

# Swarthmore College

*Office of Sustainability*



## 2022 Zero Waste Report



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# Overview

In June 2022, Swarthmore College adopted a formal [Zero Waste Plan](#), which outlines new goals that will lead the campus to become zero-waste by 2035. Our zero waste goals are as follows:

- Embed zero waste into **campus culture** through a series of operational changes and increased educational programming
- Reduce our per capita waste **15% by 2030** and **25% by 2035**
- Achieve **80% diversion by 2030** and **90% diversion by 2035**

The Zero Waste Report will allow us to benchmark and track our zero waste efforts. Annual reports will be published each academic year and made available to the entire campus community.

## Key Takeaways

- Our 2022 Waste Characterization Study (WCS) shows an **actual diversion rate** of **43%**, while our **potential diversion rate** is **78%**.
- **Food waste** makes up the biggest category of waste on campus.
- The campus community can contribute to higher waste diversion rates by reviewing educational resources such as the [Office of Sustainability's Waste Disposal Guide](#) and [Green Events Guide](#), placing paper towels in compost bins, and using reusable utensils and food containers as much as possible.
- The next steps will be to increase **operational efficiencies** on campus for waste diversion and collect per capita waste reduction rates in addition to our diversion rates. Additionally, we will continue **educational initiatives** for the community to increase knowledge and engagement in our zero waste goals.



