



LUNCHROOM WASTE AUDIT GUIDE

Why conduct a lunchroom waste audit?

Lunchrooms are one of the biggest sources of waste in schools. Roughly 5 billion school lunches are served each year in the United States¹ and much of the waste from these meals is ending up in landfills. While single-use tableware and packaging make up a lot of this waste, food is often the largest component by weight in lunchroom trash bins.

Waste from school lunchrooms has environmental, economic, and social impacts. When food waste and other organic materials decompose in landfills, they generate methane, a greenhouse gas that absorbs over 25 times more heat than carbon dioxide over a 100-year timeframe.²

Additionally, when food is landfilled, the nutrients contained in the food are lost, along with all the energy, water, and labor that went into its production, transportation, and preparation. In the United States, 40% of all food is wasted while 1 in 7 families face food insecurity.

A great deal of lunchroom waste can be prevented or diverted from landfills through source reduction/prevention, food recovery, and composting. Conducting a waste audit is a great first step schools can take to see how much waste they are producing and which materials have the potential to be prevented or diverted. Waste audits are also opportunities to engage students in hands-on learning that addresses authentic problems right in their own school.

About this guide

This waste audit guide will help you determine how much of your school lunchroom waste stream is:

- Share table eligible (unopened packaged food and/or whole fruit with a peel from school meals that students take but do not eat)
- Liquid waste
- Recyclable
- Compostable food scraps
- Landfill trash

This guide is accompanied by a printable data form. After the data is collected, you can use it to create pie charts to show your data graphically.



Photo: Seven Generations Ahead

¹ U.S. Department of Agriculture, National School Lunch Program, <https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/national-school-lunch-program.aspx>

² U.S. Environmental Protection Agency, Understanding Global Warming Potentials, www.epa.gov/ghgemissions/understanding-global-warming-potentials

The data from this audit will help you figure out which waste reduction strategies will have the biggest impact. It can also help determine what supplies, equipment, and hauling services you may need. The data can further be used to estimate the environmental, economic, and social benefits of your efforts. If your school has a kitchen, it can be included in your audit as well.

Different types of waste audits provide different kinds of data. If you are specifically interested in understanding how much and what types of foods are wasted and why, see [A Guide to Conducting Student Food Waste Audits: A Resource for Schools](#).

In addition to measuring quantities of waste, an audit can also analyze school practices and policies that impact waste generation. Examples include:

- Length of scheduled meal time
- Actual measured length of time students are seated and can eat
- If the Offer versus Serve method is used
- If lunch is scheduled before or after recess (or if there is recess)

PLANNING THE AUDIT

Bring together a Zero Waste Team

When planning a lunchroom waste audit, it is important to get key partners on board. An audit requires teamwork and cooperation. Some of the people to collaborate with during the planning process are:

Principal: Get their permission to conduct the waste audit. Explain what you plan to do and why.

Custodians: Speak with the custodians to learn about their daily duties in the lunchroom. Discuss what you will need from them the day of the audit to make it a success. You do not want to create more work for the custodian, so it is important to understand how they do their job.

Lunchroom managers/supervisors: Speak with your school lunchroom managers or supervisors about what you would like to do and what you will need in order to complete the audit.

Volunteers: Volunteers are essential. Having more people not only makes the audit easier, but also more fun for everyone. Student service clubs, environmental clubs, or classes are a great starting point. Waste is an issue that is relevant to all aspects of school curricula, so think beyond the science classroom or environmental clubs for support and engagement opportunities. Depending on the role, some volunteers can fill more than one role. Volunteers will be needed to:

- Create signage for the audit
- Set up the sorting stations for the audit (2-3 students)
- Help students sort their trash into the correct bins (6-8 students per sorting station)
- Weigh the bags and buckets throughout the audit (2 students)
- Record the data on a data collection form (1 student)
- Take photos of the audit (1-2 students)
- Clean up (4-6 students)



Photo: Seven Generations Ahead

Decide what data you will collect

Before starting the waste audit planning, you should decide what information you want to gather so the audit can meet your needs. For example, some schools conduct waste audits to determine how much food waste or recycling can be diverted from landfills, while others aim to gauge what kind of food is going uneaten to better plan their menus.

