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BY SARA MICHOLS

Rounding up recycling data

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In Texas, everything is big - except for the collection of recycling data. But now a number of interested parties are trying to quantify recycling efforts in order to examine the impacts of our industry in the Lone Star State.

fter years of efforts, a stakeholder group has recently come together to initiate a statewide effort to capture recycling data in Texas. The Texas Recycling Data Initiative (TRDI), led by a partnership of the State of Texas Alliance for Recycling (STAR) and the Lone Star Chapter of the Solid Waste Association of North America (TxSWANA), seeks to quantify material availability for market and infrastructure development and resource planning and management. The initiative also aims to identify recycling industry-associated job creation. This information is important to better understand the economic, environmental and policy issues facing Texas businesses, citizens and governmental agencies.

Changing the game in Texas

The results from TRDI will shape the future of recycling activities in Texas and will provide the information needed to initiate, enhance and promote recycling programs at both a regional and state level.

In the late 1980s and early '90s, environmentalists across the country responded to the infamous Mobro 4000 "Gar-barge" crisis in which a barge hauled the same 3,168 tons of refuse along the East Coast for seven months looking for a place that would accept the load. The incident raised awareness of the increasing number of municipal landfills that had closed in '80s and put solid waste issues on the agenda for many state governments.

In response to this issue, the Texas legislature in January 1994 called for a 20 percent reduction of solid waste disposal in the state by 2000 and a 40 percent reduction by 2010. Lawmakers claimed that through programs offered by the state regulatory agency, which at that time was the Texas Natural Resource Conservation Commission (now the Texas Commission on Environmental Quality), such waste reduction was entirely possible. However, the goal was loosely enforced, little data was collected and other environmental issues have grabbed the bulk of attention in both regional and state governments.

"We are flying blind in an arena with great potential for future state economic development," says Maia Corbitt, STAR's executive director. "In a growing state with the second-largest population in the country, we need to take a serious look at what that population expends as waste when instead it could and should be the next great resource boom for Texas. It is imperative that a state this size has the proper data available to inform decisions that will further recycling capabilities in Texas."

TRDI hopes to fill the gap where previous efforts have fallen short. Consistent statewide data will provide decision-makers with the information needed to advocate for market development, increased recycling infrastructure and widespread public education.

In lieu of a mandated reporting system, industry is now able to participate in a voluntary data collection mechanism that will identify what material is under-collected and support businesses in making investments where the most opportunity lies. The economic case for increased recycling in Texas will become more apparent as this study quantifies and highlights the number of jobs created by resource-recovery practices across the state.

The data provided by TRDI will also help support state planning regions (called councils of governments) in their staterequired regional solid waste planning efforts. In addition, the numbers will show where Texas is lacking in material processing capabilities and allow councils of governments to advocate for increased infrastructure and education to boost collection rates and bring more industry to individual parts of the state. In areas in which Texas is excelling, the study will validate current efforts and allow local governments to make a case for continued funding and support for their recycling programs.

An idea that goes back five years

This initiative stemmed from the needs

expressed by members of STAR, the state recycling organization, in a survey conducted during the legislative session in 2009. Although limited regional and state data exists in Texas, there is currently no comprehensive or consistent statewide information collected on the amount of material recycled. "Previous attempts to capture recycling data have been hampered by confidentiality concerns and the lack of broad industry support," Corbitt says. "This time, we've engaged commodity representatives throughout the process, from survey development to vendor negotiations, to ensure a comfort level with data management and

dissemination."



In response to the feedback about a lack of data, a series of stakeholder meetings took place in 2010 during which the framework for a statewide recycling survey emerged, and in 2011, the State of Texas Municipal Solid Waste Management and Resource Recovery Advisory Council passed a resolution supporting the study. Also in 2011, the partnership between STAR and TxSWANA led to the formation of a survey group, which included representatives from public, private, governmental and nonprofit recycling stakeholders. From this group, the Texas Recycling Data Initiative (TRDI) was born.

Representatives from the initial stakeholder group now comprise the TRDI Steering Committee (see chart on page 20), which was established to administer the survey process and identify potential funding sources. The steering committee then went through a competitive bid process that resulted in the retention of Burns & McDonnell, a firm that specializes in environmental studies and consulting services. Burns & McDonnell will work alongside Texas State University to conduct the statewide survey and publish the results prior to the 84th Texas Legislative Session in January 2015.

