

Most public school districts in Rochester, NY and Albany, NY metro regions not currently composting to manage wasted food

Maddie Tlachac*, Rochester Institute of Technology; Rodhy Vixamar, Rochester Institute of Technology; Kaitlin Stack Whitney, Rochester Institute of Technology

*corresponding author: met7550@g.rit.edu

Cite as: Tlachac, Maddie, Rodhy Vixamar, and Kaitlyn Stack Whitney. **2024**. "Most Public School Districts in Rochester, NY and Albany, NY Metro Regions Not Currently Composting to Manage Wasted Food". *Food-Fueled*, **1**, e00008. doi:10.57912/25642377.

web address: <https://edspace.american.edu/foodfueled/issues/volume-i/most-public-school-districts-in-rochester-ny-and-albany-ny-metro-regions-not-currently-composting-to-manage-wasted-food/>

Keywords: food waste; wasted food; compost; local government; school districts; environmental policy

Abstract:

Students, whether getting cafeteria meals or bringing food from home, generate a lot of potential food waste while at school. Food waste represents a significant portion of solid waste and a major source of greenhouse emissions when it enters landfills. To understand if and how schools are taking steps to reduce and recover wasted food, we examined how Rochester and Albany area public school districts in upstate New York (NY) manage food waste with composting, using publicly available information online. We found evidence that most districts do not currently compost, revealing opportunities for districts to recover and manage food waste. Overall, we found that five districts are composting in all their school cafeterias, and nine districts are partially composting in cafeterias or places within the district, such as school gardens. Although our findings indicate there are few school districts composting in our study area, there are guidance documents and resources for schools and local governments to manage food waste. Understanding school district activities is a critical component of understanding how local governments and municipalities are using policy tools to reduce and recover wasted food.

Introduction

As of 2021, 49.5 million children attended public school in preschool through high school grades in the United States [1]. This number represents more than half of all children living in the U.S. [2]. Each school day, millions of those children are eating at school, including breakfast, lunch, and/or snacks. Those meals and snacks include both food sent in with children from home and food provided by publicly funded programs distributed through schools, such as the National School Lunch Program [3] and the School Breakfast Program [4].

Whether or not food is being made and shared at school or sent in from home, there is a lot of potential food waste at school. Food waste in schools can be generated in a variety of pathways, including meal preparation in cafeterias or post-consumer leftovers. The World Wildlife Fund estimates that over 500 thousand tons of food waste are generated in schools every year in the U.S. [5]. This amounts to 18 thousand pounds of food waste for the average elementary school, or almost 70 pounds per student per year [6]. Wasted food is estimated to account for almost 25% of municipal solid waste landfilled or incinerated [7]. Managing food waste at school through recovery or reduction is not just about diverting organics from the landfill though. The U.S. Environmental Protection Agency (EPA) has reported that food waste is a significant contributor to greenhouse gas emissions, exacerbating climate change [8].

There are steps that schools can take to address food waste. In the EPA's recently redesigned "Wasted Food Scale," *prevention* is the most preferred approach proposed to reduce food waste [9]. Some strategies used to reduce wasted food in schools include changing how food is portioned and served, saving food leftovers, and changing lunch times [10]. Yet not all food waste can be prevented, so management strategies can also be engaged. One practice to recover food waste is *composting*, which the EPA defines as: "a controlled, aerobic (oxygen-required) process that converts organic materials into a nutrient-rich soil amendment or mulch through natural decomposition" [11]. Composting has been documented as a successful approach for schools to divert wasted food from landfills [12]. The NY Department of Environmental Conservation recognizes composting in schools as part of a broader goal of green policies and environmental stewardship in NY schools [13].

Our research objective was thus to examine if and how schools are using composting to recover and manage wasted food. We were interested in this

specific food waste management strategy as "*support food waste reduction and recovery programs in schools*" is one of several evidence-based policy approaches that local governments can implement to reduce wasted food (Table 1) [14]. Understanding how public school districts are approaching food waste is part of a broader examination of how local governments are using available policy tools to reduce and recover wasted food.

Methods

Study regions

We focused our data collection on public school districts in two large metropolitan regions across New York state: the Greater Rochester metropolitan area and the Capitol District, the metropolitan region including and around Albany (Figure 1). The greater Rochester region included six counties: Livingston, Monroe, Ontario, Orleans, Wayne, and Yates. The Capitol

District region included 11 counties: Albany, Columbia, Fulton, Greene, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, Warren and Washington.

We compiled a list of all the public-school districts in both regions [15, 16]. These two regions represent around 20% of the state's public-school districts with 145 public school districts out of the 723 school districts that make up New York State. We also recorded the number of students enrolled [15]. The Greater Rochester region has 53 districts serving a total of almost 140,000 students, and the Capitol District has 92 districts, with just about 153,000 students [17].

