

# School Food Recovery Handbook



A How-to Guide to Reduce Wasted Food  
in Maine's K-12 Schools



Natural Resources  
Council of Maine

*The Natural Resources Council of Maine (NRCM) was founded in 1959 by citizens working to protect the Allagash River from a proposed dam that would have flooded 88,000 acres of beautiful Maine wilderness. Their success led to the creation of the Allagash Wilderness Waterway. Since then, NRCM has worked statewide to protect Maine's stunning landscapes and wildlife, restore the health of Maine's rivers and native fish populations, increase clean and efficient energy, reduce air pollution and toxic chemicals, and help Maine communities become more sustainable.*

*NRCM's Sustainable Maine Project engages with local communities to make local policies, systems, and environments that support sustainability. As part of the Sustainable Maine Project, we are working with schools to curb food waste. Food production is resource intensive, and when food is wasted, so is the land, water, air, and energy used to make it. At NRCM, we believe that food should be eaten—and anything that we don't eat should never be landfilled. Schools provide a unique opportunity to address the problem of food waste, because they can involve students—our future leaders—in finding solutions.*



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## A How-to Guide to Reduce Wasted Food in Maine’s K-12 Schools

### What’s Inside:

This is the first comprehensive guide for Maine schools that identifies the serious problems with wasting food and offers solutions, explaining—step by step—*how* to take action, *how* to work as a successful team, and *how* to involve others in the school. By referring to NRCM’s School Food Recovery Hierarchy Framework, and using our “How-To” guides, you’ll be well on your way to reducing food waste in your school. Here is what’s inside:

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## INTRODUCTION: School Food Recovery 101

In this section, you'll learn why we should care about food waste and why working with schools can have a positive ripple effect on the issue. You'll learn about tools like NRCM's School Food Recovery Hierarchy, a framework for solutions, and how to choose the right program for your school.

# Why Reducing Food Waste in Schools is Important

Maine K-12 schools generate seven million pounds of food waste annually, according to NRCM estimates. That is a staggering number for our small state, and it reflects the larger, global problem of food waste. At home, almost one-third of the garbage Mainers throw out contains food waste and scraps<sup>1</sup>. Meanwhile one in four Maine kids is food insecure<sup>2</sup>. Nationally, 40 percent of the food we produce does not get eaten<sup>3</sup>. All of these numbers represent missed opportunity, and for schools those opportunities include maximizing student potential by feeding hungry students, saving money, and protecting our natural resources.

**Today's students are tomorrow's food decision makers.** While schools generate a comparatively small portion of our nation's food waste—between one and two percent—taking action in schools will likely have the largest impact in solving the problem. Soon, today's students will be making their own restaurant choices, doing their own grocery shopping, and cooking their own meals. Schools are uniquely positioned to help change the culture around food waste to a more thrifty, efficient, and resourceful use of food. This “Yankee thrift” is a tradition in Maine, a point of pride, and represents the values of our parents and grandparents. If we involve kids in helping to solve the food waste problem, they will pass on what they learn to the next generation.

It is important to tackle our food waste problem for many reasons, including environmental, social, and economic ones. By addressing food waste in schools, we can seize opportunities to:

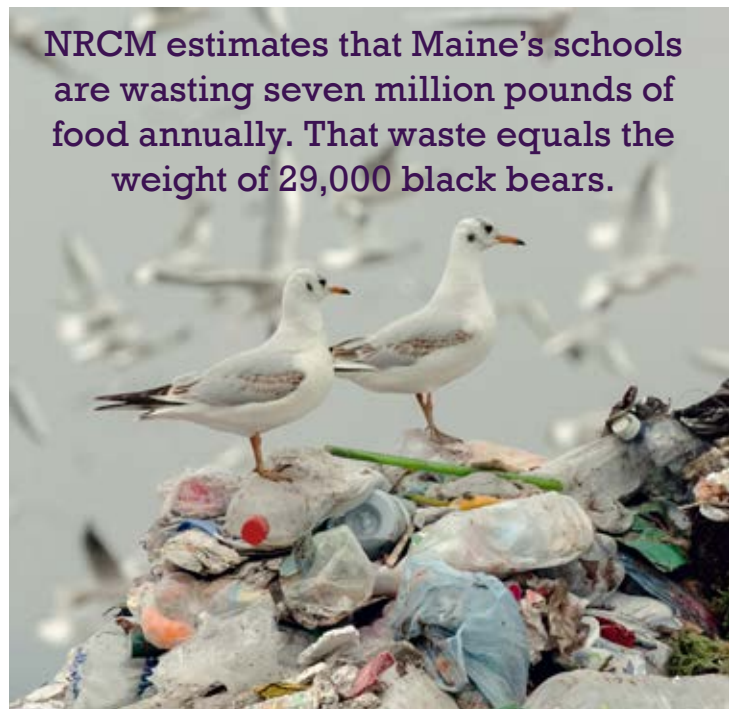
- ▶ **Help Kids Do Better in School.** Focusing is hard on an empty stomach. Making sure kids have enough healthy food to eat can help them focus on their schoolwork and improve their behavior<sup>4</sup>. Unfortunately, many kids are missing meals for a variety of reasons, making them unprepared when the bell rings. Schools can find strategies in food waste reduction programs to attend to this issue and maximize student potential.
- ▶ **Save Schools Money.** Reducing food waste can save schools money by avoiding disposal fees. Food waste is roughly 80 percent water and water weighs eight pounds per gallon. In the Northeast, landfill fees average \$40-\$95 per ton<sup>5</sup>. It is easy to see how

quickly these disposal fees can add up. Reducing food waste can free up funds that would be better spent educating Maine students.

- ▶ **Conserve Natural Resources.** Our kids are inheriting an increasingly crowded world, and there is no guarantee that the natural resources we take for granted today will be available for our kids tomorrow. When food is wasted, so is the land, air, water, and energy used to produce, transport, and ultimately dispose of this food. Food waste recovery programs get kids involved as solutions to this global problem. Kids can actively learn about the important relationship between their food choices and how they impact the natural resources that everyone depends on.

Whether you're an administrator, teacher, custodian, cook, parent volunteer, or student, we all have a role to play in reducing food waste. This handbook will provide an inside look at the choices schools have for changing their food waste practices, how school food recovery programs work, and importantly, how to engage students so that they become part of the solution to our global problems. We've found that people usually agree that food should be eaten instead of tossed in the trash. Where they get stuck is how to solve the problem. This handbook will help your school overcome hurdles and reach its goals.

