

This much trash gets
thrown out on campus
every 6 hours

**SHRINK
MT. TRASHMORE**

Northwestern | sustainNU

Northwestern University

Integrated Solid Waste Management Plan

2018



Contents

2	From our President
3	Executive Summary
4	Introduction
5	Why Focus on Resource Recovery?
6	Resource Recovery and Conservation
12	Stakeholder Engagement
14	Comprehensive Waste Characterization
26	Activity Zone Results and Strategies
48	Strategies to Achieve Diversion Goal
54	Contributors
56	Glossary

From Our President



Northwestern is committed to effective environmental and fiscal stewardship, and the Integrated Solid Waste Management Plan provides the guidance for a thoughtful approach to the use of resources on our campuses. Through sustainNU, we are taking action to create an ecologically sound, socially just and economically dynamic culture that will lead to a greener and healthier future for everyone.

Morton Schapiro
President and Professor

Executive Summary

In the spring of 2017, Northwestern University engaged the Evanston and Chicago campus communities in developing an Integrated Solid Waste Management Plan. This plan is part of the University's overall Strategic Sustainability Plan focused on reducing greenhouse gas emissions and waste. The Integrated Solid Waste Management Plan will build on existing successes, assess the current situation, and engage the Northwestern community in identifying strategies to meet the 50% diversion target by 2020.

Northwestern already has planned and implemented many successful reuse, recycling, and composting programs across campus. The waste diverted from landfills has increased annually reaching a 38% diversion rate in the 2017 academic year.

As part of this process, Northwestern conducted its first campus-wide waste characterization study. The study involved sorting more than 9,000 pounds of waste from 19 buildings across both campuses, as well as sorting waste from recycling and refuse trucks that service the entire Evanston campus. The study identified the makeup of the campus waste stream as well as the framework of unique activity zones within campus such as the unique composition of waste for an academic, residential, or administrative building.

After all of this information and feedback from stakeholders across the Northwestern community were collected, the plan was developed to provide the following overall strategy to achieve the 50% diversion goal by 2020.

- Address operational opportunities to eliminate waste generation at the source through procurement and reuse systems.
- Prioritize increasing the capture rate of currently recyclable materials, maximizing the effectiveness of existing programs.
- Optimize the recycling and food scraps collection infrastructure to make the system convenient for users and address collection gaps across campus.
- Implement consistent cross-campus communications and outreach that focus on high-potential recycling streams, such as paper and cardboard.
- Introduce new recycling programs for special or unique waste streams, such as laboratory plastics and textiles.
- Improve monitoring success by addressing source-separated stream data collection gaps.
- Empower unit-level decision makers and change agents with data and tools to enable them to implement local solutions that meet their specific needs.

Introduction

Northwestern University is committed to fostering environmental and ethical stewardship by providing a living-learning environment that supports student-, faculty-, and staff-led sustainability initiatives and improving our built environment and natural ecology.

As one of the world's leading academic institutions, Northwestern strives to be exemplary in addressing sustainability, climate change, and the opportunities and challenges they pose. The University is dedicated to creating a greener campus by reducing waste, conserving water and energy, and promoting sustainable modes of transportation.

The Northwestern University Strategic Sustainability Plan is the comprehensive planning resource that supports and guides the University's sustainability program, sustainNU. The Strategic Sustainability Plan organizes the University's efforts into five key program areas: built environment; transportation; resource conservation; experiential learning; and communications and engagement. Working groups composed of students, faculty, and staff from across the University's schools and administrative units have been established for each of these program areas. The working groups are responsible for planning and implementing initiatives specific to their program area.

The Resource Conservation Program Working Group serves as the hub for sustainability efforts involving University purchasing and waste management and reduction. Northwestern's vision is to adopt sustainable procurement practices for materials, food, and services and to take a comprehensive approach to conserving resources, as well as reducing and managing waste. The working group has identified the following key focus areas for its efforts:

- Focus on waste reduction and reach a 50% landfill diversion rate.
- Increase rates of reuse, recycling, and composting.
- Promote sustainable procurement practices.

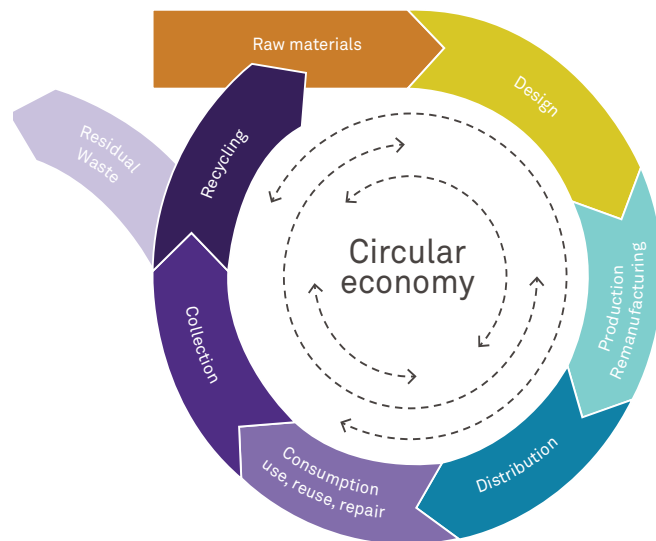
This Integrated Solid Waste Management Plan was developed by a study team led by sustainNU that included members from the Evanston and Chicago campuses as well as several external partners. It is specifically intended to provide operational guidance to the Resource Conservation Program Working Group in its efforts to reduce waste and increase the landfill diversion rate to 50%. The plan will provide an overview of current diversion rates and existing waste-related programs, followed by the results and analysis of a comprehensive waste characterization of both the Evanston and Chicago campuses, performed to create a complete waste generation profile for Northwestern. Based on that profile, opportunities and recommendations for increasing waste reduction and diversion will be described, as well as recommendations for implementation, evaluation, and monitoring.

Why Focus on Resource Recovery?

The increase in the global rate of raw material during the 20th century was about twice the rate of population growth¹. Left unaddressed, this rate of consumption of resources is unsustainable and will disrupt the natural flow of materials within our ecological system. Additionally, according to the World Resource Institute, much of the raw material input in industrial economies is returned to the environment as waste within just one year². By accounting for a product's entire life cycle, i.e., from material extraction to end-of-life management, the resources can be recovered and reentered into the manufacturing stream.

Across Northwestern and the world, teams are working to create materials that are sustainable throughout their life cycle and thus reduce the global raw material needs. By increasing the rate of recycling and composting at Northwestern, we are able to eliminate the need for new raw materials to be extracted and thereby be part of the solution. As more products and processes are designed with the life-cycle principle in mind, Northwestern will be able to reintroduce those materials into the manufacturing sphere through a robust and ever-evolving resource recovery program.

With a focus on improving the diversion rate and decreasing the amount of material sent to the landfill, Northwestern's resource recovery program is creating a campus ready for a future in which all products and systems are designed to be cyclical in that resources used in production are captured and reused fully. This change can be achieved at an individual level as well. The Environmental Protection Agency estimates that in the United States, we each discard 4.4 pounds of material as waste daily. To extend the life of materials, we can repair rather than replace, repurpose rather than purchase, recycle rather than discard, and reduce and refuse when appropriate.



¹ Fridolin, Krausmann, et al. Growth in Global Materials Use, GDP and Population During the 20th Century. Ecological Economics. 2009.

² Matthews, Emily, et al. Weight of Nations: Material Outflows from Industrial Economies. World Resource Institute. Washington, DC, 2000.

Resource Recovery and Conservation

CURRENT PROGRAM

Northwestern endeavors to adopt practices that reflect a comprehensive approach to conserving resources and reducing and managing waste. Waste prevention, reuse, recycling, and composting are prioritized over landfill disposal.

Northwestern's diversion program started as a student-led initiative in 1989 and is now part of daily operations across the Evanston and Chicago campuses.

The current diversion program includes a single-stream recycling collection system, commonly referred to as mixed recycling, as well as other source-separated streams. Mixed recycling includes plastic, glass, metal, paper, and cardboard. Northwestern also collects food scraps from back-of-the-house food service operations for composting. Other streams include secured shredded paper, printer cartridges, computer and electronics recycling, construction and demolition material, and furnishings.

Northwestern's Sustainable Waste Management Policy outlines the guidelines for handling each material stream as well as implementation responsibilities for the campus community.



SOLID WASTE INFRASTRUCTURE

As part of the current diversion program, all buildings on the Evanston and Chicago campuses have access to mixed recycling and refuse bins. The primary bins for recycling and refuse are 5-gallon desk-side bins for personal office and in-room residential, 23-gallon bins for low-density indoor public and office recycling, and custom-made bins for more visible indoor waste collection. Laboratories, event spaces, and other special-use spaces have unique collection arrangements depending on their individual needs. Other combinations, sizes, and shapes of bins exist across campus depending on local need and unit or building preferences. sustainNU is working closely with the custodial service to pair recycling and refuse bins across campus and identify opportunities for standardization. Individuals on campus can request standardized desk-side and central recycling bins with labels directly through the sustainNU website to assist in the process.

The contracted food service provider is responsible for providing a refuse, recycling, and composting infrastructure at all back-of-the-house food service operations. These vary depending on size and type of dining facility.

The external solid waste collection infrastructure at Northwestern is provided and maintained by the contracted hauler. Over time, sustainNU has worked with the hauler to identify the appropriate number of containers and frequency of waste pickup across both campuses. The refuse infrastructure ranges from 20- to 30-cubic-yard compactors to 2-cubic-yard dumpsters, whereas the recycling infrastructure ranges from 8-cubic-yard dumpsters to 96-gallon wheeled carts. External composting infrastructure currently is located only at facilities with food service operations and 62-gallon wheeled carts are used exclusively.



CURRENT DIVERSION

Diversion is the total quantity of material that is diverted from a landfill through source reduction, recycling, and composting. A diversion rate is the quantity of material diverted as a percentage of the total material generated.

