



The Edge of Chaos

Wicked Problem Discussion:

Where there is a Will, there is a Way: Glass Recycling in Birmingham

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Participants:

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Abstract

On August 5, 2015, at the request of the Alabama Environmental Council (AEC), The Edge of Chaos (TEOC) facilitated a dialog on the important topic of recycling glass, through its Wicked Problems Discussion Forums. Among the invited panelists were stakeholders, subject matter experts, local leaders, University of Alabama at Birmingham (UAB) and TEOC fellows, faculty, and staff. This discussion centered on developing an economically sustainable business model designed to create a viable, long-term solution to the problem of glass recycling in Birmingham. The diverse experience and expertise of the attendees evoked a collaborative exchange resulting in an outline for a successful, creative approach for a viable community glass recycling program.

Introduction

Today, glass recycling operations in the Birmingham area are at a halt. Due to various changes in the area collection and recycling climate, recycling centers throughout Birmingham, including those operated by the AEC and the University of Alabama at Birmingham (UAB), no longer accept glass. A key factor in the demise of glass recycling is the loss of a viable “market” for the product (glass). Historically, glass recycling in Birmingham has relied heavily on a partnership with a local cement company. Changes in the operations of the cement company negated the value of the use of local glass in the cement mix and the relationship ended due to financial considerations.

The AEC and TEOC identified glass recycling as a Wicked Problem following this market shift and subsequent collapse. In June of 2013, TEOC and the AEC met with area stakeholders to address this Wicked Problem. That meeting resulted in a partnership between Waste Pro and the AEC. For a time, Waste Pro collected, stored and then transported the glass out to neighboring states. Unfortunately, this opportunity was short-lived. Storage capacity and the maintenance of the heavy equipment needed to sustain recycling became problematic. However, due to the positive outcomes of the June 2013 meeting, the AEC again sought the help of TEOC to catalyze networking connections and the exchange of knowledge to create a long-term solution for area glass recycling.

With the dearth of glass recycling in the Birmingham community and the continued call for an outlet for disposed of glass containers, it is clear that the community and environment stand to benefit from a successful glass recycling program. The next sections will outline the challenges, potential solutions, and benefits that arise with glass recycling.

Challenges and Possible Solutions

1) Drop-off locations/Education or Outreach for Citizens and Businesses that Recycle

- Glass that is dropped off at unsupervised locations is often contaminated with non-glass items. This contaminated glass is difficult and expensive for end-users to salvage and repurpose. The AEC's Recycling drop-off center is supervised which results in the prevention of unwanted items in the containers, thus a superior product for glass recycling with a higher demand.
- There are significant costs for picking up glass from multiple drop-off locations as well potential of city/county approvals. The AEC has the ability to get glass recycling off the ground again in Birmingham and surrounding cities by providing

supervised drop-off location(s). Birmingham is thriving in the bar and restaurant industry which could be a potential launch point for pick-up service by the AEC.

A fee structure for AEC services would need to be determined.

- Education is a component to both drop-off and pick-up locations—supervised or not. Currently, a large amount of glass is found in non-glass drop off bins. This reflects both a need for glass recycling and a learning opportunity in the community. Each recyclable constituent has specific parameters for optimal usage which are compromised when there is co-mingling. Supervised drop-off locations are the optimal outcome, second to that, a high impact outreach program is needed to educate recyclers on the importance of “clean” recycling.

2) Storage Capacity

- The current downtown location of the AEC is not sufficient for the volume of recycled glass to be stored until it can be processed or hauled away. The AEC is seriously investigating sites that will allow the storage capacity needed to accept glass and store it until it is hauled to a neighboring state.

3) What to do with the glass after collection: Viable markets and end users

- There are several opportunities for recycled glass post collection, but there are hurdles associated with each one. The solution(s) may change over time adjusting to market needs and efficiency.
- The AEC could acquire a pulverizing machine to process collected glass into cullet. Pulverized glass or cullet is used in numerous industries such as, countertop and fiberglass manufacturing and the creation of roadbed materials. Currently, the expense of the pulverizing machine is beyond the reach of the

AEC. Possible venues for financing are grants and/or supplemental monetary donations.