**NRCM estimates that Maine's schools are wasting seven million pounds of food annually. That waste equals the weight of 29,000 black bears.**



# The School Food Recovery Hierarchy: A Framework for Solutions to Food Waste

The following chapter will take you through NRCM's School Food Recovery Hierarchy, level by level. This tool was designed to help schools understand the variety of options they have when it comes to managing food waste. Schools can use this tool to design their program and reach their goals.

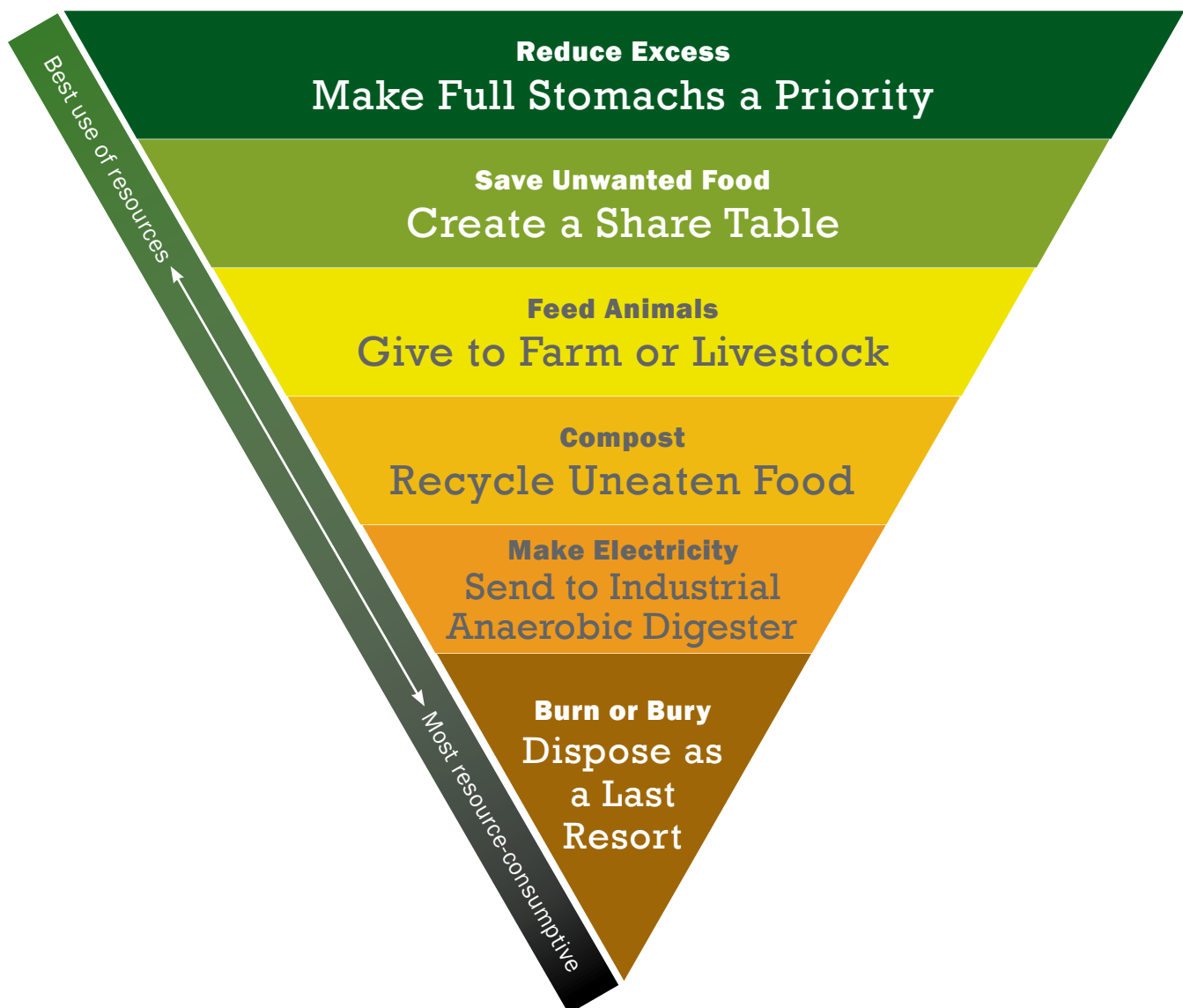
The Hierarchy (shown below) puts, in order of priority, the range of options that schools have. The top level, Reduce Excess, is the best use of resources, and is therefore the first thing we should do to address the problem of

food waste. The lowest level, Burn or Bury, is the most resource-consuming and should only be considered after the other levels of the Hierarchy have been tried.

NRCM's School Food Recovery Hierarchy is based on a similar hierarchy that the U.S. Environmental Protection Agency (EPA) developed. The EPA's hierarchy is a great general framework and national guideline, but is not tailored for schools. That's why NRCM has created the School Food Recovery Hierarchy with specific suggestions for schools.



## School Food Recovery Hierarchy A Tool for Schools



## **Reduce Excess**

### **Make Full Stomachs a Priority**

“Reduce Excess” tops the School Food Recovery Hierarchy because we want to prevent food waste at its source. In schools, this means changing systems in ways that get kids to eat more of the food they are given at lunch. There are several ways to increase food consumption and reduce waste. Many of these strategies are no- or low-cost and, ultimately, promote the efficient use of the Earth’s soil, water, air, and other resources. We expand upon each of these options in our “How to Prevent Food Waste” guide on page 16.

## **Save Unwanted Food**

### **Create a Share Table**

Share tables create the opportunity for uneaten, perfectly edible food to be shared with other people rather than thrown in the trash. There are many ways to do this. Items that students choose not to eat can be placed on a share table and taken by another student to be eaten in the lunch room or saved for later. Food items could also be used for a future meal, used in classrooms as snacks, taken to the nurse’s office to be distributed discretely to students who need it, or donated to a local food pantry. See our “How to Create a Share Table” guide on page 18.

## **Feed Animals**

### **Give to Farm or Livestock**

Pigs and chickens love to eat food waste and food scraps. Feeding leftover food to livestock also allows farmers to reduce costs by purchasing less commercial feed. Involving local farmers in the school’s waste management system can also be a great way to enrich student learning and make community connections. Special considerations should be made when creating food waste recovery programs for animals. See our “How to Set Up the Lunchtime Food Waste Separation Stations” guide on page 20 and our “How to Feed Farm Animals Your School Food Waste” guide on page 21.