"Our work plan is designed to obtain data in a thorough manner that projects the confidentiality of survey respondents," said Scott Pasternak, Burns & McDonnell project manager.

A collaborative and voluntary effort, the survey will focus on data from processors and end markets to reduce or eliminate double-counting, and TRDI will utilize a confidential approach to ensure that proprietary data is protected. TRDI is a true partnership between private, public and

TRDI Steering Committee Representation

TEXAS RECYCLING DATA INITIATIVE

A COLLABORATIVE EFFORT TO MEASURE RECYCLING

Steering Committee Participants

- Carpet America Recovery Effort (CARE)
- Construction Material Recycling Association
- **CTRA**
- **Electronic Resource Recovery Committee**
- of STAR
- Environmental Protection Agency Region 6
- **ISRI Gulf Coast Chapter**
- ISRI Scrap Tire Chapter
- Municipal Solid Waste Management and **Resource Recovery Advisory Council**
- North American Hazardous Materials Management Association
- National Waste & Recycling Association (formerly NSWMA)

- Recycling Council of Texas
- STAR
- Texas Association of Business
- Texas Association of Regional Councils (TARC)
- **Texas Chemical Council**
- Texas Coal Ash Utilization Group
- Texas Commission on Environmental Quality (TCEQ)
- Texas Compost Council of STAR
- Texas Oil & Gas Association
- Texas Retailers Association
- TxSWANA



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Kitcher



NGO participants and proves that positive collaboration among varied sectors is realistic and beneficial to the needs of the state and the people of Texas.

"It is important for us to be able to bring together the various groups representing all sectors of the waste management industry in Texas to aid us in this endeavor of determining where we are as a state regarding landfill diversion," said Richard McHale, TxSWANA board member. "Once we are able to see the aggregated numbers, we can then help to advocate for the allocation of recycling and diversion resources to areas of the state that are underserved."

How TRDI works

TRDI will generate data that is publicly accessible in aggregate form and will not correlate to specific respondents. It will be categorized by the 24 council of governmen regions in Texas (as long as data reporting does not compromise any confidentiality issues), and although a directory of survey respondents will be available, the directory will in no way be connected to any data to ensure the confidentiality of proprietary

Commodity information will be Since TRDI is a voluntary initiative,

provided at the state level and at council of government regions where data aggregation can meet confidentiality standards. In addition to tracking the traditional recyclables collected, the project will also gather data on organics, construction and demolition material, and certain industrial waste streams, including coal combustion products. The TRDI intent is to repeat the survey every two years, ahead of each legislative session, in order to discern trends and continue benchmarking progress in Texas. Surveys are expected to be sent to recycling processors in the summer of 2014, with a target project completion date of December 2014. it is being funded by contributions from a wide range of entities. Participation from TRDI consortium members and participants is crucial to the success of this study, as well as financial contributions from companies or organizations that support such an important endeavor for Texas. Contributors so far include: TxSWANA member cities, the Construction and Demolition Recycling Association (CDRA), Recycling Council





business information.

of Texas (representing metal recyclers), Cooperative Teamwork and Recycling Assistance (CTRA, representing rural recycling programs) and STAR.

The need for comprehensive and consistent statewide recycling data is vital to every entity involved in resource recovery and solid waste management in Texas and beyond. Positive partnerships among the various stakeholders involved with TRDI prove that the demand for the results TRDI will produce is strong and necessary, and this consortium will serve as a model for future projects involving collaboration among multiple representative groups.

"Advancing recycling is a paramount issue across the state of Texas," Corbitt says, "and TRDI will provide an understanding of our progress to date, as well as future opportunities to increase recycling and help our economy thrive for generations to come." RR

Sara Nichols is the communications and programs manager for the State of Texas Alliance for Recycling (STAR). She can be reached at info@recyclingstar.org or (512) 828-6409.

RR | June 2014 21









F G A

Brands now turn to almost 200 verifications to back up their sustainability claims. But all those logos can cause confusion for consumers when it comes time to properly dispose of product packaging. BY JUSTIN GAST

e know to check the Nutrition Facts label if we're looking to eat healthy or be better informed about the foods we buy and eat. These days, more consumers are also looking for labels that display the terms "organic," "local" or "gluten free." What about when it comes to the sustainability of other products we also use everyday, such as office paper, household or workplace cleaners or even foodservice items, such as utensils, plates, bowls and cups?

