# Why The Waste:

# Food Waste Reduction Guide for Michigan Schools

## Steps, tips, and a case study to empower change in districts small and large

This material is based upon work supported by the Department of Energy and the Michigan Department of Environment, Great Lakes, and Energy (EGLE) under Award Number EE0008653. The views expressed herein do not necessarily reflect those of the United States Government or any agency thereof. Find this document and more about the CLC Fellowship that supported this project at graham.umich.edu/clcf.



# Overview and Foreword

This Project was developed in conjunction with Plymouth Canton Community Schools, Canton Township, University of Michigan's Graham Sustainability Institute, and Michigan's Department of Energy, Great Lakes, and the Environment. The goal was to assess the potential for reducing food waste within the Plymouth-Canton School District, starting with one school, with the hope of expanding the program in the coming years. Secondarily, a deliverable was to be created to serve other municipalities around Michigan in their own food waste reduction efforts. This document serves that purpose

This resource is intended to serve as a concise and general guide for anyone, whether inside or outside of schools, who wishes to implement waste reduction efforts in their town, school, or district. The information presented here is not a comprehensive list of food waste solutions, nor is it a detailed plan personalized for every situation. I encourage the reader to take liberty with the information gained by reading this guide and apply what you learned as you see fit for yourself and the district. Schools are special places, shaped by the cultures and people who inhabit them and give them life. So too, are the strategies needed to make change in a school.

Because there exists a wealth of knowledge and resources both online and on the internet, clickable links have been inserted under an icon for digital users to easily access aforementioned resources. I would also encourage anyone looking for more guidance to contact state agencies like EGLE and MDARD, as well as universities across the state, such as MSU, to seek both guidance and support for your initiative.

These past 10 weeks, I have worked towards and studied food waste reduction initiatives in educational institutions. I have dug through trash, drafted emails and surveys, and compiled reports to be digested by the administration. In my brief yet intense ventures into school food waste reduction, it has become apparent to me that schools across the state and across the nation are suffering from a lack of resources, be it labor, money, or time. In this ecosystem full of factors which limit the capacity for change, it may seem difficult, impossible even, to make lasting change within the bureaucracy of the school system. Yet, it is important to remind oneself that nothing worth doing is easy. In the pursuit of a more sustainable future, hard work is needed to accomplish one's goals.

Take care to remind yourself why you chose to go down the road of waste reduction. Remind yourself that the people you interact with are like you, human, and subject to the flaws of any mortal. Remind yourself that waste reduction in schools is not just about immediate reduction of waste from landfills, but the creation of a future where sustainability and waste aversion are a second nature for the citizens of your town, city, or county.

I hope this resource can guide you on your journey of food waste reduction, however long it may take. Should you have more questions, I would refer you to the sources listed before the appendix of this document.

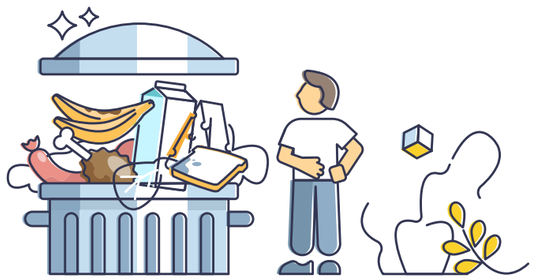
In circularity and health,

Mateo Garcia
2025 Catalyst Leadership Circle Fellow
M.S. Environment and Sustainability '26

# Contents



The rollout of food waste reduction efforts is a long journey with many stops. There are bridges that need building, people to meet, and pit-stops that need to be made in order to get to your final destination both in good health and good fortune. Below we have outlined the major segments of the journey, each with their individual challenges and rewards. Expect this endeavor to span multiple years, allowing for students, faculty, and families to adjust and learn new habits.





# Case Study: Bentley Elementary

To help ground this process in tangible action, we have presented examples from the process undertaken at Bentley Elementary School this past summer. The Plymouth-Canton Community Schools (PCCS) district has voiced its commitment to reduce food waste reduction, partnering with existing initiatives piloted by Canton Township and nonprofit organization Make Food Not Waste. Bentley is a K-5 elementary school that serves around 480 students in a district of over 16000 kids. In the summer of 2025 the school had its first waste audit, beginning the road towards food waste reduction. We will refer to Bentley throughout the course of this guide to provide real world examples of solutions, challenges, and documentation.

# Establishing a Vision

When championing a cause like food waste reduction, a vision is crucial for creating sustainable action. A vision can serve as a north star for waste reduction efforts and can align communities towards a shared end goal. Food waste reduction, especially in schools, does not happen over night. It can take years to arrive at a "meaningful" level of waste reduction. Envisioning what a succesful waste reduction effort looks like will allow for a movement to persevere through hardships, overcome obstacles, and acheive your goals for a more sustainable and environmentally friendly district.

## What is a Vision?

A vision is a picture of a mutually desired future.

Rather than describing how this happens, one should picture

hopes, wishes and outcomes.

What does the life of a teacher look like with food waste reduction? What about a custodian? A principal?

What does food waste reduction mean to the community?

How does food waste reduction fit into the school district's mission?



# PCCS Mission Statement

When creating your vision for a food waste-free school, utilize your existing mission statement to contextualize waste reduction within the goals of your educational institution

Plymouth-Canton Community Schools demonstrate an active commitment to creating critical thinking and involved citizens, while shaping the future of what public education might look like. In committing to food waste reduction, the district will be making an effort not only to adopting environmentally friendly practices, but also to enhancing the quality of their education experience by enabling students to take responsibility for issues which will affect their lives both now and in the future.

As the Detroit Metro area continues to adapt to large population shifts in the wake of the widespread exodus from the motor city, available space in Southeast Michigan has begun to shrink smaller and smaller. The finite capacity of landfills in the region is a problem which will affect the citizens of both Canton and Plymouth, as hauling fees rise and the logistics of moving waste becomes more difficult. Food waste reduction within the public school system serves as an active solution to preserving the integrity of each town's waste management system by creating students who are capable of being responsible citizens, and who are knowledgeable about the waste issues of their communities.

Food waste reduction teaches not just environmental responsibility, but allows for students to engage in real time with fiscal responsibility, the regulatory process, and public-private engagement. In the creation of a transformative education experience, connecting students with waste reduction can be a powerful engine for educational improvement.

# Stakeholder Engagement

School systems are large institutions, with complex networks of staff, administrators, students, and parents, all of whom play a part in effectively implementing waste reduction efforts. Without support across the school system's chain of command, the long-term feasibility of any efforts for food waste reduction and diversion become vulnerable to policy, personnel, and logistical changes.

It is important to have the support of relevant people before beginning any sort of action. For example, if you want to do a food waste audit, you should confirm first with that school's administration, as well as any custodial and food service staff. Being proactive about gathering the proper network of stakeholders will move the food waste reduction process forward speedily.

Additionally, if you are not a long-term employee of a school or district, it is important to remember that change is only sustainable if there are people to continue to do the work once you are gone. Finding these people and coordinating a plan of action is best practice when making change.



