Reducing Food Waste in K-12 Schools

Midwest Food Recovery Summit
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Seven Generations Ahead
Seven Generations Ahead

- Nonprofit serving Chicago metro area and Midwest since 2001
- Mission: Promote ecologically sustainable and healthy communities
- Programs include:

- greentown
- Fox Valley Sustainability Network
- Zero Waste Schools
- Community Works
- PlanItGreen
- Harvest of the Month
- Oak Park-River Forest Community Foundation
- Illinois Farm to School Network
SGA’s Zero Waste Program

We work with school staff and students to shift operations and minds towards generating zero waste through **source reduction, recycling, composting, and food recovery.**

Seven Generations Ahead:

- Helps schools plan effective waste reduction strategies
- Provides on-the-ground support for operational changes
- Educates students and staff about the How and Why of going zero waste
- Connects schools with local partners and opportunities
- Drives policy changes and infrastructure development that promote zero waste.
We help lunchrooms that look like this...
... become zero waste lunchrooms that look like this:
USDA & EPA
U.S. Food Waste Challenge:
Reduce food waste by 50% by 2030

Food Recovery Hierarchy

- **Source Reduction**: Reduce the volume of surplus food generated
- **Feed Hungry People**: Donate extra food to food banks, soup kitchens and shelters
- **Feed Animals**: Divert food scraps to animal feed
- **Industrial Uses**: Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy
- **Composting**: Create a nutrient-rich soil amendment
- **Landfill/Incineration**: Last resort to disposal

Feed people, not landfills
Feed soils, not landfills

Seven Generations Ahead
EPA Waste Management Hierarchy

1. Source Reduction & Reuse
2. Recycling / Composting
3. Energy Recovery
4. Treatment & Disposal

Most Preferred

Least Preferred
Lunch at a middle school with 983 students:

52% of served food went uneaten

- Completely uneaten food & milk (24.99%)
- Food scraps (18.16%)
- Leftover liquids (9.19%)
- Consumed food & milk (47.66%)
Lunch at a middle school with 983 students:

Food waste comprised 75% of cafeteria waste in one day.

Total: 449 lbs
(0.5 lb per student)
Completely uneaten food items from lunch for 983 students

How many of each item went uneaten?

- 82 Diced Fruit Cups
- 30 Bagged Veggies
- 120 Milks
- 71 Bananas
- 19 Oranges

3 OUT OF EVERY 7 SERVINGS OF APPLESAUCE WENT COMPLETELY UNEATEN

47% OF FRUIT CUPS (INCLUDING APPLESAUCE) WENT COMPLETELY UNEATEN

2 OUT OF EVERY 11 SERVINGS OF MILK WERE UNOPENED
Some factors that may contribute to food waste

- Not enough time for students to eat (getting to the lunchroom, waiting in line for lunch, time to be dismissed)

- Students required to take a certain number and type of food items to meet the requirements of a reimbursable meal

- Food items are often packaged, and the packaging may be a barrier to picking it up and eating it (especially when time is short)

- Whole fruits can be more challenging or time-consuming for some students to eat

- Lack of understanding about Offer versus Serve option and milk

- And more...
School waste reduction strategies

- Source reduction strategies-- preventing waste before it happens
- Share tables & recovering food for donation
- Food scrap composting (onsite composting & commercial composting)
- Recycling
- Diverting food scraps for animal feed or fuel
Source reduction strategies:

Food presentation and service
- Cut up fruit and veggies to encourage eating
- Use “Offer versus serve” for USDA reimbursable school meals; and educate students/staff about required components

Meal scheduling
- Lengthen the meal periods to give students more time to eat
- Schedule recess before lunch

Sourcing food
- On-site gardens for students to grow produce for school meals (ex: Chicago Public Schools’ Eat What You Grow)
- Farm to School programs

Procurement choices
- Food packaging and service ware options
Offer versus Serve (OVS)

- National School Lunch Program meals consist of five components: fruit, vegetable, whole grain, meat/alternative, and milk.

- The OVS policy allows students to decline up to two items, as long as they take a fruit or a vegetable. Students in schools without an OVS policy receive a tray full of each food component offered that day.

- OVS is optional in elementary and middle schools. The USDA requires high schools to use OVS.

- Schools can reduce plate waste by establishing OVS as their lunch service method for all grade-levels.