How well do you know the marketing labels that grace the packaging of many of the products you buy for your home or workplace? If a product contains the chasing arrows logo, does that mean the product is recyclable or contains recycled-content? Is it more sustainable to purchase office paper that includes recycledcontent or paper that was made from wood harvested from a Forest Stewardship Council (FSC) certified site? Is there an organics label that trumps all others? If a product carries the U.S. Department of Agriculture's (USDA) Biobased label, does that mean that product is recyclable or compostable? Is a label carrying the term "biodegradable" the same as one carrying the term "compostable"? Trying to decipher an eco label can be exhausting for consumers and could potentially prevent them from purchasing a product altogether.

According to the Eco Label Index (tinyurl.com/EcoLabelIndex), the world's largest global directory of eco labels maintained by Big Room Inc., there are currently 444 eco labels being used in 197

countries worldwide and 25 industry sectors. In the U.S. alone, 193 labels are presently being used for a wide variety of products and services. For example, there's certification of food and agricultural products, buildings, electronics, offices, automobiles, and certifications given to businesses organizations or institutions that meet certain social and environmental performance criteria.

Though many eco labels are created via legislation or programs established at the national level, such as the U.S.'s Energy Star label that involves the U.S. Department of Energy, the Environmental Protection Agency and the Federal Trade Commission (FTC), eco labels can also be created by private entities, non-governmental organizations, public agencies, or jointly by stakeholders and experts from the public and private sectors. Starbucks' third-party evaluated Coffee and Farmer Equity (C.A.F.E.) Practices label, for example, evaluates, recognizes and rewards producers of high-quality, sustainably grown coffee for Starbucks stores. And, as the popularity of green products continues to grow, it's important to know what the standards, codes, labels, indices and certifications mean to you as a consumer.

Deciphering labels

How can a consumer have confidence in products and/or services that carry some form of sustainability label or certification? As

noted in the Fordham Environmental Law Review's 2011 report, "Whose Grass Is Greener? Green Marketing: Toward a Uniform Approach for Responsible Environmental Advertising," "If consumers cannot trust environmental claims, their incentive to purchase so-called environmentally safe products will be lost."

The marketplace for green products and services has increased exponentially over the years due mainly to increased global demand for sustainable products and services. Look on store shelves and you'll notice a green option for many products, such as window cleaners, dish soaps and food. Additionally, many company slogans now display advertising slogans using words like "sustainable," "environmentally friendly" and "green." The advent of these products and services has brought about a tidal wave of new environmental claims and standards.

According to the 2010 report, "An Overview of Ecolabels and Sustainability Certifications in the Global Marketplace," from the Corporate Sustainability Initiative at Duke University, "Research shows that products containing some sort of an eco label, coupled with intense marketing of

that particular product's label, can equate to economic success."

labels.

Only 44 percent of single-standard labels have conducted an impact study to assess the effect of their certification efforts on the environment.

of doing so.

It can leave consumers with a sense that it's purchase at-your-own-risk.

Outside of the labels already mentioned, let's take a look at a few other notable codes and labels being used today:

> Chasing arrows: Also known as the universal recycling symbol, this symbol has been used on almost every product imaginable



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by ShoreLandr'

Conversely, that same report also noted: Most eco labeling organizations are unaware of the market share of products, services or organizations carrying their eco

One-third of labelers surveyed had made no attempt to monitor or evaluate the environmental and social benefits of their eco labels programs and have no intention

Labeling the labels

and, for the most part, means that particular product is recyclable. Show this symbol to the average consumer and they know what it is and what it most likely stands for.

But, the recycling symbol also appears in other codes or labels. For example, when purchasing paper, if the arrows are located inside a circle, it means the paper was made partly or entirely from recycled paper. Another use of the chasing arrows symbol involves its association with the Society of the Plastics Industry's resin identification code. It's a common belief that if a plastic product contains this symbol, the product is recyclable. However, plastic recyclability is more often driven by the technology and type of equipment utilized by a community's materials recycling facility. Plastic is typically highly recyclable, the question more apt would be: Will the MRF be able to sort it effectively and send it to market?

Green Seal: Developed by NGO Green Seal, this certification demonstrates that a product or service is safer for human health and the environment and has met a high level of functional performance. A list of Green Seal-certified products and services

operation make this durable trailer the complete package. Combining efficiency with smart design, the SimpleSort'r trailer will get you on the easy road to recycling.



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can be viewed at tinyurl.com/GreenSeal-Mark.