# Identifying Key Players

There are a variety of people within a district with whom it is necessary to establish connections in order to move forward with the waste reduction process. When reaching out, it is important to remember that schools operate within logistical, monetary, and legal constraints. Listening to their needs and concerns, as well as developing waste programs which can meet them, are crucial to maintaining diversion efforts for years to come.

## Potential Key Players

### Administration

These people are crucial for garnering support, navigating the hurdles of school system processes, and defining the needs of an individual school. They should be looped in from square one of the process.

- Superintendent
- Principals
- School Committee
- Procurement Director
- District CFO

### School Specific

These are pople you should talk to before implementing specific changes to ensure that they can handle changes to their daily routine. They are often integral to facilitating waste reduction effort within the lunch room.

- Kitchen Staff
- Custodial Services
- Paraprofessional

### Connectors

These are people who may not have the most administrative power, but who are crucial to the boots on the ground work that comes with food waste reduction. They will be able to connect teachers, sutdents, and other staff with your movement.

- Curricilum Developers
- Career and Technical Program Coordinators
- Parent Teacher Organizations (PTO)

# Building Coalitions

**Connecting people to champion waste reduction efforts is imperative for mobilizing resources toward a sustainable goal. As administration and faculty begin to voice their opinions and interest regarding waste reduction strategy, ensuring proper coordination for different initiatives is key for success. Every district may have different existing sustainability or environmental groups which can already serve to organize food waste reduction efforts. Prioritize uplifting these organizations first, but if it appears there is a vacuum to be filled, we have listed some potential groups/positions which can serve to help catalyze action.**

## Compost Curriculum working group:

In order to facilitate diversion of food scraps from landfills, a group of faculty and staff should be assembled to create a plan for teaching students about waste sorting. Because waste sorting is a requirement for a successful composting program, efforts should initially be focused on teaching sorting, although curriculums would benefit from other information added, such as the importance and benefits of composting. See the section on composting on page XX for more information.

## School Sustainability Representative:

School sustainability representatives should be appointed to facilitate communication within their own schools, as well as from other member of the school community. They will be able to coordinate with and train other staff members on sustainability and food waste initiatives within the school.

## Student Leader coordinators:

Student leader coordinators will work with students to uplift sustainability initiatives within the student community, as well as bridge existing sustainability/environmental programs within schools with new food waste reduction initiatives.

## District-wide Sustainability representative:

This person will lead the charge on coordinating sustainability efforts between different schools and serve as the outward face of sustainability initiatives within the district. This person is in charge of connecting interested stakeholders with existing food waste reduction and environmentally oriented movements within the district to ensure consistent and coherent action across the district. While this role is not necessarily limited to one person, it is important to have a consistent line of communication to which you can funnel input about sustainability efforts.



# Case Study: PCCS All Call

To begin the process of reaching out to stakeholders across the district, a breif survey was sent out to PCCS faculty and staff to gauge interest in a veriety of initiative related to food waste reduction. The full survey is attached to this document in the appendix. The objective is not only to gauge the capacity for waste reduction improvement, but also to survey the landscape of existing sustainability initiatives within the district.

If your school or district does not have a centralized hub for sustainability efforts, you might not know what initiatives already exist in your school. In P-CCS for example, there are over 20 schools, all of which have different practices for food waste recuction in the classroom. Each school may have its own organization aimed at environmental science or sustainability which could come in handy in coordinating waste reduction efforts. Having documentation and establishing connections with these organizations or their leaders is another item on the food waste reduction check list.

Surveys are not the only method for reaching out for support. Individial emails to known sustainability advocates whithin your district may also be a solution. For a more intimate outreach strategy, focus groups could be held at participating schools. Strategies should be chosen based on your exising resources for time and labor. Reaching out to people is supposed to speed up the process, not slow it down.

Once you have gathered data on existing initiatives and people willing to help out, it is important to document such things either with a stakeholder matrix or an orgainization chart. Resources for creting these documents have been linked below.

## Resources for stakeholder documentation

**NOAA Stakeholder Involvement Worksheet**

https://coast.noaa.gov/digitalcoast/training/stakeholder-analysis-worksheet.htm

**GACD Stakeholder Mapping and other resources**

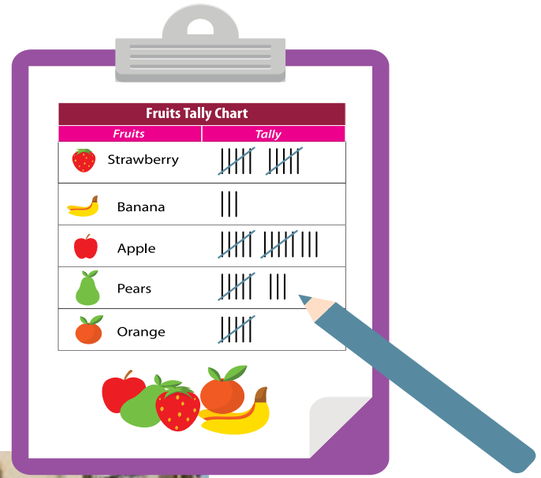
https://www.gacd.org/resources/researchers-and-students/stakeholder-engagement/stakeholder-mapping-and-other-resources

**Boise State: Organizing your org chart**

https://www.boisestate.edu/webguide/2021/01/25/organizing-your-org-charts/

# Data Collection

It is recommended that the district conduct a variety of assessments in order to prioritize action for reduction solutions, as well as provide further evidence for demonstrated reduction needs. Data should be collected on both the physical properties of food waste, but also should cover the qualitative aspects of food waste, such as the reasons for why students didn't finish their lunch. Once data is gathered, it can be assessed both on a school-wide and district-wide basis to address issues in supply, along with issues in the food consumption process. Many waste haulers also appreciate an estimate of food waste so they can understand the logistical requirements of organic waste pickup.



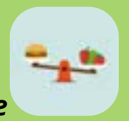




# Food Waste Audit

A food waste audit is aimed at assessing the sources and and types of food waste within a building or institution. In general the criteria measured during an audit should at least include:


*Total mass of organic waste*



*Organic waste masses by type and source*

*Total amount of food produced*

*Documentation and quantization of unopened food*

Comprehensive instruction for conducting a food waste audit are provided by the EPA's resource: Guide to Conducting Student Food Waste Audits: A Resource for Schools

**The guide outlines the steps needed to be taken to conduct a food waste audit, although different schools may have different capabilities when it comes to available man-hours, lunch room timing, and available space for sorting. For example, while it can be beneficial to separate waste streams not just by material but by menu item, there may not be sufficient assistance during an audit to do so.**

