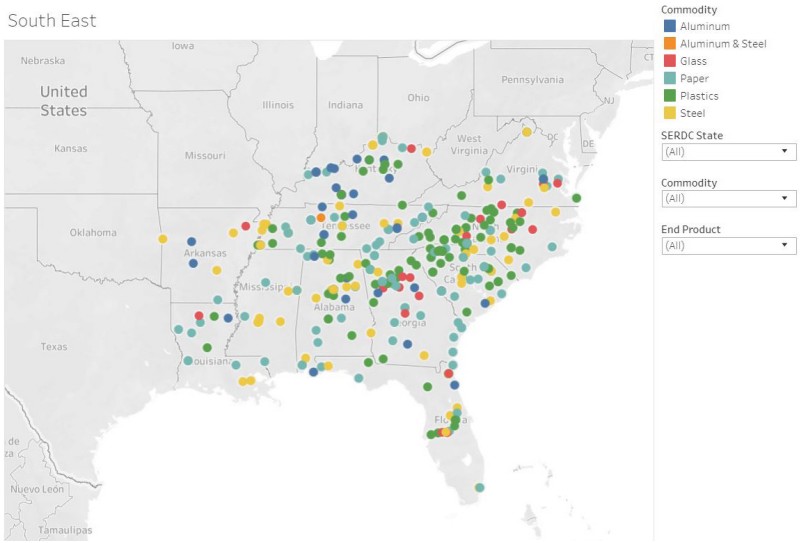
Sony has been actively moving towards this goal since fiscal year 2010 by setting intermediate targets along the way. Green Management (GM) 2020 has been established as the intermediate target set for fiscal year 2020, and includes two recycling targets: (1) establish take-back and recycling schemes suitable for the needs of local communities and move ahead with efficient operations with the goal of aiming at the high-level return of waste to a form in which it can be used as a resource: sony.net/SonyInfo/csr_report/environment/recycle/performance.html and 2) reducing use of virgin plastics per product by 10 percent from the fiscal year 2013 level, by fiscal year 2020: sony.net/SonyInfo/csr_report/environment/products/plastics.html

In order to achieve the GM2020 targets, Sony has been working on resource conservation. ***One way of reducing the consumption of virgin plastic is to expand the use of recycled plastics. Sony has developed SORPLAS™ - a flame retardant plastic resin made of recycled plastics that can be recycled repeatedly. SORPLAS contains up to 99% recycled plastic from sources such as optical discs and water bottles, combined with less than one percentage of a Sony-developed proprietary flame retardant.*** Sony is working to expand the use of SORPLAS, which is used in the components of more than a dozen TV models as of October 1, 2019. sony.com/electronics/sorplas-recycled-plastic

In terms of take-back recycling, Sony has expanded recycling efforts, recognizing local needs as well as regulatory framework, and the total amount collected for Reuse & Recycling has increased in 2017 from 2016 by 16%. The effort earned Sony the Gold Sustainable Materials Management (SMM) Electronics Challenge Award from EPA in January 2019 for commitment to responsibly recycle electronic waste through certified recyclers. As a leader in responsible stewardship, Sony continues to support the mission of EPA's SMM voluntary program through proper management of electronic waste by downstream service providers.

Sony is the first consumer electronics manufacturer to sign the U.S. EPA America Recycles Pledge. While the company continues to work toward increasing the use of SORPLAS and other recycled plastics in various electronics products, fiscal year 2019 marks the first full year of partnership with Electronics Recyclers International (ERI). With ERI as the largest e-waste processor in the USA and their commitment to responsible recycling and sustainable material management, Sony has expanded its support of local recycling efforts in Colorado and Delaware since late 2018.

The Southeast Recycling Development Council, SERDC, has a mission to unite government and industry to promote sustainable recycling. SERDC has focused on measuring the economic impact created by recycling and communicating that information to elected decision makers in order to build political and budgetary support for recycling. ***SERDC has mapped 360 manufacturing facilities in the region that rely on recycled material as a primary feedstock in the production of consumer goods. These plants employ 98,000 people in manufacturing jobs and generate over $40 billion in sales.*** (see serdc.org/maps)



SERDC provides technical support for state and local governments in the region, as well as works with EPA Region 4 to develop tools to assist recycling programs. Outcomes include workshops, infrastructure evaluation and mapping, and best management practices reports. SERDC also works with state recycling organizations to host "Recycling Days" in their respective legislatures. Visit: serdc.org/

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The Sustainable Packaging Coalition (SPC) is a nonprofit membership organization dedicated to helping companies all along the packaging supply chain increase the sustainability of their packaging. Among other sustainability projects, SPC develops resources to help member companies increase their use of recycled content, such as the Design for Recycled Content Guide. SPC also offers a labeling system for packaging that shows consumers how to recycle their packaging, the How2Recycle label. In conjunction with The Recycling Partnership, SPC manages ASTRX, a project to improve the U.S. recycling system. The Coalition also manages multiple conferences each year that are designed to educate packaging professionals about different aspects of sustainability, including recycling.

