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Northeast Recycling Council's Glass Recycling Forum Busts Myths and Offers Glimpse Into Current and Future Opportunities

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After a welcome and a thank you to their sponsors, attendees and speakers by Mary Ann Remolador, Assistant Director of the Northeast Recycling Council, the Keynote Address for the forum was given by Scott Defife, President, Glass Packaging Institute (GPI) and focused on the state of glass markets in the U.S. He spoke about GPI as a resource and that glass retains its place as the favorite recycling material among consumers and recyclability (80 to 90 percent). Defife also discussed the goals of both the Glass Recycling Coalition to inform, educate and talk about common issues and the Glass Recycling Foundation—policy work, and MRF Certification Awards across the U.S. He dove into how leading into 2020, there were many recycling goals that started off strong but when COVID hit, GPI needed to make sure they were in compliance and had common rules nationwide as states shut down. Food and Beverage Packaging was deemed essential as was waste and recycling. While consumer demand shifts changed dramatically, most of the glass packaging demand was kept fairly consistent and level. Food and non-alcoholic beverages are up. GPI did see some issues in varying differences with regards to redemption and managing flow through retail establishments, resulting in a dip in the material being recovered. However, numbers are picking back up and will be back on par for the rest of the year. Defife stressed that this situation has given GPI an opportunity to remind consumers and public officials the lessons learned about glass recycling and deposits:

- Container deposit systems need resilient backup for critical supply chains
- Communities want to support glass recycling
- Residents can adapt quickly but desire transparency regarding recycling destination
- Quality has dramatic impact on value Lowering transportation costs is a key factor to get quality material to market
- Glass benefits as North American product

Defife also talked about what the industry can do to move forward. Alternative solutions such as regional public/private partnerships to fill gaps, exploring a return to dual-stream, commercial on-premise routes, end-market opportunities to drive demand, support expansion of drop-off and aggregation sites were some of the points he mentioned, as well as the importance of outreach and re-establishing connections through states and localities.

The forum then segued into "Why Glass Recycling Remains Important", where Jim Nordmeyer, VP of Global Sustainability for Owens-Illinois (a leading glass container supplier) spoke about how glass is still the most sustainable packaging option and glass recycling remains important because it is an essential part of the supply chain and manufacturing operations. When it is meeting the right quality to sorting specification, it can be used up to 99%. He stressed there are plenty of glass markets for the material (no markets is a myth).



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Complementing Jim's session, Megan Pryor, Environmental Specialist at the Maine Department of Environmental Protection spoke about end uses for waste glass, which included:

- *Glass to Glass Recycling* – container glass is made from sand, soda ash, and limestone, glass bottles can be endlessly recycling in a closed-loop process, recycled glass cullet can be substituted for up to 95% of raw materials used to make new glass.
- *Alternative Glass Recycling* – using cullet to make fiberglass reduces the energy needed to make new fiberglass by approx. 25%.
- *Glass Aggregate* – when other recycling markets are not available, glass can still serve for infrastructure projects (backfill, roads, sidewalks, stabilization, parking lots, landfill cover, etc.) – can complete a lot of projects with this material

"Alternative Glass End Markets for the Region's Non-Bottle Bill Glass" featured Reagan Bissonnette, Executive Director of Northeast Resource Recovery Association NRRA, Patrick Grasso, Principal of Urban Mining NE and Herb Northrop, Chief Operations Officer for Aero Aggregates. Bissonnette spoke about what NRRA is offering in terms of programs, school education, training, etc. She also covered what is acceptable/unacceptable and processed glass aggregate (PGA) as an alternative to landfilling valuable material, the fact that local use reduces transportation emissions, and because the world is facing a shortage of sand, PGA reduces that sand use. She also pointed out that glass can be used in municipal road sub-base, public works garage, parking lots, foundations under bulky waste buildings, Foundation under open-top dumpsters, etc.

Both Grasso and Northrop continued the conversation by highlighting what their companies offer in terms of products using glass and aggregates. Urban Mining offers a product called Pozzotive®, an essential component of high-performing concrete. Because of the unique chemical reaction that takes place in the concrete mix, it has the imparting strength and durability for concrete products. Demolition waste glass is able to be transformed into new building products. Aero Aggregates has developed a Foamed Glass produced from 100% post-consumer recycled glass. Because of the highly frictional surface, combined with a low unit weight, inertness, high permeability, and insulating properties, it is ideal as a lightweight backfill.

The last session of the day, "Economics of Glass Recycling – An Overview of the Costs for Recycling and Processing Glass" took a hands-on approach by having speakers from the industry talk about their experiences in collecting and processing glass, and how to deal with contamination and other concerns. Joseph Sardone, General Manager at Oak Ridge Waste & Recycling said that in their area inbound glass is between 19 – 25 percent on average and it greatly affects tonnages of loads that come in. Inbound glass is mostly broken before it is introduced into the system (from compaction or falling on the floor in the transfer station/MRF, etc.). Some of the cost concerns include that glass accelerates the failure of belts, they are a cause of major contamination of finished products in MRFs, glass cleaning systems cost millions with no clear defined ROI, added weight increases fees to municipalities on tonnage costs, and, because it is the most destructive, abrasive material in the industry, there can be many worker injuries from handling glass. Sardone sees the future of glass recycling as source separation removing glass from the single stream to recycling which will lower tonnage cost for municipalities in both the recycling MSW stream; however, glass end-users need to help shoulder the process. Source separation will increase the overall value of the blended recycled commodities giving added value to both processors and municipalities and increases the life span of all equipment.