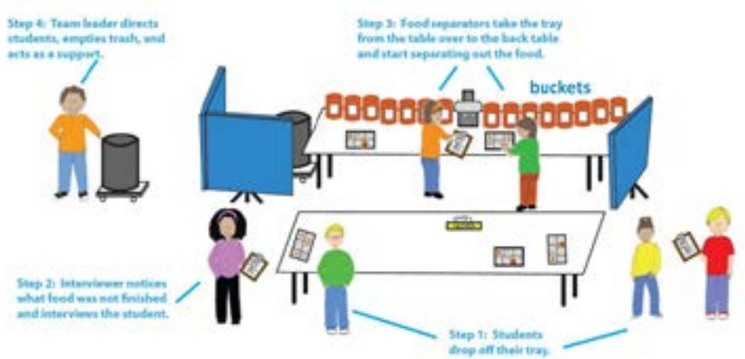



*Diagram by Stephen Sturdivant, U.S. Environmental Protection Agency*

# Waste Audit Checklist

- Outline the different categories of waste to be collected
- Draw out the pathways food takes from the kitchen to the lunchroom to the trash (Appendix)
- Perform a site visit of the school you wish to audit to ensure proper logistics and space given audit needs
- Alert administration, faculty, and families over a week in advance so they can prepare for an altered lunch schedule
- Alter the datasheets provided by the EPA's resource to fit the needs of your audit


# Qualitative Data

While getting hard numbers is important, asking questions about attitudes and sentiments regarding food waste is an important step towards reducing waste in schools. While this information is important for finding solutions for waste reduction, it also allows for the voices of staff and students to be heard. When implementing change, ensuring that all key stakeholders feel like they are being uplifted is incredibly important. When designing opportunities for feedback, the following inquiries are recommended:

**Question: Why don't students finish their lunch? (to students)**

***Potential Answers: "too full," "not enough time to eat," "didn't like the taste"***

**Question: How could we improve the lunch distribution process? (to kitchen staff)**

**Question: What logistical barriers prevent students from sorting their lunch? (to administration/paraprofessionals)**

## Engagement Strategy:

While every school might require a different strategy for assessing attitudes about food waste, inquiries should provide poll conductors with some sense of anonymity as well as be easily accessible. Rather than presenting the inquiry in an email, incorporating surveys into the lunch routine of both staff and faculty can help to ground participants in the context of the lunchtime routine.

# Turning Data Into Action

Once waste audits have been completed and surveys have been received, a review of outcomes will reveal the next steps for reduction of food waste. But how should conclusions be made? When thinking about next steps, it is important to consider the following questions:

## What are the largest contributors to food waste?

We want to be efficient and effective when implementing waste reduction efforts. Schools operate on limited taxpayer resources. By confronting the largest sources of waste, we can not only make a large impact.

## At what point in the food service process does that contribution happen?

By identifying the step at which major waste contribution happens, we can begin to make logistical assessments about the solutions we are proposing. For example, if most waste happens because a school only has one waste hauler, a relevant solution would have to deal with finding an alternative end-of-life solution. If it is found that a large portion of fruit becomes partially eaten, apple slicers could be purchased to reduce the mandatory serving size.

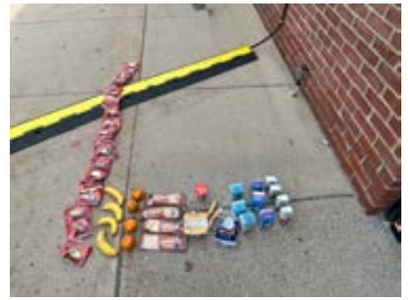
## What parties are responsible for reducing food waste?

This question will determine the relevant parties to include in solution decisions, as well as help narrow the scope of a solution. For example, if waste happens mostly from kitchen scraps, it would be important to include the kitchen staff in the decisions to ensure that they understand the new changes, and that the changes are made in a manner that is conducive to a quality work environment.



# Bentley Waste Audit

The waste audit performed at Bentley Elementary was done on two days at the end of May 2024. The audit inspected waste produced at breakfast and lunch, but kitchen processing waste was not examined.



Due to time constraints and limited assistance, food was unable to be pre-sorted, and we ended up digging through some trash after the lunch period had ended.

Because Bentley serves their breakfast in the classroom, we went into each room individually 30 minutes after the meal was served. This allowed for waste to be collected without major disruptiojns to the school day.

Due to limited assistance, we were unable to process 100% of the waste. If this is the case for you and your school, it is possible to attempt an audit by just assessing a representative sample of the weight. This sample should take waste from a variety of areas and at different times withinthe lunch period. You should also take note of the proportion of food you actually collected (50%, 20%) so that you can estimate the total amount of waste produced.

The audit at Bentley also featured a qualitative survey of the students perceptions of food waste reduction. While it is possible to consult the students one-on-one, we decided that it would be easier to go around to each table as they were being dismissed, and they could put a sticker on one of the four categories listed (see image to the right). This was much less cumbersome given the space constraints in the cafeteria, and let the students out to recess much faster.


A report was produced from the audit, and it can be accessed in the appendix of this document.

# Implementing Changes

Once the main sources of waste are identified, decisions should be made regarding strategies for improvement. In this section, we will review how to optimize the impact of food waste reduction strategies, and offer some suggested solutions at each level. For each solution, we will provide a subjective rating on the logistic ease and financial burden of the solution. This list serves as a general guideline, and is not comprehensive.  For more information, check out these resources listed below:


## Utilizing the Waste Reduction Hierarchy

In this section, we will break down the available solutions to you category by category using the waste reduction pyramid. While efficiency also depends on the effort needed to implement a solution, the pyramid prioritizes the most energy efficient methods for waste diversion. Districts should pick and choose which solutions work best for themselves, but utilizing the pyramid is an important mental exercise when planning waste reduction.




# Source Reduction

Source reduction is the most energy efficient method of dealing with food waste. While every district might manage this type of problem differently, there are a few strategies which can be employed:

### Record Keeping

Maintaining production records, as well as recording data about student meal preferences and demand can save schools money. This could eliminate food perishing before it is served, and will allow food service to better calibrate purchasing needs.

### Implementing an Offer Vs. Serve Program

Offer Vs. Serve is a way to ensure compliance with federal dietary requirements while still allowing students to leave certain items at the lunch counters.

### Fruit Slicers

By allowing students to slice certain fruit like apples, they can share with their peers, and are actually more likely to consume the whole fruit.

### Bulk Milk Dispenser

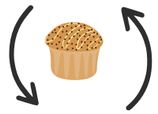
Bulk milk dispensers allow students to only take the milk they want, reducing the total amount wasted. While potentially expensive, they are effective at reducing the amount of milk in the trash.

# Reuse/Redistribution

Food reuse/redistribution refers to diverting food towards other human sources to be eaten. This can mean diversion in the kitchen, the cafeteria, and even across a community. A tricky element of this strategy is navigating the line between waste diversion and food safety as some items are not able to be redistributed. In Michigan, there exists a law similar to a "Good Samaritan Act" which provides legal protection for institutions whom choose to send their food waste to food pantries or other food waste gleaner.

## Connecting with local gleaners

By reaching out to local non-profits, meals not eaten and perishable food that won't be served can be redistributed to needy members within the community. While food safety should be a priority when redistributing, there exist good samaritan protections for institutions donating food scraps.

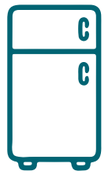


## Share Tables

A share table is a place for students to place unopened items for sharing. This is in compliance with the federal guidelines of offer Vs. Serve. Students are able to take shared fod with them. Perishable food can be collected, but should be thrown out at the end of the lunch period.