Resources include:

- The Design for Recycled Content Guide is a free resource for members to learn how to work with their suppliers to incorporate more recycled content into their packaging. It also provides insights for suppliers working with brands in this area. The goal of this guide is to increase the demand for recycled content, thereby strengthening end markets.
- ***The How2Recycle label program now boasts over 180 brand owner and retailer members collectively owning over 3000 brands. Over 175 products are issued the How2Recycle label everyday--there are now tens of thousands of labels currently in the marketplace. Additionally, via the How2Recycle Member Platform, more than 75,000 specific design for recyclability recommendations have been sent to brands.*** The goal of the How2Recycle label is both to educate consumers on recycling best practices as well as to reduce contamination to improve recycling outcomes.
- ASTRX has developed free resources for packaging professionals interested in learning more about how the recycling system functions and why a package may or may not be recyclable. In addition, SPC has developed a report on material flows at MRFs and reprocessors to better understand why some packaging struggles to work successfully through the recycling system. This report includes a map of

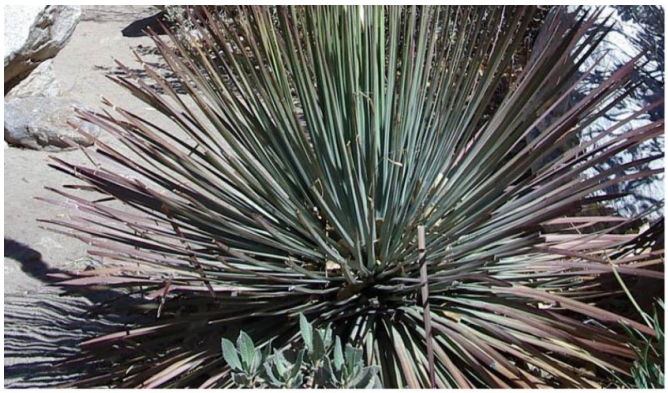
the typical flow of materials at an MRF as well as a glossary of recycling terms. The goal of the ASTRX report is to find ways to decrease contamination in the recycling stream, thereby improving products sold into end markets.

- SPC also provides online educational courses called The Essentials of Sustainable Packaging. This is a web-based training program to educate professionals about subjects in sustainable packaging, including designing for recovery, bioplastics, ocean plastic pollution, compostable packaging and others.

Visit: recycledcontent.org, how2recycle.info, astrx.org and sustainablepackaging.org/projects/esp/

★★★

The **Tribal Waste and Response Steering Committee (TWAR SC)** works with the Institute for Tribal Environmental Professionals (ITEP) to communicate the needs of Tribes across the U.S. in the fields of solid waste, Superfund, underground storage tanks, emergency response, and brownfields. They also assist ITEP by instructing at in-person training courses, serving as peer mentors to their colleagues at other Tribes through ITEP's onsite mentor project, and sharing their knowledge via webinars and online trainings.



The **Pan'ul** (Whipple Yucca) - young stalks are utilized to make flour, while the young blossoms can be eaten fresh or dried for later use.

The goals of the TWAR SC and ITEP in the field of recycling are to help Tribal staff develop their own capacity to create community-specific, sustainable programs, as well as be advocates for recycling at a national level. To achieve these goals, ITEP has designed and delivered over 60 solid waste training courses in cooperation with members of the TWAR SC and others and has made over 40 onsite mentor matches for Tribal solid waste professionals – again, with members of the TWAR SC often serving as peers. Two members of the TWAR SC have also recently conducted a training as part of ITEP's annual Tribal Lands and Environment Forum on recycling outreach, and then reprised this training as a webinar to assist more Tribal staff.