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Matt McKinney, Major Account Manager at Waste Management-Recycle America talked about the company's experiences with glass recycling. He expressed that the economics of glass recycling have remained relatively stable against overall recycling market volatility for the past decade. Glass does not have end-markets in some parts of the country, which creates confusion about glass recycling; the markets are regional and an increasing volume of glass processed for recycling is now sold into the fiberglass market. In many parts there are no glass markets within the 300-mile radius necessary for economical transportation, so glass is used as construction aggregate, roadbed or beneficial use at landfills. There is more glass collected for recycling than there are end markets. He pointed out that the drivers for demand in glass manufacturing are energy, raw materials and economic drivers to use recycled cullet. However, limiting factors can include contamination issues, cullet concentration and availability. Considerations that are factored into the economics of collection and processing of glass are the costs associated with marketing material, maintenance, processing, collection, cost per ton to process and disposal of residual.

Second Day Takes Hands-On Approach

The second day of the forum opened up with a focus on "Preparing Your Glass for Recyclers: Know Your End Market Needs". Kicking off the session was Francois Lerfino, Purchasing/Sales and Sourcing Manager for 2M Resources, a cleaning and sorting facilities serving Quebec, Ontario, and the Northeast U.S. He talked about why glass is important to the waste stream. At 2M Resources they work with source-separated mixed colored glass. The hand-sorted glass is very clean, no contamination and sorted by color and separated into different streams (flint, amber and green). The company inspects every load that comes in and sends back the material if it is not up to standards. They also deal with rejected glass from bottlers and distributors; the large volume directly goes through the line and the material is re-sold to the bottle industry.

Next, Laura Hennemann, VP of Marketing and Communications for Strategic Materials (the largest glass recycler in North America), debunked some of the myths associated with glass recycling, including that broken glass cannot be accepted, mixed color glass cannot be accepted, glass must be washed and cleaned, glass cannot be recycled due to China's SWORD policy, that glass has no value and that there are no end markets for glass but these can actually include container, fiberglass insulation, highway bead and more. Glass recycling is important because the material is 100% recyclable forever; it does not lose value, recycled glass displaces virgin materials by up to 95%, recycled glass melts at a lower temperature, extends furnace life for container manufacturers as well as being EnergyStar, LEED eligible for fiberglass and building materials.



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After a break, the sessions dug into "Strategies & Technologies for Cleaning, Handling and Transporting Glass". Mark Neitzey, Director of Sales for VAN DYK Recycling Systems, gave an overview of the company and its systems. He stressed that MRF glass is market-driven; it can't be shipped globally like other products, so sale pricing is determined by local markets. He explained that you should work with your market to determine how clean the glass is and calculate the ROI: capital for equipment, freight costs, end market revenue, landfill costs, and sale of by-products. It is possible to get the material clean, but it takes capital to do it and it needs to be done in multiple steps to properly prepare the material.

Carlos Manchado Atienza, Regional Director Americas for TOMRA Sorting, Inc. spoke about the company's collection and sorting systems and sensor-based (Autosort and Optical) solutions that can clean the glass to more than 97 – 98 percent purity, while Cynthia Andela, President of Andela Products, covered recycling glass into a safe handling fine granular product with no sharp edges. In turn, it can be used in the community as an engineered aggregate, landscaping mulch and substitute for sand. Andela Products offers glass processing systems sized for every community (including pulverizers/crushers, surge hoppers and conveyors and trommel screens).

Dan Krivit, Environmental Technical Support for Foth Infrastructure & Environment, LLC, talked about reducing the costs of transporting glass with strategies like larger payloads, cleaner glass, storage and load-out silos, rail, cooperative marketing and/or hauling and local end-use applications. He showed

some real-world examples and went into detail about glass by rail basics, pointing out that rail shipping is more cost-effective, it is more environmentally friendly, it is great for repetitive volumes as well as reaching more distant markets. Railroad types include Class 1 Railroads, which are long haul, economies of scale, and regionals and shortlines, which are flexible and growth-oriented (better suited for glass).

To wrap up the day, Ava Labuzetta, Pollution Prevention Engineer for the New York State Pollution Prevention Institute (P2I) discussed glass recycling in New York State. There are two major recycling systems in New York state, curbside collection (single or dual stream) or drop off centers by consumers and Bottle return (at a retailer or redemption center). Ninety percent of glass is processed by 20% of the MRFs. At stakeholder meetings held from December 2018 to September 2019, the group discussed current challenges and how can they be improved. These included finding reliable and consistent outlets, high contamination and color mingling, residential confusion and lack of education. However, Labuzetta pointed out the opportunities that were discussed as well like increasing demand and educating potential users, expanding bottle bills, setting collective goals for improvement (state or local targets), co-locating suppliers and users, phasing out single-stream and a return to dual-stream, collecting restaurant and bar glass separately, increasing consumer education and creating programs to facilitate the return and reuse of glass containers.



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Mary Ann Remolador closed out the forum by thanking the attendees and sponsors and noted that the presentations will be available at NERC's website next week. Overall the Glass Recycling Forum was an excellent 2-day educational virtual event that gave attendees the chance to interact, ask questions and discuss issues associated with the material. Be sure to check out the NERC's next virtual events listed on their website. We look forward to the next event!

For more information, visit www.nerc.org.

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