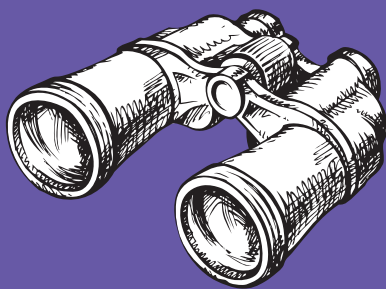




THE Ripple Glass
**FIELD
GUIDE**
TO RECYCLING*



* Or, Everything You Always Wanted to Know About Recycling But Were Afraid to Ask.

HOW TO:

**PARTNER WITH RIPPLE GLASS | COLLECT GLASS
STORE GLASS | SHIP GLASS | GROW YOUR PROGRAM**

WELCOME!

We are excited to partner with you! We've filled this Field Guide with information you may find useful in launching a glass recycling program. If you have questions, please e-mail us at info@rippleglass.com.



HOW MUCH GLASS DOES YOUR COMMUNITY GENERATE?

Recycling glass can have a big impact on your community's diversion rates! Let's crunch some numbers. Across all ages and lifestyles, residents generate, on average, approximately 70 pounds of waste glass each year. Use the example below to calculate the glass diversion from your city.

$$\begin{array}{l} \mathbf{10,000} \\ \mathbf{PEOPLE} \\ \textit{Example} \\ \textit{community} \\ \textit{population}^* \end{array} \times \mathbf{70} \text{ lbs of glass per} \\ \text{person each} \\ \text{year} = \mathbf{700,000 \text{ LBS}} \\ \mathbf{OF GLASS GENERATED} \\ \mathbf{EACH YEAR}$$

* Don't forget to include any outlying communities that may utilize your drop-off centers.

YEAR 1

Diversion Estimate:
35,000 LBS

A conservative estimate is 5% of glass generated. Good education programs, separate curbside collection, and commercial recycling would increase this number.

YEAR 3

Diversion Estimate:
70,000 LBS

We have found that by year 3, most programs reach 10% diversion or greater.

YEAR 5

Diversion Estimate:
140,000 LBS

Drop-off programs can typically divert 20% of a material, though robust programs can exceed that rate.

**ONE RECYCLED BOTTLE
EQUALS ONE NEW BOTTLE.**



**714 RECYCLED BOTTLES
EQUALS ENOUGH FIBERGLASS
INSULATION TO INSULATE
AN ENTIRE ATTIC.**

TYPES OF GLASS ACCEPTED:

- Glass food and beverage containers
- All colors. No sorting required
- Labels and caps can remain on the glass
- Glassware, such as wine or pint glasses.
- Plate glass when pre-approved by Ripple—all hardware, framing, casings and spacers must be removed, and we cannot accept laminated glass

NOT ACCEPTED:

- No windshields
- No ceramic, porcelain, or milk glass
- No boxes or bags
- No laminated glass
- No mirrors

CONSOLIDATION OF GLASS:

We recommend utilizing a concrete storage bunker to store glass for shipment. If one is not available, the materials to build a bunker 20' wide x 24' deep x 8' tall should cost around \$4,000 plus delivery fees. Please see pictures and examples beginning on page 4.

LOADING OF GLASS:

Ripple will arrange for a semi truck with an end-dump trailer to pick up the glass, up to 25 tons per load. In most cases, this service is free of charge, but you will need a front-end loader and operator to top-load the glass. Some recyclers without a storage bunker use Gaylord boxes or IBCs to hold the glass, and load the trailer with a forklift equipped with a rotator attachment. (Note: a Bobcat does not have the height clearance needed to load into an end-dump trailer; if a Bobcat must be used, we recommend pairing it with a dock or ramp to make up the height differential.)

BENEFITS:

- Glass is heavy! Recycling reduces landfill tipping fees paid by city residents.
- Each year, Ripple selects a program to receive a donation of fiberglass insulation that can be used in your local winterization program or donated to Habitat for Humanity. See page 6 for more details.
- Increase your glass diversion year over year to receive cash incentives.
- Ripple can provide marketing assistance when desired, including signage, limited advertising, and help in soliciting businesses to participate in the program.