The categories of waste you will measure may vary depending on what you want to find out. We recommend the following categories:

1. Share table (for recoverable uneaten food from school meals that students take but do not eat)
To-do: Find out what items, if any, your school could possibly collect for a share table or for donation to a food pantry. This might include whole fruit with a peel, unopened factory-sealed non-perishables such as cereal, as well as unopened milks. Food from home should not be included. For more information about share tables, see [USDA memo The Use of Share Tables in Child Nutrition Programs](#).
2. Liquid waste (including any leftover milk, juice, water, soda, etc.)
To-do: Liquid waste will need to be poured down a drain at the end of the audit. Find out in advance (from the custodians, building engineer, or an administrator) where you can dispose of the liquids.
3. Recyclables
To-do: Find out what your school could potentially recycle through your waste hauler. Options might include: milk cartons, plastic containers #1-5, glass bottles, aluminum cans, steel food cans, cardboard, and paper. During the audit, plan to collect the items that your hauler will accept (or that could potentially be recycled with a hauler in your area). Make sure all volunteers understand that materials should not be recycled if they have food residue on them (applesauce or yogurt cups with residual food in them, for example). Drink containers (such as plastic and glass bottles, milk and juice cartons, and drink boxes) are typically recyclable as long as they are completely emptied (no need to rinse or dry).
4. Landfill trash
This will include all other waste, such as polystyrene lunch trays, plastic bags, plastic utensils, straws, wrappers, and recyclable containers with food residue.
5. Composting
To-do: If you are interested in commercial composting, all food scraps and compostable paper products (non-food organics), such as paper napkins, can be collected together. If you are interested in onsite composting, you may want to sort fruit/vegetable scraps separately from the other food scraps.
6. Lunch trays
If your school uses styrofoam or paperboard trays, you can reduce your overall trash or organics volume by stacking them.

Here is a sample set-up for a sorting station. Click [here](#) for the lunchroom sorting signs shown below.



Note if auditing the kitchen: Work with kitchen staff to set up separate bins for recycling, compost, and landfill. The kitchen will not have data for liquids or share tables. Click [here](#) for the kitchen sorting signs shown below, which are customized with items typically used in school kitchens.



Ideas for very large schools/lunchrooms

It is ideal (and most informative) when doing a waste audit to measure all waste from all students in all lunch periods in one day. However, if you do not have enough volunteers to manage this, here are a couple ideas:

1. Focus on collecting data from all students eating in just one lunch period, then extrapolate the results for all lunch periods. For this option, you will need to find out how many students are in the lunch period you are auditing and compare it to the total number of students that eat in the lunchroom over all lunch periods on a typical day. Keep in mind that younger students may generate more food waste than older students.
2. Focus on collecting data from just a subset of tables or classes in the lunchroom during each lunch period of the day, then extrapolate the results to estimate the total waste from all students in one day. For this option, be sure to record exactly how many students are measured in each lunch period compared to the total approximate number of students in each lunch period.

Supplies

For the audit you will need:

- A scale that measures within an accuracy of at least 0.1 ounces, if possible, and has a capacity of at least 50 lbs. One option is a postal scale, which has a detachable digital front. If using a postal scale, you will need a large, flat, rigid surface (like a pan or box lid) to set on the scale to make weighing the big bags easier. In order to get an accurate reading, make sure all materials are centered on the scale and nothing is hanging off the edge. Other options include: a hand-held luggage scale, hanging scale, spring scale, or even a bathroom scale.
- Decide how many sorting stations you will need to conduct your audit. For each sorting station:
 - 1 box and a table/desk for collecting share table items
 - 1 5-gallon bucket for collecting liquids (do not allow the bucket to get more than half full to avoid it getting too heavy or spilling)
 - 1 bin with a bag for collecting recycling
 - 1 bin with a bag for collecting landfill trash
 - 1 bin with a bag (or a few 5-gallon buckets, each lined with a bag) for collecting compostable food scraps and food-soiled paper. This bin may get heavy quickly; avoid filling it beyond 20 lbs.
 - 1 desk or table for stacking trays (if applicable)
 - 1 set of sorting signs
- 1 box of gloves for volunteers
- 1 clipboard for the data form
- 1 printed copy of the audit data form for each meal period (at the end of this guide)
- Writing utensils
- Camera/camera phone
- Tongs (optional, but can be useful for fishing out items that go in the wrong bin)
- A few old towels or rags for clean up



Photo: Seven Generations Ahead

Note: Lining the containers with bags is not required, but the buckets/bins will need to be rinsed after the waste audit if bags are not used. Keep in mind that you will also need to subtract the weight of the containers from your measurements to obtain an accurate weight for the sorted materials.

Audit Prep

Sorting signs

Use these sorting [signs](#), or create your own, to show students, staff, and volunteers what goes where.

Signs should be placed in an easy-to-read location on or above each waste bin (see photo at right for one method of attaching signs to waste bin handles).

Create signs for each type of waste to be measured (i.e. liquids, recycling, food scraps, landfill, recoverable uneaten food). Signs should have descriptions and pictures of what kinds of items can be placed in each bin.



Photo: Seven Generations Ahead

Things to consider regarding the sorting station(s):

- It is not important, for the purpose of the audit, to have different colored bins or bags.
- If you use more than one sorting station, each station should be set up in the same order.
- Do not let the liquids bucket get more than half full before weighing it, otherwise it may get too heavy to lift, increasing the risk of spilling.
- You may want to use a few 5-gallon buckets (instead of a larger bin) for collecting compost/food scraps. Food scraps can get heavy – using smaller containers can help prevent them from getting too heavy to lift. If you use 5-gallon buckets, you may want to use empty milk crates (or something similar) to raise them to waist-level so students do not need to bend over to use them.
- If you do use a typical trash bin and bag to collect food scraps, remove the bag when it is about a quarter full (or even less).
- Stack trays on a table at the end of the sorting station. If your school uses disposable trays, weigh and record their volume separately. If your school uses styrofoam trays, include these values in the landfill section of the data sheet. If your school uses compostable uncoated paperboard trays, you can include these values in either the landfill or compost section of the data sheet.

DAY OF AUDIT

Set-up

Set up the sorting station(s)

The set-up volunteers should make sure that each bin in the sorting station is placed in the correct sequence and that the signs are attached at eye-level.

Educate volunteers about their duties

Once the volunteer team has gathered, assign roles and go over what each person will be responsible for. Depending on the role, some volunteers can perform more than one.

Prepare the weigh station

Set up your scale in a location out of the way of traffic but not too far from the sorting stations. If using the postal scale, place the scale on the floor and detach the digital reader. Set a large rigid lid or pan (for supporting the bags) on the scale. Then press the Tare/Zero button so that the screen reads 0.0 lbs. By “taring” the scale, it will provide the weight of just the bag of materials, not the lid supporting the bag.

During the audit

Make announcements

Ask your principal and/or the lunchroom supervisors to make an announcement at the start of each lunch period to let everyone know that you are conducting an audit and why. Explain what students may need to do differently.

Get started!

All volunteers should be at their assigned spots. Volunteer duties are as follows:

Sorting station volunteers (about 6 per station): One volunteer should be stationed at each bin/bucket. As students come up to the sorting station to throw away their trash, volunteers will take their trays and sort the waste into the proper bins in an assembly line fashion. If students would like to sort their



Photo: Seven Generations Ahead

own trash, volunteers will make sure students are sorting correctly and that there is no contamination. If contamination occurs, volunteers can use gloves and/or tongs to pick the items out of the bins and sort them correctly.