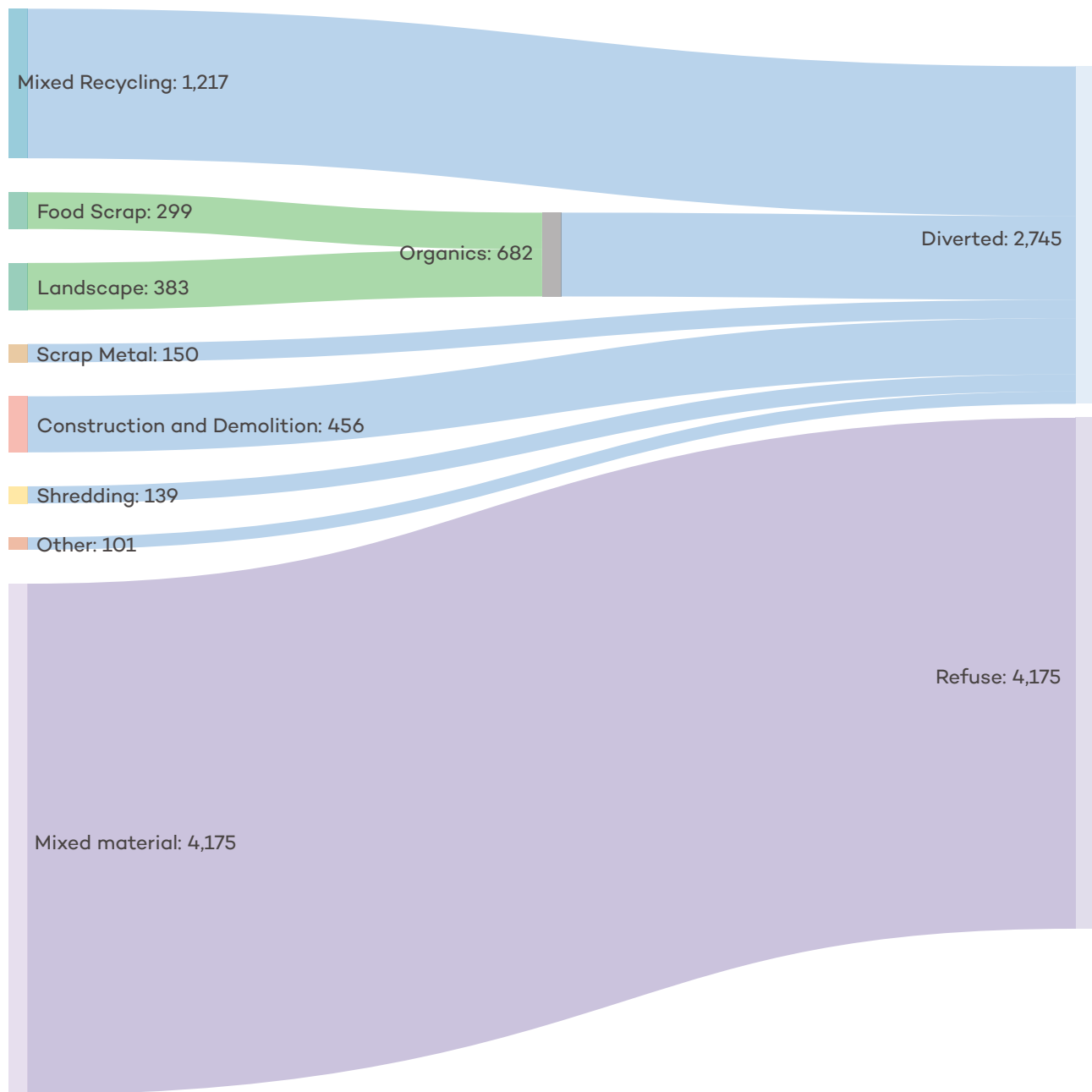
$$\text{Diversion rate} = \frac{\text{material recycled} + \text{material composted}}{\text{total material generated}} \times 100$$

The landfill diversion rate was one of the first sustainability metrics that Northwestern collected, and the University has continued to use it to track the progress of resource conservation practices. Over the past two decades, as the Northwestern sustainability program has matured, growth of the recycling markets in the Chicago area has had a positive effect on the University's diversion rate.

sustainNU serves as the central hub for all material diversion data. sustainNU collects monthly data on each source-separated stream from contractors, vendors, and participating departments to calculate the overall diversion rate for each campus.

In the 2017 calendar year, Northwestern recycled 2,745 tons and sent 4,175 tons of material to the landfill, making the effective diversion rate for that calendar year 40%. Note that Northwestern reports its official annual diversion rate according to its academic calendar. For the 2017 academic year, the University diverted 38% of its waste from landfills. Diversion rates included in subsequent sections of this plan are based on the calendar year.

2017 Material Stream Analysis (in Tons)



In 2017, Northwestern recycled 2,745 tons and sent 4,175 tons of material to the landfill, making the effective diversion rate for that calendar year 40%. As seen in the diagram, recycling diverts material through various streams.

“Other” includes specialized source-separated streams such as lamps, electronics, surplus property, and printer cartridges.

CAMPUS ENGAGEMENT

In addition to providing various waste collection programs that are integrated into daily operations, Northwestern spearheads special engagement initiatives that leverages its unique expertise and variety of impact possibilities throughout its operations. The following engagement initiatives raise awareness of the magnitude of campus waste generation among students, faculty, and staff while highlighting and encouraging participation in waste reduction and diversion opportunities. Some of these initiatives are seasonal (e.g., Earth Day/Month activities), while others are continuous programs.

Preferred Purchasing

With more than 2,800 full-time faculty members, 21,000 graduate and undergraduate students, and 5,700 full and part-time staff, Northwestern has enormous purchasing power. Procurement and Payment Services, along with sustainNU, continues to identify vendors and products that minimize the overall environmental costs.

“Mount Trashmore”

As part of campus Earth Day celebrations, volunteers construct a mountain of trash on the Evanston campus. This waste-art installation has been created annually for over a decade and is meant to help combat apathy that may result from hearing abstract waste generation statistics.

Bring Your Own Mug

The Bring Your Own Mug program (BYOM) is an effort to reduce the number of disposable cups purchased, used, and disposed of within campus dining halls.

Campus Kitchens

As a local chapter of the national Campus Kitchens project, this community service student group collects unused edible food from campus dining halls for repackaging and distribution to low-income Evanston residents at no cost.

Composting

Back-of-the-house food scraps are collected for composting in all six resident dining locations and at Norris University Center.



Biofuel Production

Used cooking oil from Northwestern Dining is collected and filtered by Chicago Biofuels for use as a feedstock in Loyola University's Biodiesel Program.

Move-Out /Take It or Leave It Program

Each spring, as students move out of campus residences, sustainNU collects food, clothing, and other items for donation through the Take It or Leave It program. Boxes are placed in each residential building to collect nonperishable food, clothing, sheets, and small household items.

Zero Waste Community Picnic

Throughout the year sustainNU helps organizations plan and execute many Zero Waste events. One of the highlights is a free annual community picnic, which welcomes Evanston neighbors and guests to enjoy the campus, share a meal, and learn about local businesses and arts programs. Attendees are guided through sorting their waste by sustainNU volunteers to make this a Zero Waste event.

Trash Tacklers

Since 2015, the Trash Tacklers program has been raising awareness of recycling opportunities at home football games. sustainNU, in partnership with Northwestern Athletics, receives sponsorship to promote increased recycling at football games. Student groups adopt a game and serve as Trash

Tacklers, promoting awareness and collecting recyclables from attendees. Fans and volunteers enjoy the interaction, and it provides great visibility for game day recycling throughout the season.

Space Certification Programs

Both the Green Office (existing) and Green Lab (under development) Certification programs incorporate recognition for waste reduction and recycling activities in campus facilities. Certified spaces are recognized on the sustainNU website and receive a certificate for on-site display.

Sustainable Events Guidelines

sustainNU provides a checklist and additional resources for students, faculty, and staff to reduce the environmental impact of the events they organize on campus. The checklist includes waste reduction and recycling considerations.

Northwestern Sustainability Fund

Established in 2013 and sponsored by sustainNU, the Northwestern Sustainability Fund (NSF) is a \$50,000 annual pool available for Northwestern students who are seeking to make an impact in energy and sustainability. Proposed projects must address environmental sustainability on campus, with priority given to projects that contribute to objectives defined in the Strategic Sustainability Plan.



Stakeholder Engagement

An effective solid waste plan hinges on the active participation of the entire Northwestern community. To incorporate a variety of perspectives and avoid unforeseen conflicts or barriers during plan implementation, the study team solicited feedback from representatives of functional groups across campus.

The study team gathered input from over 80 participants through 15 focus groups, three one-on-one interviews, and three workshops. Discussions shed light on the overall campus culture surrounding resource recovery, waste-related priorities, challenges, and concerns for each functional group.

Analysis of stakeholder responses revealed that the viewpoints, issues, concerns, and needs expressed by participants could be grouped into overarching themes. The following is a summary of all feedback, grouped by theme.



The diversion program can benefit from collection infrastructure improvement across campuses.

- Create standard bin options by providing a master list with sets of options to address aesthetic, size, and price concerns for various groups to foster a standardized bin infrastructure while maintaining the individual aesthetics of each building. This suggestion was reiterated by building service contractors, who noted standardization would realize purchasing and handling efficiencies in liners and bin replacements.
- Utilize existing custodians to serve as the eyes in the field for identifying optimum bin locations and grouping mixed recycling collection with refuse.

A sustained waste reduction outreach program would increase diversion literacy and participation in the program.

- Incorporate recycling and reduction education in new staff and student orientations. Periodically updating staff on the most up-to-date practices and providing a refresher on waste reduction and diversion best practices to be added to an existing annual training were suggested.
- Respondents suggested having an avenue for individuals to ask questions or make suggestions.
- For specialized operations such as food service, trade shops, and laboratories, incorporating best practices information in safety trainings or having a stand-alone training was also advocated.

Additional resources and institutional training for green purchasing would increase participation in waste reduction efforts through procurement.

- Offer unit-level training and guides to increase participation in sustainable procurement. Create environmentally preferred product lists for iBuy options.

Reducing paper towel consumption by hand dryer installation should be a phased approach.

- Incorporate hand-dryers-only options into overall building specifications for new constructions and retrofits. Additionally, buildings slated for restroom updates should have hand dryers included and priority should be given to highly trafficked restrooms were also recommended strategies.

Mechanisms to introduce new specialty source-separated programs and track progress should be standardized.

