## The Recycling Attendant's Guide



For Quality Material Collection and

## Effective Education \& Outreach



Produced by New Mexico Recycling Coalition with assistance from
Department of Energy, American Recovery and Reinvestment Funds

## New Mexico Recycling Coalition

## What is the New Mexico Recycling Coalition?

NMRC is a member based non-profit organization, which provides technical and education assistance to cities, counties, solid waste authorities and citizens around the state. NMRC's mission is to lead New Mexico to value waste as a resource. In September 2010, NMRC began work on a $\$ 2.8$ million grant from the Department of Energy to develop rural recycling infrastructure throughout New Mexico. More than two-thirds of those monies were used to develop and expand hub and spoke collection infrastructure. NMRC aims to share all the resources, templates, designs and specifications developed under this project so that other communities, regions and states can use the materials.

> Many other states are looking to New Mexico for help in developing their own rural recycling program.

Based on 29 reporting landfills in New Mexico, it is estimated that we buried \$168 million worth of recyclable material in 2010.

There is an effective solution to burying money.

## RECYCLE!

Recycling saves natural resources, creates jobs and reduces pollution.


Recycling saves money and creates revenue.

# Hub \& Spoke Recycling in New Mexico 



New Mexico 2009: The rural nature of the state leaves the majority of communities with little or no access to recycling.

## What is Hub and Spoke recycling?

The hub and spoke system provides the most efficient means of gathering and processing recyclables in rural areas.

HUB: A regional recycling processing center within a larger community, which houses a baler and efficient storage for bales of recyclables. The hub is able to generate revenue to cover cost of operation.

SPOKE: A smaller community or drop-off center away from the hub, which allows collection of separated recyclables. These recyclables are delivered to the hub for processing.

Successful recycling programs depend on efficient collection and basic processing of materials.

The hub and spoke approach has been proven in several regions of the United States and Canada.

For more information about recycling in New Mexico visit: www.RecycleNewMexico.com!

The number of communities providing access to recycling has jumped from 37 in 2004, to 87 communities in 2012.

# Hub \& Spoke Recycling Collection 

Why is source-separated collection used with the Hub \& Spoke model?
Drop-off collection stations are simple, affordable and effective at gathering significant quantities of recyclables from the public. This kind of collection requires the consumer to sort their recyclables.

## What is source-separated recycling?

Each commodity is collected in separate compartments so that no sorting is required at the time of baling. Citizens sort their materials according to the municipality's specifications. Collection equipment is specifically designed to release one material at a time. It is good practice to collect cardboard in a separate container, as it fills quickly.

Source-separated collection is simple and cost effective, but only if citizens bring quality materials.


Multi-Bin Collection Roll-Off


Multi-Bin Collection Trailer

Good signage at the drop-off site is essential for collection of quality recyclables.

It may be necessary to split the important information into more than one sign.

## Drop-Off Hours

Acceptable Materials
Prohibited Materials
An Emergency Phone Number
Why Recycling is Important to the Community
A community logo

# Hub \& Spoke Recycling Process 



## Education at Collection Stations

## Recycling education is an essential component of any recycling program!

Like any other service or product, recycling earns more "customers" through advertisement. The recycling industry is complicated, though, and citizens need to understand some basic concepts before using the community's drop-off stations. Recycling educated citizens are able to spread the word about recycling opportunities within their community which ensures a higher volume of recyclables with less contamination.

## Station attendants make great recycling educators!

Handling waste is a big job and requires much knowledge and training. Citizens trust station attendants to know the best practices. Attendants can explain to citizens that clean and sorted recyclables are essential for recycling to be effective.

For un-manned stations it is important that check-ins happen regularly to show citizens
the managing entity cares about the recycling program.


Cardboard can be seen here in a landfill, soon to be buried forever with no value gained.

What do customers need to know about recycling?

1. Location of recycling drop-offs and hours of operation
2. What can be recycled in the program
3. What materials are prohibitied
4. Recycling is an important service to the community
5. Operation and upkeep of landfills is expensive. Recycling saves landfill space and \$\$ spent on tipping fees.
6. Much of our waste has value as a reused or recycled product.


Carboard is a highly valued recyclable and can be worth up to $\$ 100$ /ton when baled and sold to a mill.

## Attendants can stop contamination before it starts.

1. Educate customers on acceptables and prohibitives.
2. When contamination happens, remove it immediately.
3. Maintain good signage.
4. Keep grounds free of litter and hazards.