Today, hundreds of sovereign Tribal Nations run efficient and effective recycling programs of all types. These run from stand-alone recycling centers, like those at the Modoc Tribe in Okla., Colville Confederated Tribes in Wash., or Poarch Band of Creek Indians in Ala., to recycling activities at comprehensive solid waste facilities at Saint Regis Mohawk Tribe in N.Y., Red Cliff Band of Lake Superior Chippewa in Wisc., or Pala Band of Mission Indians in Calif.

Many Tribes have created model programs that serve as inspiration for their colleagues across the country – Tribal and non-Tribal. For example, Tracy Horst of the Choctaw Nation (and TWAR SC member) started recycling several years ago using her own car to pick up recyclables. From there, she built a recycling program that has two top-line recycling facilities employing dozens of people that is the largest recycling operation in southeastern Okla. – and serves not only her Tribe but multiple customers throughout the region. Rob Roy of the La Jolla Band of Luiseno Indians (and another TWAR SC member) worked with his colleagues at other Tribes to develop a zero-waste project to significantly reduce waste, and capture recyclables, at the annual Inter Tribal Earth Day event. ***The diversion rate has increased every year going from 61% in 2017, to 88% in 2018, and 93% in 2019, meeting the goal of 90%, and informing the public about zero waste goals.***

Recycling is not only an important part of solid waste management for Tribal Nations. It is a core value that is central to an overall priority of caring for the Earth and future generations. Tribes are in the forefront of developing innovative and effective recycling and other waste diversion and conservation efforts, and value being a full partner with non-Tribal communities and entities to be true advocates for the Earth that sustains all. Learn more: www7.nau.edu/itep/main/twarsc/Home/Index

The **U.S. Chamber of Commerce Foundation (Chamber Foundation)** is leading a multi-stakeholder initiative called Beyond 34: Recycling and Recovery for A New Economy (Beyond 34), with the support of a coalition of corporations and foundations. Beyond 34 is an initiative aimed at increasing the current 34% recycling rate in the U.S. by providing a scalable, place-based collective impact model to increase and improve recycling and recovery.

Beyond 34's goals are to:

- Demonstrate processes for improving recycling, recovery, and reuse rates in selected U.S. regions;
- Provide a blueprint illustrating how companies and communities can successfully recover materials to keep them flowing in continuous, profitable, and sustainable loops that can be replicated in other communities;
- Develop strategic partnerships across the value chain that helps shift the U.S. towards a more circular economy;
- Raise awareness of the barriers and opportunities for transition to the circular economy in the U.S., and share learnings so others can better address challenges for materials recovery.

The Chamber Foundation piloted Beyond 34 in the Orlando region in September 2017. At the same time, the foundation began development of online resources to educate recycling stakeholders on how the pilot initiative was structured and executed, offering regular updates on the pilot's progress and analyses of how recycling could be increased in the Orlando region.

Communications efforts to date have reached more than 330,000 people. The efforts include educational videos; ongoing social media content; thought leadership pieces on Chamber Foundation platforms/external publications; webinars on realities and opportunities in the U.S. recycling infrastructure; presentations and workshops; and a case study report highlighting key learnings.

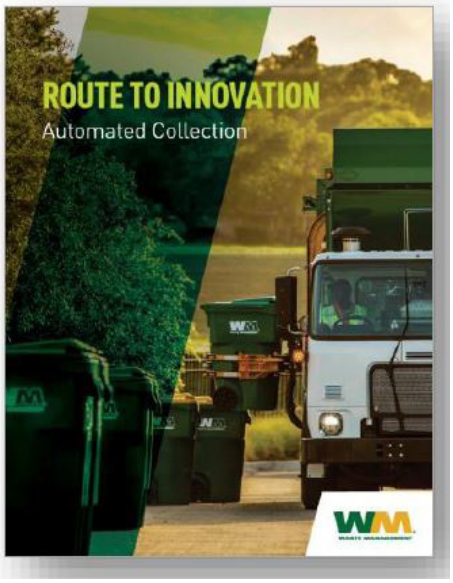
To amplify the Chamber's impact, the foundation is in the process of:

1) Tracking launched projects out of the Orlando pilot to continue sharing best practices;
2) Implementing a refined Beyond 34 model in Cincinnati based on learnings from the pilot;
3) Developing an online resource clearinghouse to enable any community to administer the Beyond 34 model.

For nearly 20 years, the Chamber Foundation has harnessed the power of business to improve communities through best-in-class communications, fact-based research, and a convening power that brings together key business and policy leaders on a wide array of issues including sustainability and the circular economy. The foundation is contributing to EPA's America Recycles workgroups because they align with the Chamber's mission to equip businesses with resources and tools to achieve their corporate citizenship goals.