BUNKER RECOMMENDATIONS AND EXAMPLES:

We recommend building a bunker 20' wide x 24' deep x 8' tall, or about 4,000 cubic feet. This will hold approximately 25 tons of glass, and allows for some overflow in case of transportation delays. A larger bunker will increase your flexibility.

A 20' x 24' x 8' bunker requires around 40 concrete blocks, each 2' x 2' x 6'. The total number depends on how the open ends are treated. You may want a finished blunt end that requires half-blocks, or stepped side walls that can reduce the total number needed. See images D, E, and F.

You'll need to build your bunker on a concrete apron to keep loader tires out of the mud and eliminate the risk of loading gravel and soil with the glass. About 1,200 square feet of concrete is required to support a 20' x 24' x 8' bunker.



◀ Blocks: Typically 2' X 2' X 6', weighing about 2,500 lbs. each (some are larger).

These generally cost about \$50 plus delivery fees; a local company may provide more competitive pricing.



▲ Bunker block with rebar "hook" for stacking and moving.



▲ Slightly different design with male ridge across the top of block and female groove along bottom; each concrete company has their own molds.

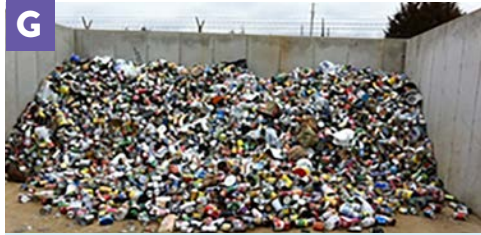


◀ Stair-stepped side wall of bunker, eliminating the need for half-blocks.



E

▲ The back wall and most of each side wall of this bunker are 8' tall, then stepped down towards the front.



G

▲ Formed walls were used to build this bunker, 8' all around.



F

▲ Straight front (blunt) bunker walls. Note that wooden 2x4s are used as a 'stop' to prevent rolling bottles; these boards are easily removed for loading.



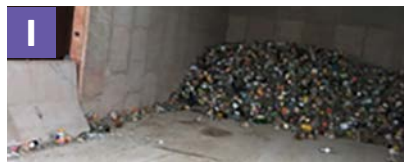
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▲ The bunker dimensions shown here are 42'L x 25'W x 5'D. The third course of blocks along the outside is used for other material storage on the adjoining bunkers. A full load takes up 13' x 25' x 5'. The dimensions of the blocks are 72"L x 35"W x 30"H.

LOADING EXAMPLES:



▲ A front-end loader makes quick work of loading glass from a bunker. Partnering with a local municipal crew may gain access to the use of a loader when you are ready to ship.



I

▲ Back wall of this bunker is the exterior of existing warehouse.



◀ In this picture, a forklift rotator and clamps are used to dump gaylord boxes of glass into our trailer.



◀ The loader pictured is a Deere 524K WH high-lift loader—height to hinge pin, 13'8". Trailer height as measured is 10'3". The trailer is a 66" sided trailer by 40' long.

GLASS RECYCLING PROGRAM OF THE YEAR



Ripple Glass rewards municipal programs and businesses that are truly making a difference in their communities, annually recognizing the best all-around program as the “Glass Recycling Program of the Year.”

REWARD

Ripple Glass will deliver a full semi-trailer load of fiberglass insulation (a \$10,000 value), material that can be used in municipal projects or donated to a local organization.

HOW TO QUALIFY

- Significant growth in total tons collected
- Strong educational and marketing efforts
- An ongoing commitment to new and innovative recycling efforts
- A high and rising community-wide glass recovery rate

Each year, applications are distributed in January. Submissions will be reviewed and scored by a panel of industry experts, and the winner announced towards the end of Q1.



INCENTIVE BONUS

Is your community program growing by leaps and bounds? Ripple Glass wants to reward you for your hard work.

HERE'S HOW TO PARTICIPATE

\$ Achieve 5% year-over-year growth and earn \$1 per ton for every net new ton recycled.