## Improving refrigeration and freezer capacity

By increasing the capacity for cold storage, schools can worry less about perishable foods. While this option may be expensive, provisions could be included for future infrastructure funding requests.



## Working with local farmers to give animal feed

Leftover food scraps can also be fed to animals if there are farmers near your community. Be sure to consult exisitng legislature regarding this issue before calling your local farmer.



# Wellness Policy Integration

Many strategies for food waste reduction also will be impotant for your district's Wellness plan. Things such as student nutritional needs and community engaged learning intersect with student wellbeing and sustainable action. Combining these initiatives as it suits your district is key to being efficient with time, funding, and other resources. Here are just a couple of ways in which wellness policy and sustainable action can intersect:

**Extending the sitting time of a lunch period can decrease plate waste while improving nutritional intake.**

**Service learning opportunities can improve social outcomes and establish a sense of community.**

**Engaging with problems oriented towards the community can benefit student attendance and academic success.**

## Important Notes

While extending lunches and service learning may seem like straightforward initiatives, there are always tradeoffs with every reduction decision. For example, increasing sitting lunch time will compete with instructional and recess periods. Adding alternative learning oppurtunities, while important, may not be in line with existing contract agreements between the district and the teachers' union. When planning your waste reduction efforts, it is important to make sure any changes you make do not have any unintended consequences.

# Composting Programs

Through diverting organic waste such as cardboard and food scraps, we can both increase the lifespan of our landfills and reduce greenhouse gas emissions by reducing methane emitted from our landfills. While there are other alternatives to organic waste management such as an anaerobic digester, such solutions often require infrastructure purchases not viable for educational institutions to handle alone.

Composting programs have the potential to not only reduce emissions, but engage the student body with participatory programs, creating the citizens of a sustainable future. If implemented correctly, composting programs have the ability to be integrated within the K-12 curriculums of biology, chemistry, economics, family-consumer science, and social studies. Composting is also a value additive process, meaning that finished compost material is of significant worth, and can be sold to the community to cover upkeep and other funding needs. It is recommended that composting be organized in a district-wide approach, considering the pedagogic requirements of waste sorting, as well as the initial overhead and site requirements.

Without the source-separation of food waste from other wastes, like plastic and metals, a lot of labor and/or industrial machinery is required to sort out the different types of waste.

While composting can have tangible impacts on the environment and students, it requires labor, planning, monitoring, and curriculum development in order to be done correctly. Before beginning your composting program, you should have performed an audit and assessed the characteristics and quantity of waste produced. You should also gather information on the sorting capabilities of the student body, as that may dictate the speed of the composting rollout.



## In House

The creation of an in-house composting program is a task that can only be done if a champion exists within the district. At least one faculty member should be dedicated to managing the compost pile and the composting program. A student group will also need to be created, or elected from existing organizations to facilitate pile management as well as waste collection. Before beginning composting, the student body must be trained to sort out organic waste from plastics in their cafeteria waste. Without such source separation, the regulatory requirements in the state of Michigan would be too overbearing for a district to manage. An in-class curriculum should also be created to foster both an understanding of the reasons for waste diversion, and the physical composting process. The creation of an in-house composting process is a rewarding yet substantial task. With the proper mobilization of school resources it can be done if that is within your district's vision for food waste management.

## Contracted

Due to the complexity of managing compost, school districts often engage in public-private partnerships to be able to properly achieve their goal of landfill diversion. These services often have their own protocols and programs which they would like to institute before they begin collecting waste from schools. Oftentimes these programs are rolled out over a number of years to ensure proper student education. The collection fees for each contractor differs from program to program, and some even offer to return produced compost to the district at-cost. When engaging in a contracted compost process, a variety of options should be looked into to ensure that the program implemented aligns with the vision the school or district has for food waste management.

# Case Study: Canton and MiGreenMichigan

In 2023 Canton Township piloted a food waste drop off collection service in conjunction with local organic waste hauler MiGreenMichigan. Since then over 300,000 pounds of food scraps have been collected for use in a local composting operation. Because of the existing agreement between the township and MiGreenMichigan, it made sense to work with the school district as well. At this time, MiGreenMichigan has provided a quote to the district to begin collection at Bentley Elementary. While no formal agreement has been reached, this is just one example of leveraging public-private partnerships when moving forward with food waste reduction initiatives. While it can be rewarding to create compost in-house, working with a company like MiGreenMichigan ensures a variety of perks such as:

- **Proper disposal of compostable materials**
- **Assistance with education initiatives**
- **The ability to compost BPI materials, increasing flexibility on the food procurement end**

Establishing trust between public and private entities takes time and effort, but it could save a lot of work in the long run, as well as ensure community trust in whatever waste initiatives your school/district decides to pursue.



# Balancing the budget- Important considerations

School systems operate on limited budgets, and thus navigating the financial logistics of food waste reduction can often be tricky. Resources are needed for infrastructure improvements, labor, and potential hauling fees. While this can be tricky to navigate, funding opportunities exist for schools in need of funds.

## Grants

There exist a number of grants which can be pursued both in southeast Michigan or at the national level. Performing an audit before the grant application process, and developing a coherent plan for implementation are crucial steps to take before applying for funding. Demonstrated need, as well as ensured success are important traits to have in your funding application. Some example grants are listed below, but independent research may provide new options that could fit the needs of your school/ district.

## Excess Funds Balance

Working with your district's CFO to identify excess funding opportunities can help to fund many improvements toward waste reduction infrastructure. If your district receives federal money for food, and at the end of every school year your schools account balance is in excess of an average three months of expenditure, the district is required to create a spend down plan to reduce the excess funds within the school budget. One effective use of this funding, which must be spent within one year, can be toward food waste reduction infrastructure.

## Low-Cost Changes

Sometimes there is just no money in store for waste reduction practices, and districts or schools need to be creative about the use of their resources. It is important to remember that changes can be made without spending a large chunk of cash. For example, share tables require virtually zero cost to implement if there is space available in your cafeteria. If you are experiencing trouble getting funding, data gathering and behavioral changes such as teaching source separation in the cafeteria can happen in the first couple of years within a management plan. As the initial changes are made, documenting the process can serve as evidence for needed investment when the time comes around for district budget allocation.

# Example Grant Opportunities

**USDA Rural Development Solid Waste Grant:**

https://www.rd.usda.gov/programs-services/water-environmental-programs/solid-waste-management-grants-15#overview

Available for townships with populations less than 10,000. Must have an existing plan for waste reduction

**USDA Farm to School Grant:**

https://www.fns.usda.gov/f2s/grant

**World Wildlife Fund Food Waste Warriors Program**

https://www.worldwildlife.org/pages/bring-food-waste-warriors-to-your-school

## Potential Future Opportunities

**ReFed Grant Fund**

Cyclical grants available for food waste reduction effort at multiple levels of the food system.

https://grantfund.refed.org/

**EGLE Pollution Management Grant Page**

repository for the state agency's RFP's. More funding could be available with public-private collaboration.

https://www.michigan.gov/egle/about/organization/materials-management/pollution-prevention/funding-opportunities

## Get it while it's good

Grant funding is often a cyclical process, and is also heavily affected by the agendas of any state or federal administration. When searching for funding, it is important to have a plan and outline ready beforehand to ensure that when a window is open, your district can scoop up that funding while it lasts.