## **Composting**

### **Recycle Uneaten Food**

Composting is how food waste is turned back into soil; it is how nature recycles! NRCM’s School Food Recovery Hierarchy puts composting near the bottom because,



much like the recycling mantra “reduce, reuse, recycle,” reducing food waste should be the first priority. Still, there will always be some inedible food scraps and plate waste. Diverting this waste from landfills saves money and prevents the release of climate-changing methane gas. Making compost from food waste is a great way to teach children about the Earth’s natural cycles. It also can support school gardens, another great tool for enriching a child’s school experience. See our “How to Set Up a School Composting Program” guide on page 22, and our “How to Support a School Garden” guide on page 24.

## **Make Electricity**

### **Send to Industrial Anaerobic Digester**

This level of the Hierarchy refers to the production of energy through the use of an anaerobic digester. The digester creates biogas from the organic material to generate electricity. If you cannot compost on school grounds and your school is located near a digester or along an established trucking route, then it could be a good choice to dispose of your organic material in this way.



## Burn or Bury Dispose as a Last Resort

Sending food waste to landfills is often the default method for managing food waste, but it's at the bottom of the Hierarchy because this method wastes the most resources. When schools rely on this method as the only solution to food waste, they miss opportunities to save money, feed kids so that they are ready for class, and enrich the quality of education that students are receiving.

You can use the Hierarchy to determine where to start and what goals you want to reach. You can start by asking yourself what your goals are. Is it to save money?

Decrease your school's environmental footprint? Create a new hands-on learning experience for your students? All of the above? To be most effective, it is best to start small with one or two clear goals and choose programs that will accomplish them. As your school starts to feel the benefits and you get some success under your belt, you can add goals and programs.

Once you are familiar with the Hierarchy and the types of food recovery programs you'd like to start in your school, the next step is to build your team and be strategic. There is no doubt that the most important thing you need to do is to involve students.

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## About half of Maine's waste goes to waste-to-energy facilities

that make electricity by burning waste. But unlike anaerobic digesters, they don't make much energy from organic waste, like food waste. Food is mostly water, which doesn't provide much energy-production value when burned. But waste-to-energy disposal may still be a better option than landfilling for organic material because decomposing food could create climate-disrupting methane emissions if not managed properly. Ideally, no food scraps or food waste would go to a waste-to-energy facility or to a landfill.

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## SET-UP FOR SUCCESS: Build Your Team and Involve Everyone

Building the support of the school community is important if you want your program to be a success now and in the future. Getting students of all ages involved and educating staff will help keep the program going and build commitment to your program. The following section provides information about how to build support in the school community.

# How to Create a Student-managed Food Recovery Program Project

The most successful food recovery programs in Maine are run by a handful of students aided by a staff coordinator, with some support from other staff. Successful and sustainable programs involve students from multiple grade levels, so when older students graduate, younger students can take over.

Young people are flexible, resilient, and adaptable. A change in their routine quickly becomes the norm, especially if they understand the problem and know that they are a part of the solution. For instance, with the right planning, fifth graders can help kindergarteners separate food waste at lunch with little supervision from adults. Teachers and other staff are then free to oversee lunchroom behavior and other tasks. And, with proper equipment (such as appropriately sized disposal containers on wheels) students can set up the disposal stations and put them away after lunch. This frees up dining and custodial staff for other tasks. See how to form your core team below.

**Choose a facilitator.** A facilitator keeps things moving by scheduling and facilitating meetings; maintaining a way to share information (such as a shared electronic folder); answering students' questions about the why and the how of the project; and acting as a liaison between participating students and teachers, administrators, and the general student body.

**Find student leaders.** To form a group of students to manage the program, look for an existing class, group, or club that might share an interest in food waste. If a group does not exist, try one of these ideas:

- ▶ Start a "Green Team" or sustainability club.
- ▶ Talk to school wellness clubs and committees.



- ▶ Talk to teachers to find a class that needs a project.
- ▶ Invite student government to participate.
- ▶ Find students who need community service credits.

**Create your identity.** Consider naming the student-run group to inspire creativity and student ownership of the program. The students could create a logo for posters, aprons, disposal bins, and more. Art students could help with this, or the school could hold a logo design contest, with prizes donated by local businesses. Such activities raise awareness about the problem of food waste and highlight the good work of students. This will help to create momentum for the program to help it succeed.

Different people have various reasons for being concerned, or not, about food waste. It's important to understand different points of view. Science teachers seek ways to connect students to the natural world. School nurses are concerned about student health and food insecurity. Taxpayers want their school funding to be responsibly accounted for, and some people just want to save money. This section describes the roles key staff can play in your project.

The best way to begin conversations with staff members

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## There are many ways to connect food waste to the classroom.

Science teachers could teach about composting; social studies could link current events, economics, or culture with food waste; math classes could learn about measurements, weights, multiplication, and division in a real world situation. Ask the students to explore the topic, and this may spark action. This spark forms a strong foundation for a student-led program.

In addition to academic classes, "green teams," and science clubs, many high schools require community service for graduation. The school could allow serving on a food waste reduction committee to qualify as community service. Many schools have a student government, which may be the perfect group to tackle food waste.

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# How to Involve Key School Staff



is to ask questions, or, better yet, have the students ask questions! We suggest the core team conduct an interview project so students can glean important information, which helps them to develop listening, interviewing, and note-taking skills. This process will not only teach students valuable skills, it will help staff begin to think about the problem.

***Pro-Tip:*** ***It is important for the entire school to know about the food waste program.*** *You can accomplish this through a letter, memo, staff meeting, presentation, or conversations with all staff members at the school.*

**Teachers.** Teachers usually have two major roles in school food recovery projects: 1) Weaving the topic of food waste into curriculum and classroom activities, and 2) helping food recovery club students oversee and correct behavior in the food waste separation and disposal process.

***Pro-Tip:*** ***As a facilitator,*** *you will also want to let teachers and administrators know if students participating in the school food recovery programs may need to be late for class, and ensure that is OK.*

**Principal and Administration.** The administration should be made aware of this program at the early stages. Even if you are working on this as an academic project rather than a food recovery project, your principal needs to be aware, especially if it involves buy-in from multiple teachers or school departments.