\$\$ Achieve 10% year-over-year growth, and earn \$3 per ton for every net new ton recycled.

\$\$\$ Achieve 20% or greater year-over-year growth, and receive \$5 per ton for every net new ton recycled.

EXAMPLE

Rippletown USA recycled 1,000 tons of glass in Year 1. In Year 2, they conducted an awareness campaign for their drop-off centers that attracted new recyclers and resulted in the collection of 1,300 tons of glass. Since Rippletown experienced 30% year-over-year growth, they qualify for \$5 per ton for each of the 300 net new tons recycled. This \$1,500 incentive reward can be put back into their program or donated to a local organization.

TERMS

This program is available to municipalities that have participated two full consecutive calendar years.



WOULD YOU LIKE ASSISTANCE IN BUILDING YOUR PROGRAM AND GROWING YOUR GLASS RECYCLING RATES?

Ripple Glass would like to provide partial funding for communities to purchase new bins (of any size) for glass-only collection. Ripple will also provide paint and decals to brand these bins. For existing glass collection dumpsters, we will provide partial funding for re-branding and marketing. Bins must be painted “Ripple purple” and include Ripple Glass artwork. We will work with you to produce a mutually agreeable bin design.

HERE’S HOW TO APPLY:

Submit an application with a detailed plan including:

- Number of bins requested
 - Proposed or existing location of bins
 - Total population that the bins will service
 - Process of emptying bins to central location
 - Central location where glass will be emptied and loaded into a truck provided by Ripple Glass
-

Applications will be released in January, accepted on a rolling basis and will be reviewed and approved first come, first serve. Funds will be released in the quarter following the approval.

NOT ALL GLASS RECYCLING IS THE SAME!

How you collect glass matters! Glass that is collected separately from other materials is recovered at the highest rate. Due to high contamination levels, Ripple Glass generally cannot process glass from single-stream commingled systems. See the graphic below for more information.

Out of the three common ways to collect glass for recycling, **ONLY ONE** has a 98% recovery rate.



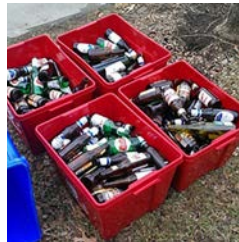
Source: "Understanding Economic and Environmental Impacts of Single-Stream Collection Systems," Container Recycling Institute, 12-2009

COLLECTING GLASS: AT THE CURB

Dedicated curbside glass collection is a great way to make residents happy, but it does have its challenges. When applied to small groups of residents, it can often be successfully done in a very low-tech manner. A person or two, a truck, and some collection bins are all you need! Successful curbside glass programs exist all across the Midwest. Read on to learn about a few.

Atlas Glass and KC Curbside Glass, Kansas City

Both Atlas Glass and KC Curbside Glass are independent Kansas City businesses that provide 13- to 18-gallon bins to customers, and offer a variety of pick-up options. Weekly, semi-monthly, and monthly pick-up is available on a subscription basis, with cost ranging from \$5 to \$20 per month.



COLLECTING GLASS: AT THE CURB (CONTINUED)



Momentum Recycling, Salt Lake City, Utah

Our friends at Momentum Recycling in Salt Lake City have developed an interesting partnership with the City. Optional curbside glass pick-up is provided for residents, who can sign up through their city water bill. Momentum provides customers with a 35-gallon cart serviced monthly for \$7 per month.

City of Conway, Arkansas

The City of Conway found that residents were more inclined to recycle their glass if it was easy. Currently available in the city of Conway, nearly 2,400 households and businesses now participate. Residents can request a free 18-gallon bin, which they then fill with glass food and beverage containers and put on the curb on their normal collection day. A glass-only truck picks up the recycled material with a trailer proudly proclaiming “Even Glass Deserves a Second Chance.”

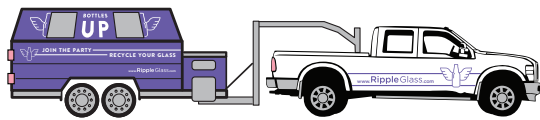
After two years, the curbside route is collecting around 100 tons of glass each year, and participation continues to grow.