Composting data collection

We used publicly available data sources to compile information on each district's composting practices. This was done in several different ways. First, we searched for food waste management information on the school district's website. On those sites, we looked for any information about composting, food waste, or wasted food. The school website also contained the food services tab, and this was a way to see if a school district was considered a partial if there was documentation about garden composting, a schedule for a composting company that comes to the school, or if there was composting in the cafeteria. We also checked school district newsletters and press releases. For example, if a school had a press release about composting, then we would document the press release as well as search the school website to see if there was any further documentation on the details and scope. After searching school district webpages, we also conducted searches using Google search using combinations of the school district name and composting, wasted food, and food waste. This is because

sometimes local news websites had reporting on new initiatives in districts, such as reporting on composting.

We coded the resulting information in a few ways. Composting practices were coded as "yes" (indicating the entire district was composting), "no" (indicating no part of the district was composting), or "partial." The "partial" label included districts with a range of practices that did not encompass the entire district, such as one or several (but not all schools) in the district having a compost initiative. In the event that the school district was composting, we recorded if a given school district currently had composting in cafeterias and whether they had composting in other parts of the school or administrative buildings or lands within the district.

Results

Using our search strategies, we found evidence that 12 public-school districts of the 145 districts in our study region, have composting programs fully or partially implemented in cafeterias across their district (Figure 2). From the six public school districts composting in cafeterias across their district, four are in the Rochester metropolitan area: Dansville CSD, Fairport CSD, Geneva City School District and Webster CSD. We also found two in the Capitol District region: Guilderland CSD and Schuylerville CSD. We also found evidence that six districts in our study region have partial composting practices. Of these, four were in the Rochester metropolitan area and two school districts in the Capital District region area (Table 2). These included districts with some, but not all, schools composting cafeteria food waste and also districts composting waste in school gardens and other locations.

Overall, the data indicates only 4% of the public-school districts in our study region publicly report composting in cafeterias across the district, accounting for just over 22,000 students. If we include partial districts, 10% of the public-school districts in our study region publicly report composting in the cafeteria fully and partially across the district as well as other places, meaning around 52,404 students are in districts with composting practices. While the number of schools composting is small, some patterns emerged from the data collection. School districts that composted in cafeterias tended to be larger school districts with a lot of students. However, the largest school districts (8,000+ students) in our study area were not observed to have composting practices currently.

Discussion

Overall, we found that most public-school districts in our study region are not currently using composting as a food waste recovery strategy in schools. Even though there are few school districts fully composting either in their cafeteria or in other places, the ones who do are larger in size. This could be

making an important contribution to recovering wasted food in the state. According to the NRDC, New York state generates 3.2 million tons of food scraps annually, and almost 20% of the state's municipal solid waste is food waste [18]. By composting within the school district, those districts are helping potentially reduce the amount of organic material that ends up landfilled or incinerated.

One reason that our study districts may not be composting is that it is not required. Currently, recycling is required in schools across the state, but universal composting is not [29]. As of January 1st, 2022, NY has implemented the Food Donation and Food Scraps Recycling Law, which aims to reduce wasted food; however, K-12 schools are excluded from this law [19]. Food donation and recycling is required in NY by law for institutions that generate 2 tons of food scraps or more per week [29]. Any covered business and institution that generates 2 tons or more of wasted food per week, and is within 25 miles of an organic recycler, must recycle all remaining food scraps and donate excess edible food. For example, the list of food scrap generators covered by this law in 2023 includes organizations like colleges, theme parks, and grocery stores [20]. However, K-12 schools are considered exempt facilities [30]. Enormous amounts of wasted food are currently produced and thrown out in schools, and our data indicate that there's a lot more that New York public school districts could be doing to manage organic material away from landfills, even if not currently required by state law.

Even though we found our study region does not seem to have many districts composting, many guidance documents and resources exist to help schools develop and implement composting programs. For example, there is a toolkit for Illinois schools detailing various ways to prevent, recover, redistribute, compost, and educate about wasted food [23]. Another guidance document to help student leaders and teachers was published by the Cornell Waste Management Institute detailing how to start a successful composting program [24]. Not only do these guidance documents already exist, but the Institute for Local Self-Resilience prepared a Guide to Composting Onsite at Schools introducing the basics for onsite composting at K-12 schools [25].