Things that will likely need an administrator's authorization include:

- ▶ Permission to set up a system that could make certain students late to class after lunch (if this is a necessary part of your program)
- ▶ Changing existing lunchtime activities and set-up
- ▶ Letting students exit the building to put compost and other materials in their proper places
- ▶ Deciding on a location for compost piles

## Sample Interview/Survey Questions for Students to Ask School Staff:

Here are some sample interview questions students may ask school staff members. Keep in mind that people's time is limited and valuable. Consider asking each student in the group to interview one staff person and report back. Alternatively, these questions could be sent electronically as a school survey.

- ? Hi, I'm working on a project and I'd like to ask you a few questions about school lunches, breakfasts, and snacks. Would that be alright?
- ? What is your title/position at the school?
- ? What sorts of things do you do for your job?
- ? How long have you been working at the school?
- ? Are there things students here could do that would make your job easier/better?
- ? I've noticed we seem to be throwing away a lot of food in the cafeterias. Have you noticed that?
- ? What do you think about it?
- ? How do you think we could get students to throw away less food?
- ? If there was a group of students who wanted to help stop wasting food, would you be interested in helping us with your experience and expertise?
- ? Thank you so much! I didn't know \_\_\_\_\_. I really appreciate you taking the time to answer my questions!

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## Understand limitations.

School nutrition staff are under incredible pressure to do the near impossible—feed hundreds of kids in a short timeframe, meet ever-shifting nutrition mandates with far too little money, meet reimbursement requirements from federal, state, and municipal governments, and often work with aging equipment and in cramped quarters. In some cases, dining services staff serve items cooked elsewhere. All of this may make school nutrition staff feel like they have little input or flexibility, even if they care a lot about food waste.

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- ▶ Authorizing the expenditure of funds, if any are needed for the program (though usually food waste reduction projects do not involve any cost, at least in the early stages).

**Facilities Manager.** If you intend to begin separating organic waste, this usually means you'll need to speak with the district or school facilities manager, who likely negotiates the waste hauling contracts for the school, and oversees plowing, building egress, and safety issues. Likewise, if you intend to construct a new composting site or garden on school grounds, you will want to involve the facilities manager to make sure everything is in a convenient spot and complies with all state, municipal, and school regulations.

**Custodial Staff.** When you begin to separate food waste, or start a share table, custodial staff will probably need to modify their routine. They will either no longer have to deal with emptying waste from breakfast/lunch, or they will need to assist students taking materials outside the school to the compost pile, or to a compost company pick-up site. It is important that your food recovery program does not burden the custodial staff with more responsibilities. Let custodial staff know right at the beginning that it is not your intention and that you want to listen to their ideas and address their concerns.

**School Nutrition Staff.** If you intend to compost food scraps from the kitchen, conduct a food waste audit, or use fresh produce from your school garden, then you will need to involve the school nutrition staff. Working with nutrition staff is an opportunity to learn about the policies that shape the menus at schools and ask questions about how menus are made.



**School Board and Superintendent.** School boards and the superintendent usually take a bird's-eye view, so it is important to talk to your school's principal to find out if they need to be involved in the project from the start. Either way, starting small can allow you to troubleshoot the program and fine tune it. Once your program is up and running and is proving to have a positive effect on the school, be sure to share this success with the school board and community. If you want to scale up, or do something that will impact the budget, you'll need to consult with the school board and superintendent.

***Pro-Tip:** If you want to let your school board know the benefits of school food waste reduction, please consider contacting NRCM for assistance.*

# How to Involve the Entire Student Body

Everyone eats, so everyone has an opportunity to reduce food waste. All students should be aware of the preventable problem of food waste, and how they can make a difference. At a minimum, the entire student body needs to know how they can participate in whatever school food recovery program you choose.

In general, it's important to choose the best messenger and use compelling, eye-catching educational materials. Simplify your message and repeat important points. Use positive reinforcement and avoid using divisive language. Here is a list of ideas for the staff facilitator(s) and student team to consider:

**Create Posters.** Clear visual aids, particularly in the lunchroom disposal line, are essential. It is also helpful to create posters that show progress: how much money, energy, water, and food the school has saved by diverting



its food waste. Consider asking the art teacher(s) to tie student assignments into the theme of food recovery. Presenting facts in compelling, easily *digestible* ways makes the difference—pun intended!

**Create Videos.** Some schools, especially at the high school level, have classes or clubs dedicated to media production. Videos can be a great way to share messages. Everyone has a phone that can play movies right in the palm of their hand. AV/media students can create short films or longer documentaries to encourage everyone to do their part to tackle food waste.

**Hold School Presentations.** Public speaking and language arts classes can focus on food waste as a student research, discussion, or presentation topic. Many schools have debate and public speaking clubs or teams, some of which compete in statewide and national contests. Participating students could practice their skills speaking about an issue that has a big impact in their school and community.

**Organize Field Trips.** Visit a local farm, composting facility, anaerobic digester, waste-to-energy facility, or landfill to see what happens to food waste captured by the school. People who own and operate these places usually enjoy talking about what they do, and appreciate having students take an interest in their work.

**Tap Guest Speakers.** Ask local food pantry staff to come in and talk about what they do and see. Contact local farmers and ask them to speak to your students and let students ask questions about farming. People are often eager to share their experiences with others.

**Show a Documentary.** Consider showing a documentary such as “Just Eat It –The Story of Food Waste,” or a similar film. Ask students to compare what they learn and what they observe in the lunchroom. Invite other staff members, allies, and potential opponents to view the film with your students. Anything that plants a seed for possible change is a benefit.

***Pro-Tip: Use visuals to get your school talking.** David Pope, a science teacher and award-winning school compost facilitator at Massabesic Middle School, came up with a great way to demonstrate why it's important to separate different types of waste. For one week, David and his students collected milk cartons from each school lunch period. They rinsed and stacked them in a pyramid at the front of the cafeteria. Students saw the pyramid growing each day, and a light bulb went off for the kids when the school found it was throwing away between 2,000 and 3,000 milk cartons every week.*



## HOW-TO GUIDES: Steps and Tips to Succeed with Your New Programs

The following sections provide information on how to implement changes that move your school food waste management practices up the Hierarchy. You will find tips and resources that will support your efforts.