## A Station Attendant's Favorite Tools

1. Long handle grabber
2. Bucket for sorting into
3. Recycling education handouts
4. Gloves, high visability vest
5. Magnet to test metals


## Education at Collection Stations



## What's in our waste?

MSW, or municipal solid waste, is made up of mostly recyclable materials.
The recyclables are much harder to remove once all the waste is mixed together.

Tell citizens how important it is for them to sort carefully!

Recycling education can be distributed in several ways:

1. Handout at stations
2. Send out in utility bills
3. Distribute through schools
4. Hang on community bulletins



What is a Plastic Bottle?
A plastic material is any of a wide range of synthetic or semi-synthetic organic solids that are moldable. They are usually synthetic, most commonly derived from petrochemicals. The resin codes or "recycle numbers" found on the bottom of most plastic containers are an attempt to help you distinguish types of plastic and do not mean that the item is recyclable in your area. This program only accepts \#1 PETE and \#2 HDPE bottles.
Tubs and bags are not acceptable for recycling with bottles, regardless of number.
What do recycled Plastic Bottles become?
Producing new plastic products from recycled materials uses two-thirds less energy than making products from raw (virgin) materials. Recycled plastic bottles make hundreds of everyday products, from fibers for fleece jackets and carpeting to lumber for outdoor decking and playground equipment.

How should Plastic Bottles be prepared for recycling?
Completely empty liquids before recycling bottles. Lids should be removed and discarded into the trash, unless there is a separate recycling program for them. Labels do not need to be removed. Crushing the bottles is helpful as it allows for more bottles in the recycling bin. \#1 PET Plant Bottles are acceptable for recycling.

| Resin Code | Abbreviation | Polymer Name | Recycled Product |
| :--- | :--- | :--- | :--- |
|  | PET or PETE | Polyethylene <br> Teraphthalate | Polyester fibers, thermoformed <br> sheet, strapping, soft drink <br> bottles |
|  | HDPE | High Density <br> Polyethylene | Bottles, grocery bags, recycling <br> bins, agricultural pipe, <br> playground equipment, plastic <br> lumber |

Resin codes, found inside the recycling arrows, do not mean a material is recyclable, only what chemicals they are made from.

Plastics make up about $12 \%$ of the the total waste produced in the US.


## Did you know?

Plastic is made mostly from oil.
A Bale of HDPE weighs 500-800 pounds.

Plastic bottles with lids on are difficult to compress into a bale. Help by removing or loosening the lid before recycling.

Plastic does not decompose. It breaks into small pieces, which animals often mistake for food.

# PLASTICS Frequently Asked Questions 

Why can't I recycle tubs, bags or clamshells even if they are \#1 or \#2?
Tubs and bottles are created in different ways, so they melt at different temperatures. Bottles, tubs and bags must be recycled separately, regardless of \#. Most recycling programs in NM only accept bottles with a neck and a screw top.

Where do I find the "recyle number"? Recycle numbers (resin codes) are small numbers within chasing arrows. The resin code is stamped into the plastic on the bottom of the bottle.

What if there is no resin code? If there is no resin code on the bottle, do not recycle it. Sometimes it is difficult to see. Ask a recycling station attendant for help and memorize the recyclable items in your household.

Do I have to remove lids? Removing lids is good practice. This reminds you to empty the bottle before recycling. Lidless bottles compress more at the time of baling allowing more bottles into one bale. Please remove the lids at home and throw them in the trash, unless your center has a separate lid recycling program. Lids are made of a \#5 Polyethelyne, which is recyclable, however; due to their small size, lids are difficult to capture.


Can plastics be recycled back into oil? Yes. We have the technology to do so, but it is much more energy efficient and economical to recycle plastics back into plastic products. Plastic to oil technology is being studied for applications where the plastic is too contaminated to recycle, such as ocean litter and plastic already buried in landfills.

Is Styrofoam recyclable? Styrofoam is only recyclable with other Styrofoam. Currently, there are no outlets for Styrofoam recycling in NM and very few in the U.S.

What is "compostable plastic"? Is it recyclable? Polylactic acid (PLA) is a biodegradable, thermoplastic derived from lactic acid which in turn can be made by fermentation of various agricultural products such as corn starch. PLA will be labeled with "Compostable" language or a resin code of \#7. Because PLA is designed to degrade and decompose, it is not recyclable with any plastics. The PET Plant Bottle is recyclable, not compostable.


Most HDPE is recycled into plastic lumber.


What is an aluminum can?
This category covers all pop top beverage containers, as well as some cat food cans. Also accepted for recycling with aluminum cans are pie plates and aluminum foil.