# Timeline Development

Because schools are busy places, it is important to plan ahead and plan often. When thinking about implementing changes many things should be considered, from staff availability, to budget turnover, to new student arrivals. The creation of a timeline can streamline communication, avoid time conflicts, and set measurable goals for a food waste reduction movement.

When creating a timeline, it is important to evaluate a few different things:

## High Workload Periods

Food waste reduction takes a back seat to the day-to-day learning and operation of a shool. Planning to do the legwork of waste reduction, such as writing grants, developing curriculums, and creating SOPs should come over school breaks, or during lulls in the school year depending on how your district's calendar works.

## Student Orientation Windows

Teachers and students develop routines as they get used to their schedules over the course of a school year. Any new changes in the day-to-day routines of students or staff should be implemented at the begginning of the school year to facilitate a reasonable adjustment period.

## Access to Training/Improvements

It's not just students that need training, but faculty and staff too. Timelines should reflect reasonable time for staff adjustment, and should account for training needs. Ensuring that you plan a proffesional development event before implementing changes is an important consideration when timing the rollout of new practices.

# Example Material:
## Burndown Chart

The creation of a spreadsheet, or a similar centralized file with a timeline of all the necessary tasks, is an important part of managing a large project like food waste reduction. Presented in this packet is a Gantt chart created by Lane Belloli during the creation of Southfield's food waste reduction plan. While some of the prerogatives may differ from the ones outlined in this document, the chart serves as an example of what a document could look like. This chart can be edited and formatted to fit the needs of your project, or you could create your own.

PROJECT MANAGEMENT GANTT CHART

Eliminate Food Waste in Michigan Schools

Development Plan Implementation Start Date: Mon, Jul 07, 2025

| LABEL | TASK TITLE | TASK ASSIGNMENT | | PROJECT DATES | |
|---|---|---|---|---|---|
| | | DPT LEAD | OWNER | START | DU |
| | 1. SCHOOL COMMITMENT | MFNW | | Mon, Nov 06, 2023 | Wed, Nov |
| | 1.1. Appoint a Project Manager from Make Food Not Waste | MFNW | | Mon, Nov 06, 2023 | Mon, Jan |
| | 1.a. Ceate a citywide school contact matrix | MFNW | | Tue, Jan 30, 2024 | Tue, Feb |
| | 1.b. Create a communication plan | MFNW | | Tue, Feb 20, 2024 | Fri, Mar |



# Curriculum Creation

The final essential component of a food waste management plan is the creation of a food waste curriculum. If you are planning to process your compost in-house, this is an essential step, and will require a good chunk of resources to develop. If you are not composting, or are contracting your compost hauling, a curriculum can be much more simple. If you already have some sort of sustainability curriculum integrated into your school or district, it can be amended to include food waste topics.

## Suggested Topics

- Food waste reduction strategies and the laws of thermodynamics
- Economics of waste reduction and circular economy
- Basics of waste sorting and the need for source separation
- The biological characteristics of composting

## Tips for Sustainability Curriculum Development:

- Work material into existing curriculums
- Focus on the good not the bad
- ground lessons in local examples
- engage with lessons that span multiple topics
- highlight the three pillars of sustainability: social, environmental, and economic

## Alternative Resources

**University of Windsor Tips for Integration**

https://www.uwindsor.ca/sustainability/355/tips-integrating-sustainability-curriculum

**Penn State: Teaching Sustainability**

https://sustainability.la.psu.edu/education/teaching-sustainability/

**Embedding Sustainability in the Curriculum**

https://www.sustainabilityexchange.ac.uk/files/embedding_sustainabilyt_in_the_curriculum_guide.pdf

**American University: Curriculum Development Resources**

https://soeonline.american.edu/blog/curriculum-development/

**University of San Diego: 5 Tips for Curriculum Design**

https://pce.sandiego.edu/curriculum-design-explained-5-tips-for-educators/

# PD Days and SOP's

Food waste reduction efforts require learning not just for students, but for faculty, staff, and administration. The creation of standard operation protocols (SOP) as well as proffessoinal development days related to waste reduction initiatives are incredibly important. Ensuring that every staff member understands the "whys" and the "hows" of food waste reduction creates a consistent and aligned effort that can support students in their own waste learning journey. SOPs ensure that rules are followed, and can serve as aresource for staff allowing for swift communication and sharing.

Attached to the appendix of this document is an example SOP for PCCS middle and high schools. It is available for reference when crafting your own food waste reduction resources.

## SOP Resources

**Penn State: SOP writing guide**

https://extension.psu.edu/standard-operating-procedures-a-writing-guide

**How to create an SOP**

https://helpjuice.com/blog/standard-operating-procedure

**SOP how to's**

https://helpjuice.com/blog/standard-operating-procedure

## Professional Development Resources

**Harvard: Why professional development is important**

https://professional.dce.harvard.edu/blog/why-is-professional-development-important/#What-is-Professional-Development

**PD Day Playbook**

https://www.frontlineeducation.com/wp-content/uploads/2020/12/HQPD_Playbook.pdf

**10 TipsFor PD day delivery**

https://www.edutopia.org/blog/10-tips-delivering-awesome-professional-development-elena-aguilar



# Other Resources:

**EGLE Comprehensive Food Waste Resource hub (Contains a host of resources pertaining to Michigan)**

https://www.michigan.gov/mde/services/food/sntp/managing-food-waste

**MDE Share Table Administrative Memo**

https://www.michigan.gov/mde/-/media/Project/Websites/mde/ohns/School-Nutrition-Programs/Administrative-Memos---CNP/Admin-Memo-No-6-Share-Table-with-Attachment.pdf?rev=5c284fec0aad41cc887628dfod1b4c95&hash=5A2737916A892A86AC657741FDBFC585

**WWF Food Waste Warriors Program**

https://www.worldwildlife.org/teaching-resources/toolkits/be-a-food-waste-warrior

**USDA Food Buying Guide for Child Nutrition Programs**

https://foodbuyingguide.fns.usda.gov/

**USDA School Composting resources**

https://www.usda.gov/foodlossandwaste/schools

**SDSU Food Waste Reduction Info**

https://extension.sdstate.edu/food-waste-schools-and-strategies-reduce-it

**Guide to Food Waste Reduction for South Carolina Schools**

https://des.sc.gov/sites/des/files/Library/OR-1522.pdf

# Appendix





| | |
|---|---|
| SOP Name: | Share Tables- |
| SOP CLASSIFICATION: | Operations – Food Safety |
| Date: | 8-23-24 |

**Purpose:** Reduce food waste and help address food insecurity for the district students.

**Scope:** This plan applies to Plymouth-Canton Community Schools students and involves cafeteria staff, aides, teachers and administrative personnel who oversee the breakfast and lunch periods