# How to Prevent Food Waste and Reduce Excess

This section is the most extensive because preventing food waste at its source is the most important level on the Hierarchy. There are a lot of ways schools can reduce food waste at its source. The strategies below are by no means exhaustive.

**Increase the length of the lunch period.** The average length of time that kids get for their lunch period is between 20 and 30 minutes<sup>6</sup>. In that time, they have to travel to the lunchroom from their classroom and wait in line before they can eat. By the time kids sit down to eat, they often have just 10 or 15 minutes to eat and socialize. Many students feel rushed during the lunch period, and the data supports this. Kids who have shorter lunch periods consume less of the food on their trays<sup>7</sup>. Increasing the length of the lunch period, even by just five minutes, can help reduce food waste at its source by giving kids more time to consume it.

This strategy can be implemented in two ways. First, your team can talk with nutrition staff about making changes in the lunch room that will help increase the speed with which students get through the lunch line. When looking at lunch line efficiency think about these things:

1. Try to create lines of foot traffic so that they don't cross to avoid congestion.
2. Share the day's lunch options on the morning announcements and post the menu on sandwich boards in the line to help students decide ahead of time what they want to take.
3. Create an "express line" that allows students to "grab and go" certain meals.
4. Make foods clearly visible so that students can quickly find what they need.

The ideas listed above are taken from the Smarter Lunchroom's program. You can find more strategies at [www.smarterlunchrooms.org](http://www.smarterlunchrooms.org).

The second strategy for increasing the length of the lunch period is more systemic. It includes gathering a team of parents, teachers, principals, and staff to talk with the curriculum coordinator, superintendent, and school board to lengthen the lunch period.



**Schedule recess before lunch.** Studies have shown that flipping recess and lunch can boost the amount of food kids consume at lunch<sup>8</sup>. Flipping lunch and recess has this effect in two ways: First, the exercise kids get at recess helps build their appetites. Second, when kids are let out of class for lunch they are eager to socialize. Socializing at lunch is important but also can distract them from eating. Recess allows kids to get physical and social energy out before sitting down for lunch. Talk to your school's principal to see if your school can flip recess and lunch periods. You may need to involve the superintendent and school board to implement this strategy.

***Pro-Tip:** Teachers report that students are more manageable at lunch when they've had recess before the lunch period.*

**Use Smarter Lunchrooms strategies.** The Smarter Lunchrooms program uses behavioral economics to nudge kids to make the healthy choice, and boost the consumption of fruits and vegetables. By taking low- or no-cost actions such as naming foods with appealing names and using decorative fruit bowls, schools see increased consumption of healthy foods. Learn more at [www.smarterlunchrooms.org](http://www.smarterlunchrooms.org).



***Pro-Tip: Are you using the right serving utensils?** Matching the serving utensil to the serving size is one Smarter Lunchroom strategy. If one particular item is usually left uneaten, perhaps the problem is that the serving spoon is too large, and the student was served too much. A simple and effective way to prevent food waste is to match the serving utensil to the serving size.*

**Conduct a student food waste audit.** A food waste audit can help the school community understand the scope of a school's food waste problem. Learning what items are wasted, how much, and why some items are more commonly discarded, is useful to shape a strategy that fits your school. For guidance, NRCM relies on "A Guide to Conducting Student Food Waste Audits: A Resource for Schools." This publication was produced through a collaboration between the EPA, USDA, and the University of Arkansas, and is available through EPA's website.

Food waste audits also give students the opportunity to communicate with school nutrition staff about what their favorite meals are so that the right amount of healthy, appealing food is available to students. It's a great idea to use a food waste audit to teach students research skills and important concepts in math and science. Numbers are powerful, and connecting the audit to the curriculum will help students learn while capturing valuable information, too. The results may shock administrators and dining staff as well!

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## How much food does your school waste each year?

You can calculate an estimate by multiplying the number of students by 36.5 pounds. This number is based on studies from around the country, regardless of geographic or socioeconomic differences.

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**Conduct a back-of-kitchen audit.** A back-of-kitchen audit will assess how much food is being wasted before it even gets to the plate. Restaurants do this to make sure they are not buying too much produce. Schools that participate in the National School Lunch Program are required to keep journals and data about quantities and foods

served. Most school nutrition professionals already use this information so that they can be as efficient as possible when ordering and preparing food. So, in a school setting, this should be the last priority but may help refine how much is purchased. New technology is also making it possible for schools to prepare food in shifts, which can help staffers avoid preparing food that is not needed that day.

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## If you are starting a composting program at your school, don't forget about kitchen food scraps!

It is unlikely that school kitchen staff is producing a lot of food waste (edible food) behind the serving line, but they may be producing a lot of food scraps (inedible food). This can be a good thing in some ways because it means your kitchen is using fresh ingredients.

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**Boost student and family education.** Some students have developed a preference for non-produce items, and this can lead to healthy items being thrown out. Many schools work with community organizations to supplement student education about healthy eating. You can provide additional support by helping schools conduct outreach to families about the health and environmental benefits of eating healthy foods provided by the cafeteria. Some ideas include:

1. Working with school nutrition staff to host a family meal night. This educates families about the healthy options that schools are offering.
2. Help your school get community educators, such as SNAP-educators, to talk to students about fruits and vegetables.
3. Send resources about the health and environmental benefits of fruits and vegetables home to families.

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## Did you know

that in order for a school to get reimbursed for a meal by the USDA, students have to take at least three different items, including a fruit or vegetable? It's true! School meals follow strict guidelines set by the Healthy and Hunger Free Kids Act.

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# How to Create a Share Table

Broadly defined, a share table is a place where individuals can donate their uneaten, perfectly good food to others instead of putting it in the trash or compost bin. The most common example is an actual table in the lunchroom where students can place their uneaten apples or bananas for another student to take. But a share table can also be designed to share uneaten, good food with people outside of the lunchroom or school.

The United States Department of Agriculture (USDA), which oversees the National School Lunch Program (Program) and other school nutrition initiatives, not only allows share tables, but encourages them as a way to reduce school food waste and fight hunger.

USDA policy regarding the use of share tables in school nutrition settings is outlined in the following excerpt from the official USDA Guidance Memo:

Share tables allow surplus food or beverage items to be used in a number of ways, depending on the Program's preference:

- ▶ Children may take an additional helping of a food or beverage item from the share table at no cost;
- ▶ Food or beverage items left on the share table may be served and claimed for reimbursement during another meal service; and/or
- ▶ Food or beverage items may be donated to a nonprofit organization, such as a community food bank, homeless shelter, or other charitable organization.