What do recycled aluminum cans become?
They are commonly recycled back into new beverage containers. In some cases a used can might return as a new product in as few as sixty days. Aluminum cans may also be used to make other aluminum products including wire, signs and foil.

## How should aluminum cans be prepared?

Cans do not need to be crushed. All materials must be free of any food debris. Always ask before placing aerosol cans in a drop-off collection container or curbside program.


## Did You Know?

Every minute, an average of 113,204 aluminum cans are recycled.

A used aluminum can is recycled and back on the grocery shelf as a new can in about 2 months.

Aluminum does not contain iron, therefore it does not rust.

Scrap mtal recyclers processed \$40 billion of non-ferrous scrap metal in 2010.

Magnetic separation is used during the remanufacturing process to ensure that no steel is present in the scrap

# ALUMINUM CANS Frequently Asked Questions 

## Do I have to wash cans before recycling?

By rinsing out aluminum cans, it will help prevent odors and insect issues in your home and at the recycling center.

## Is it worthwhile to recycle cans even if I don't get money for them?

Significant water resources are required for the production of aluminium, especially during the refining and smelting process. The process is also very energy-intensive. Using recycled aluminum yields a $95 \%$ energy savings, making it the most efficient of all other recycled commodities.

## How can I tell if the can is aluminum?

Test your can with a magnet! Aluminum cans are non-ferrous, meaning that they do not contain iron. It is not magnetic. Aluminum cans are much lighter than steel cans. Today there are more than 600 sizes and styles of aluminum cans being manufactured, but your household will probably only come across 2 or 3 different kinds.

## Where does aluminum come from?

Aluminum is made from a mineral called bauxite. Most bauxite is mined overseas and shipped to the United States for processing. The aluminum in bauxite is formed when the material is refined.
The refining process produces a fine, white powder called alumina. Electricity "zaps" the aluminum powder with a continuous electric current, which separates the aluminum from the oxygen. The electricity also melts the aluminum so that it is hot and bubbly, like lava.


## Why doesn't New Mexico have a bottle bill?

Although support for deposit laws is widespread, there are some groups, especially members of the beverage production and retail industries, that consistently try to prevent bottle bills from being passed. Only 10 US states have bottles bills. Opponents of the bottle bill claim that the deposits are an unfair "tax", and that bottle bills only address a small portion of litter. Proponents of a bottle bill site that beverage containers make up 40\%-60\% of roadside litter and that bottle bills can reduce this by up to $85 \%$. When there is a refundable deposit on beverage containers, the consumers (not taxpayers) pay the deposit. The deposit is refunded if the container is returned.


Hungry for more aluminum can education? Visit these on-line resources.

The Aluminum Association http://www.aluminum.org Institute of Scrap Recycling Industries, Inc. http://www.isri.org Can Manufacturers Institute http://www.cancentral.com


What is a Tin Can?
Tin (Steel) cans are used mostly for food and some dog foods. These cans are magnetic and heavier than an aluminum can. While aerosol and paint cans are steel, they are dangerous contaminants in household recycling programs. Call your local scrap metal dealer to ask if these items may be recycled there.

## What do recycled Tin Cans become?

Tin cans are a valuable commodity, which typically become new cans but are also mixed with other scrap steel and recycled into construction materials and car parts.

How should Tin Cans be prepared?
Rinse out any food debris and place the lid inside the can. Cans do not need to be crushed. Lables do not need to be removed.
Do not include aerosol cans or any can with paint residue in a household recycling program.


## Did You Know?

Using recycled steel can yield 75\% savings in energy and 86\% reduction in air pollution.

Steel is a ferrous metal, meaning that it contains iron.

The recycling rate of steel is currently 95\%, making it the most recycled commodity.

Every ton of steel recycled saves:
$>2,500$ pounds of iron ore
$>1,400$ pounds of coal
> 120 pounds of limestone

# TIN (STEEL) CANS Frequently Asked Questions 

## Why should I recycle steel cans?

Steel is ideal for recycling because it does not lose any of its inherent physical properties during the process. Recycled steel can be used for the same applications as steel produced from virgin material but uses $75 \%$ less energy!

## Can I recycle rusty cans?

Small spots of rust are okay. Rust is erosion, so if the can is completely rusted, there may not be much left to recycle.
If it is really a steel can, why is it called a tin can?
Steel cans are coated with tin to prevent rust from leeching into food. Many cans also include a Bisphenol-A coating on the inside of the can.