# Waste Characterization Study

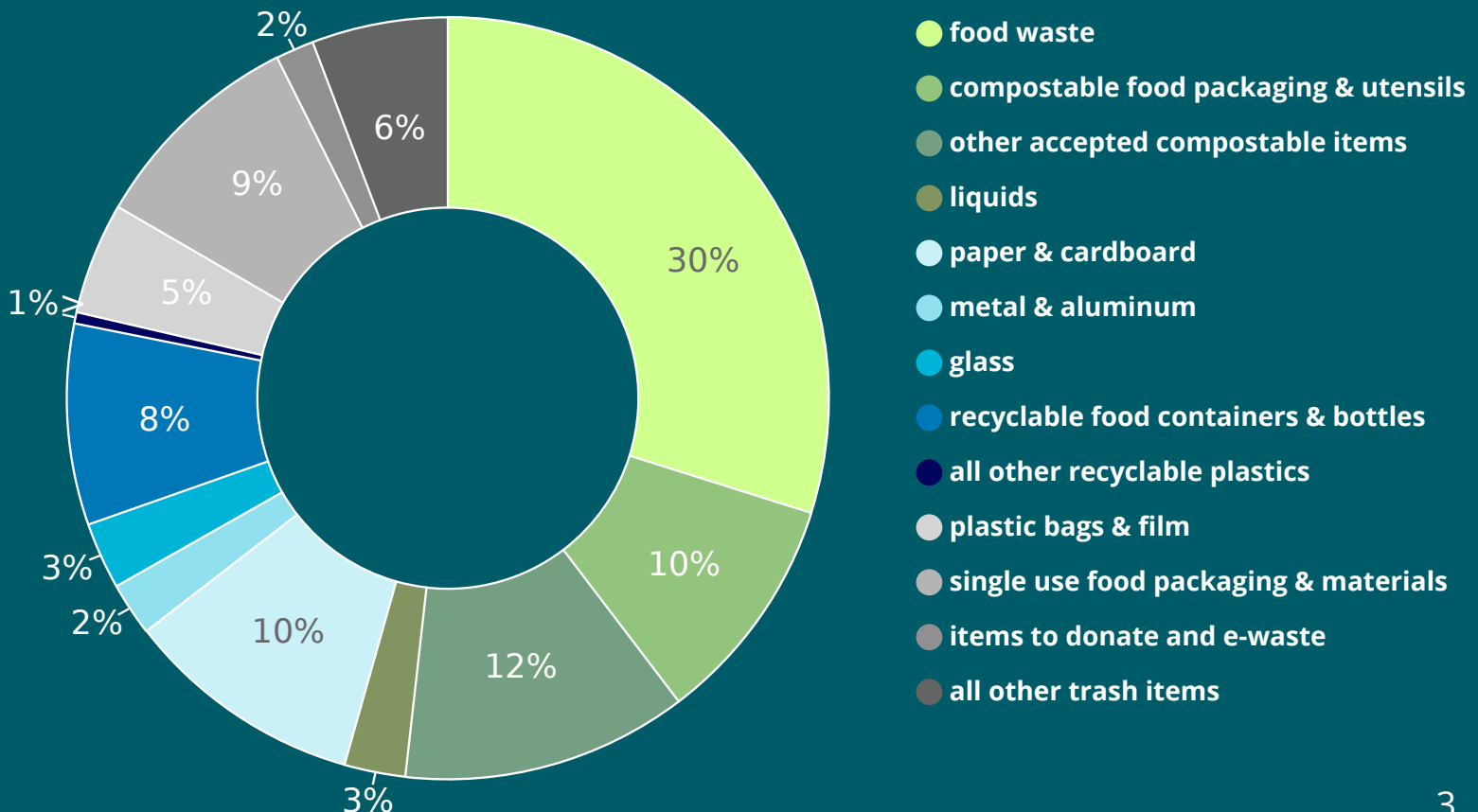
## Background

Since 2016, Swarthmore College has been collecting waste data primarily through the annual Waste Characterization Study (WCS), along with other data sources. Through tracking, analyzing, and benchmarking zero waste data, we are able to see where we stand in achieving our 2035 zero waste goals, and how aggressively we need to progress forward to meet these goals. A report on the Waste Characterization Studies from 2016-2019 can be found on the Office of Sustainability's website. These studies took a pause in the fall of 2020 due to the COVID-19 pandemic but resumed in 2021 with a special report highlighting how the pandemic affected on campus waste streams.

The WCS is completed each year by collecting bags of compost, recycling, and trash waste from different locations across campus, tracking the contents of each waste stream, and then sorting items into correct streams as needed. Waste is categorized by the stream and different types of common categories such as aluminum, paper, or food waste. This information allows us to learn about diversion rate, the capture rate of recyclables and compost, and much more.

***The 2022 WCS had support from over fifty community members made up of students, staff, and faculty, who sorted over 920 lbs of waste over the course of ten hours. This work is not possible without the help of all of the people that assisted with this data collection.***

## 2022 WCS - Waste Breakdown



# Methodology

## Diversion Rate

In this study, **diversion** refers to the amount of waste that was put in a waste stream other than trash, which is sent to the incinerator. The diversion rate is calculated by adding up the weight of compost sorted into the compost stream with the weight of recycling sorted into the recycling stream and dividing by the total weight of all the sorted waste (including trash). We also calculate potential diversion, or the best possible diversion possible if all waste was sorted correctly, by taking the weight of all of the compost and recycling (including those improperly sorted), and dividing by the total weight of the waste collected.

$$\frac{\text{actual diversion:} \\ \text{compost in the} + \text{recycling in the} \\ \text{compost bin} + \text{recycling bin} \\ \text{waste in all bins}}$$

$$\frac{\text{potential diversion:} \\ \text{compost in} + \text{recycling in} \\ \text{all bins} + \text{all bins} \\ \text{waste in all bins}}$$

## Buildings

Since waste looks different in every building, we identified several "building types" that have commonalities in their waste streams, such as residence halls versus administrative buildings. This allows us to see how these categories differ in their diversion rates, and allows us to track this over the span of several years by maintaining consistency in selected buildings. The building types, along with the selected buildings, are as follows:

### Willets Hall

-----  
residence hall, primarily  
1st & 2nd years

### PPR Apartments

-----  
residence hall, primarily  
3rd & 4th years

### Trotter Hall

-----  
academic building

### Eldridge Commons

-----  
campus eatery

### 101 S. Chester

-----  
administrative building

# Methodology

## Categories

Within each of the three waste streams (Compost, Recycling and Trash), there are categories that provide additional insight into where sorting issues exist and where zero waste efforts should be focused. The categories are as follows:



- food waste
- compostable food packaging & utensils
- other accepted compostable items
- liquids