There is no one-size-fits-all approach. The USDA gives schools a lot of flexibility in the use of share tables to reduce food waste. The Maine Center for Disease Control & Prevention's interpretation can be found on the Maine Department of Education website.



As you develop your share table program, make sure that you do these three things:

**Determine your goals and assign responsibility.**

Share tables are often used to both reduce waste and to help feed people. Students should be able to take food from the share table and eat it at school or bring it home to eat later. The food could also be used for afterschool snack programs, or given to the school nurse, who then provides the food discreetly to those in need. Whatever method you choose, it is important to make sure that everyone involved knows their roles and responsibilities and that they follow through.

**Outline what can be shared.** Be sure everyone knows what foods can, and cannot, be placed on the share table. Presentations and posters with a clear message work well. Share tables are only to be used for unopened, unadulterated, non-contaminated foods. This includes whole fruits and any packaged food items where the packaging has not been opened or damaged.

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## Messaging is crucial.

From the get-go, a share table is about making food available to anyone who wants to eat. Choose a name that makes the share table about food, and not people. Call it “the second chance table,” “the too good to waste table,” or something similar. Be creative! Schools have taken great pains to decrease the stigma associated with free and reduced lunch, and share tables must be thoughtfully integrated into school culture.

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Certain items, such as milk, juice, and individual servings of yogurt, should be kept at an appropriate temperature. This often means placing an ice bath on the table into which students can put those types of items so that they stay safe to eat. Alternatively, some schools provide small refrigerators so students can place items inside. If you cannot provide an ice bath or a refrigerator, simply exclude those items from what is allowed on the share table.

**Create a plan for uneaten share table food.** The Maine Center for Disease Control & Prevention currently interprets the Federal Food Code as prohibiting share table items from being served again the next day in the

lunchroom. But share table items can be “donated.” Some schools are finding creative ways to “donate” the items to their students.

***Pro-Tip: Location, location!** Many schools place a share table at the start of the disposal line. Once sharable food is collected, have students move the food to a more highly trafficked part of the school. This can make it easier for students to grab food and beverage items from the share table between classes or after school, and student athletes could pick up a piece of fruit on their way to the practice fields.*

## How to Set Up Lunch Disposal Stations

To keep food scraps and food waste out of the landfill, your school will have to separate it from other types of waste. Many schools have successfully done this and either fed the food scraps to local farm animals, composted them, or sent the scraps to an anaerobic digester. Follow these steps for success:

### Decide on the number and type of containers.

Schools commonly have six separate containers, buckets, or bins for each of the following categories of waste: 1) Organic waste (food/paper) 2) liquids (milk/water/juice) 3) empty milk cartons 4) recyclable plastics 5) redeemable beverage containers, and 6) trash. If this seems like too many, start with fewer and add more as needed. No matter how many categories you choose to start with, make sure there are enough containers and that they are large enough to capture all the waste, but not so large that they can't be moved easily.

### Pick the right container for each type of waste.

When choosing containers for a food recovery project, keep in mind the different characteristics of the products you'll be sorting. For instance, food waste is heavy and dense, while milk cartons and plastic containers are light but take up a lot of space. So, plan on trying a variety of shapes and sizes when picking a container. Different types, sizes, and colors of containers can also help students sort waste properly.

For light but bulky items—plastic fruit cups and empty milk cartons, for example—a large bin such as a 32-gallon trash barrel can work well. Depending on the size of your school you may need more than one.

- ▶ Containers for food waste should be smaller and ideally on wheels because they get heavy fast. If students will be handling the food waste (e.g. transporting the waste from the cafeteria to an outside compost pile or location for a local farmer to pick up) you'll want to make sure the containers are small enough that students can move them when full. Shallow rubber totes or recycling bins (the type without holes in the bottom) can make good food waste bins.
- ▶ Liquid waste can get heavy fast and be hard to move. Most schools use a five-gallon bucket with a lid for liquid waste. *Tip: place a strainer over the bucket to catch any straws.*

No matter how many and which types of containers, buckets, or bins you use, here are some other ideas to make your separation station successful:

- ▶ Put disposal buckets at least 10 feet from tables where students eat.
- ▶ Provide enough space for students to wait in the disposal area.
- ▶ Find ways to eliminate bottlenecks.
- ▶ Make sure student leaders who oversee the disposal line stand opposite students going through the line.
- ▶ It is best to place share tables separate from waste disposal, preferably before the disposal line.

**Plan for the maintenance of the containers.** Once someone takes the food waste to the compost pile or sends it to a local farmer, who rinses out the containers? How and where will they be stored? Ideally, students set up the disposal stations for each lunch period, remove the bins at the end, and keep them clean, organized, and stored.



*Sebago Elementary School came up with a great system to separate wastes and ease the flow of students in its small space. Student leaders help other students use the bins correctly, and teachers are free to perform other duties.*

*Here, students line up along the waste bins single-file. The red arrows show where a fifth grader stands to help the younger students. Non-recyclable or compostable trash is disposed of in the first trash can. Milk and other liquids are poured into the small white bucket, and organic matter (food scraps and paper) is put into the last barrel in the line before students head out the door. The fifth-grade student behind the last barrel places the empty lunch trays on the serving line window for the dining services staff, making sure the trays are stacked efficiently. Notice that the two students who manage disposal stand opposite the students in line, and are free to move around as needed.*

# How to Feed Farm Animals Your School Food Waste

Chickens and pigs love to eat food scraps. Giving school food waste to nearby livestock farms can help both the school and the farmer save money. Maine's thriving local agriculture scene means it may be possible for your school to divert its food waste to be used by a local farm. Open communication is key to a successful relationship, along with these points:

**Find the right farmer.** The Maine Organic Farmers and Gardeners Association is a good place to find a farmer near your school ([www.mofga.org](http://www.mofga.org)). Finding a farmer within a few minutes of the school will increase the chance of success. While many farmers are eager to get “free” feed for their livestock, a long drive to pick up the school's food waste isn't always practical or sustainable.