Biodegradable Products Institute's (**BPI**) **Compostable logo:** Developed by the BPI, this certification identifies products that meet either ASTM D6400 for bioplastics, or ASTM D6868 for fiberbased applications, which is a standard for compostability. Products that receive one of these certifications are meant to compost satisfactorily in large-scale composting facilities. All product testing is overseen by the National Science Foundation (tinyurl.com/BPI-Logo1).

It should be noted, when shopping for compostable products, items carrying the terms "biodegradable," "degradable" or "decomposable" may not be designed to compost in any given facility and instead may end up in a landfill. For example, the statement, "product meets ASTM D5511 standard," refers to the anaerobic biodegradation testing method of a plastic product in a landfill setting (tinvurl.com/ASTM-D5511).

The Forest Stewardship Council: The

FSC has several different certifications, including its Forest Management, Chain of Custody and Controlled Wood certifications, all of which are verified by an independent third-party source. Essentially, the FSC's certifications recognize forest owners and managers that follow the best social and environmental practices to ensure products come from well-managed forests. An FSC label can mean the paper product you've purchased contains material from an FSC-certified forest that meets the environmental and social standards of FSC: that the specific product's makeup consists of material from FSC certified forests, recycled material or other controlled sources; or that the product contains post-consumer material and may include some pre-consumer material content. The FSC system is also a reference standard for LEED. More information about FSC certification can be found by going to tinyurl.com/FSCLabel.

Another forest products label that is also verified by an independent third-party source is the *Sustainable Forestry Initiative (SFI)*. Originally launched by the American Forest and Paper Association, but *Continued on page 29*

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Continued from page 24.

now overseen by SFI Inc., the SFI 2010-2014 Standard promotes sustainable forest management in North America through 14 core principles that promote sustainable forest management, including measures to protect water quality, biodiversity, wildlife habitat, species at risk, and Forests with Exceptional Conservation Value. More information about the SFI label can be found by going to tinyurl.com/SFIcertification.

LEED: Developed by the U.S. Green Building Council, the Leadership in Energy and Environmental Design certification rates construction on water efficiency, energy and atmosphere, materials and resources and indoor environmental quality. A project can also receive credits through a number of other sustainability-based categories, with a project being eligible for a silver, gold or platinum rating. More information can be found by going to usgbc.org/leed.

USDA Biobased Certification: A labeling component of the USDA's BioPreferred program, created by the 2002 U.S. Farm Bill to increase the purchase and use of biobased products. This certification means the USDA and federal government stand behind the accuracy of the claim that the product contains biological ingredients in the amounts stated on the label. However, if a product contains biobased material, that doesn't mean the product is compostable or recyclable. In some cases, if a bioplastic resin has been combined with a petroleum-based resin to create a package or container, that product is likely both "non-recyclable" and "non-compostable." And, you would be hard pressed to find a municipal program that accepts bioplastics in its local recycling stream. For more on the USDA's Biobased certification, go to tinyurl.com/BioPreferred.

service #105

Though the FTC has regulations in place to address labeling - go to tinyurl. com/FTC-GreenG for more information on the agency's Green Guides and recent citations - the fact that more and more labels continue to be developed makes it challenging for the federal government to track every one. And, unfortunately, the number of greenwashing scofflaws willing to trick you into purchasing their products is growing. And those companies will continue to sell those very products until the heavy hand of government comes down on them. This is why more states need to enact products labeling laws, such as California did with the 2011 passing of Senate Bill 567, which expanded the Golden State's plastic end-of-life claim labeling requirements from bags and food packaging to all plastic products. Legislation like this is intended to help consumers make choices about the ever-growing number of products with labels that promise environmental and social performance.

rd Justin Gast is a program educator with Oregon's Washington County Solid Waste & Recycling Program. He can contacted at (503) 846-4930 or justin_gast@co.washington.or.us.



Option soup

How can consumers or users find out more? One could study all 444 eco labels listed in Big Room Inc.'s Eco Label Index. But, if that doesn't scream out "good times" to you, or you're not interested in searching a product's packaging looking for a particular certification or stamp of approval, think upstream and buy durable products or create homemade green cleaners. It's amazing the cleaners you can create using everyday ingredients like baking soda, glycerin, hydrogen peroxide and vinegar.



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MORE MATERIAL For Your MRF giving facility managers reason to bring the items onto their lines

Stakeholders mobilize to increase recycling access and market opportunities for cartons,

BY JASON PELZ

e all know how diversion has become a crucial measurement tool for gauging a recycling program's effectiveness and success. One sure-fire tactic to improve diversion rates is to look at a program's list of accepted recycling materials. Does your program accept cartons? If not, adding them is a fairly simple and vital step for working toward better diversion rates as well as zero waste goals.