## STEEL CAN RECYCLING PROCESS




Hungry for more steel can education? Visit these on-line resources.
Institute of Scrap Recycling Industries, Inc. www.isri.org
Can Manufacturers Institute www.cancentral.com
Bureau of International Recycling www.bir.org


What is Mixed Paper?
Mixed paper refers to a mid-grade paper mix which includes office papers, newspaper, magazines, and junk mail. It is just one category created from mill specifications. A higher, more valuable grade can be obtained by sorting papers further, but this labor intensive process is not typically worth the small increase of revenue. Large volumes are necessary. In order to produce a quality recycled product, the Mixed Paper should not include cardboard, paperboard cartons, tissue or paper cups.

What is Mixed Paper recycled into?
These mid-grade papers are reduced to pulp, mixed with wood chip pulp and recycled into products like boxboard, paper towels, and writing paper.

## How should Mixed Paper be prepared?

Papers can be kept neatly together in a paper bag. The bag can then be recycled with cardboard. Always ask before leaving any paper inside a plastic bag. Binder clips should be removed and reused. There is no need to remove staples or window envelopes.


## Did You Know?

Besides easily recognizable paper products, more than 5,000 products can be made from recycled paper, including:

Masking tape
Globes
Bandages
Lamp Shades
The first paper merchant in America was Benjamin Franklin, who helped to start 18 paper mills in Virginia and surrounding areas.

87 percent of Americans have access to curbside or drop-off paper recycling programs.

## Frequently Asked Questions

Why should I recycle paper? Paper makes up one of the largest portions of the municipal waste stream, so if we want to reduce our waste, it makes sense to start there. Trees are a necessary part of our ecosystem. Using recycled paper reduces the demand for trees to make new paper.

Why can't I recycle paperboard? Every time paper is recycled, the fibers get shorter. After being recycled five to seven times, the fibers become too short to bond into new paper. Paperboard or boxboard is made up of very short fibers and a lot of glue. It is recyclable, but it should be recycled separately from cardboard or mixed papers. Paperboard is floppy, non-corrugated and either grey or light brown in color.

If something is made from recycled paper can it be recycled again? Many recycled products contain a percentage of both virgin and post-consumer recycled content. It is more important to know whether the item is acceptable in your recycling program because only similar grades of paper are recycled together. Corrugated cardboard is the highest grade of paper, then mixed paper, then paperboard.

Does paper decompose in a landfill? Landfills are specifically designed to enclose our trash in an air-tight tomb, so that it does not degrade or decompose. Millions of dollars are spent on plastic liners and compacting machines to ensure that this does not happen. This system mostly works, but it cannot keep organic matter from breaking down thus causing methane release.


Hungry for more paper education? Visit these on-line resources.
Paper Industry Association Council www.paperrecycles.org
Project Learning Tree www.plt.org
TAPPI Paper University www.tappi.org

## RECIPE FOR PAPER

Yield: 1 Ton
24,000 gal Water 3, 688 Ibs Wood Chips 216 lbs Lime 360 lbs Salt Cake 76 lbs Soda Ash

Break down wood chips to form pulp. Process and wash pulp with chemicals to remove resins and lignin. Spray pulp liquid onto screen to release water. Feed through heated rollers until dry. Add colored dye, if desired.


## What is Corrugated Cardboard?

Cardboard refers to those boxes where the material is made from three separate layers of paper, two liners and a corrugated, or wavy, layer sandwiched between them. Brown paper bags are acceptable with cardboard for recycling. Cardboard does not include waxed boxes (commonly used for produce), paperboard or boxboard (thin, floppy paper from beverage, cereal, tissue or other cartons), or other papers. Food and oil are the largest contaminates in cardboard, so pizza boxes and waxed cardboard should not be recycled, but can be composted!

What is Corrugated Cardboard recycled into?
OCC is most commonly recycled into new cardboard or brown paper bags.

How should Corrugated Cardboard be prepared?
Remove all contents from cardboard boxes (Styrofoam, plastic bags, etc), then flatten.


## Did You Know?

Once cardboard is deposited in the recycling bin, it is referred to in the industry as OCC, old corrugated cardboard.

New Mexico is home to one OCC recycling mill, making it a highly desired commodity.

Cardboard is used to ship 90\% of all products in the US.

Recycled OCC only takes 75\% of the energy needed to make new cardboard.

Can't recycle it? Cardboard and cartons can be composted or used as a natural weed barrier in a garden.

