

Activity Summary:

Discover the proper way to divert a wide variety of items. Youth will learn how to sort items for single stream recycling, composting, and landfill. Youth will also learn how to recycle special items and explore a Materials Recovery Facility (MRF).

This lesson was modified by the Keep Austin Beautiful Education team for self-led learning.

UNIT:

Generation Zero

GRADES: 4th-5th

MATERIALS:

4 containers

1 bag of clean sample waste*

"What's in a Landfill" Pie chart*

"Zero Waste Champion" check list*

Access to internet

*see Instructor Resources for full list

TIME REQUIRED: 50 minutes

OBJECTIVES:

Students will be able to:

Identify which types of items are trash, recyclable, or compostable.

Identify and define single stream recycling.

Identify locations to recycle items that cannot go into the Single Stream Bin

Describe a Materials Recovery Facility and its role in recycling

TEKS CORE CONCEPTS:

See Attached Document

Introduction (5 min)

1. Preface what we will learn today: how to specially recycle items and discover what a Materials Recovery Facility (MRF) is.
2. Introduce Austin's Zero Waste Goal: The city of Austin has a goal to be waste free by the year 2040. To accomplish this goal we need to divert at least 90% of our waste away from the landfill. The good news is we already have all the solutions we need to accomplish this goal, we just need to learn how.
3. **What is recycling?** The action or process of converting waste into reusable material.
4. **What is "special recycling"?** Special recycling is the process of recycling items that do not belong in our single stream recycling such as soft plastic bags and light bulbs.
5. **Why do we recycle?** To help preserve resources on Earth and prevent cities from having to create more landfills.
6. **What items can we recycle?** Paper, hard plastic, metal, and glass can all be recycled. In Austin *almost* everything has a way of being recycled if we are willing to put in a little more effort.

What's in a Landfill? (10 min)

1. Look at the "What's in a Landfill" pie chart located in Instructor resources. On it are 9 categories that currently make up the landfills in Austin, TX and the percentage of how much space they take up in the landfill. Ask youth to think about the different categories and consider where else they could be sent instead of the landfill- recycling, compost, donation, etc.
2. Using the instructor resources inform youth where each category could go instead of the landfill.
3. Have them subtract each category that would be sent somewhere other than the landfill from the total. Help youth come to the conclusion that if we start sending waste to its correct destination, Austin, TX can definitely reach its zero waste goal.

Recycle Right! (15 min)

1. Explain that we will do an activity now: sorting waste into appropriate containers. Pull out the four different containers and introduce each one: Landfill Trash, Single Stream Recycling, Compost, Special Recycling.

- Landfill Trash: Holds general waste. Our goal is to have as little as possible in here.
 - [Single Stream Recycling](#): Paper, hard plastic, metal, and glass go in this container. Single stream means we only need one bin for all of our recycling. *Why is single stream recycling important? Single stream means you do not have to separate out the recyclables, but can put them all in one cart. They are separated and sorted at a Materials Recovery Facility (MRF). Materials can be recovered and reused. It doesn't get trapped in the landfill.*
 - Composting: For food and natural organic waste. *Why is composting important? Food and yard waste often end up in the landfill when these are valuable organic materials that can be used to turn into nutrient rich soil. Discuss importance of green composting carts: [most food items](#) (including cooked or raw meat, poultry and seafood (including bones), cheese, dairy products, fruits, vegetables, grains, pasta, eggshells, bread, coffee grounds, tea bags, tea leaves, baked goods, nuts, jelly, candy, snack foods, leftovers, spoiled food, other greasy food, etc. can be composted in this cart). Yard trimmings, food-soiled paper and natural fibers can be composted as well because "if it grows, it goes!". Paper products like pizza boxes come from trees and can be composted too.*
 - Special Recycling: For items that cannot go in the other bins, but you think something else can be done with it. If you can upcycle the item or if it can go to a special place to be recycled it goes in this container.
2. Provide youth with the clean sample waste and have them decide which container each item belongs. While youth are sorting the waste, have them answer the following questions for each item:
- a. What is the item made of? (i.e. paper, plastic, metal, glass, other)
 - b. How should it be disposed of? (Landfill Trash, Recycling, Composting)
 - c. How do you know?
 - d. How can this item be reduced or reused? (Can get creative with Upcycling ideas!)
- An alternative to using clean sample waste is to visit [Austin Resource Recovery](#) website and have the youth play the online "[Waste Sorting Game](#)". Encourage the youth to get through all five levels. Still have the youth answer the three questions above while playing the game.*
3. Once youth are done sorting waste, check their answers. Be sure to congratulate them on items they got correct and help them understand where an item belongs if they placed it in the wrong container.

Materials Recovery Facility (MRF) (15 min)

1. Introduce the concept of a MRF as a place where single stream recycling is sorted and baled for the recycling processing centers. Explain that MRF stands for Materials Recovery Facility.
2. Show the MRF Video of Balcones Recycling Center in Austin. [Balcones Recycling Center Video](#)
 - As the video plays, instruct youth to pay attention to details. Consider stopping the video while it plays to discuss.
 - Paper is really flat and they use these screens to collect paper by letting them bounce along the top
 - Glass breaking- what happens when glass falls? It breaks. They sweep up the broken glass and bale it.
 - Eddy Current- What is a special property of metals? Magnetic. When two magnets with the same charge come together, do they attract or repel? Repel. In the machine, they apply a negative charge to the belt. As things pass along, the plastic and paper is

unaffected but the metal keeps the charge. There is another magnet below with the same charge.