- Create a process for individual departments and functional groups to suggest new viable collection for items that may be unique to their operations that could be diverted. sustainNU must also create a process that tracks these individual efforts to aid in the overall diversion goal.

Interest in food scrap composting is growing and collections could be expanded.

- Create avenues for individual collections at building kitchenettes. Participants suggested rolling this out to buildings that have shown an interest in building-level champions that would take the lead in outreach and contamination control.

Opportunities for surplus infrastructure diversion across campus are limited.

- Create a virtual platform for surplus goods accessible to both internal and external participants as a short-term strategy. Long-term strategies included working with the City of Evanston to identify a location to collocate a regional reuse/surplus space and finding an external contractor to manage and host the surplus operation.

Comprehensive Waste Characterization

In order to explore opportunities to improve the management of waste and recycling materials generated on campus and meet the diversion targets, it is necessary to obtain a thorough understanding of what is presently in the waste and recycling material streams. To that end, the Illinois Sustainable Technology Center Zero Waste Program conducted a waste characterization study for Northwestern's Evanston and Chicago campuses in 2017.

There are three broad approaches to conducting a solid waste characterization study:

- Back-end approach, which assesses the institution as a whole;
- Activities approach, which tracks waste from distinct areas within the institution and characterize each separately; and
- Input/output approach, which tracks materials entering and leaving an institution¹.

Northwestern is home to a dozen colleges across two campuses. Along with these 12 colleges, associated research facilities, and affiliated units, the University also provides residential accommodation, runs food service operations, and offers athletic and special-use venues. Northwestern thus has a complex material flow, with each facility type producing diverse waste streams at varied volumes.

To assess this complex material flow, the study team adopted both a back-end and activities approach. The combination provided for an overall campus-wide sampling as well as actionable data at an individual generation level to guide change.

BACK-END APPROACH EVANSTON CAMPUS SAMPLE

The Evanston campus is serviced by a rear loader truck that hauls refuse daily from campus to a transfer station. This truck collects refuse from individual outdoor containers on a fixed schedule. The study team collected eight samples from material collected by this truck over two seasons (winter and spring 2017) to create a campus-wide waste generation profile. Additionally, the study team collected two samples from material collected by the mixed recycling truck over the spring 2017 season to create a campus-wide recycling generation profile. The study team worked with the hauler to identify the sample day selection, accounting for route variance and daily differences in generation.

Individual sample weights were targeted at 200 pounds for refuse and recycling, which is consistent with the industry standards.

¹ Canadian Council of Ministers of the Environment. Waste audit user manual: a comprehensive guide to the waste audit process. Winnipeg, MB: Manitoba Statutory Publishing; 1996.



ACTIVITY ZONE APPROACH

An activity zone is a classification of a building according to its main function and services, while acknowledging there may be other services housed within buildings that differ from its main function. In grouping buildings by activity zones, the Resource Conservation Working Group will be able to take advantage of unique opportunities presented and apply customized recommendations and solutions to the majority of the building's waste. It also allows an opportunity to address waste generated outside the building's main function.

For the activities approach waste characterization, buildings within both campuses were divided into eight activity zones by function. The eight activity zones have been identified as:

1. Administrative

Buildings that primarily serve administrative functions and/or house office space for staff and faculty on campus. Examples include 2020 Ridge Avenue and Abbott Hall.

2. Student Housing

Buildings that serve as on-campus student housing. These spaces are not co-located with campus food service operations. Examples include Bobb-McCulloch Hall, Chapin Hall, and Shepard Hall.

3. Student Housing + Food Service

Buildings that serve as on-campus student housing and are co-located with campus food service operations. Examples include Willard Hall, Elder Residential Community, and Sargent Hall.

4. Greek Student Housing

Buildings that serve as fraternity and sorority student housing. These units also have food service operations within their space. Examples include Beta Theta Phi, Chi Omega, and Gamma Phi Beta.

5. Academic

Buildings that primarily serve as spaces for student classrooms and instruction. These buildings also may have offices, conference rooms, lounges, and computer labs. Examples include Harris Hall, Crowe Hall, and Kresge Hall.

6. Academic + Lab

Buildings that serve as spaces for student classroom instruction and instructional laboratories. These buildings also have research laboratories, offices, conference rooms, lounges, and computer labs. Examples include the Technological Institute, the Catalysis Center, and the Tarry Research and Education Building.

7. Multi-activity

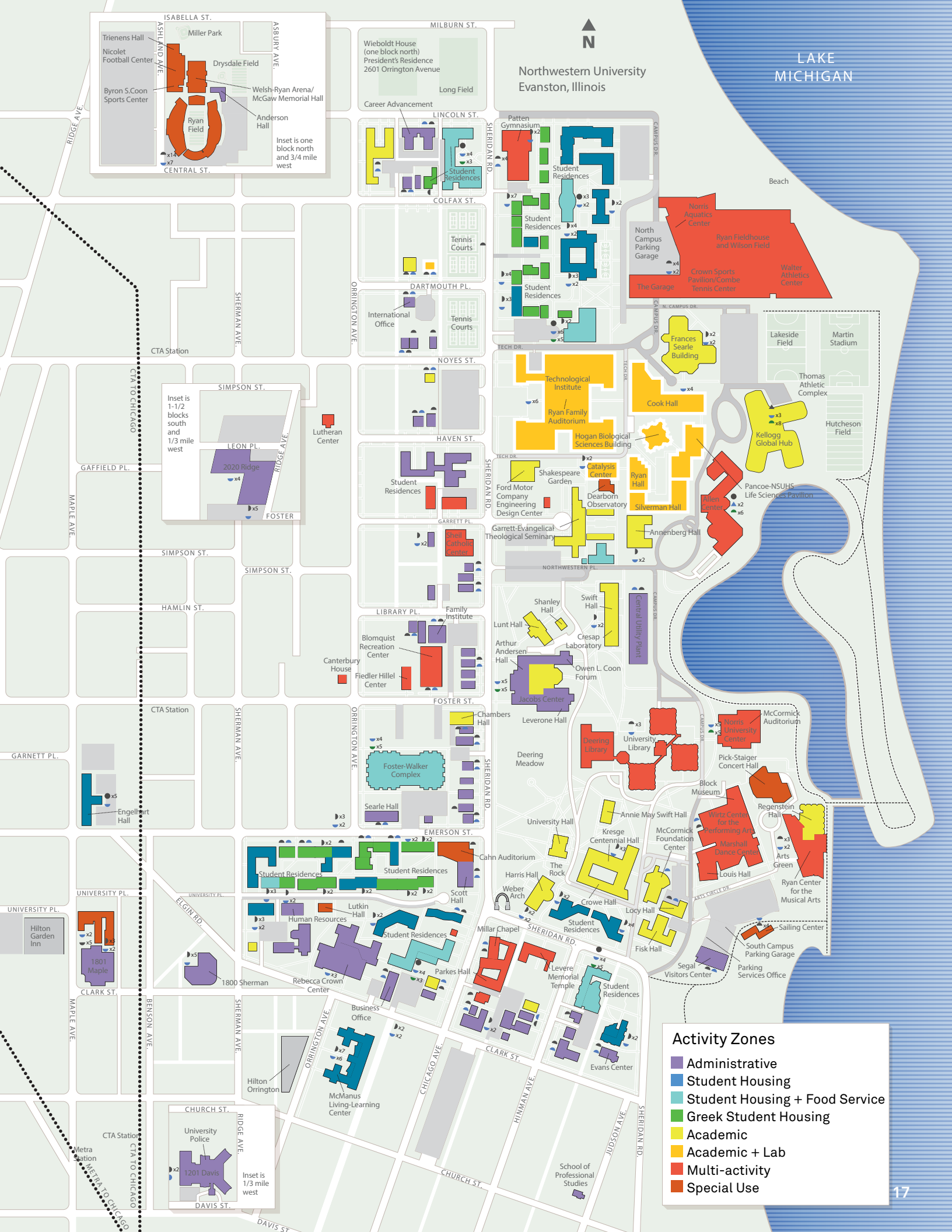
Buildings serving multiple functions. These buildings may have a unique purpose, such as a library or a gym, but may also house food service operations, instructional spaces, and offices. Examples include the Henry Crown Sports Pavilion and University Library.

8. Special Use

Spaces serving unique functions. This activity zone includes Norris University Center and Ryan Field.

Northwestern University Evanston, Illinois

LAKE MICHIGAN



Inset 1
 ISABELLA ST.
 Miller Park
 Drysdale Field
 Welsh-Ryan Arena/McGaw Memorial Hall
 Anderson Hall
 Ryan Field
 Byron S. Coon Sports Center
 Nicolet Football Center
 Triens Hall
 ASHLAND AVE.
 ASBURY AVE.
 CENTRAL ST.
 Inset is one block north and 3/4 mile west

Inset 2
 SIMPSON ST.
 LEON PL.
 2020 Ridge
 RIDGE AVE.
 FOSTER
 Lutheran Center
 Inset is 1-1/2 blocks south and 1/3 mile west

Inset 3
 CHURCH ST.
 University Police
 1201 Davis
 DAVIS ST.
 Inset is 1/3 mile west

Activity Zones

- Administrative
- Student Housing
- Student Housing + Food Service
- Greek Student Housing
- Academic
- Academic + Lab
- Multi-activity
- Special Use

SAMPLE SELECTION

The study team identified representative buildings from both the Evanston and Chicago campuses for each of these activity zones. Twenty buildings across both campuses were identified to represent the zones.

ACTIVITY ZONE	CAMPUS	BUILDING
Administrative	Evanston	555 Clark Street
		720 University Place
		2020 Ridge Avenue
	Chicago	Abbott Hall
Student Housing	Evanston	Shepard Hall
		Bobb-McCulloch Hall
Student Housing + Food Service	Evanston	Sargent Hall
		Allison Residential Community
Greek Student Housing	Evanston	Kappa Alpha Theta Sorority
		Sigma Nu Fraternity
Academic	Evanston	Ryan Center for the Musical Arts
		University Hall
	Chicago	Arthur Rubloff Building
Academic + Lab	Evanston	Technological Institute
		Pancoe-NSUHS Life Sciences Pavilion
	Chicago	Robert H. Lurie Medical Research Center
		Tarry Building/Wieboldt Hall
Multi-Activity	Evanston	Henry Crown Sports Pavilion
Special Use	Evanston	Norris University Center
		Ryan Field

The study sample consisted of waste generated in the eight activity zones over two five-day periods for each campus (Sample 1; Evanston, March 6–10, 2017 and Chicago, March 13–17, 2017, and Sample 2; Evanston and Chicago, May 15–19, 2017). Each period represents a comparable point during the winter and spring quarters, respectively.