- paper & cardboard
- recyclable food containers
- all other recyclable plastics
- metal & aluminum



- plastic bag & film
- single-use food packaging
- items to donate and e-waste
- all other trash items



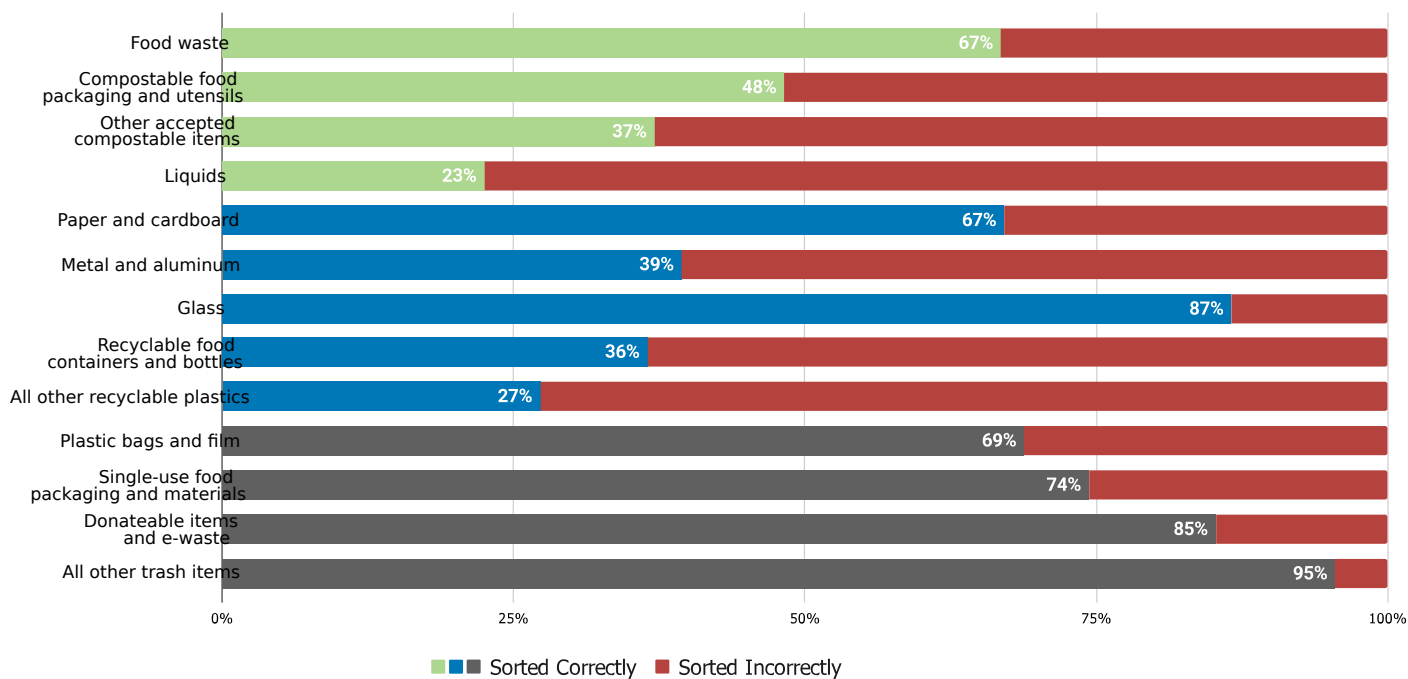
# Results

## Sorting accuracy

Overall, results show that inaccurate sorting on campus is a consistent challenge for campus waste diversion efforts. A large percentage of trash items were placed into the correct bin, although 26% of single use packaging and materials were still disposed of in the wrong bins - compost and recycling.

A few other categories had low accuracy rates for correct disposal. One-third of all food waste was not disposed of into the compost stream, and less than 50% of all other compostables were placed into the compost stream. Similarly, besides glass and paper, other recyclable items often did not make it into the correct stream.