**Resources Needed:**
1. Share table/cart
2. Disposal log

**Frequency:**
1. Daily

**Standard Summary:**
Share Table consists of a cart or table with signage designating packaged or wrapped items or whole fruits or vegetables with inedible peels (IE Bananas, uncut oranges) can be placed here. Referred to as a "share table" for the remainder of this SOP

**PHF-** Potentially Hazardous Foods
**TCS-**Temperature Controlled for Safety

**Procedure:**

**Instructions for Share tables:**
1. Any food item taken as a part of a reimbursable meal that a student does not want to eat may be placed on a share table/cart.
2. Foods allowed will be limited to unopened prepackaged items and fruits with inedible peels (Example, bananas and uncut oranges).
3. No opened foods are to be placed on the share table.
4. No foods from home are allowed to be placed on the share table.
5. Any student is allowed to take items from a share table **regardless of whether they purchased a meal or not**
6. Items from the share table are for students only

**Instructions for Reuse/Disposal of Items:**
Non TCS foods-Non-perishable prepackaged items (crackers, cereal, cereal bars, etc.), may be returned to the share cart to make them available for the next food service or used with any snack need or backpack program affiliated with your school.

1. Packaging must be inspected at the end of each food service for:
    - Unopened, in sound condition, and in original package
    - Not expired
    - Fruits with inedible peels (Example, bananas and uncut oranges)
2. Any share table items kept for a backpack program or snack need from the office, must be stored in a separate container/bin in the school until a designated backpack program representative can be picked up.
3. Items left on the share table may be used in later meals that are claimed for reimbursement (State of Michigan MDE Memo No. 6 dated 4-28-23 & USDA Memo SP 41-2016, CACFP 13-2016, SFSP 15-2016 dated 6-22-16).

TCS foods-Perishable foods such as cheese sticks, yogurt, milk **must be disposed of at the end of each meal service.**

**Instructions for Allergens:**
Staff monitoring the share tables must be made aware of any student allergies present in the school.

1. Students with allergies or modified diets need to be made aware of potential allergen possibilities associated with items on the share table and any item they may want should have the label checked before consumption.

**Monitoring of Share tables**:

1. The share table should be near the main lines of the cafeteria to ensure that it has a line of vision for monitoring by cafeteria staff.
2. The designated share table monitor will ensure that only the proper items, unopened and not from home, are being placed on the table.
3. Cafeteria staff will be responsible for collecting any leftover items from the share table for disposal, storage or reuse in Outreach Programs (ex. Backpack) at the end of meal service.



STANDARD OPERATING PROCEDURE Section 5

**Corrective Action:**

1. Employees failing to follow the above procedures will be retrained on operations and requirements of the share table.
2. Students failing to follow the guidelines for the share table should have the rules explained again to learn proper procedures for what can be placed on the cart.
3. Discard items found on the share table if:
    - They are considered unallowable items
    - TCS foods
    - Food packages have been compromised
    - The expiration date has passed
4. To ensure implementation of guidelines listed above; staff must adhere to all previously listed instructions and guidance. If any staff or student is not following the guidelines then corrective action No. 1 & 2 should be enacted to retrain.

# Bentley Waste Audit Report

Mateo Garcia
06/09/2025

## Summary

On May 30, 2025 and June 02, 2025 two food waste audits were conducted by PCCS staff, Canton Township Employees, and a Fellow at the UM Graham Institute for Sustainability. The audit was aimed at establishing data points to present to school administration, and the general public in demonstrating the need for improvement in food waste reduction efforts, as well as determining strategic food waste chokepoints for focus in reduction efforts. Additionally, the audit poses as a model for more comprehensive investigation into food waste trends within the greater PCCS district should it move forward with enacting a food waste reduction plan.

Breakfast and Lunch were both examined for waste after each meal. Kitchen processing waste was not collected. For breakfast, waste was collected from each classroom after allowing 30 minutes for students to eat. At Lunch, trash bags were randomly pulled to represent an allocated portion of total food waste produced during each day. On June 2, a qualitative survey was also conducted, where students anonymously provided reasoning for their food which they had decided to throw in the trash.

Once collected, waste was sorted into four primary categories: unopened Items, milk (including cartons,  Compostable waste, and Other waste. Other waste was not measured due to both the quantity and variety of items, making it difficult to derive any assumptions of quality from the data point. The other three categories were sorted into their respective five gallon buckets, weighed (as well as counted in the case of unopened items, and subsequently thrown away.

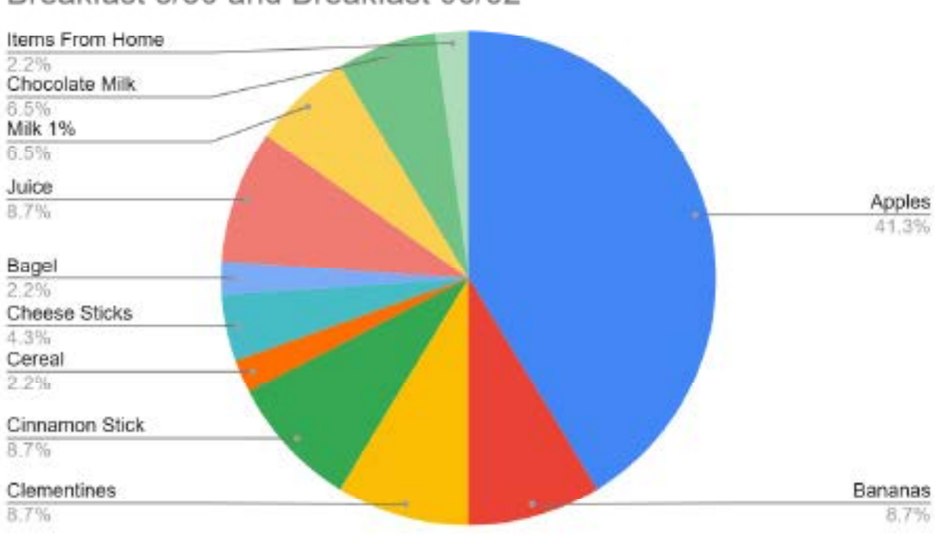
On June 2, it is estimated that 50% of the garbage produced at lunch was sorted, although 5th graders were not in attendance due to a field trip. On May 30th, an estimated 20% of total lunch was sorted, and there was full attendance by the school. To account for variation in attendance and amount of sorting, numbers in the report will reflect per day or per year estimates extrapolated from the collected data, with high estimates reflecting the May 30 day, low estimates reflecting June 2, and medium scenario projections reflecting the average between the two days of audits. Breakfast results reflected 100% collection from classrooms.