# CORRUGATED CARDBOARD Frequently Asked Questions 

Why should I recycle cardboard? Cardboard is used to ship $90 \%$ of the products we use here in the US, so it is a valuable commodity. Tossing cardboard into the trash is like throwing away money! Recycling 1 ton of cardboard saves 9 cubic yards of landfill space and 46 gallons of oil.

Why can't I recycle paperboard with cardboard? Every time paper is recycled, the fibers get shorter. After being recycled five to seven times, the fibers become too short to bond into new paper. Paperboard or boxboard is made up of very short fibers and a lot of glue. It is recyclable, but it should not be mixed with cardboard or mixed papers.

If something is made from recycled paper can it be recycled again? Many recycled products contain a percentage of both virgin and post-consumer recycled content. It is more important to know whether the item is acceptable in your recycling program because only similar grades of paper are recycled together. Corrugated cardboard is the highest grade of paper, then mixed paper, paperboard and toilet paper, respectively.

Is cardboard compostable? Yes! Any cardboard can be used as safe and effective weed barrier in your garden and on paths. Composting or reusing your cardboard is the next best thing, if you cannot recycle it.


If it's compostable, then doesn't it just decompose in the landfill? Landfills are specifically designed to enclose our trash in an air-tight tomb, so that it does not degrade or decompose. Millions of dollars are spent on plastic liners and compacting machines to ensure that even paper does not decompose.

## Cardboard is Recyclable...

 Compostable... and REUSEABLE!

Hungry for more cardboard education? Visit these on-line resources.


## What glass is recyclable?

Any glass bottle or jar that is designed for storing food or beverages is recyclable within a household recycling program. Do not include drink glasses, window glass, ceramic, vases or lightbulbs, unless specified by the waste authority. These contaminates pose special problems for glass manufacturers because they cannot be easily removed from the cullet.

## What is glass recycled into?

Mixed colors of bottles and jars (low-quality cullet) is increasingly used in the manufacture of fiberglass insulation, roadbed aggregate, driving safety reflective beads, and decorative tile. Glass separated by color yield glass cullet of higher economic value and can be used to make new beverage bottles.

## How should glass be prepared?

Please rinse all food and drink residue from glass. Remove lids. Metal lids can usually be recycled with steel cans. Separate by color, if necessary, to produce a higher quality commodity.


## Did You Know?

Glass that is crushed and ready to be reused or recycled is called cullet.

Every ton of waste glass recycled into new items saves 693 pounds of carbon dioxide from being released into the atmosphere during the creation of new glass.

Cullet prolongs the glass manufacturers furnace life and saves energy, since it melts at a lower temperature.

The Coca-Cola plant in Deming, NM still refills 16 ounce soda bottles.

# GLASS Frequently Asked Questions 

## Why can't I recycle glass in my community?

The high cost of transportation and the low market value of cullet, deters many communities from collecting glass in their recycling program. New Mexico's closest plants that use cullet in re-manufacturing are located in Denver and Poenix. Several small markets have developed in NM in recent years, but consume only a small portion of the supply.

## We have a curbside program. Why do I have to put glass into a separate bin?

Glass is specifically separated because broken glass is a hazard to the people who later manually sort the co-mingled paper, plastics and metals. A glass crusher mechanically separates labels and lids into a waste can and crushes the glass into cullet. You can ensure the recycling of the metal lids by placing them in a can with the metal recycling.

## Why can't glass bottles be refilled, like back in the day?

 Prior to 1938, all beer and soft drinks were sold in refillable bottles. The centralization of the beverage industry and the desire for convenience have resulted in the virtual disappearance of the reusable bottle. Today, nearly $100 \%$ of packaged soft drinks are sold in one-way disposable bottles.Is it true that recycled glass still ends up in the landfill? Glass cullet has been approved for use in construction of landfills and as a daily cover, in place of gravel or sand. In areas where end-markets for glass are few, beneficial use is the next best thing to burying the bottles without any repurpose.


Glass container manufacturers are the largest consumers of cullet. Using waste glass saves raw materials, energy, and furnace life.


Why doesn't New Mexico have a bottle bill? Although support for deposit laws is widespread, there are some groups, especially members of the beverage production and retail industries, that consistently try to prevent bottle bills from being passed. Only 10 US states have bottles bills. Opponents of the bottle bill claim that the deposits are an unfair "tax", and that bottle bills only address a small portion of litter. Proponents of a bottle bill site that beverage containers make up 40\%-60\% of roadside litter and that bottle bills can reduce this by up to $85 \%$. When there is a refundable deposit on beverage containers, the consumers (not taxpayers) pay the deposit. The deposit is refunded if the container is returned.