- Optical eye- This is how they separate out some of the plastic film. The lasers at the bottom shine light through the plastic and the sensors at the top can tell what type of plastic it is. Certain plastics get a blast of air and are separated from the rest.
 - “Money on the floor” comment- At one point, an employee mentions that when you look out on the floor, we see paper, plastic, trash but when he looks out, he sees money. Why did he say that?
3. Visit [ARR website](#)- play with “[What Do I Do With](#)” guide and have youth search for battery, lightbulb, Styrofoam, and anything else they are interested in.

Closing: Become A Zero Waste Champion (5 min)

1. Review Austin’s goal of being waste free in 2040
 - Ask youth why they think recycling is a necessary solution in helping Austin reach its goal.
 - Ask youth why composting is crucial.
 - Using the instructor resources provide youth with the Zero Waste Champion checklist, have them decide what steps they can take immediately to start becoming a Zero Waste Champion.
2. Ask youth if they learned anything new today, encourage them to share any items they previously thought of as trash and were surprised could actually be sent somewhere other than the landfill.
 - Have the youth set a goal of reducing, reusing and recycling. Ask them how they can achieve that goal and share out examples. Prompt questions: how can you save energy and water? What can you bring with you to the grocery store to help reduce your waste? What are ways you can reduce your use of single use plastic? (Bring own reusable water bottle, reusable bags, bring to-go containers to restaurants, etc.)

Extension and addition resources

1. Visit the [Austin Resource Recovery website](#)
 - At the bottom of the home page have youth scroll down to the bottom and use the “[What do I do with...](#)” tool. Be sure to have them type light bulb, battery, grocery bag and Styrofoam.
 - [Upcycling Landfill Waste](#): Have youth explore and learn how they can recycle odd objects that are not suitable for donating (for example: bike tire) or that may not be accepted through Austin Resource Recovery. For example: chip bags, tetrapacks
2. Find where to donate, resell, buy responsibly, rent, and repair items, while supporting our local reuse economy at [Austin Reuse Directory website](#)

INSTRUCTOR RESOURCES

Materials

- 1 bag of clean sample waste. Items to include:

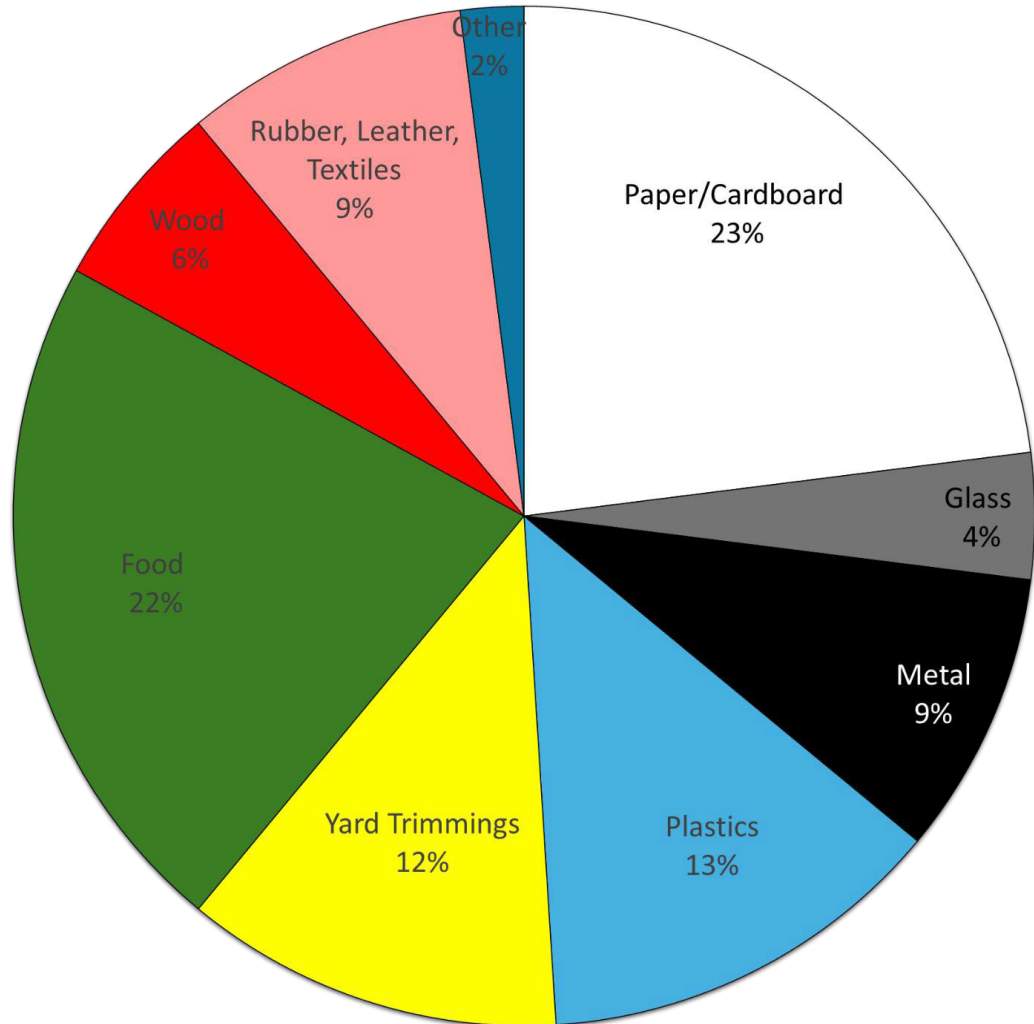
ITEMS	CORRECT LOCATION
Junk Mail /Newspaper	Single Stream Recycling or Composting. Dirty paper is best in compost.
Plastic water bottle	Single Stream Recycling
Soda Can	Single Stream Recycling
Soup/ Vegetable can	Single Stream Recycling
Piece of cardboard	Single Stream Recycling or Composting. Dirty or greasy cardboard is best in compost.
1 fruit	Compost
1 veggie 1 meat product 1 dairy product <i>*note use fake food or images to represent real food waste</i>	Compost
Soft plastic (Ziploc bag/ grocery bag)	Special Recycling: Grocery stores such as HEB, Target, Walmart, Whole Foods, Central Market ,etc.
Battery	Special Recycling: libraries, BestBuy, Batteries & Bulbs, Home Depot, Austin Recycle & Reuse Drop-off Center, etc.
Cellphone	Special Recycling: Electronic stores, Austin Recycle & Reuse Drop-off Center
Styrofoam	Special Recycling: Austin Recycle & Reuse Center
Chip bag	Trash or Terracyle
Lightbulb	Special Recycling: Home Depot, Austin Recycle & Reuse Drop-off Center
Old article of clothing	Donate: Goodwill, Salvation Army, Savers, Younger sibling, Upcycle clothing, Austin Recycle & Reuse Drop-off Center etc.