Weigh station volunteers (1-2):

As the bags/bins fill up (or at the end of the lunch period, whichever comes first), the weigh station volunteers should pull the bags out of the bins, weigh them, and allow the data collector to record the data.

Data collector (1):

The data collector should try to familiarize themselves with the data form in advance. Their job is to record all waste audit data on the data form.



Photo: Seven Generations Ahead

Before the audit begins:

- Record the container type and capacity (e.g. 5-gal bucket, 32-gallon bin, etc.) for each waste stream.
- If bags aren't being used to line any of your buckets/containers, be sure to record the weight of the empty buckets/containers. You will need to subtract this number from the weight of the full buckets/containers to obtain the weight of just the sorted materials.

After the meal period:

- Estimate how full each bag/bin is ($\frac{1}{4}$ full, $\frac{1}{2}$ full, $\frac{3}{4}$ full, full).
- Record the weight of each bag/container where materials were collected.
- If using disposable trays (compostable or styrofoam), record the weight of the stacked trays.
- For share table items: at the end of the audit, organize all of the items by type (milks or whole oranges, for example), weigh a sample of each item type, and count the number of each type of item collected.

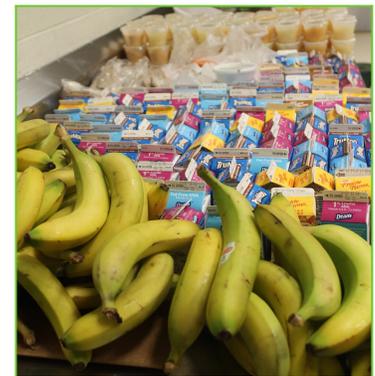


Photo: Seven Generations Ahead

Media volunteer (1-2): Take photos of the audit process. These will be useful for communicating your results and the potential impact of any changes you make. Ideas for what to capture include:

- Volunteers helping to sort
- All of the sorted bags at the end of the lunch period
- The contents of the sorted bins
- The sorting station
- Photos of student lunch trays before they get sorted
- The uneaten recoverable food items

Clean up crew (4-6): Take all bags of waste out to the correct dumpsters (unless the custodian is taking them out), empty the liquids bucket into the designated drain or sink, clean out the buckets and bins, and remove the sorting signs.

DATA ANALYSIS

After the sorting and weighing are done, think about the most effective ways to analyze and use the data. Here are some ideas:

- Present the data (mass and/or volume) in pie charts. Note: If you are interested in starting a commercial composting program, it will be helpful to combine the food waste, non-food organics, and compostable trays (if used) into one category titled “Compost.”
- Based on the results of one day’s audit, extrapolate the data for one school year by multiplying the mass or volume of each category by the number of days in the school year. To make this number more meaningful to students, consider expressing this data in more relatable terms, such as the number of school buses, elephants, or other comparisons that will grab their attention.
- Calculate the environmental impact of the waste using the [EPA Waste Reduction Model \(WARM\)](#). This tool allows you to calculate greenhouse gas emission reductions, energy savings, and economic impacts resulting from your waste reduction efforts or potential efforts. Use WARM Version 15, available as a downloadable Excel file, to input your data (baseline and alternative waste management practices).
- Try to estimate how many people could be fed by the uneaten/unopened food and connect that to data about food insecurity in your region.
- Try to calculate the cost implications of the waste. Does your food service provider have any pricing information for food items? What volume of your trash dumpster is used for cafeteria trash? Using your hauler invoices, estimate the cost savings to the school/district that could result from implementing a comprehensive recycling and composting program.