Sorting accuracy across different waste categories



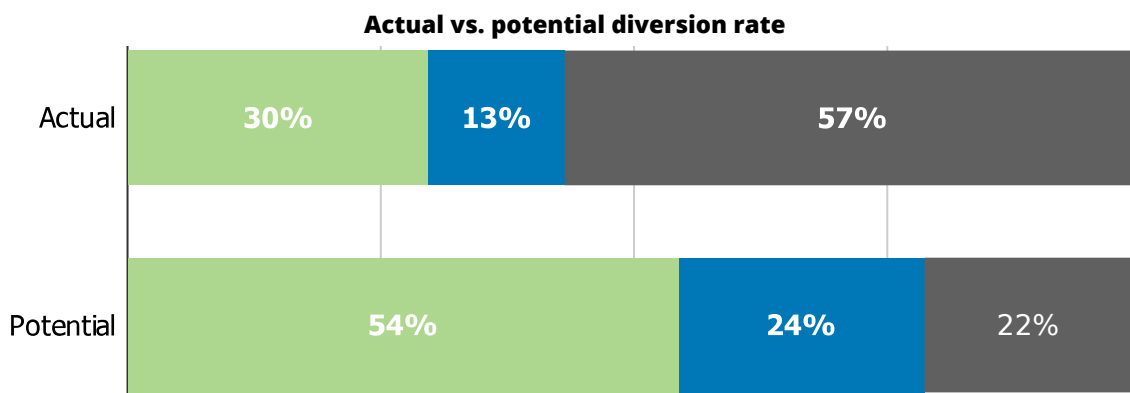
This information demonstrates the need to continue education for the campus community around recyclable or compostable items on campus and encourage the accurate sorting into the correct streams for these items.

Changing of products on campus, as well as the number of items brought on to campus from outside vendors, increases the likelihood of incorrectly sorted items. A focus on building consistency in campus zero waste operations is also essential to ensure appropriate bin placements, waste bin liners, and streamlined waste collection systems.