Custodial crews collected and aggregated landfill-bound material in bags per their normal routine. The study team placed collection bins next to dumpsters. Depending on the size of the building and staging capacity, the study group asked the custodial crews to place every third or fourth bag into the collection bin each time they went out to the dumpster, which ensured that the study group had a random sample that represented at least a quarter of the daily waste generated. The study team collected bags from each location daily and temporarily stored it at the sorting location.

In addition to these 20 building samples, the study team conducted visual audits during student move-out and move-in to get a more complete profile of student housing activities.

SORTING

All samples were sorted at the Advanced Disposal Transfer Station in Northbrook, Illinois. Samples were hand sorted into 25 categories. All samples were sorted into the same categories. Sorting was conducted primarily by the study team, but participation was open to the larger Northwestern community. More than a dozen staff and students volunteered during the two sample periods. All data was collected and represented by weight. A total of 9,800 pounds of material was sorted during the sample periods.

Sorting Categories

GROUP	FIBER	ORGANIC	METAL	PLASTICS	GLASS	MISCELLANEOUS /UNIVERSAL WASTE
RECOVERABLE Currently Recyclable or Compostable	1. Corrugated Cardboard	5. Food Scraps	9. Aluminum Cans	13. Plastic Beverage Containers	18. Glass Beverage Containers	21. Bulbs/Lamps
	2. Office Paper	6. Food Soiled Paper	10. Tin/Steel Cans	14. Other Plastic Containers	19. Other Glass Containers	22. Regulated Electronic Goods
	3. Miscellaneous Paper	7. Yard Material	11. Other Metal Containers	15. Film Plastic		23. Batteries
NON- RECOVERABLE Currently Landfilled	4. Composite Paper	8. Composite Organics	12. Composite Metal	16. Plastic Food Service ware	20. Composite Glass	24. Textiles
				17. Composite Plastic		

All samples were hand sorted into these 25 categories, which are organized by material type and recoverability.

University-Wide Results and Strategies

The following charts show the campus-wide results of the waste characterizations.

2017 COMPOSITION OF REFUSE MATERIAL

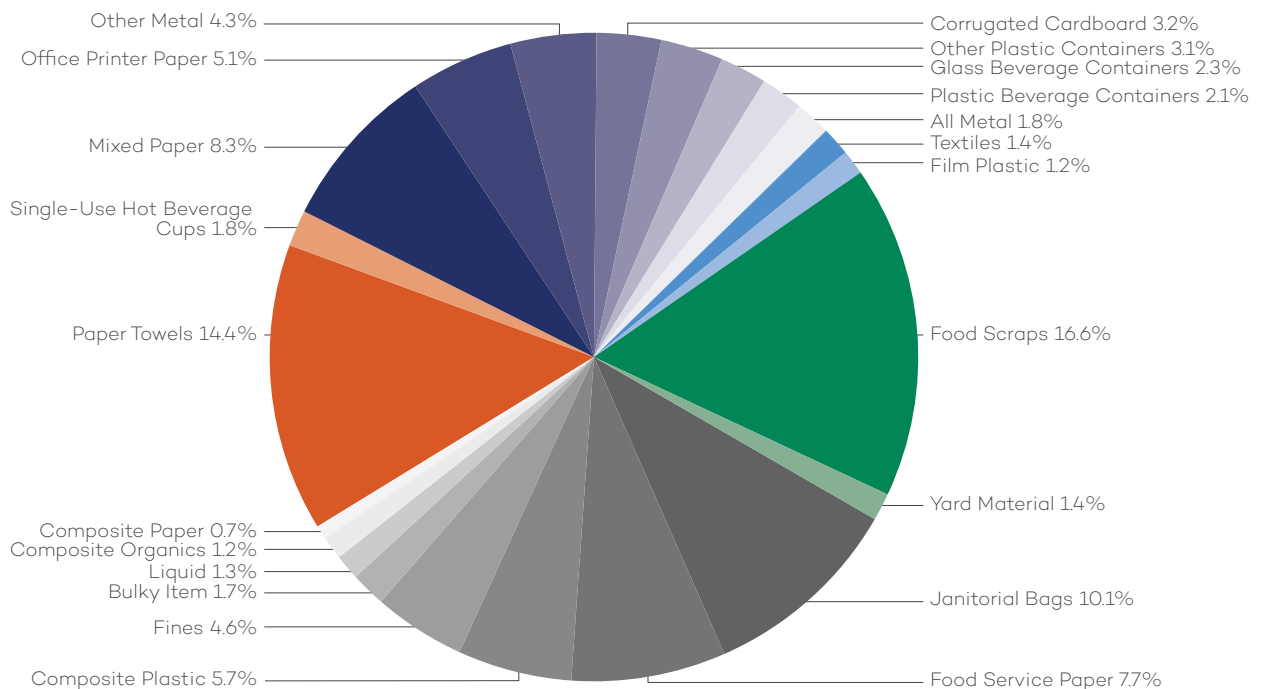
Of all the material that Northwestern discards, about one-half is compostable or recyclable by the current programs; less than one-third is currently nonrecoverable.

What is in the waste?

According to the 2017 study, 30% of the material sent to a landfill consists of recyclables, i.e., material that can be currently recycled through the single-stream collection. Eighteen percent is made up of organic materials that could be suitable for composting. Sixteen percent of the stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Four percent of the stream consists of material such as textiles and plastic film that could be diverted through additional source-separated collections.

The remaining one-third of the stream (32%) consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, janitorial bags, and plastic items. The graph below represents a sample from the Evanston campus refuse route.

Evanston Route Sample Characterization



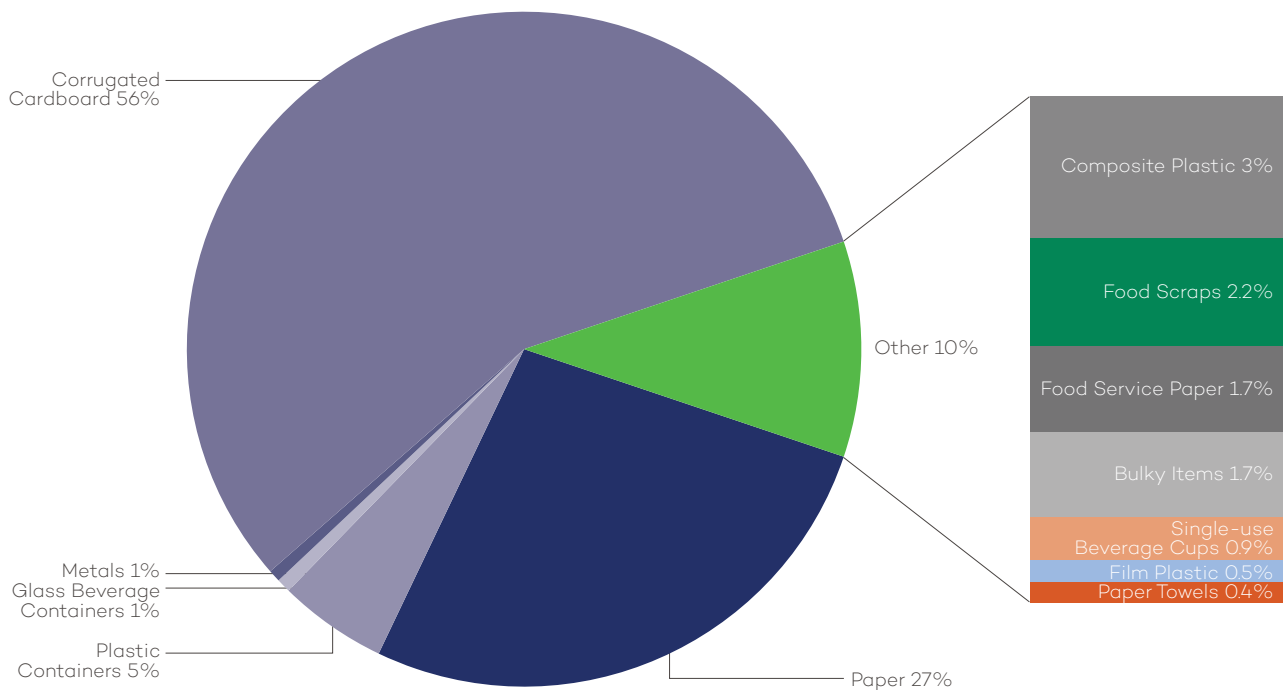
2017 COMPOSITION OF RECYCLED MATERIAL

Of all the material that Northwestern recycles, over 80% is paper and cardboard.

What is in the recycling?

According to the 2017 waste characterization study, fiber materials comprise 83%, corrugated cardboard was 56%, and paper was 27%. Plastic containers account for 5%, and metal and glass containers account for 1% each. Although plastic containers accounted for only 5% of the weight, it should be noted that as a material of low density, they account for the largest volume in the recycling stream.

Campus Recycling Load Distribution



Contamination

The recycling stream has a 10% contamination component. Non-recyclable plastics make up the largest portion of the contamination at 3%, followed by food scraps at 2.2%. Other contaminations include food service paper, bulky items, single-use beverage cups, film plastics, and paper towels, together accounting for the remaining 5.2%.