Source: Keeping Food Out Landfills: Policy Ideas for States and Localities
Educating Students / Staff about OVS & Milk

“For all grade groups, one cup of fluid milk must be offered daily as a beverage. Students may decline milk under OVS.”

Best practices:

Sample signage message to post in school cafeteria:

Milk is a healthy option, not a requirement.

Offer cups for water

Source: OFFER VERSUS SERVE: GUIDANCE FOR THE NATIONAL SCHOOL LUNCH PROGRAM AND THE SCHOOL BREAKFAST PROGRAM
Farm to School

Strengthen the connections that communities have with fresh, healthy food and local producers

**Procurement**
Local food in taste tests, snacks, and school meals

**Education**
Learning about agriculture, food, health, and nutrition

**School Gardens**
Hands-on engagement
Farm to School & Food Waste

- Farm to School (F2S) - A comprehensive approach to changing students’ attitudes and behaviors around healthy food on their tray

- Research suggests F2S programs reduce cafeteria plate waste (Bontrager et al, 2015; Kropp et al, 2017)

- USDA: 17% of schools with F2S programs reported a reduction in waste

- 2018 Hawaii study: 9-21% less waste generated from F2S meals vs conventional
Key IL Farm to School Programs

**Illinois Great Apple Crunch**
- Part of Great Lakes Great Apple Crunch
- Annual event every 2nd Thursday of October
- Over 1,000,000 participants crunch across the region

**Illinois Harvest of the Month**
- Connects producers with schools and teaches staff how to buy & celebrate local food
- Highlights one local fruit or vegetable every month
- Schools receive classroom activities, cafeteria recipes, and promotional materials
- Brings food education into the cafeteria, garden, and classroom
Procurement choices impact waste levels

BAD
Polystyrene trays & spork packets

BETTER
Compostable trays & recyclable food containers

BEST
Reusable trays & silverware
Best practice: Plate-stacking to reduce volume

A good practice for polystyrene trays, too!
Share Tables & Food Donation

Share tables
● Designated stations where children may return whole and/or unopened (factory-sealed) food or beverage items they choose not to eat
● These items are then made available to other children who may want another serving during or after the meal service.
● Leftover food from a share table can also be used in future reimbursable meals.
● Leftover food is from a share table can also donated to a local food pantry or homeless shelter.

Share tables teach students the value of food rather than teaching them trash it.
K-12 policies that support share tables & food recovery

USDA 2016 memo: The Use of Share Tables in Child Nutrition Programs

“Using ‘share tables’ is an innovative strategy to encourage the consumption of nutritious foods and reduce food waste”

“local and State health and food safety codes may be more restrictive than the FNS requirements”

“CNP operators should discuss plans for a share table with their local health department and State agency prior to implementation.”

The memo also outlines recommended steps for setting up share tables, including a list of food items the USDA recommends and does not recommend allowing in share tables.
K-12 policies that support share tables & food recovery

Illinois State Board of Education’s School Nutrition Programs Administrative Handbook School Year 2018-2019

“...All alternatives permitted by program regulations and State and local health and sanitation codes should be exhausted before discarding food.”

“Options may include using leftovers in subsequent meal services and offering ‘sharing tables.’”

“CNP operators are able to claim the reimbursable meal at the point of service even if a child then puts one or more of the meal components on the share table. When food items are left on the share table at the end of the meal service, that food can be used in later meals that are claimed for reimbursement.”

“...excess food may be donated to a nonprofit organization, such as a community food bank or homeless shelter”
9,000+ pounds of produce were donated to food pantries from all program schools in 2014-15

At one school, 5,827 food items were donated to a local pantry in one year.

**Challenge:** Many local food pantries have very limited hours.

**Potential solution:** A growing number of CPS schools have weekly markets on-site; could coordinate Food Share items to these in-school markets instead.

**Challenge:** FoodShare is currently limited to only whole fruit and shelf-stable factory-sealed foods.

**Potential solution:** CPS planning to pilot the recovery of sealed perishables like milk and cheese sticks.
The Surplus Project:

A partnership of Oak Park River Forest Food Pantry & Oak Park River Forest High School

Created to simultaneously address problems of food waste and food insecurity

- Each day, cafeteria staff repackage back-of-the-house surplus prepared foods into individual meals in recyclable microwavable containers.
- Once packaged, they are refrigerated while awaiting transport by volunteers to recipient sites.