# Results

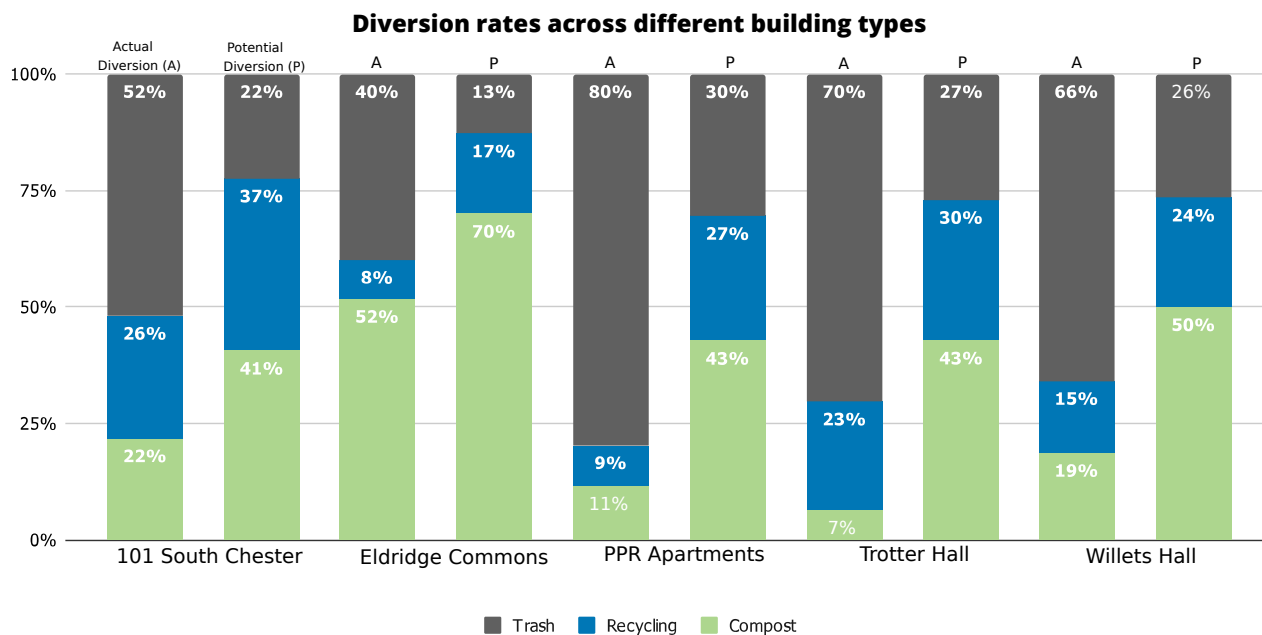
## Diversion Rates

Of the 43% of waste that was diverted, 30% of it was compost and 13% was recycling. When properly sorted, however, 54% of our waste could have been composted, and 24% could have been recycled, leaving us with a potential diversion rate of 78%.



## Buildings

The graph below shows that Eldridge Commons has the highest diversion rate of the sampled buildings, possibly indicating the effectiveness of zero waste education in the campus eatery space. Future efforts in Trotter should focus on education around what is compostable versus trash. In the PPR Apartments, where students do not receive recycling or compost bin liners and are required to take their waste to a waste room, some compost and recycling was incorrectly making its way to the trash stream. This demonstrates the need for continued oversight of PPR Apartments.