ANALYSIS

The campus waste characterization sheds light on the material stream that is sent to the landfill. To understand the overall diversion potential for Northwestern, the hand-sorted material categories were rolled up into five groups:

Avoidable: Items that can be eliminated from the material stream through policy, procurement, and behavior change

Currently recyclable: Items that can be recycled through the existing mixed recycling collection

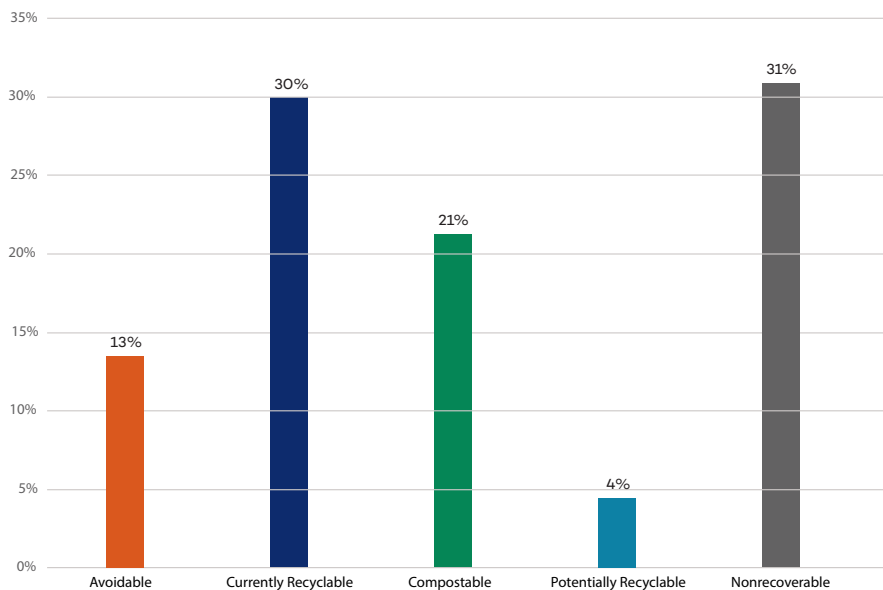
Compostable: Items that can be composted through existing composting program

Potentially recyclable: Items that can be recycled through the introduction of new source-separated recycling programs

Nonrecoverable: Items that currently cannot be recycled due to logistical limitations or lack of end market

To use the waste characterization data, the study team incorporated its findings with the current diversion rate to shed light on the material stream that is sent to a landfill. The team envisioned three scenarios and used the waste characterization data to ascertain the impact each would have on the effective diversion rate. All scenarios were built on the existing 40% diversion rate and focus on diverting material currently sent to the landfill.

Material Opportunity of Landfill Waste across Campus



100% capture of recoverable material

As illustrated in the bar graph characterizing the percentages of types of materials present in the waste stream, 55% of the materials currently being sent to landfill could be diverted through existing or expanded recycling and composting programs. Another 13% of the landfilled material can be avoided through procurement and policy changes. Specifically, all paper towel dispensers would have to be replaced with hand dryers, to-go containers would have to be replaced with reusable or compostable ware, and all reusable surplus items would have to be re-purposed. If all those changes were implemented (including expansion of recycling and composting programs), and if perfect participation and proper sorting of all recyclable and compostable materials by students, faculty, staff, and visitors to campus occurred, so that the entirety of the potentially divertible material could be salvaged from the current landfill stream, Northwestern's diversion rate could increase to 79%. This would require considerable operational outreach resources and institutional behavioral change, not to mention consistent and perfect participation from the Northwestern community.

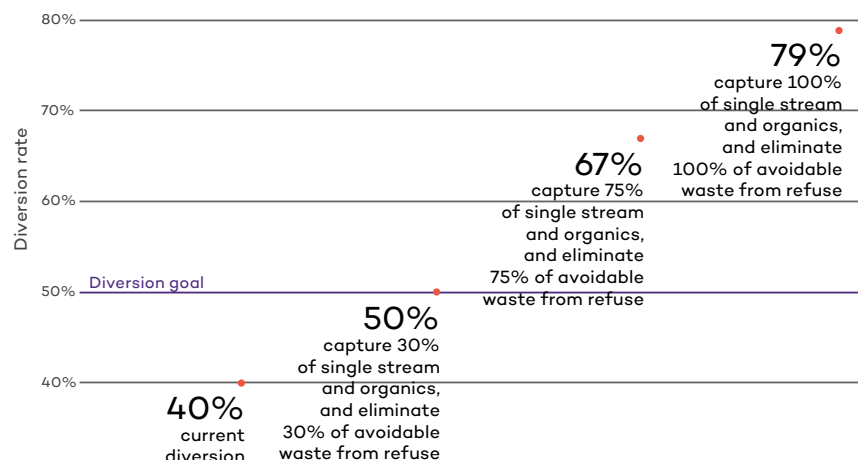
75% capture of recoverable material

Rather than capturing all recyclables and compostables perfectly and implementing all of the suggested policy and procurement changes, a more achievable scenario would be to capture 75% of the recyclable materials and compostable organics currently being sent to landfill, along with avoiding 75% of the materials which could potentially be eliminated. This would bring the effective diversion rate up to 67%. To achieve this, the Northwestern community would have to

- significantly increase outreach and educational efforts for mixed recycling and composting programs,
- expand the compost program to capture organics generated in all buildings, and
- replace most paper towel dispensers with hand dryers.

2017 Diversion Scenarios

The study team evaluated the diversion rates for three capture rate scenarios.



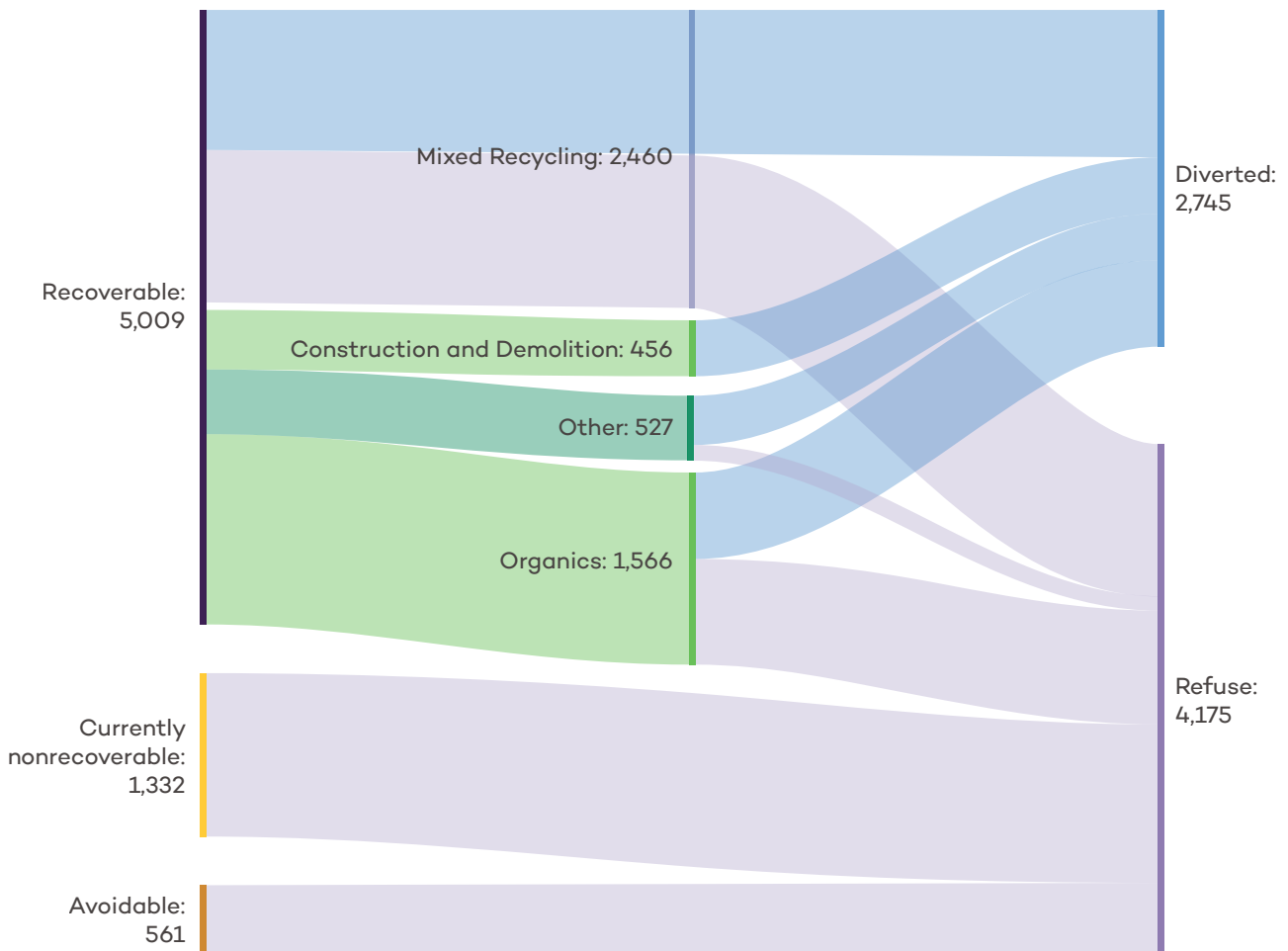
30% capture of recoverable material

A 30% increase of the current capture of mixed recycling and organics would take the effective campus diversion rate to 50%. To achieve this, the Northwestern community would have to

- increase outreach and education efforts for the mixed recycling and composting program,
- expand the compost program to capture organics generated in Greek student housing and all campus events with food service, and
- replace paper towel dispensers with hand dryers in high-use buildings.

The study team used the 30% scenario as a guide to organize its short-term strategies with the intent to achieve the 75% scenario in the long term.

2017 Material Stream Analysis (in Tons)



In 2017, Northwestern recycled 2,745 tons and sent 4,175 tons of material to the landfill, making the effective diversion rate for that calendar year 40%. However, using the waste characterization study data, 5,009 tons of the total waste can be recovered making the effective capture rate 54%, i.e., 54% of the material that could be recycled currently would be.

STRATEGIES TO ACHIEVE DIVERSION GOAL

To achieve the targeted campus diversion rate of 50% via the 30% increase in the capture of mixed recycling and organics, as outlined in the previous section, the study team recommends the following strategies for the Northwestern community. These strategies can be classified into five program areas:

- **Reduce waste generation through a comprehensive review of procurement and reuse practices.** Promote procurement of products and services that use less material and enable more complete recycling. Expand reuse programs to extend the life cycle of products within campus or within the broader community.
- **Reinforce the existing recycling program** with standardized bin infrastructure throughout all buildings and ensure all refuse bins are collocated with mixed recycling bins.
- **Expand the composting program** to other buildings with significant food service presence, such as Greek student housing, and to campus events where food is served.
- **Enhance education and outreach efforts** by providing consistent trainings to key building operations staff and by developing educational materials for all new and continuing students, employees, contractors, and visitors. Ensure that bin signage is consistent and present.
- **Pilot new source-separated recycling programs** that focus on diverting the unique materials generated that cannot be collected through the mixed recycling program, such as laboratory plastics and personal protective equipment, and textiles.

