



## About Single-Stream Recycling

Recycling experts and recycling markets from around the country have expressed their concern with the negative impacts of single-stream recycling on the quality of materials. Single-stream technology simply does not adequately address quality concerns at this time. Several national and local studies and articles have addressed this issue.

### What is single-stream recycling?

Single-stream collection is a way of collecting recycling from residents in which all recyclables, including cans, glass, plastic and paper, are combined and collected together, usually in a large recycling cart. Two-stream collection, also known as dual-stream collection, keeps paper and cardboard separate from bottles and cans.

### Do people recycle more when they have to sort less?

A common argument in favor of single-stream collection is that resident participation will rise once the necessity of sorting is eliminated. However, several studies, including a 14-month study by Eureka Recycling in 2001, discovered (and more recent studies have confirmed) that container capacity, rather than less sorting, was the significant factor in determining the amount of materials set out for collection. When recyclers were given larger containers or more frequent collection, they recycled more material in both a two-stream and single-stream system. For most people and communities, the switch to a single-stream service provider is accompanied by a cut in collection frequency—from weekly to every other week—making it less convenient for recyclers.

### Do more materials get recycled in single-stream programs?

Just because more materials are being collected, doesn't mean more materials are being recycled. In fact, several studies show that more material gets recycled in two-stream recycling programs than in single-stream programs because less has to be thrown away after processing. The residual rate (the contaminated amount that needs to be thrown away) for a single-stream program can be as high as 27%—meaning almost one third of the materials collected for recycling in a single-stream program are thrown out as trash, even though it was once recyclable. According to a report released by the Minnesota Pollution Control Agency in 2006 about the differences in single-stream and two-stream recycling facilities (which was cited in an August 5, 2008 *Star Tribune* article) “two-stream operations lost 6.4 percent of their materials to contamination, compared with 27.7 percent for single-stream operations.” Eureka Recycling's two-stream facility does even better and has a residual rate of less than 2%.

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[www.eurekarecycling.org](http://www.eurekarecycling.org)

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### **Why does more get recycled in two-stream programs?**

Two-stream recycling results in higher quality materials, meaning it's better for the environment. The environmental benefits of recycling are dramatically reduced in a single-stream recycling program. For example, the quality of glass in single-stream programs is highly compromised and, in the metro area, is most often used for landfill cover instead of recycling. Paper quality suffers as well, since glass and plastic become embedded in the paper. According to the MPCA report, "Over 70% of the end-markets interviewed reported they are seeing more contamination in their recycled feedstock today than they were five years ago. Most of the mills and all of the plastics recyclers cited single-stream recycling as a contributing factor to the decline in feedstock quality."

### **What kinds of materials don't get recycled in a single-stream program?**

#### **Glass is one example.**

The way in which glass—or any material—is collected and sorted impacts the quality of that material and the ability for that material to be recycled. For glass bottles to be recycled back into glass bottles, they must be sorted (usually by hand) and separated by color. In single-stream programs glass is collected with other materials like cardboard and paper. These materials are often compacted during collection and must go through more processing machinery, resulting in higher amounts of broken glass that are too small to sort by hand. This mixed glass then cannot be used to make new glass bottles. Much of the glass collected in single-stream programs is not recycled but is instead used as an aggregate, a sandblasting medium, or in landfill operations as roadbed.



### **Isn't it okay that we use glass we can't recycle for something?**

Not recycling glass back into glass bottles is contrary to what residents want for their glass and is a great environmental loss. Compared to landfilling or using glass as an aggregate, recycling 11 tons of glass saves the equivalent of 13,200,000 to 30,800,000 BTUs of energy. The pollution savings from recycling glass are significant, and can be assigned a dollar value in the range of \$18 to \$68 per ton. The dollar amount saved is even higher when you account for a wide range of environmental impacts beyond the 29 pollutants considered in this calculation. For example, for every ton of glass recycled, over a ton of raw materials are saved, including 1,300 pounds of sand, 433 pounds of soda ash, 433 pounds of limestone, and 151 pounds of feldspar. These environmental and economic benefits can only be realized when glass is recycled back into glass bottles.

### **Can't we just sort the glass from single-stream programs?**

Technology does exist to mechanically separate glass by color so that even mixed glass can be sorted for recycling. This equipment—called optical sorting—utilizes color recognition technology that separates glass by color as well as contaminants from the finished product that are incompatible with the glass manufacturing process. However, even if single-stream facilities added optical sorting for glass, this doesn't solve all of the problems. Single-stream still significantly decreases the value of the paper and cardboard because glass (and plastic) becomes embedded into those materials. This means that the quality of the paper being sent to the mill for recycling is lower and the amount of recyclable paper being wasted increases.

## Is single-stream recycling cheaper for my community?

Across the metro area and the country, communities using single-stream collection are paying more than most other recycling communities. Haulers often assert that single-stream is the best system because it is cost-effective for collection, which is their focus. Single-stream collection allows haulers to collect recyclables using existing garbage trucks, which reduces their costs for collection, but those savings aren't necessarily passed along to the customer. According to a study released by the American Forest and Paper Association in 2004, "single-stream did not save money on a system-wide basis. If anything it was somewhat more expensive than dual-stream. A cost savings for collection was more than offset by increases in costs to processors and mills."

### Learn more!

**Eureka Recycling** completed one of the first studies in the nation comparing different curbside collection methods in 2001, including two-stream and single-stream collection. The findings of the report are summarized in the following article: "[Downstream of Single Stream,](#)" *Resource Recycling*, November 2002.

[Executive summary](#) (11 pages)

[Entire report](#) (77 pages)

Since that time, several other studies have been completed about the impacts of single-stream collection, including:

- **Minnesota Pollution Control Agency**, [Single-stream and Dual-stream Recycling: Comparative impacts of commingled recyclables Processing](#), January 2006.
- **Conservatree**, [Single Stream Collection: Done Deal or Good Deal?](#) 2003-2006.
- **Container Recycling Institute**, [Understanding economic and environmental impacts of single-stream collection systems](#), December 2009.