- The most immediate solution is to identify people such as Joe Keating with Vitro Minerals, who takes the recycled glass and produces a product to use in manufacturing. This eliminates the pulverizing step at the AEC and pushes the glass out into the market. Keating strongly praised the AEC's glass, comparing it to the far inferior glass from Memphis, TN's MRF. For a company such as Vitro Minerals, full recovery for repurposing is the best outcome. Using the AEC's recycling model, Birmingham and the surrounding community could re-enter the glass recycling market with ready "middle" buyers due to its clean program.
- There are also local, potential end users that can repurpose the glass in-house. More research on in-state/Central Alabama end users is required at this time. The benefit to localizing the distribution is cost savings via reduced hauling fees. Further, this option brings the pulverizing machine back into discussion. Potentially, were the machine purchased to make local cullet, it would be ideal to divert the glass directly back into the local community.

4) Financial Requirements

- Glass recycling is inherently more expensive than paper/cardboard, plastic and metal recycling as glass has minimal value on the market and a higher cost of processing and transportation.
- Fees may need to be instituted for drop-off and or collection to offset some of the expense of glass recycling efforts. Through education efforts and outreach, the AEC has the potential to have a preeminent clean glass collection program. The

community and businesses will need cursory understanding of proper recycling habits and the rationale behind a fee structure. A cost/benefit analysis should be completed to look at both individual recyclers and businesses to in order to assess fees that will support recycling while at the same time be acceptable by the community participants.

- Acquiring sponsorships from local corporations may be necessary to off-set some of the upfront and maintenance cost of the overall glass recycling efforts.

5) Education and Awareness

- The cost of disposing glass and other goods into a landfill in Alabama is relatively cheap which serves to encourage industries to dump waste and use raw materials instead of recycling. More individuals are becoming aware and supportive of green initiatives, as well as businesses becoming more transparent on sustainability efforts. The benefits of recycling are many, and the need for education and outreach is clear in the current disposal climate.
- Single stream recycling is preferred by many because it is perceived as easier; however, glass is still prohibited in single stream recycling (due to cross contamination and difficulty in processing, etc.). Education can play a huge role in a holistic recycling program. Separating glass for reuse is a simple and easy step once it is fully grasped by participants.
- Local area governments may be approached to consider fines for dumping unwanted items into recycling drop-off centers, incentives for recycling, and advertisement/area support.

Benefits of Glass Recycling Program:

- Fewer materials will end up in the landfill, extending the life of individual landfills. This saves time, money and land.
- New jobs may be created for collection, sorting, and hauling purposes.
- Conserves raw materials, while eliminating waste and minimizing environmental impact
- Less energy is used to create new items from existing, recycled glass
- Reduces greenhouse gas emissions

Summary

Recycling in Birmingham, Alabama is on the brink of re-establishing a glass recycling program. The Alabama Environmental Council is the key player in organizing and implementing the plan to move the community to action. The AEC and this panel understand the benefits and value of recycling for the community and the environment. The AEC/Glass Recycling short-term goals include: acquiring a new collection site, consideration of drop-off and pick-up fees for services, and securing sponsorships from corporations to help fund infrastructure for glass recycling. Working with government entities to create public awareness and education campaigns is a mid-term goal that requires additional planning. Long term goals include: creation of ample volume and identification of local end-users as justification for purchasing a pulverizing machine.

TEOC and the AEC through the Wicked Problem format have established connections between relevant experts and community leaders to address the challenge of recycling glass. As with any plan, there are bound to be unexpected hurdles, but with determination and commitment, they can be overcome to provide long-term solutions that allow for significant benefits to the environment, the economy and the overall community.