With respect to promoting education and outreach, through Beyond 34, the Chamber is collecting and compiling data on successful recycling practices; conducting a gap analysis to identify what is needed to promote and increase recycling; and amplifying messages to educate stakeholders on best practices. With respect to enhancing materials management infrastructure, the Chamber is creating an online clearinghouse of resources by material type (i.e., glass, aluminum, plastic, paper) and intervention type (i.e., collection, infrastructure, education) and compiling information on what is working. Visit: uschamberfoundation.org/beyond-34-recycling-and-recovery-new-economy

Waste Management (WM): Growing Recycling through Automation – WM has a goal to transition from manual to automated collection to increase recycling volume and improve worker safety as contracts come up for renewal. Automated collection creates significant value to communities by lowering the number of trucks on the road, providing wheeled and lidded recycling carts that are easier to use, keeping communities cleaner, and increasing recycling capacity and participation.



Providing recycling carts and automated collection to residential customers have resulted in:

- Increased recovery – ***In 2018, WM negotiated contracts and programs, adding more than 500,000 residential recycling carts, resulting in 110,000 tons of increased recycling materials.***
- Better Service – Residents can easily fit their recyclable materials in one container, before rolling it to the curb. Recyclables stay dry, and more customers participate with the easy-to-use cart. This drives more participation and increases recycling pounds per home.
- Worker Safety – Switching to carts eliminates the need for employees to bend and lift heavy bins and exit the truck since the automated arm does all the work.

Collaborating with municipal customers is vital to company success since it gives WM the chance to educate them about the value of single-stream recycling and leverage all communication channels to help communities successfully transition from recycling bins to carts. From the city's website, to messages from the Mayor, community events, city e-newsletters and push emails, WM tries to help customers understand the benefits of moving from bins to carts through a variety of educational recycling materials.

As North America's leading recycler, WM has been at the forefront of growing recycling in the U.S. for the past three decades. In 2018, the company managed over 15 million tons of material for recycling, composting and beneficial reuse – an increase of over 91% since 2007. WM has a goal of avoiding 17.3 MTCO2 emissions by 2038, primarily by focusing on recycling materials with the most benefit from recycling. In 2019, WM established an additional goal to reduce inbound contamination to no more than 10% by 2025.

Waste Management created the award-winning **Recycle Often. Recycle Right.® program (RORR)**, a community-based social marketing program to help consumers recycle more and recycle the right materials. This recycling message is integrated into all aspects of the business. With more than 42,000 employees, 17,000 collection trucks, and 103 MRFs, it is a massive undertaking to train employees to fully integrate RORR into the business. To make things easier,WM created RORR.com, an open-source website offering a variety of recycling education resources to cities, businesses and individual recyclers.

WM reduced inbound contamination from 24% in August 2018 to 17.7% in August 2019, a reduction of 26% at 45 single-stream MRFs. This was accomplished by the entire company participating in a focused effort over the past 14 months. From front-line employees (drivers and customer service agents educating customers), to the website design, to brochures, posters and bins decals, the company worked together to engage customers on an ongoing basis to help them recycle right.

Through regular audits, WM determined that plastic bags are the biggest contaminants in recycling. The company developed a program that acknowledged the challenges consumers face when removing plastic bags from recycling and quickly learned it had to provide solutions for customers and to show them they can recycle without putting recyclables in plastic bags. WM created residential videos for household recycling success, and a No Plastic Bags toolkit to provide business recycling solutions.

The company knows that the best way to reach customers is through direct feedback at homes and businesses. On-the-street contamination reduction program involves taking photos of contamination in

commercial bins and tagging carts at residences. These instances are recorded on the truck's onboard computer to track contamination and provide education and technical support directly to customers. Sharing a picture of a customer's bin and discussing what materials are acceptable to recycle have proven to be most effective in driving the right recycling behavior.

Technology also plays an important role in educating customers to improve recycling. An RORR widget was developed for municipal and commercial customers' websites, re-directing consumers to RORR.com.

Drivers also use on-board computers to identify containers with excessive contamination, triggering customer notification and directing them to RORR. MRF technology investments, including robotics and optical sorters, provide cost-effective, consistent sorting and quality control functions that reduce cost while improving quality.

Visit RecycleOftenRecycleRight.com to view and download recycling educational materials.

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