Yet we also found that several districts had partial composting initiatives and that many other school districts had 'one-off' events, such as composting lessons or awareness days or weeks. It is possible that these findings indicate that districts are interested in composting. There may be barriers to districts in our study implementing district-wide composting practices. While this is beyond the scope of our study, this can lead to future research exploration. For example, we are curious if districts with one-time composting events, but not recurring practices, have adopted this due to resource constraints. Further research is needed to understand the factors

and differences between districts may make them more or less likely to adopt composting or other food waste management practices.

Our study may be missing some public-school districts that are taking steps to reduce and recover wasted food. Our search process using publicly available data sources may be undercounting districts that compost. If a school district did not post information on their waste management practices, we concluded that there was no evidence that the district composts. Our data collection is also a snapshot in time; it's possible that some districts have changed their policies since our data collection period. Additionally, our study region may not be representative of the trends for the rest of New York state or the country. We're curious how the statewide results will compare to our preliminary explorations with these two metro regions. For example, New York City has curbside composting for all public schools [28]. Future research is planned to extend data collection to all of the New York school districts. Furthermore, in the future we plan to integrate the findings with those about the local government policies in the municipalities the districts are located in. While current NY state law does not currently apply to local governments themselves, cities and towns can take additional measures to support the larger goal of reducing wasted food across NY. According to research by ReFED and the Harvard Law School Food Law and Policy Clinic, there are nine policy opportunities for local governments to reduce food waste [21, 22]. Outside of the school districts, municipalities can also work on wasted food reduction. The NRDC and Environmental Law Institute (ELI) have developed a Model Executive Order on Municipal Leadership on Food Waste Reduction to provide municipalities the opportunity to lead by example through implementation of policies and programs raising awareness of food waste and loss [26]. Combining data on school districts' practices with local policy can collectively give insights into the broader wasted food policy landscape in the areas that school composting practices take place in.

Ultimately, our study finds that few public-school districts in our study region are taking available steps to recover wasted food through composting. This presents an opportunity for public school districts to act, which collectively has the potential to affect large-scale change. Yet our results also indicate that many districts are teaching about composting and food waste. Our results have raised new questions about this disconnect, potentially indicating that school districts face barriers to implementing practices to recover wasted food. Further research is needed to understand if our results are representative of public schools in New York and the country generally and to understand the reasons why districts may or may not be able to compost.

Acknowledgments

This work was supported by NSF Grant # 2115405 SRS RN: Multiscale RECIPES (Resilient, Equitable, and Circular Innovations with Partnership and Education Synergies) for Sustainable Food Systems. Findings and conclusions reported here are those of the authors and do not necessarily reflect the views of the National Science Foundation. Thank you to Ariella Knight for image creation for Figure 1.

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Tables

Table 1. Policy opportunities for local governments to reduce food waste

Policy opportunities for local governments to reduce food waste
Better Organic Waste Management Disincentivize, Limit, or Ban Food from Landfills
Increase Landfill Tipping Fees
Provide Financial Support and Reduce Permitting Barriers for Food Waste REduction Infrastructure
Incentivize Innovations that Reduce Food Waste
Support Research and Development of Upcycled Foods
Clarify Guidance On Food Safety For Donations
Support Food Waste Reduction and Recovery Programs in Schools
Implement School Lunch Changes
Fund or Implement Consumer Education Campaigns

Table 1. ReFED and the Harvard Law School Food Law and Policy Clinic identified 9 policy opportunities for local governments to reduce food waste [21][22]. Our study focused on the bolded item, food waste reduction and recovery programs in schools.

Table 2. Study region school districts partially composting

School district name	New York study region	County	Number of students enrolled	Composting practices found
Hilton CSD	Greater Rochester metro region	Monroe	4,066	The Zero Waste policy includes composting
Honeoye Falls-Lima CSD	Greater Rochester metro region	Monroe, Ontario, Livingston	2,006	Composting program occurs in one of the schools
Penfield CSD	Greater Rochester metro region	Monroe, Wayne	4,619	Four elementary schools have started a composting program in the cafeteria
Kendall CSD	Greater Rochester metro region	Monroe, Orleans	655	Partnership with a composting organization results in the district receiving rich compost dirt for garden composting in exchange for their food waste.