A type of food and beverage packaging, cartons are easy to recognize and come in two types: gable-top, which is used for refrigerated products, and aseptic, also known as shelfstable, which are used for non-refrigerated products.

Since 2009, the Carton Council of North America has been working to improve American citizens' access to carton recycling, and thanks to the help of countless recycling industry representatives, stakeholders and communities, access has increased more than 170 percent since our efforts began. About half of all U.S. households currently can recycle cartons through their local recycling program. But we're not stopping there: Cartons belong with the rest of mainstream recycling commodities.

Making the grade

Because cartons are a recyclable commodity with value, the demand for carton recycling is increasing around the country. In fact, of the nation's top 100 cities, 73 now accept cartons in their residential recycling programs. Much of this expansion has come about because there are end markets for cartons. In 2011, a new Paper Stock Industry (PSI) commodity grade specification, Grade 52, was created for cartons (aseptic and gable-top). Such a step only occurs when industry demand and commodity value justifies it.

The Carton Council is a proponent of the Grade 52 effort as it allows for cartons to achieve their highest possible value in the recycling chain. When baled as Grade 52, cartons can be shipped to paper mills that have the proper equipment both to extract all of the fiber and potentially capture the poly and poly/ aluminum residuals.

For materials recovery facilities, there are economic benefits that exist beyond the markets the material can be sold into. For facilities in competitive markets, for instance, adding cartons or other materials can attract new communities, increasing MRF revenue in the process. Adding cartons also adds value to the communities being served: The step makes the recycling

program more convenient for residents and removes barriers that could be preventing them from recycling. When residents feel the program is convenient and easy, and when effective education takes place, it's normal to see tonnage increases in all materials.

Processina cartons

We recognize that no two MRFs are the same and, because of that. there is no silver bullet solution to sorting cartons. At some MRFs. carton sorting can be as simple as adding a bunker. Others take the step of installing optical sorters or find a different way to sort ef-



aseptic. Access to carton recycling has grown 170 percent since 2009.





Cartons are used for a variety of food and beverage products and come in two types: gable-top and

ficiently. It is critical that each individual MRF operator take an active role in deciding what might be the best solution for his or her specific operation.

The first step should be assessing the inbound recyclables stream: single-stream, dual-stream or even material from drop-off locations. Second, look at the existing material flow to get an idea of where cartons might travel as they go through the facility.

MRF representatives and program coordinators are also invited to contact the Carton Council. The organization has a wealth of experience working with operators as they develop strategies to sort cartons, and Carton Council experts are ready and willing to help

MRFs decide on the technical details. Furthermore, the Carton Council can help

connect operations with end markets for cartons and assist in the necessary outreach



Rumpke installed optical sorters in its regional single-stream MRFs in Cincinnati and Columbus, Ohio to recover cartons for recycling.

to let customers know that cartons can be accepted into the recycling program. The organization offers free toolkits to communities looking to engage with





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A major player takes the plunge

One of the nation's largest privately owned residential and commercial waste and recycling firms, Rumpke Recycling, recently added cartons as an accepted material to its facilities in Cincinnati and Columbus. Ohio.

Steve Sargent, Rumpke's director of recycling, indicated the company is approached regularly about adding various materials to its recycling facilities. As a result, they've developed prerequisites that a potential new material must have, including:

- 1. A stable and secure end market for the material.
- 2. An economically viable method for processing the material that will not contaminate the remaining stream of recyclables.
- 3. An education component where Rumpke can promote the material as part of the single-stream mix to residents.

After examining cartons using these criteria Rumpke decided it was logical and beneficial to add the material. During the past five years, Rumpke renovated its Columbus MRF and rebuilt its Cincinnati facility, which had been damaged by fire. The multi-million dollar project included installation of top-of-the-line recycling equipment, including optical sorters to process cartons. The optical sorters for cartons are placed on the container line of the material stream, and Rumpke also stations quality control sorters there to ensure that the quality of cartons is up to par.

Rumpke and other successful programs that have included cartons recognize that there is more to program development than just shiny equipment and tested MRF processes. Another critical component is the educational outreach to residents. In Rumpke's Ohio markets, once the company completed the upgrades to process cartons, dedicated efforts were taken to communicate the addition of cartons to residents.