NEXT STEPS

Meet and plan waste reduction strategies

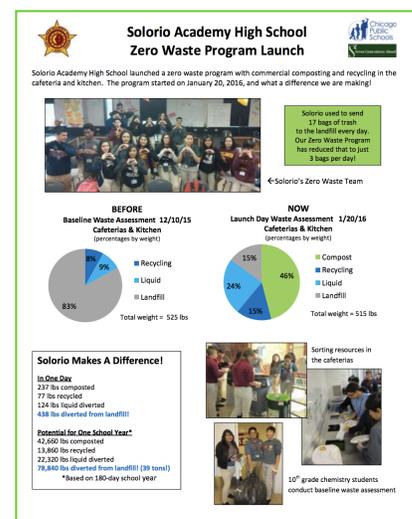
After your group has analyzed the data, brainstorm strategies that can be implemented to increase your school’s diversion rate. Identify areas for improvement and areas that are already going well. Consider setting up a meeting with your principal and other key stakeholders to present your findings and to share recommendations for changes that you would like to implement.

Communicate your results

Create a one-pager, handout, or multimedia communication piece to convey the results of the waste audit to the school community and beyond. For comparison, and to make the results more impactful, be sure to include how many bags of trash are collected in the lunchroom on a typical day (you may need to ask your custodian(s) or building engineer for this information) and compare that to the number of bags collected on the day of the audit.

Use the pictures and/or videos you took during the audit to visually demonstrate what the audit looked like and how much waste was produced on audit day. Include pie charts to convey the results. Provide next steps on how your school can reduce waste and what members of the school community can do to help.

Good luck as you begin your journey to zero waste!



Lunchroom Waste Audit Data Form

Description of meal period (number of students, grades, which period, etc):

Locations measured (kitchen, lunchroom, classrooms, etc):

of sorting stations used:

Cafeteria/Lunchroom		
Container type/capacity* (5-gal bucket, 32-gallon bin, etc.)	How full is the container? (¼, ½, etc)	Weight (lbs)
Share table eligible items (total weight)		
Liquid waste		
Recycling		
Food waste		
Landfill		
Non-food organics (napkins, paper bags)		
Trays (if using disposable trays)		
Total weight (lbs):		

Share table-eligible items			
A share table is a place where students can put uneaten items from school meals. Eligible items include: whole fruit with a peel; unopened milk/juice; unopened, factory-sealed items (perishable and non-perishable).			
Item description	Weight of single item	# of items	Weight (subtotal)
Total weight (lbs):			

Kitchen	
It may be easier to weigh all kitchen materials at the end of all meal periods.	
Category	Weight (lbs)
Recycling	
Food waste	
Landfill	
Total weight (lbs):	

Totals	
Location	Total weight of all categories (lbs)
Lunchroom	
Kitchen	
Total weight (lbs):	

*Remember to record the weight of any containers not lined with bags. You will need to subtract the weight of the empty container(s) from the weight of the full container(s) to obtain the weight of just the sorted materials.

Additional Questions

The following questions may be helpful when analyzing your data and/or recommending procedural or procurement changes.

General information about the meal period

Description of menu items/options:

Type of tray used: reusable compostable styrofoam

Type of milk container used: reusable compostable recyclable landfill

Type of utensils used: reusable compostable landfill

Type of bowl/boat used (if any): reusable compostable recyclable landfill

Does your school currently sort anything? Please describe.

Questions to ask your custodians, building engineer, or kitchen staff

How many landfill bags are thrown away in a typical day (the custodians most likely know this)?

Number of meals served: Number of milks served:

(the kitchen manager should have these numbers)

Outdoor equipment/service (the building engineer or custodians most likely know this)

*It may be helpful to take photos of the containers/collection area for future reference.

	Container type(s) (compactor, dumpster, cart)	Container volume/capacity and # of container(s)	Collection frequency/schedule	Any contamination?	Should capacity or service be decreased/increased?
Landfill containers					
Recycling containers					
Compost containers (if present)					