Averill Park	Capitol District metro region	Rensselaer	2,587	Civic Ecology Club started a composting program in the high school
Bethlehem CSD	Capitol District metro region	Albany	4,070	Composting occurs only in the elementary school

Table 2 caption: *School districts we found with partially composting practices, indicating that some part(s) of the district had implemented composting.*

Figures

Figure 1. Map of Study Regions within New York State

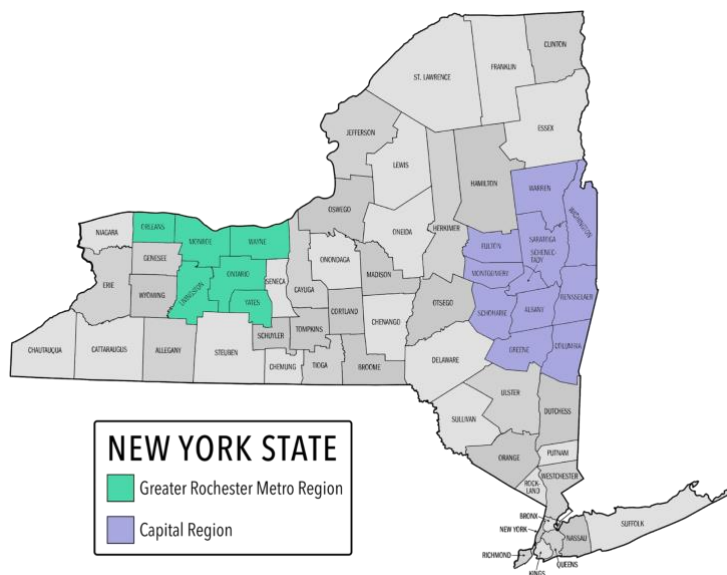


Figure 1: A map of New York State counties, with the study regions, greater Rochester region and greater Albany metro regions, highlighted in green and purple respectively. The greater Rochester region included six

counties: Livingston, Monroe, Ontario, Orleans, Wayne and Yates. The greater Albany region, also known as the Capitol District, included 11 counties: Albany, Columbia, Fulton, Greene, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, Warren and Washington. Image credit: Ariella Knight.

Figure 1 image description: New York State with the Rochester region highlighted in green and the Capital region highlighted in purple. Highlighted areas are the counties included in the study.

Figure 2 School Districts Composting Food Waste in Cafeterias

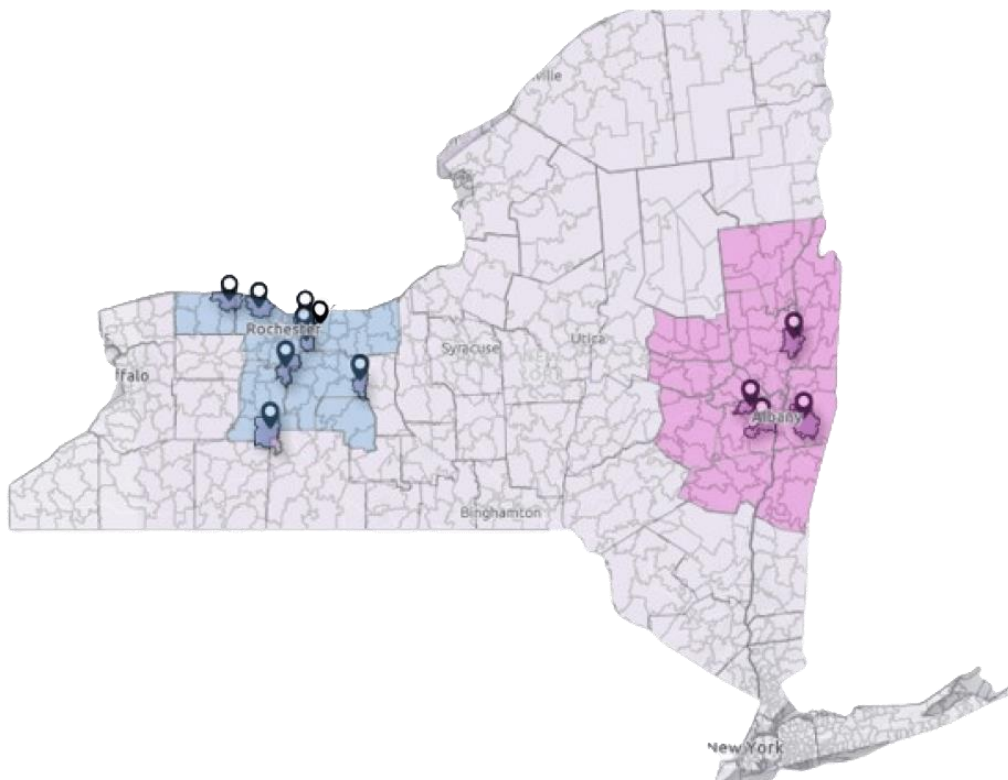


Figure 2 caption: Rochester metro region (in blue) and the Albany metro region (in pink) with the pinpoints representing the districts where all or some of the schools are composting wasted food from cafeterias. Image credit: Maddie Tlachac.

Figure 2 image description: Rochester region highlighted in blue with eight pinpoints and the Albany region highlighted in pink with four pinpoints.

Pinpoints indicate locations of public school districts that were found to have composting practices.