The size and scale of the farm is another consideration. Large-scale pig farmers must guarantee a certain number of pigs per week or per month to their customers, especially supermarkets and restaurants. This means these farms will be raising pigs year round. Small-scale and homestead farmers may have only a handful of pigs for a couple of customers or for their own use. Both options offer pros and cons. While large-scale producers may guarantee an outlet for the school's food waste on a year-round basis, they may also be strict about what they will accept. Small-scale livestock farmers may only want the food waste part of the year, but are often less picky about the types of food waste they can accept.

**Clear communication is the key to success.** A successful relationship between a local farm and your school depends on clear communication and shared expectations. It is best to make sure both the farmer and the school understand the answers to these questions:

- ▶ What types of food waste/scraps can the farmer accept/not accept?

- ▶ How much food waste can the farmer handle?
- ▶ How many times per week will the farmer pick up the food waste/scraps? How many months of the year will this happen?
- ▶ Where will the waste be placed at the school, and how can the farmer get access to pick it up?
- ▶ Will the farmer accept different types and amounts of waste during different seasons?
- ▶ When will the farmer be able to return the buckets/containers, and will they be clean?

It helps to have an email record or written agreement so that everyone understands what is expected.

**Safety first!** To make sure students, staff, and the farmer(s) stay safe, make sure the food waste buckets are small enough for students to transport from the lunch room to a pick-up site that can be supervised. Be sure it is clear when the farmer will be picking up the food scraps. If it is during school hours, make sure that the farmer understands the safety requirements at the collection site.



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## Feeding food scraps and food waste to pigs

is regulated by the federal government under the Food Safety Modernization Act of 2012. This law is still new and somewhat controversial. Generally, Maine farmers must make sure that any animal food waste that will be used to feed pigs is heat-treated by a licensed facility. Make sure the farmer and the school understand what can and cannot be in the food waste buckets based on state requirements.

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# How to Start and Maintain a School Composting Program

On-site composting is a great way to save money. It connects kids to science, math, and engineering while keeping food waste out of landfills, nourishing soil instead. And that compost can be used to grow healthy food. Composting is easy if you plan well and involve both students and school staff.

There are many helpful resources available online that provide more detail than we can here. We recommend starting with the Maine Department of Environmental Protection's *Ten Step Guide to Starting a School Composting Operation*. Below are a few things you need to know to help you decide if composting on site is right for your school.

**Choose the right composting site.** People who are unfamiliar with composting may be concerned with the potential for smell, pests, and run-off. If done properly, none of those things should be a problem. A successful site for your compost pile needs to be:

- ▶ **Close to the kitchen/cafeteria.** This will help minimize the distance students must travel to dump food waste bins and return them to their storage area.
- ▶ **As close as possible to the school gardens.** If you have to choose, the compost pile should be closer to the kitchen than the garden. Finished compost can be transported with a wheelbarrow or tractor, if necessary.
- ▶ **Away from where people may smell it.** Avoid putting the pile in front of or below intake or exhaust vents, classroom or office windows, or exit doors.
- ▶ **Easy access for vehicles and people.** Leave plenty of room for pick-up trucks or small trailers to back in and drop off horse or cow manure, wood chips, and other organic materials. It's best not to



have the pile in a remote location, or in a location where students would have to cross parking lots or driveways to get there.

- ▶ **Out of the way of other services.** Access for plow trucks, fire trucks, and other safety vehicles needs to be considered as part of the site plan.

**Design the right composting set up.** There are many systems to choose from, and many different materials that could be used. Although it is not essential, consulting a composting professional or making sure that someone involved has composting experience can help ensure success. Depending on the site and your needs, you may want to create a single-bin, multi-bin, or pile system, from materials such as wood, wire, concrete, and more. A single, large pile may be difficult to turn by hand and may best be managed with a tractor, depending on the amount of food waste. Any system will need regular

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## Be aware of the potential for run-off.

Run-off occurs when rain or snow washes away parts of the compost pile. Run-off may carry contaminants from your pile into local waters. To avoid this, build the pile on a relatively flat site with well-draining soil. Consider covering the compost with felt or long-lasting, UV-treated tarps, enclosing it in bins, and locating it in an area where run-off will be minimal. If this is not possible, your school could instead work with a compost management company that can handle the materials safely and maybe even return finished compost for use in the school gardens.

maintenance to achieve a good carbon/nitrogen balance, allow aeration, moisture, and temperature monitoring. The Maine Department of Environmental Protection suggests that you expect to spend about 30-45 minutes daily, and 1 to 1.5 hours weekly maintaining your operation.

***Pro-Tip:*** ***Designing and building a compost system*** gives students an exciting opportunity to use math, science, engineering, and other skills to solve real-world problems!

**Find a steady source of carbon.** A compost pile works best with a steady carbon to nitrogen ratio between 20:1 and 30:1. Food waste is your nitrogen source, and you'll need a lot more carbonaceous material to add to your pile. Fresh horse manure is a good carbon source because it can easily break down nitrogen-filled food waste. Dry-bedded cow manure can be good, too. A local farmer or horse hobbyist could be a good source for manure. If they will deliver the material to your school, all the better! Demonstrate your school's appreciation by making delivery easy, and by offering to reimburse gas or mileage, or giving a gift card to a local business. Many people are willing to help if they feel appreciated.

If you do not have a source of fresh manure, other carbonaceous materials can be used in the compost, including leaves, yard clippings, wood chips, sawdust, paper, cardboard, straw, and hay. Each of these has different ratios of carbon to nitrogen than fresh manure, and different qualities and impacts on the pile when they get wet, so some research and trial and error may be needed to get the right mix.



**Consider the safety of the people involved.** Food safety covers everything from how students transport food waste to the compost site, to how they handle fresh animal manure, to using the compost to grow healthy food. Stay safe by taking the following steps:

- ▶ Students should wash their hands after dealing with food waste, compost, soil, manure, or tending the school gardens. They should also change shoes before returning to the building.
- ▶ Food waste bins should be rinsed, with all organic matter removed before storage.
- ▶ Remember to supply enough buckets so students don't overfill them and make them too heavy to carry. Make sure that students are supervised at all times, especially if the students are using shovels and spades to tend the compost pile.
- ▶ Make sure students wear proper clothing when dealing with the compost. This includes gloves and protective footwear.

***Pro-Tip:*** ***Plan ahead to store food waste*** if it is raining or too cold to go outside. Food waste can be stored in covered five-gallon buckets for several days. To cut down on odor when the buckets are opened to be dumped, layer the food waste with sawdust or torn newspaper.