The efficacy of these strategies will improve over time through additional research, the development of the local recycling markets, and lessons learned from implementation of pilot programs. By focusing on these strategies and refining them over time, Northwestern could potentially achieve approximately a 67% diversion rate.

Activity Zone Results and Strategies

Northwestern's complex material flow and unique facility functions require the overall strategies to manifest as individual action items within each building. The study team integrated the results of the activity zone waste characterization and the feedback received via stakeholder engagement to compile activity zone-specific approaches to the implementation of the overall strategies.

The following charts show the individual results of the waste characterizations for each activity zone and the key actions to be implemented to achieve the 50% diversion goal. The comprehensive list of actions can be found in the Strategies to Achieve Diversion Goal section.



ACTIVITY ZONES

Buildings on the Chicago and Evanston campuses were categorized into eight activity zones by usage.

ADMINISTRATIVE



STUDENT HOUSING



STUDENT HOUSING + FOOD SERVICE



GREEK STUDENT HOUSING



ACADEMIC



ACADEMIC + LAB



MULTI-ACTIVITY



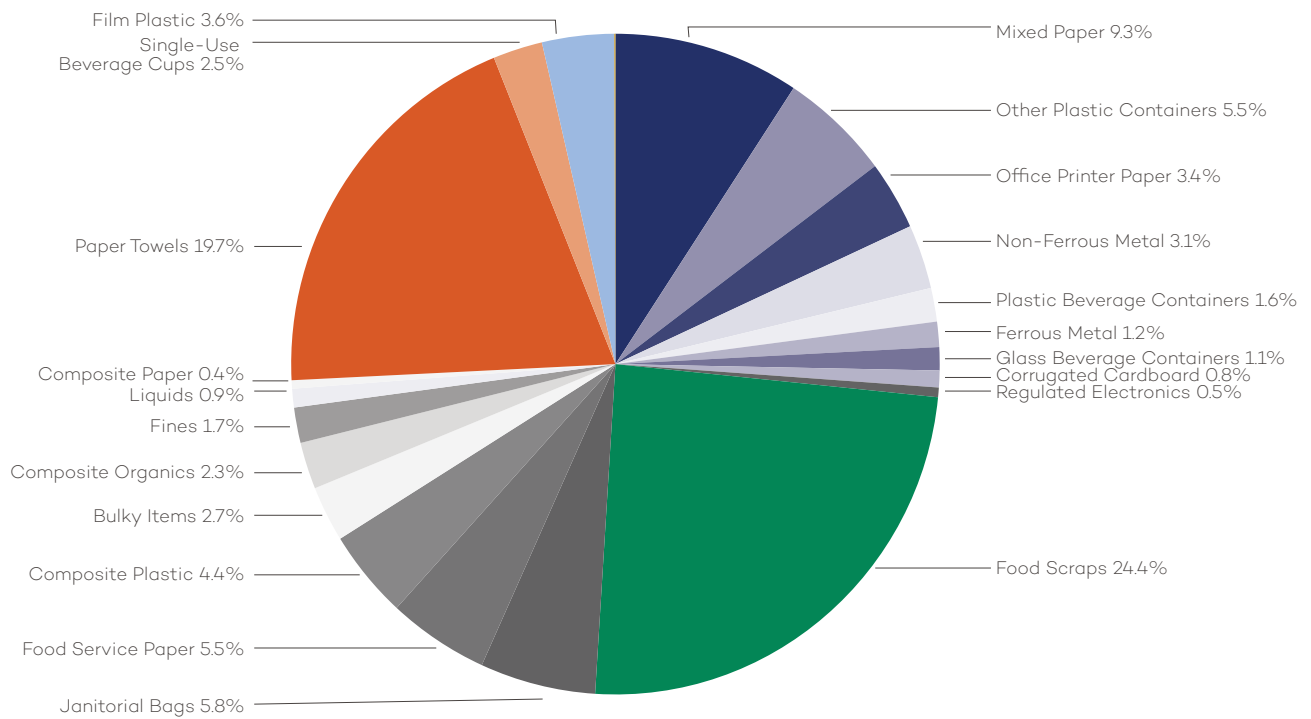
SPECIAL USE



ADMINISTRATIVE

Administrative spaces primarily serve administrative functions and/or house office space for staff and faculty on campus. Examples include 555 Clark Street, Alumni Relations and Development, and 2020 Ridge Avenue.

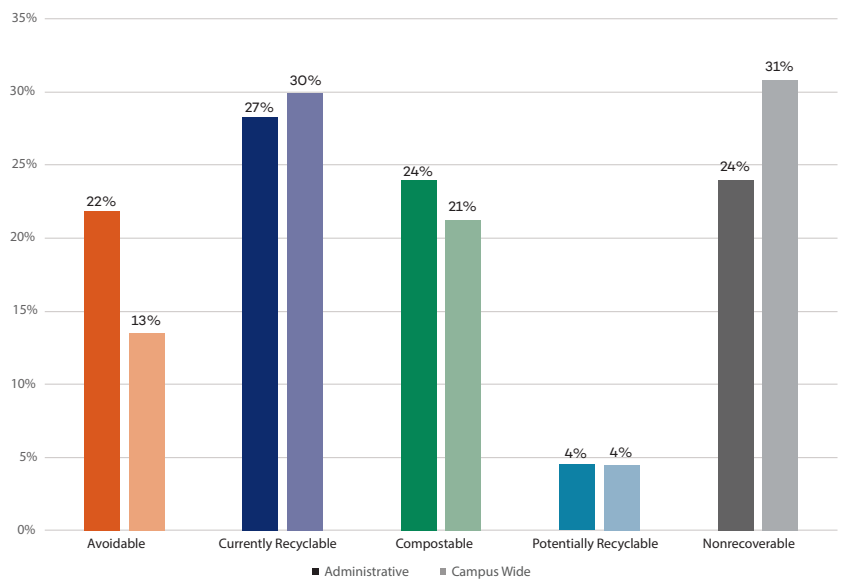
2017 Composition of Waste from Administrative



Administrative: What is in the waste?

According to the 2017 waste characterization study, 27% of the waste stream consists of Northwestern recyclables. Twenty-four percent is made up of organic materials that could be suitable for composting. Twenty-two percent of the waste stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Four percent of the stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

Material Opportunity of Landfill Waste in Administrative Spaces Compared to Campus Route Sample



The remaining 24% consists of materials that are currently nonrecoverable, i.e. items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key actions

- Pilot liner-less collection for desk-side refuse containers.
- Launch a directed outreach campaign on mixed recycling, focusing on paper recycling.
- Pilot kitchenette composting program to collect food scraps in targeted building.
- Promote purchase of recycled content and recyclable products.
- Create a mechanism for units to transfer/donate unneeded working office infrastructure to different units on campus or other partners in the community.

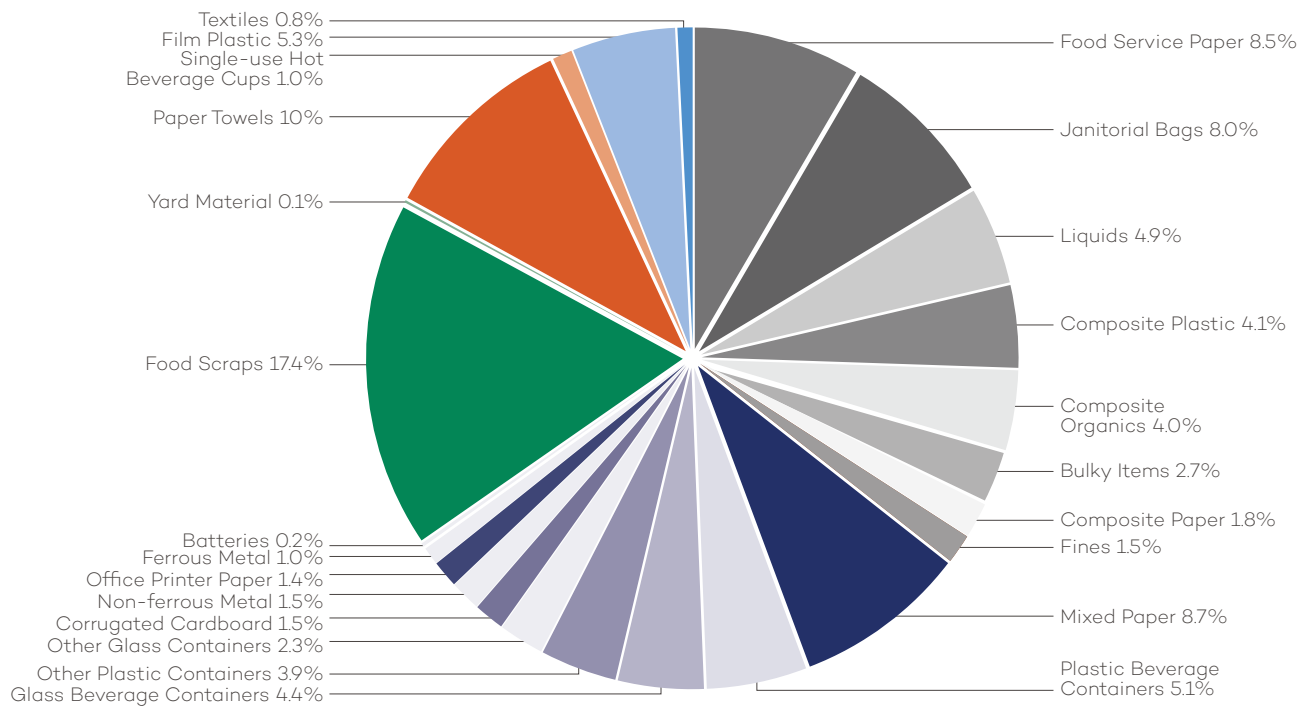
A complete list of actions for administrative spaces can be found in the Strategies section.