## Results:

### Breakfast:

Two days of Breakfast inspection yielded 19.6 and 25.4 lbs of food waste on the Friday and Monday respectively. Notably, unopened food consisted of the largest portion of food waste, considerably more than the portion of unopened Items at lunch. The most notable portion of the unopened items came from apple slices, accounting for over 40% of the reclaimable food items. Using the two collection statistics as high and low indicators of estimated food waste, between 1247 and 2502 lbs of waste per year could be diverted from landfills, either via composting, meal donation, or implementation of in-classroom sharing.

| Breakfast | Monday, June 2 | Friday, May 30 |
|---|---|---|
| compostable | 6.7 | 7.15 |
| unopened | 13.9 | 5.55 |
| milk | 4.8 | 6.93 |




*Unopened items as a percentage of unopened Item count*

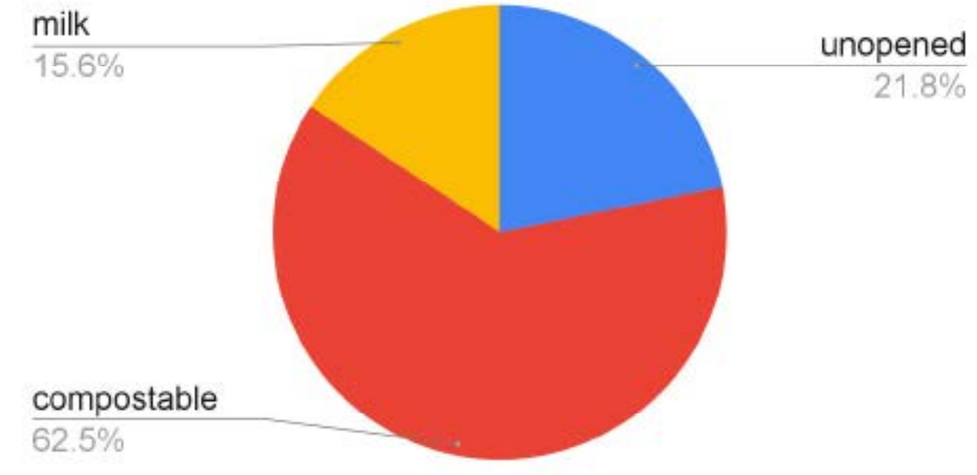
*Unopened Items from Breakfast, Friday March 30*

### Lunch

Two days of audits at lunch captured an estimated 27 and 30 lbs of food waste, representing 25% and 50% of the estimated waste stream. In total, 386 meals were served, with 13 meals going unserved, accounting for 10.4 lbs of either donateable or compostable food. When accounting for differences in attendees and total waste produced, it is estimated that 109 lbs of food waste was produced on the Friday, and 70 lbs of food waste was produced on the Monday.

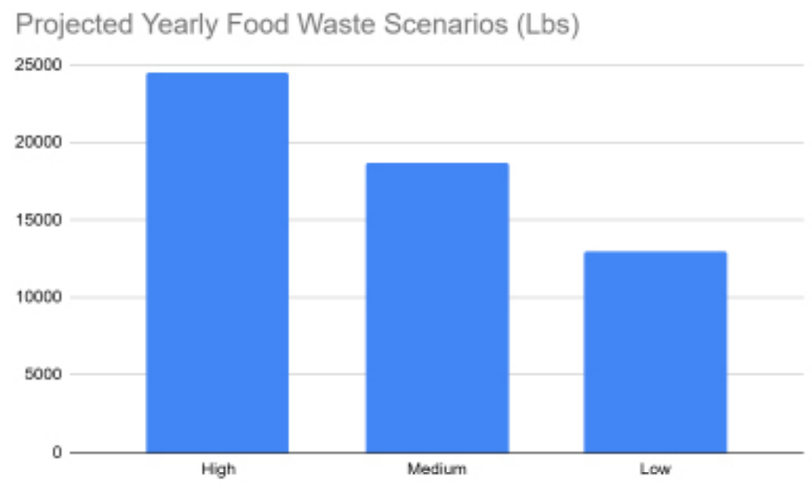
| | Monday, June 2 | Friday, May 30 | Total |
|---|---|---|---|
| unopened | 8.45 | 4.95 | 13.4 |
| compostable | 16.85 | 21.5 | 38.35 |
| milk | 4.65 | 4.95 | 9.6 |


Of this waste, over 60% of the organic waste received fell within the compostable category, with 21.8% of the weight making up unopened food items.

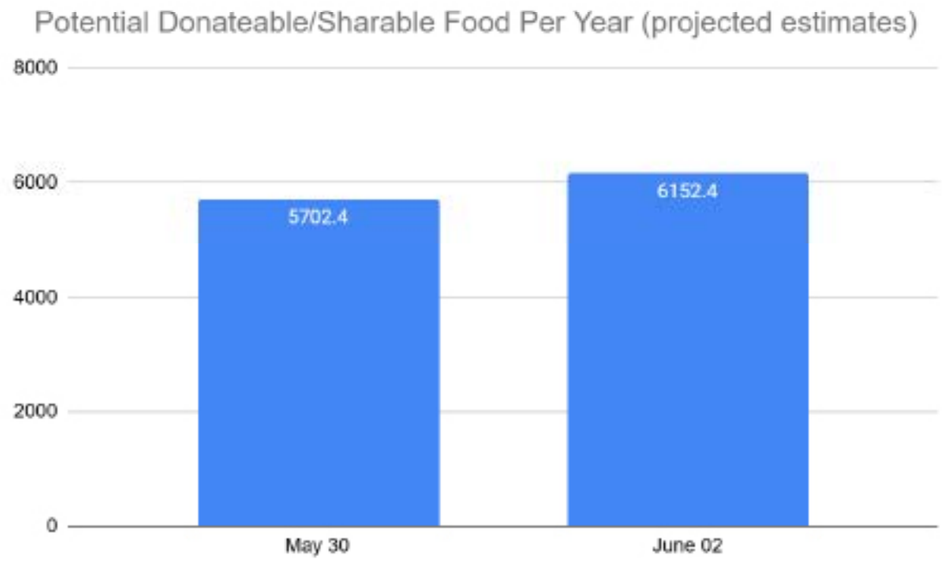



*Composition of lunch food waste*

Assuming Friday to be a high estimate, and Monday to be a low estimate, between **6 and 12 tons** of food waste could be diverted from landfills every school year by both reducing food waste and adoption of composting. Additionally, simply providing alternative pathways for repurposing of

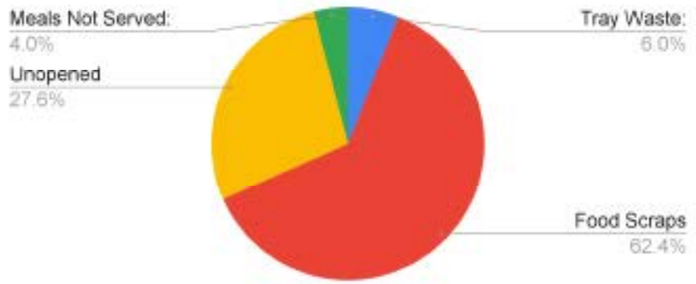


unopened food Items could save the district from procuring between 5700 and 6200 lbs of food just for Bentley alone.