Other food donors for the Surplus Project include hospitals, a university, a senior center, and a restaurant.
Composting in Schools

- Diverts food scraps from landfills
- Can include food scraps generated during food prep in the kitchen and food scraps from student plate waste
Composting is a way of recycling food scraps and yard trimmings.
Three Ways to Compost in Schools

On-site Composting
Fruit and vegetable scraps collected and mixed with yard trimmings in an outdoor compost bin.

Vermicomposting (Worm Bins)
Fruit and vegetable scraps and newspaper are fed to worms in an indoor bin. (not suitable for large amounts of food scraps)

Commercial Composting
All food scraps and food-soiled paper are collected and hauled to a commercial compost facility.
On-site Composting

Collect fruit and vegetable scraps in lunchroom sorting station

Students record the weight of food scraps and the temperature of the compost pile (great science/math skills and teamwork).
Gardening with on-site compost

Students sift the finished compost for spreading on the school flower beds.
Commercial Composting

1. Sort lunchroom food scraps
2. Hauled to a compost facility
3. Food scraps decompose
4. Finished compost sold
Composting options compared

**On-site composting:**
- Can be done at most schools with outdoor space
- Requires daily time commitment of staff and student leaders to take out food scraps and turn pile
- Limited to fruit/veg scraps
- Can be challenging to collect and store enough dry leaves in the fall to last the year
- Great hands-on learning experience

**Commercial composting:**
- Not available in many areas
- Compost hauling requires a separate truck and route - not yet cost-effective in many areas
- Important to keep compost stream free of contamination - this can require students or staff monitoring
- May or may not require use of compostable bags
- No need to collect landscape waste since food scraps are processed off-site
Benefits of composting

Reduces impact of landfills
  • Extends landfill capacity
  • Reduces climate-changing methane emissions from landfills

Builds healthier soils
  • Supports soil food web of microorganisms
  • Improves soil structure and water retention, which reduces erosion and irrigation needs
  • Reduces need for synthetic pesticides and fertilizers
Methane traps 72x more heat than CO₂.  
20% of all U.S. methane emissions come from landfills. 
Keeping food out of landfills can greatly reduce methane emissions.
Compost can be used to rebuild depleted soils

Healthy soils contain a diverse ecosystem of living things.

One teaspoon of healthy soil contains

100 million-1 billion individual bacteria

Source: Soil Biology Primer page 2-1 (Elaine Ingham, Andrew R. Moldenke, Clive Edwards)

Want more soil secrets? Check out www.nrcs.usda.gov

USDA is an equal opportunity provider and employer.
CPS Commercial Composting & Recycling Program

FoodShare - Recycling - Commercial Composting - Plate Stacking
CPS Commercial Composting & Recycling Program

Results at Sandoval Elementary, a school of 1,015 students:

**Check out our impact!**

**In One Day**
- 257 lbs composted
- 99 lbs recycled
- 167 lbs liquid diverted
- **523 lbs diverted from landfill!**

**Potential for One School Year**
- 46,260 lbs composted
- 17,820 lbs recycled
- 30,060 lbs liquid diverted
- **94,140 lbs diverted from landfill!** (about 47 tons!)

**Waste Audits of Cafeteria/Kitchen**

- **Baseline**
  - 38 lbs, 6%
  - **629 lbs, 94%**
  - Total 667 lbs

- **Launch Day**
  - 63 lbs, 11%
  - 167 lbs, 28%
  - **257 lbs, 44%**
  - 99 lbs, 17%
  - Total 586 lbs

Sandoval went from 36 big trash bags per day to less than 7 bags per day (from lunchtime and kitchen).
CPS Commercial Composting & Recycling Program

Results at Solorio High School, a school of 1,100 students:

Waste Assessments - Cafeteria & Kitchen Combined

Baseline 12/10/15
- 83% Compost (436 lbs)
- 9% Recycling (46 lbs)
- 8% Landfill (42 lbs)
Total 524 lbs

Launch Day 1/20/16
- 24% Compost (124 lbs)
- 15% Recycling (78 lbs)
- 15% Liquid (77 lbs)
- 46% FoodShare (236 lbs)
Total 515 lbs

Year End 5/24/16
- 40% Compost (166 lbs)
- 15% Recycling (62 lbs)
- 17% Liquid (69 lbs)
- 14% FoodShare (61 lbs)
- 14% Landfill (60 lbs)
Total 418 lbs

Note: 97 students on field trip on 5/24/16.
Recycling in the Lunchroom & Kitchen

- Recycling, in regions where it’s available, typically costs less to dispose of than trash, resulting in cost savings for schools/districts.