Since adding cartons to their material mix, Rumpke reports a positive operational experience. The company has been able to effectively sort cartons, and representatives say they've seen no detrimental impact on

2x132 kW electrical motors each side being Individually adjusted. More than double intertia in the belt/llywheels

Simple steps to follow when adding cartons to a program

 Review your existing inbound streams and material flows Contact the Carton Council for technical assistance and ideas If necessary, make MRF upgrades to effectively sort cartons Get the word out to residents

the rest of their materials and sorting protocols. Minimal contamination has occurred

from cartons mixing with other materials. While cartons are still a relatively new



material in facilities compared to other recyclable items, Rumpke officials report that efforts are off to a great start and the added value has benefited their business.

Growing the trend

Municipalities have recognized residents' desire to place these items in the bin beside other long-accepted curbside materials, and the option is helping programs collect more material overall and drive up those ever-influential diversion rates. MRF operators now have a prime opportunity to support those municipal efforts and a build their own revenue streams. The carton realm is one, like many in recycling, where teamwork among varying stakeholders can lead to huge strides forward. The current momentum in carton recycling is one residents, program coordinators and processors should all be ready to enjoy. **RR**

Jason Pelz is vice president of recycling projects for the Carton Council of North America and vice president, environment, for Tetra Pak North America. He can be reached at jason.pelz@tetrapak.com.

The Carton Council of North America is backed by four leading carton manufacturers, Elopak, SIG Combibloc, Evergreen Packaging and Tetra Pak, as well as an associate member, Weyerhaeuser. Through a united effort, the Carton Council works to deliver long-term collaborative solutions in order to divert valuable cartons from the landfill. If you are interested in learning more about adding cartons to your recycling facility or program, contact the Carton Council at info@recyclecartons.com or visit www.cartonopportunities.org.



After optically sorting cartons from the single-stream mix, Rumpke bales and prepares the cartons for the end market.

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Former Times

20 Years Ago

In the mid-1990s, China was just starting to feel the effects of capitalist reforms on its solid waste system. The country had gone through a decade of growth in both wealth and urbanization, which made its cities fascinating case studies in the ways emerging economies were approaching the notion of materials recovery.

Researcher Paul Ligon headed to Beijing to learn more about that municipality's struggles and successes on the waste front, and he reported some of his findings in the June 1994 issue of this publication.

Ligon found, interestingly, that China's materials recovery system was well-established, reaching back to the 1950s when the government had set up an extensive system to get hold of secondary materials. This was driven by the fact the country had limited resources to produce those materials itself. In the 1990s, that infrastructure was still in place, and Ligon reported 270 government-operated redemption centers existed in Beijing, allowing residents to receive payment for a wide range of items.

But as wealth grew in the city and consumers began to encounter a wider range of products that came into the increasingly free-trade-oriented society, the institutionalized nature of materials recovery was shifting rapidly. Households that formerly relied on redemption centers for extra income were now more than happy to give materials to informal trash collectors who went door-to-door and paid small amounts to take used items off residents' hands. They turned around and sold what they accumulated to small manufacturers or brokers. Other pickers nabbed materials from open transfer stations that were growing as the country produced more waste.

It was clear that China's major cities were in the midst of a waste management transformation – and that opportunities and growing tonnages would define the future in that area.

10 Years Ago

The challenges of recycling glass certainly are nothing new now and nor was it a decade ago when officials in New Hampshire were hard at work on a pilot program to help alleviate costs associated with processing recovered glass.

The state's initiative set up four "host" communities that would accept off-spec glass and other glass that couldn't be profitably moved through traditional recycling channels. Once accumulated, this material was crushed and screened to a specific size specification (three-eighths of an inch or smaller) and then used to create gravel for road building. The participating municipalities saved thousands when it came to gravel purchasing, and more cost savings came through the fact that hundreds of tons of glass no longer needed to be sent to landfills.

The glass-to-gravel concept had been leveraged in other corners of the country at that point, but New Hampshire's huband-spoke strategy was unique. In many ways, it was not surprising the idea gained traction in New England: The project was coordinated in part by the Northeast Resource Recovery Association, a group that was deeply experienced in helping small communities in that region work together to push sustainability goals in a financially

viable manner.

New Hampshire was also seen as an important testing ground because it was (and still is) a non-bottle bill state, meaning glass containers were more likely to end up in the recycling stream. With no clear management plan in place, the material could be a liability. But with unique programs set up to leverage the glass, communities were finding they could use off-spec and colored bottles to reduce costs and pave a path forward.