STUDENT HOUSING

On-campus student housing spaces are divided into student housing co-located with campus food service operations, student housing not co-located with campus food service operations, and Greek student housing. Along with these spaces, the study team also surveyed student move-in and move-out material handling.

Student Housing Without Food Service

2017 Composition of Waste from Student Housing Without Food Service



Student housing without food service: What is in the waste?

According to the 2017 waste characterization study, 30% of the waste stream consists of Northwestern recyclables. Eighteen percent is made up of organic materials that could be suitable for composting. Eleven percent of the waste stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Six percent

of the waste stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

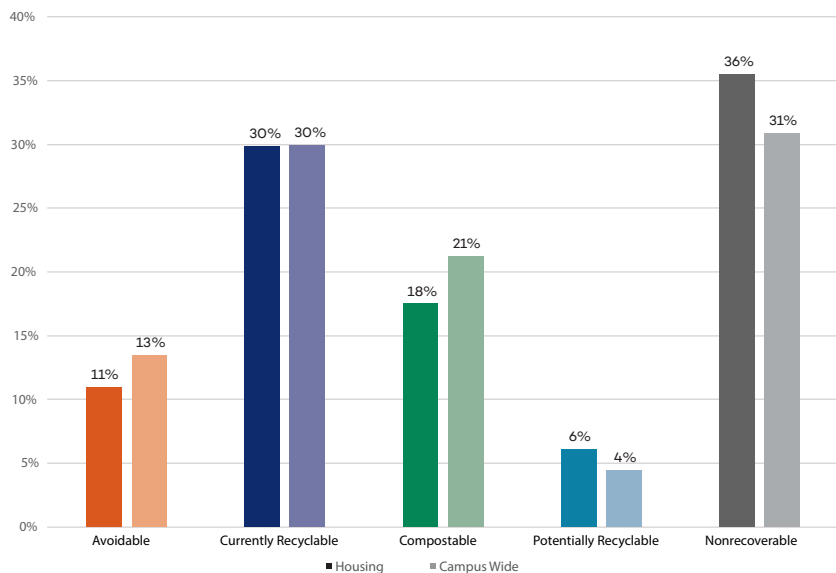
The remaining 36% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key actions

- Direct mixed recycling outreach focusing on recyclable plastic containers.
- Provide year-round recycling at each residence hall for unneeded electronics, textiles, and other small functioning furniture.
- Create a hall-specific recycling challenge to engage students and promote recycling behavior.

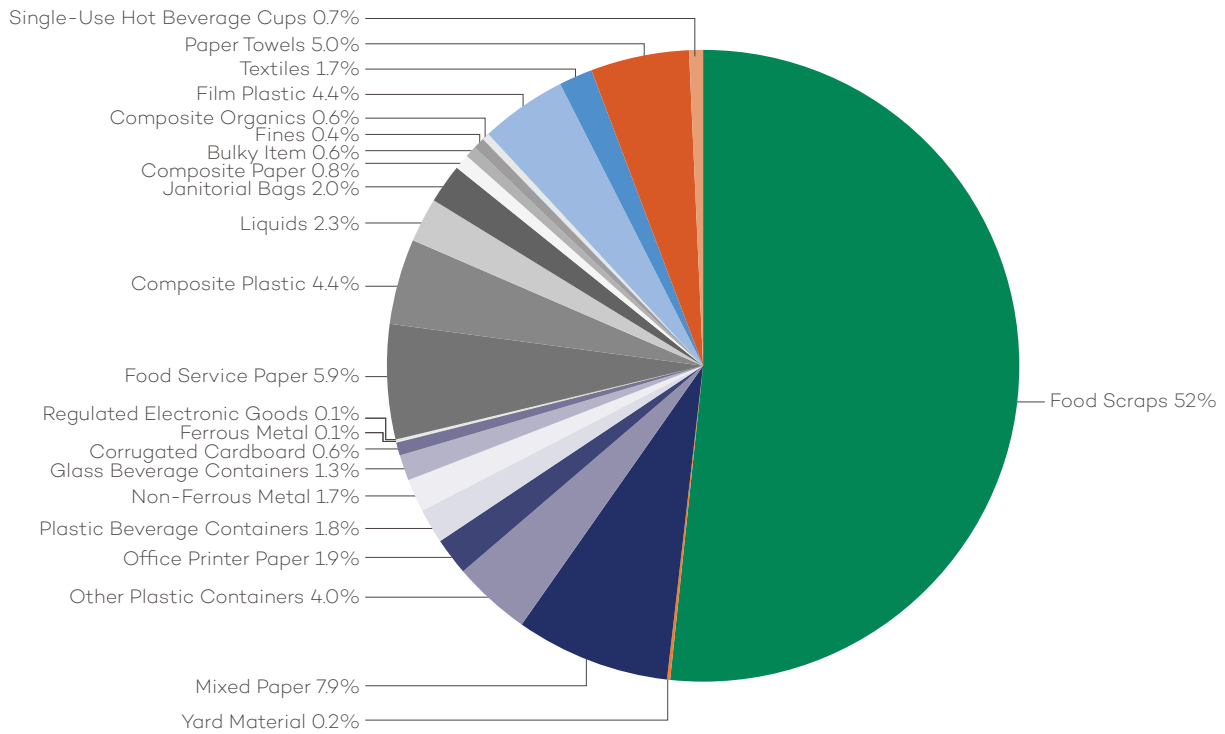
A complete list of actions for student housing can be found in the Strategies section.

Material Opportunity of Landfill Waste in Student Housing Spaces Compared to Campus Wide Sample



Student Housing + Food Service

2017 Composition of Waste from Student Housing with Food Service



Student housing + food service: What is in the waste?

According to the 2017 waste characterization study, 19% of the waste stream consists of Northwestern recyclables. Fifty-two percent is made up of organic materials that could be suitable for composting. Six percent of the waste stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Six

percent of the waste stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

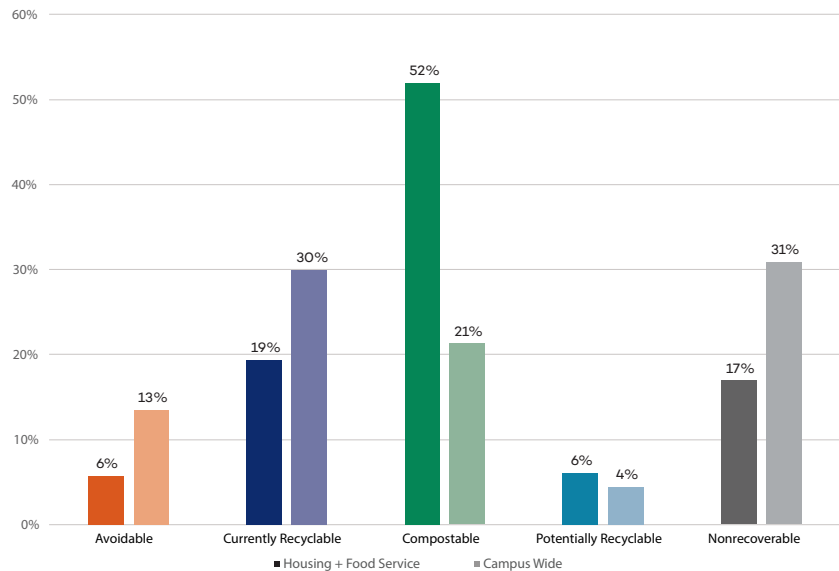
Only the remaining 17% consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key actions

- Require food service contractor to report quarterly production food loss ratios (pounds of food loss per meal served) and total loss (pounds of food loss).
- Improve composting through outreach and education of food service contractor.
- Change procurement practices to receive produce in recyclable or reusable packaging.

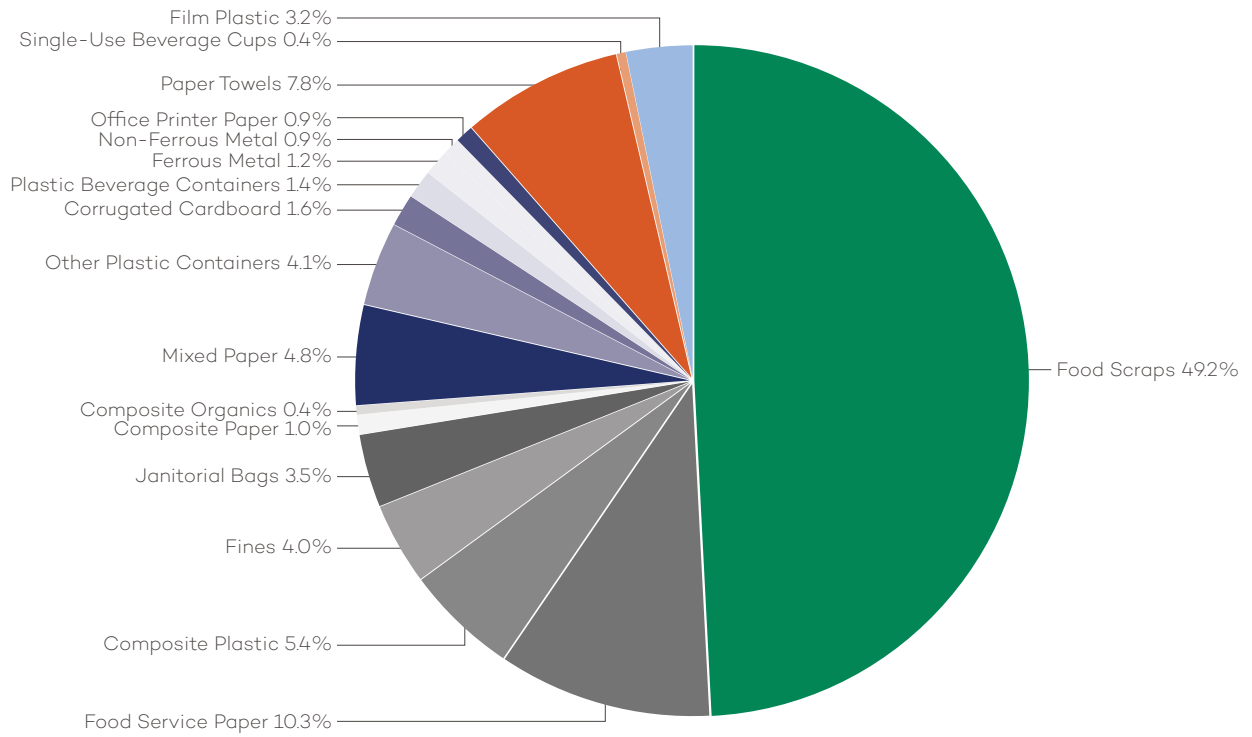
A complete list of actions for student housing with food service can be found in the Strategies section.