- Need to find out what the hauler accepts and design your recycling system based on that.

- Common items from the lunchroom that are usually recyclable include: milk cartons, cardboard, plastics #1-5, glass, steel cans, and aluminum cans.
Planning & Implementing Waste Reduction Strategies

Basic steps

- Build a Zero Waste Team
- Conduct waste audit (baseline)
- Plan waste reduction strategies using audit results
- Coordinate operational changes
  - Equipment and supplies
  - Hauling service and equipment
- Educate about the How and Why
  - All students and teachers
  - Kitchen staff/ custodians / engineers
- Implement strategies
- Conduct waste audit to measure impact
- Celebrate and communicate impact
Build a Zero Waste Team

- Administration & Staff
- Custodian & Cafeteria Staff
- Student Ambassadors
- SGA
- PTO/ Green Team

Zero Waste Team
Waste audits: Provide valuable data and a great way to engage students
Plan waste reduction strategies

- Include everyone the program will depend on in the planning process
- Use your waste audit results as a guide for what strategies may be most impactful
- Consider costs and ease of various options and decide which ones to start with
  - Okay to implement strategies in stages
  - Go for the lowest hanging fruit
Consider operational changes needed

Best practices for sorting stations:

- Always locate a full set of bins with no single bins off on their own (no loner bins)
- Keep the same sequence so it’s easier to sort and make it a routine.
- Create signs with images of common items to help students learn how to sort.
Educating Students on the How & Why

School assembly to teach the How and Why of going for zero waste

High school students teach students in neighboring elementary school about composting and recycling.

Student Zero Waste Ambassadors guide and monitor sorting
Curriculum Connections & Service Learning
Zero waste program uniquely integrated at each school

Victor, Solorio Zero Waste Ambassador:
At my elementary school, we didn’t do this. The fact that we’re sharing this experience is amazing. We didn’t do anything at home before this either-- no recycling, nothing. You’d be surprised; a lot of kids do care. Some might do it at first as a service learning project, but once they see the impact they want to be on the Zero Waste Team.

NGSS Aligned Chemistry Unit (HS-PS1-7)
Essential Question: Where does the mass from our garbage end up?
• Students apply knowledge of conservation of atoms and stoichiometry to evaluate the human impact of landfills and incinerators
• Service Project: Students apply principles of conservation of mass to design an improved waste management program at Solorio and to advertise the program to students.
Zero waste program uniquely integrated at each school

Southside Occupational High School:
- Onsite and commercial composting are used as job training opportunities in Culinary Arts, Horticulture, and Agriculture programs.
- Winner of 2017 U.S. Green School Ribbon Award (1 of 58 schools!)
Zero waste program uniquely integrated at each school

McAuliffe Elementary: Integrates composting program into school-wide focus on sustainable agriculture practices
Communicate & Celebrate Impact

- Use waste audit results to demonstrate impact
- Take photos of all the steps along the way
- Include benefits
  - Environmental benefits (EPA’s WARM model is good for calculating avoided greenhouse gas emissions)
  - Cost benefits (hauling costs, food costs),
  - Social benefits (amount of food donated; number of students engaged)
- Share your school’s success: newsletters, social media, and announcements
Resources/tools:

Seven Generation Ahead’s Zero Waste Schools website

Seven Generation Ahead’s Zero Waste Schools monthly e-newsletter

Green Lunchroom Challenge (archived, Illinois Sustainable Technology Center)

USDA - U.S. Food Waste Challenge K-12 schools resources
  ● USDA’s K-12 School Reducing, Recovering, and Recycling Food Waste Webinar
  ● USDA’s list of food waste measurement tools
  ● USDA’s Smarter Lunchroom Techniques

Smarter Lunchroom Movement

K-12 School Food Recovery Road Map

Mindful Waste

Washington School Food Share Program Toolkit

Illinois Food Scrap Coalition
Thank You

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