**Use your finished product!** Finished compost is an amazing soil conditioner. Although it is not a fertilizer, compost does contain a lot of micro nutrients and some nitrogen, phosphorus, and potassium to help improve the biological health of the soil, increase its water holding capacity and infiltration, and reduce erosion. You may want to send your compost to a lab for analysis to determine if you've made the right recipe for a school garden or if it should be used somewhere else. The University of Maine Soil Testing Laboratory will test your soil for less than \$60. Many schools also are able to sell their finished compost in their community.

***Pro-Tip:*** ***If your finished compost doesn't look quite finished,*** then it may be good material for a vermicomposting bin, where worms could break down the material even more and get it ready to be a wonderful soil amendment.

# Vermicomposting

Did you know that you can put worms to work composting uneaten food? This is a great indoor, small—yet scalable—option. You can make nutrient-rich compost and water (known as “worm tea”) right in the classroom.

There are many options for set-up, but basically you will want a waterproof bin with air holes and a lid inside another without any holes. The inside bin will house soil, worms, and compost. The outer bin keeps everything contained. Feed your worms food scraps once per week, covering with moist, shredded paper and dirt to avoid odors.

When the worms have worked their magic and the bin is filling up, entice them to move to one side of the bin by only placing food on that one side for a couple of weeks. Then, take a spade and dig out fresh compost from the other side. Then drain out the “worm tea” that has collected in the outer bin. Voila! The worm tea is a healthy drink for your plants, and the compost can be used as a soil conditioner to replenish nutrients in your garden.



**Know your worms:** Red wigglers and earth worms are both good choices. Do you know children who would love the chance to dig for worms? Find worms in an existing garden, or purchase worms (and count on worm reproduction in your bins). Worms like to eat fruit and vegetable scraps, bread, tea bags, coffee grounds, and cereals—but they don’t like meat or dairy. It helps to feed them smaller pieces of food.

***Pro-Tip:** If your worms are trying to escape or crawling around at the top of your bin that indicates something isn’t right. Happy worms will want to stay right in the bin. Consider feeding them more or providing a bit more moisture.*

The U.S. Environmental Protection Agency provides a simple, step-by-step guide to creating a cheap and easy vermicomposter. A quick internet search for “vermicompost” will offer dozens more helpful tips.

## How to Support a School Garden

Once you have set up a successful composting system and it is producing garden-ready finished product, the natural next step is to use it in your school garden. Growing food with compost made from your school’s food waste is a fantastic, educational way to showcase your food recovery efforts.

Remember, while the students run the show, decisions should happen with assistance from the facilitator and facilities manager. Students can work with teachers and other staff members to find the perfect garden site. Access to water, protection from pests, plenty of sunlight, and good soil health are necessary. Together, students and staff can build the beds and select the plants.

To acquire materials to build raised beds and gardens, students may raise funds by selling compost, or they may ask local residents to donate funds or materials.

To get going, there needs to be a schedule for the students to plant, water, weed, and harvest the gardens. Therein lies one major challenge: Gardens need maintenance throughout the growing season, which happens to be during summer break. We’ve found two strategies help to overcome this: 1) Choose plants that require less labor, and 2) Create volunteer opportunities for others in the community, especially during the summer season. It’s best to use both of these methods.

**Reduce the need for garden maintenance.** With careful planning, and by using time-saving gardening techniques, the bulk of the work will be done during the spring and fall when students are in school.

First, determine your goals for the garden. Do you want to grow food to donate to the local food pantry or to use





in your school's meal program? It's good to consult with the pantry or school nutrition program to see what crops would be most appreciated. This can help you decide what to plant, and when.

**Pro-Tip:** For school gardens, it's important to plant long-season crops, like squash, melons, dry beans, onions, carrots, and potatoes, because these items are planted in the late spring, grow all summer, and are ready for harvest when the students return to school. Combined with mulching gardens heavily, these are the best ways to align labor in the school garden with when students are in school.

Once you've decided what to plant, it's time to plan and make the garden as low maintenance as possible. Mulch is a great way to cut down on work. It reduces weeds and helps the soil retain moisture. It's best to apply mulch after the seedlings are planted and while students are still around, toward the end of the school year.

**Pro-Tip from Let's Move!:** Parking lots, courtyards, rooftops, greenhouses, and schoolyards can be potential school garden sites. If there's not a good site at school, consider other options like local parks or vacant lots, places of worship, nature centers, retirement centers, and community gardens. You will want to avoid locations that are exposed to significant pollutants, such as highways, airports, industry smokestacks, or former industrial areas referred to as "brownfields." If space is very limited, consider gardening in containers. You might even find that the ideal spot is indoors instead of outside.

**Create volunteer opportunities for summer garden maintenance.** Many local residents will be excited to learn that the school is creating a garden and will want to help! Staff facilitators can help create a system for volunteers to visit the school over the summer to maintain the gardens so they are in top shape when students return in September and resume their garden maintenance. Volunteer management is a valuable skill for the students to learn, and with today's technology, it is easier than ever.

- ▶ **Create a garden maintenance schedule that is ready to fill in with volunteers.** There are many shareable online forms, like Google Docs, that work nicely. Not only does a schedule help with volunteer management, but most school administrators and summer staff need to know when people are going to be on school grounds. The school may need to consult with its insurance company or create a liability waiver to allow volunteers onto school grounds.
- ▶ **Spread the word about the garden and volunteer needs, and make it easy to sign up.** The school could email parents and teachers, post on the town website and social media, take out an ad in the local newspaper, publicize to local gardening groups, send a printed notice home with the students, or set up a table at the local farmers market or another community event to recruit volunteers.





## SUMMARY

As you begin your journey to institute a food recovery program at your school, keep in mind how important this work is. Your efforts will improve Maine’s environment, reduce hunger and food insecurity in your school and community, and save thousands of local tax dollars annually—all while enriching the educational experience of students.

We hope you have found the information in this handbook to be helpful. It’s important to us that you know that you’re not in this alone. In the end, when we solve our food waste problems, we all win: Our students, our schools, and our communities all become part of a more Sustainable Maine. To connect with one of our staff experts to learn more about NRCM and how we can assist you in your efforts, contact [nrcm@nrcm.org](mailto:nrcm@nrcm.org) or (207) 622-3101.

**We’re here to help.**

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