

## Memorandum

Date: June 11, 2014

To: Stuart Ramsing, Building and Permit Services Division Manager.

From: Ethan Nelson, Program Manager

**Subject: Glass Recycling System**

In Oregon, the two laws which influence the glass recycling system are the landmark 1971 Oregon Bottle Bill and the 1983 Opportunity to Recycle Act. The Bottle Bill established the mandatory deposit fee and programs related to covered beverage containers, while the Opportunity to Recycle Act established the solid waste management hierarchy of reduce, reuse, recycle before landfilling which provided the direction and impetus for curbside recycling as a service of solid waste haulers. These two pathways have created two distinctly different systems for glass recycling in Oregon.

### Uses for Recycled Glass

One of two primary products from recycled glass is 'cullet' that will be processed into a range of final products by other manufactures. Cullet of recycled glass is mixed as necessary with virgin glass or other materials to create a range of products from containers to insulation. The other product is a coarsely crushed glass used as aggregate in road beds and drainage systems.



Figure 1: Examples of Cullet

In December 2013, Owens-Illinois and eCullet, opened a glass-to-glass joint venture in Portland. The new facility will employ 75 people and will provide cullet to the nearby Owens plant that produces one million bottles per day, primarily beer bottles for Pacific Northwest breweries.

Every 10% of recycled glass used in the O-I manufacturing process reduces energy costs by 2-3% and greenhouse gas emissions by 4-10%, showing the economic as well as environmental benefit for industrial scale recycling.

Oregon Department of Environmental Quality (DEQ) policy allows crushed glass to be utilized as roadbed or drainage 'fill' within the footprint of a landfill, that meets their standards for contamination levels, non-hazardous waste, etcetera. DEQ staff believes the policy will continue into the foreseeable future, as the use provides an option when other markets are not feasible, usually in more rural areas of the state. The use of crushed glass also replaces the more traditional use of quarried rock (i.e., gravel).

In 2013, DEQ completed an initial life cycle analysis of the environmental benefits of using cullet in the manufacture of glass compared to recycled glass used as aggregate in roadbed construction. For each ton of glass:

- glass-to-glass recycling showed an energy savings of .62 million BTU (MMBTU) as a low estimate with a high estimate of 1.67MMBTU, while
- aggregate use showed a .22MMBTU energy savings

The use of source separated glass as a replacement in the production of new glass products saves three to seven times the amount of energy compared to using the material as aggregate replacement.

### Material Streams

The Oregon Bottle Bill was established in 1971 with a few updates over the years, most recently in 2009, that among other things updated the law to include more beverage containers. For 2010, the most recent data from Oregon DEQ, Bottle Bill distributors reported recycling 56,000 tons of glass. Due to the collection method (reverse vending machines or by hand at retailers), this material has very little contamination, resulting in 99% of the material being recycled as glass-to-glass. This system is funded through the \$23million in annual unredeemed deposits which stay with beverage distributors.

Comparatively, curbside glass recycling within the state is either through a dual system (like Eugene's) where glass is placed in a separate container or a single stream system where all recycled materials are collected in one bin (Medford). Statewide in 2010, the DEQ reported 51,000 tons of hauler collected glass with 54% of this material being recycled as glass-to-glass, the remainder used as aggregate fill (roadbeds and landfill roads/drainage ditches). This hauler collected glass has a much higher rate of contamination making it a lower quality product for glass-to-glass manufacturing.

It is estimated that Eugene recovers roughly 6,300 tons of glass annually through bottle bill redemption and curbside recovery (Eugene is 52% of the Lane County Wasteshed which produced an estimated 12,000 tons in 2012). The majority of curbside glass collected in Lane County is delivered to EcoSort in Glenwood where a hauler pays a 'tip fee' of \$32.50/ton to leave the product. Material is stockpiled on-site and then shipped on average of 2-3 times per week (roughly 30 tons per load and 300 tons per month). Prior to the Glass to Glass facility opening in Portland, EcoSort sent the majority of its source separated glass to Coffin Butte Landfill and a small amount to Delta Sand and Gravel Landfill to be used as aggregate replacement in roads and drainage systems within the footprint of the landfill.

The three largest licensed haulers in Eugene, accounting for over 98% of all customer accounts include Sanipac, Lane Apex Disposal, and Royal Refuse. Both Sanipac and Lane Apex Disposal send collected material to EcoSort,



Figure 2: Curbside Glass at EcoSort

while Royal Refuse provides it directly to the Oregon Beverage Recycling Cooperative (OBRC). Currently, all source separated glass collected by EcoSort is hauled to Glass to Glass in Portland.

### Financial Impacts

The City of Eugene sets all solid waste/recycling rates for residential and commercial customers within the City limits. This is done annually and is based on the financial performance of the hauler with the largest amount of customers, which is Sanipac. In its simplest form, rate calculation assesses the total amount of revenue versus the total amount of eligible expenses (operations, fees, taxes, overhead, etc).

The cost of collecting, hauling, and processing recyclable material (including glass) is included in the customer rate for both residential and commercial customers. Any increase in expenses related to collecting, hauling, or processing materials are therefore passed through to the rate base. EcoSort's tip fee did not change with the switch to move material to Glass to Glass in Portland.

All hauler financial information reported to the City is considered confidential, and therefore cannot be shared within this memo. Yet, in regards to how increased expenses impact the rate base, an expense increase of \$100,000 annually would result in: residential customer increase of \$0.25 per month and commercial customer increase of \$0.38 per yard per month.

### Policy

At a local level, the City of Eugene implements the ORS 459-Solid Waste Management and ORS 459A- Opportunity to Recycle Act through the Solid Waste, Yard Debris, and Recycling Ordinance (EC 3.245-3.270) and associated administrative rules (R 3.250). The City has no jurisdictional authority over the implementation of the Oregon Bottle Bill, which is administered by the Oregon Liquor Control Commission (OLCC).

City Administrative Order No. 53-13-01-F provides the implementing rules and standards for the EC 3.245. Specifically, item R-3.250-I (3) provides direction that, "Licensee must dispose of recyclable materials at a recycling facility in compliance with regulations of the Oregon Department of Environmental Quality..." and "Licensees may not dispose of recyclable materials by any means other than recycling." Recycling is defined in EC 3.005 as, "Any process by which solid waste materials are transformed into new products in a manner that the original products may lose their identity."

The past practice of using source separated glass to in lieu of virgin fill in roadbeds and drainage at landfills, is considered 'recycling' rather than 'reuse'. Neither city code nor rule provides a definition for 'reuse', but under ORS 459 'reuse' is defined as: 'means the return of a commodity into the economic stream for use in the same kind of application as before without change in its identity.' Clearly, use of source separated glass as aggregate is a substantial 'change in its identity'. Staff is currently investigating rule changes intended to maximize environmental benefit and prioritize the highest reuse or recyclable value from the waste glass stream. Rule revisions will be incorporated into this year's rate review process, ready for public comment in late summer.