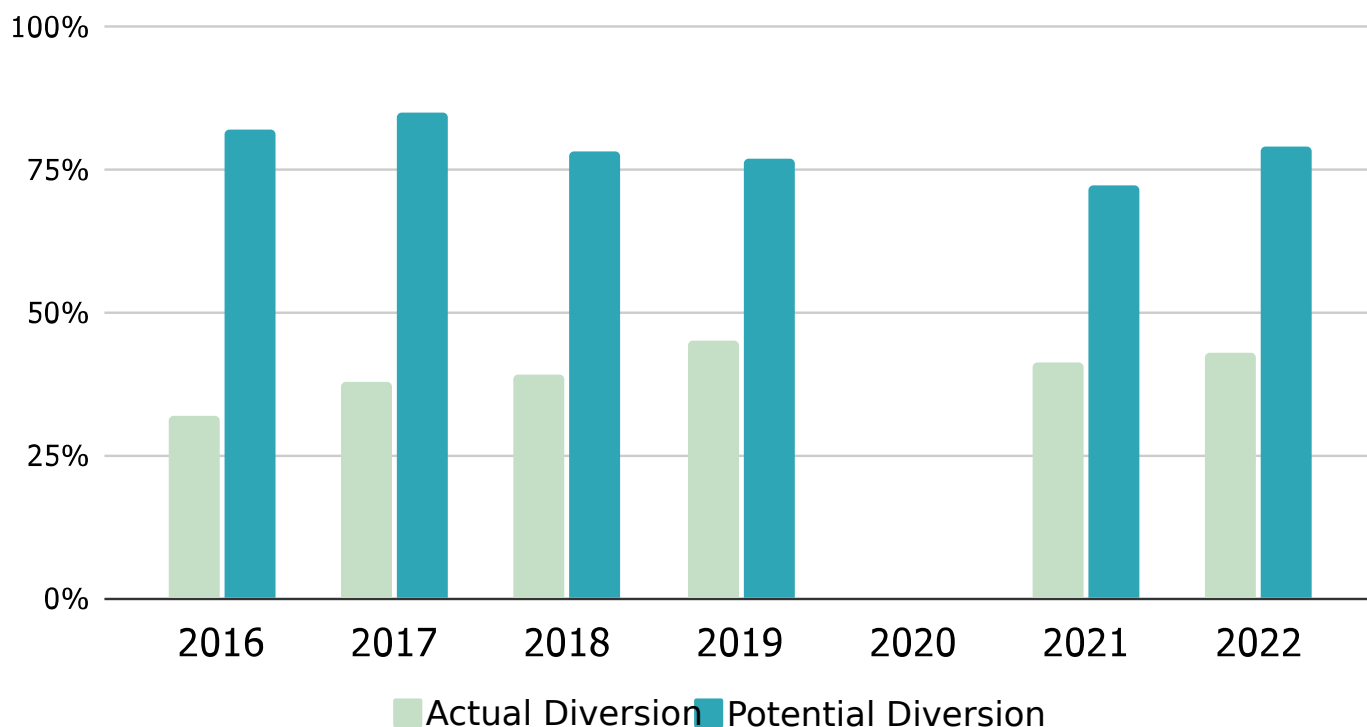


# Results

## Diversion Rates Over Time

We can compare this data to our past waste sorts and see that our diversion rate steadily continues to increase, with a leveling around 2019. After a drop in diversion in 2021 due to COVID-19 challenges (see [2021 Waste Characterization Study Report](#)), our diversion rate and potential diversion rate have both bounced back to similar levels. **With a goal of 80% diversion by 2030**, it is important to note how easily we could achieve 80% diversion simply by sorting all of our waste more accurately.

### Annual Waste Diversion Rates



In order to achieve this goal, we will also need to reduce the number of single-use plastic items on campus, especially food packaging. While increasing diversion is a top priority, it must also coincide with **waste reduction programming**, such as the reusable utensil program or the reusable takeout container program. In addition, the establishment of new programs like these will help decrease overall waste on campus.

# Looking ahead

## Recommendations

In order to ensure that we continue moving toward our zero-waste goals, the Office of Sustainability has the following recommendations for the community:

- Review the Office of Sustainability's [Waste Disposal Guide](#) to review the correct waste streams for different items.
- Place recyclable items (**#1, #2, #5**) in the recycling bin. If the item is black plastic it cannot be recycled, even if it is #5. **Aluminum cans** should be placed in the recycling bin.
- All **takeout cutlery** provided at Dining Services locations and through campus catering are now **compostable**. Please place the wooden utensils in the compost bin.
- All **single-use takeout containers** provided at Dining Services locations are **compostable** and should be placed in indoor compost bins. Please remove sauce packets and other trash.
- If your bathroom does not have a compost bin, please take your **lightly soiled paper towels** to the nearest tri-bin with **compost**. Any paper towels with cleaning spray should be placed in the trash bin.
- **Utilize reusables as much as possible**; students are given reusable utensil sets (and water bottles by request) from the Office of Sustainability, and faculty/staff can purchase these at the Campus Store. Additionally, students can participate in the [Reusable Takeout Container Program](#) at the Dining Center, and the Office of Sustainability is working to offer the program to faculty and staff in the future.



# Achieving Zero Waste by 2035

In efforts to achieve our goals outlined in the Zero Waste Plan, the Office of Sustainability and Zero Waste Working Group will be working over the next several years working to actively reduce the campus's per capita waste amount and increase its diversion rates, while embedding zero waste into the campus culture. There will be **two main pathways** for accomplishing these goals:

## Zero Waste Operations

### Zero Waste Signage

Update signage in buildings across campus to indicate changes in waste disposal and increase signage at campus-wide and athletic events.

### Waste Management

Consolidate recycling and trash collection to Science Center and Dining Center and utilize new pulper in Dining Center for increased compost collection.

### Reusables Programming

Increase access of Reusable Takeout Container Program to all students, create pilot program for staff and faculty. Continue to distribute reusable utensil sets to all incoming first-years. Instate reusable bags at Campus Community Store to replace all single-use plastic bags.

### Data Collection

Transition waste hauling on campus to internal, allowing for weighing and tracking for each waste stream. Benchmark per capita waste generation rate on campus to explore and quantify future reduction impacts.

## Zero Waste Engagement

### Sustainability Guides

Promote the use of green resource guides for faculty, staff, and student events.

### Regional Zero Waste Campus Collaboration

Share knowledge and resources with zero waste managers at institutions in the Delaware County.

### Training and Education

Provide zero waste training for current and new faculty/staff at department meetings. Provide regular engagement sessions for the Zero Waste Plan and Annual Zero Waste Report.

### Student Engagement and Collaboration

Uplift and advertise the Office of Sustainability's jobs and internships, and other ways to get involved. Partner with student organizations to host a student-led waste conference.

**For more information about zero waste, please visit our website or email [zerowaste@swarthmore.edu](mailto:zerowaste@swarthmore.edu).**