COLLECTING GLASS: AT BUSINESSES

Ripple Glass Commercial Program, Kansas City

Ripple Glass has rolled out a new program that will allow businesses in the area to recycle their glass with ease. With the purchase of a new truck and mobile collection container, the business will be able to efficiently collect glass from locations all over the city. The company will begin with routes in select areas of town, and expand as their routing and collection ability grows to meet the demands of metro businesses. Ripple will offer both 65 and 96 gallon sized carts.



COLLECTING GLASS: AT BUSINESSES (CONTINUED)

Old Market District, Omaha, Nebraska

In this entertainment district, a local group took a novel approach to collecting recyclables. InCOMMON, a non-profit dedicated to job creation in downtown Omaha, began picking up recyclables on heavy duty bikes pulling small trailers. Charging a monthly fee, they pick up materials from 1-2 establishments at a time, then deliver them to a nearby drop-off center. The drop-off center is sponsored by the local Community Improvement District, Ripple Glass, and a local recycling provider. Job creation and increased diversion? We'll call that a win/win!



COLLECTING GLASS: AT DROP-OFF POINTS

In Greater Kansas City, Ripple Glass has placed over 100 roll-off containers throughout the metro, many at retail destinations such as grocery and liquor stores. We locate containers in visible, well-lit areas to promote awareness and avoid contamination.



The purchase or re-purposing of roll-off containers is a budget consideration, as is servicing the containers. We recommend closed top 30- or 40-yard containers with six cut-out windows approximately 49 inches off the ground to allow recyclers to easily deposit glass in the bin.

If you do not have a truck that can handle roll-off containers, the service can be sub-contracted to a local hauler. Prices can vary widely depending on distance and other factors – haulers typically reward frequency and reliability with lower pricing.

SUCCESS STORY:

PURPLE IS THE NEW GREEN IN SIOUX CITY, IOWA

Residents of Sioux City, Iowa have recently embraced a change in their glass recycling. When the City decided to end glass recycling as a part of its single stream recycling program at the end of 2016, they came up with a new solution for residents. That solution was partnering with Ripple Glass to offer glass only drop-off bins around town.

When the company who processes Sioux City’s recyclables decided to phase glass out of their facility, the City found Ripple Glass as a solution to their glass problem. We worked closely with the City and the Sioux City Environmental Advisory Board to come up with a plan that worked best for residents of Sioux City. Change is hard, so convenience for residents was key. Based on Sioux City’s population of around 83,000, the decision was made to place six bins around town. The group decided that grocery stores would be the most convenient locations, and the City got to work recruiting bin hosts. The response was great and soon, six locations were confirmed.

Beginning January of 2017, glass was no longer accepted in the City’s curbside recycling containers and residents were instructed to recycle glass at one of six drop off locations. Efforts to relay the message to residents included new bus signage, regular updates on the program to local news outlets, social media posts, and speaking to residents in person at various outreach events.

Additionally, updating the City’s website and Solid Waste & Recycling Guide reinforced the change. Nine months later, almost 70 tons of glass has been recycled into fiberglass insulation and new bottles and jars!



Locations:

- Hy-Vee**
2827 Hamilton Blvd.
Sioux City, Iowa 51104
- 4500 Sergeant Rd.
Sioux City, Iowa 51106
- 3301 Gordon Dr.
Sioux City, Iowa 51105

- Fareway**
4040 War Eagle Dr.
Sioux City, Iowa 51109

- 4016 Indian Hills Dr.
Sioux City, Iowa 51108

- Sioux City Citizen’s Convenience Center**
5800 28th St.
Sioux City, Iowa 51108



ABOUT US:

Since 2009, Ripple Glass has worked with individuals, businesses, and organizations to recycle more than 1 billion bottles and jars. Recycling glass is an easy way to reduce waste, conserve landfill space, protect the environment, and support area businesses.

LEARN MORE:

- Visit rippleglass.com
- Email info@rippleglass.com

Printed on recycled paper with at least 30% post-consumer content.

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