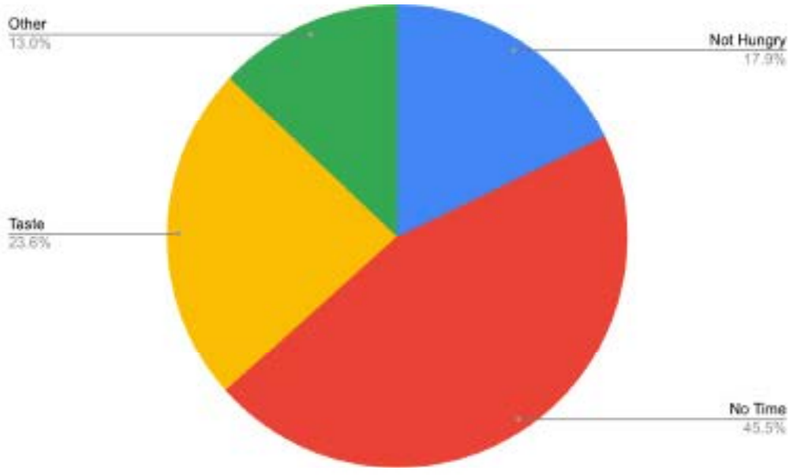

## Tray Waste

The district has already made an effort to reduce plastic waste and adopt a compostable material for their lunch trays. These trays account for 6% of the total weight of waste produced. Trays also provide an opportunity to introduce some sort of student-led waste sorting as it is easier to separate trays before other forms of waste like packaging. In total, the diversion of trays could keep 1393 lbs of waste out of landfills per school year.




## Qualitative Assessment

A qualitative assessment on food waste trends was also conducted on Monday, June 02 in order to gain insights on student attitudes towards the lunch process. 123 students were polled on their way out of the lunchroom via an anonymous sticker process. Elementary schoolers were asked to place a sticker on the board for why they threw away their food that day including “No Time” “Not Hungry”, “Taste”, and “Other”.




No time emerged as a clear leader with 56 of the 123 votes cast. Taste emerged as the second most prominent answer, with just under ¼ of the total votes. This may be influenced by the menu that day, as 8 prepared yet unserved meals were disposed of on June 2 in comparison to 5 on May 30.

*Responses from Bentley Students on the posterboard*

## Mass Flow Diagram

## Recommendations/Topics for Discussion

### Existing Wins

While there is room for improvement, there are already a variety of sustainable practices implemented at Bentley Elementary School. Kitchen waste is remarkably low given the nearly 400 meals served every day. Many meals are available to be reserved, and meals which were prepared and thrown away represented less than 4% of the total meals prepared. Bentley also already implements an Offer Vs. Serve policy, ensuring that they both comply with federal meal requirements, while allowing students to generally take only what they want rather than a set meal portion. Many of the food items which are currently wasted are required. Additionally, students are already dismissed by table, allowing for a much easier implementation of post-lunch waste sorting should that strategy be pursued by the district and administration.

### Breakfast Recommendations

Given transportation logistics and the need for instruction time, breakfast is currently served within each individual classroom. This makes food waste collection difficult. The amount of food waste which could actually be composted is relatively small when compared to the totals for the lunch period. However, the amount of unopened food should be addressed. One potential solution would be training faculty on the operation of an in-classroom share table for items which students do not eat during breakfast. At the end of the day, these items could be moved to the trash or taken home by students should there be items left.

### Lunch Recommendations

The lunch block produced the vast majority of waste food material, and thus a variety of changes are recommended. One priority for waste reduction is the extension of lunch periods. Currently, students are given 25 minutes during the lunch period, including the time to go to and from the cafeteria, as well as wait in a line of up to 50 students at a time. While the logistics may be difficult to navigate, both student attitudes and academic literature reflect the potential effectiveness of an elongated lunch block. In addition to the lunch period extension, a long term plan is recommended to implement the diversion of organic waste from other cafeteria waste streams for alternative use such as composting. Decisions should be investigated as to whether on-site composting, district- backed composting, or a private entity is optimal for the school given existing faculty capacity. Once this is decided, a multi-year timeline is recommended to ensure proper education for both students and faculty. Lasty, a share table system is also recommended. It is advised to elect a staff member or a group to head this initiative, as well as provide instruction during a PD day.

# PCCS Food Waste Reduction Interest Survey

We're seeking staff feedback and interest regarding future food waste reduction initiatives within Plymouth-Canton Community Schools. This survey will help us understand current practices, shared values, and opportunities for collaboration. Your input is valued and appreciated!

---

## Interest in Involvement

**1. Are you interested in supporting food waste reduction efforts in your school or across the district?**

- Yes
- Maybe, I'd like more information
- Not at this time

---

## What's Already Happening?

**2. Are there any current food waste reduction efforts happening at your school? (Select all that apply)**

- Food waste sorting in the cafeteria
- Donation of unopened food items
- Use of share tables
- Composting (in cafeteria, classrooms, or gardens)
- Student clubs or green teams focused on sustainability
- Staff-led efforts or lessons on food waste
- I'm not sure
- Other (please describe):

**3. Please describe any food waste reduction or sustainability practices you've seen or participated in at your school.**
*(Open-ended)*

**4. Who is involved in leading or supporting these efforts at your school?**
*(Open-ended)*

**5. Have you or your students ever participated in lessons or activities about food waste?**

- Yes, regularly
- Occasionally
- Not yet, but I'm interested
- No

---

## Opportunities for Involvement

**6. Which of the following initiatives interest you? (Select all that apply)**

- Coordinating alternative waste haulers to divert food scraps from landfills
- Partnering with student leaders to improve food waste education and sorting
- Helping to develop a K-12 compost education strategy
- Creating or participating in professional development around food waste strategies
- Adapting food waste strategies to fit my school's unique needs
- Helping gather or facilitate input from community members
- I have another idea (please describe):

**7. [Optional] Please describe any other ideas or efforts you'd like to see related to food waste reduction.**
*(Open-ended)*

---

## Vision & Values

**8. What do you envision for the future of sustainability and food waste reduction in PCCS? What would you love to see in your school or districtwide?**
*(Open-ended)*

**9. What personal or professional values guide your interest in food waste reduction or sustainability?**
*(Open-ended)*

**10. Which of the following areas do you believe PCCS should prioritize first when it comes to sustainability? (Please rank in order, 1 = highest priority)**

- Reducing cafeteria food waste
- Integrating sustainability into classroom learning
- Expanding composting programs
- Creating green teams or student leadership opportunities
- Engaging families and the community
- Improving recycling and waste sorting infrastructure
- Other (please specify):

**11. Do you know of any individuals, organizations, or community partners we should connect with to support this work?**
*(Open-ended)*

---

## Support and Next Steps

**12. How would you describe your current level of involvement with sustainability or food waste topics?**

- I'm already involved in related initiatives
- I'm interested but haven't gotten involved yet
- I'm new to this topic
- Not applicable

**13. What support or resources would help you feel more prepared to engage in this work?**
*(Open-ended)*

**14. What is your general availability to engage in this work? (Select all that apply)**

- Summer 2025
- Fall 2025
- Winter 2026
- During the school day
- After school hours
- Weekends
- Unsure, but I'd like to be kept in the loop

**15. Please share your name and school/building (optional but helpful if you'd like to be contacted).**
*(Open-ended)*