- 4 buckets; one each of Single Stream Recycling, Special Recycling, Compost, Landfill waste

<u>Single Stream Recycling</u>	<u>Special Recycling</u>	<u>Landfill</u>	<u>Composting</u>
<p>Hard plastic (in order to recycle bottle caps, they must be left on item. Too small to recycle separately).</p> <p>Tin Aluminum Paper Cardboard Glass</p>	<p>Batteries Plastic bags Electronics Styrofoam</p> <p>All of these items can be taken to Austin Recycle & Reuse Center. For additional options, reference “What Do I Do With” tool.</p>	<p>Diapers Straws Chip Bags Medical-waste</p>	<p>Food Waste Yard Trimmings Dirty or greasy Paper & Cardboard</p>

WEBSITE'S LISTED IN LESSON PLAN	
Austin Resource Recovery	https://austintexas.gov/department/austin-resource-recovery
Waste Sorting Game	https://austin.recycle.game/
Balcones Recycling Video	https://www.youtube.com/watch?v=mhXvRKS_A14&t=82s
Austin Reuse Directory	https://austinreusedirectory.com/
What Do I Do With	https://www.austintexas.gov/whatdo

What's in a Landfill?



Paper and Paperboard: Recycling

Food Scraps: Compost

Yard Trimmings: Compost

Plastics: Recycling

Metals: Recycling

Rubber, Leather, and Textiles: [Special Recycling, Reuse or \(donation\)](#)

Wood: Landfill

this wood is from tables, bookshelves, etc. and processed wood cannot be composted

Glass: Recycling

Other: Landfill
diapers, Band-Aids, etc.



BE A ZERO WASTE CHAMPION!

Are you ready to recycle?

- ☐ Recycle papers, metals and glass
- ☐ Include hard plastics
 - ☐ Rinse food containers
 - ☐ Keep bottle caps on
- ☐ Remove plastic bags and styrofoam (take to Austin Recycle & Reuse Drop-off Center or check local options)
- ☐ Check for items that don't belong
- ☐ Set trash and recycle carts 5 feet apart
- ☐ Encourage a friend to recycle



How can you reduce and reuse?

- ☐ Use reusable towels
- ☐ Pick up one piece of litter
- ☐ Say no to single use items

Congratulations, you are a
zero waste champion!



TEKS Core Concepts (4th - 5th)

4th Grade Knowledge and Skills: Science – 1(A); 4(A); 11(B)

Source: The provisions of this §112.6 adopted to be effective April 26, 2022, 47 TexReg 2136.

5th Grade Knowledge and Skills Science – 1(A); 4(A);

Source: The provisions of this §112.7 adopted to be effective April 26, 2022, 47 TexReg 2136.

Social Studies – 23(D);

Source: The provisions of this §113.16 adopted to be effective August 23, 2010, 35 TexReg 7232; amended to be effective August 1, 2020, 44 TexReg 1988.