Material Opportunity of Landfill Waste in Student Housing + Food Service Spaces Compared to Campus Wide Sample



Greek Student Housing

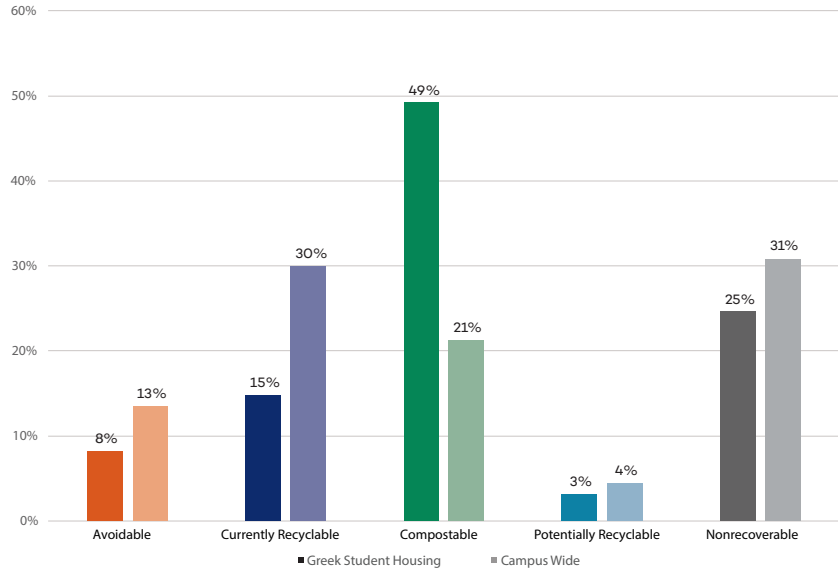
2017 Composition of Waste from Greek Student Housing



Greek student housing: What is in the waste?

Material Opportunity of Landfill Waste in Greek Student Housing Spaces Compared to Campus Route Sample

According to the 2017 waste characterization study, 15% of the waste stream consists of Northwestern recyclables. Forty-nine percent is made up of organic materials that could be suitable for composting. Eight percent of the waste stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Three percent of the waste stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.



The remaining 25% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key actions

- Expand composting to include food scraps generated from Greek student housing.
- Provide food waste-free kitchen trainings for the Greek student housing community to minimize food preparation waste.
- Ensure Greek student housing has adequate recycling bins and signage.

A complete list of actions for Greek student housing can be found in the Strategies section.

Student Move-In

During move-in, sustainNU and Residential Services provide significant support, from assisting individuals with unloading vehicles to breaking down boxes for recycling. Additional cardboard collection areas are set up and volunteers assist with collection of boxes for recycling. Recycling and refuse hauling is increased to avoid overflow in dumpsters.

During move-in, the study team found the following:

- Unflattened corrugated cardboard boxes in recycling dumpsters reduce the available capacity.
- Styrofoam and other non-recyclable material enter the recycling stream as contamination.
- Recyclable packing material enters the refuse stream due to overflowing recyclable containers.

Key actions

- Provide information to incoming students before move-in on best practices for moving in with minimal waste
- Increase the frequency of recycling pickup during move-in to reduce contamination due to overflow



Student Move-Out

Well before and during move-out week, sustainNU and Residential Services provide plenty of opportunity to divert material, from setting up Take It or Leave It donation bins for textiles, household items, and nonperishable foods to providing electronic recycling boxes at select residence halls. Recycling and refuse hauling are also significantly increased to avoid overflow in dumpsters.

During move-out, the study team found the following:

- Refuse and recycling dumpsters both contain items that can be reused, such as plastic storage containers, mirrors, and clothes hangers, as well as material that could be potentially recycled through a source-separated stream, such as bedding and mattresses.
- Desk-side printers and small refrigerators were found in the refuse dumpster.
- Recycling dumpsters are highly contaminated with non-recyclable goods such as kitchenware and electronics.

Key actions

- Create year-round Take It or Leave It stations for students to donate reusable materials.
- Pilot a tagging system in which students can leave bulky reusable or recyclable materials in individual rooms to increase participation from students and limit overflow in common collection areas during move-out.

A complete list of actions for move-in and move-out can be found in the Strategies section.

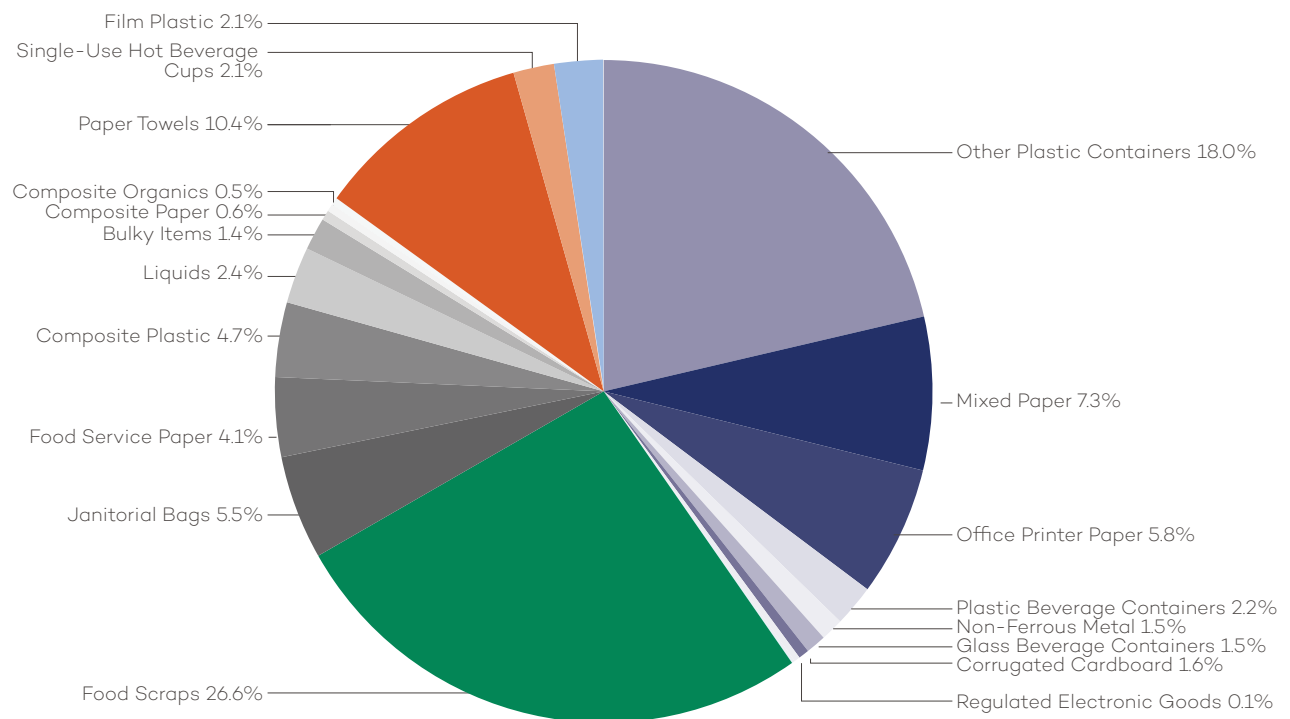


ACADEMIC

Academic spaces primarily house student instruction and instructional laboratories. These buildings also have research laboratories, offices, conference rooms, lounges, and computer labs. The study team further divided this category into two zones, buildings with and without laboratories.

Academic Spaces Without Laboratory

2017 Composition of Waste from Academic Without Lab



Academic spaces without lab: What's in the waste?

According to the 2017 waste characterization study, 39% of the waste stream consists of Northwestern recyclables. Twenty-seven percent is made up of the organic materials that could be suitable for composting. Thirteen percent of the stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Two percent of the stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

The remaining 2% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

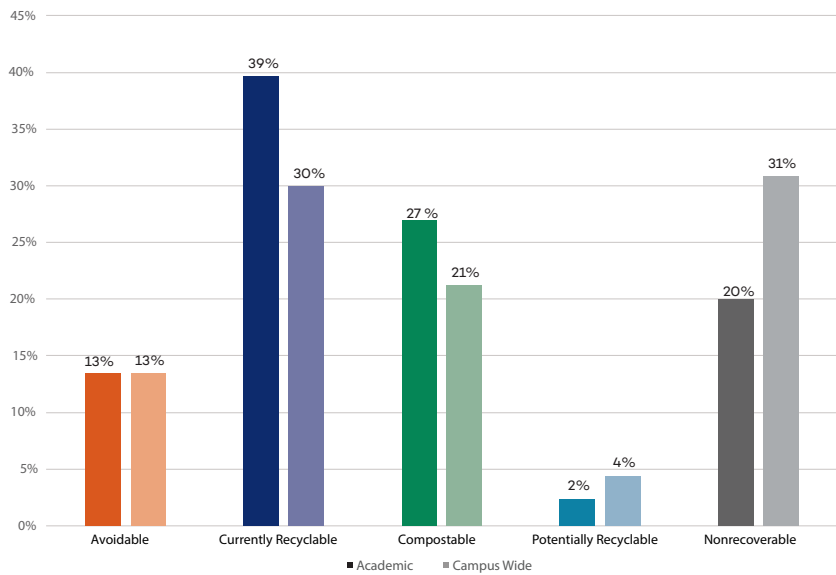
Of all activity zones at Northwestern, academic spaces have the highest percentage of recyclable material entering the waste stream.

Key actions

- Direct mixed recycling outreach that focuses on paper and plastic container recycling.
- Standardize recycling and refuse bins and signage in all common areas.
- Provide green procurement training for departments.

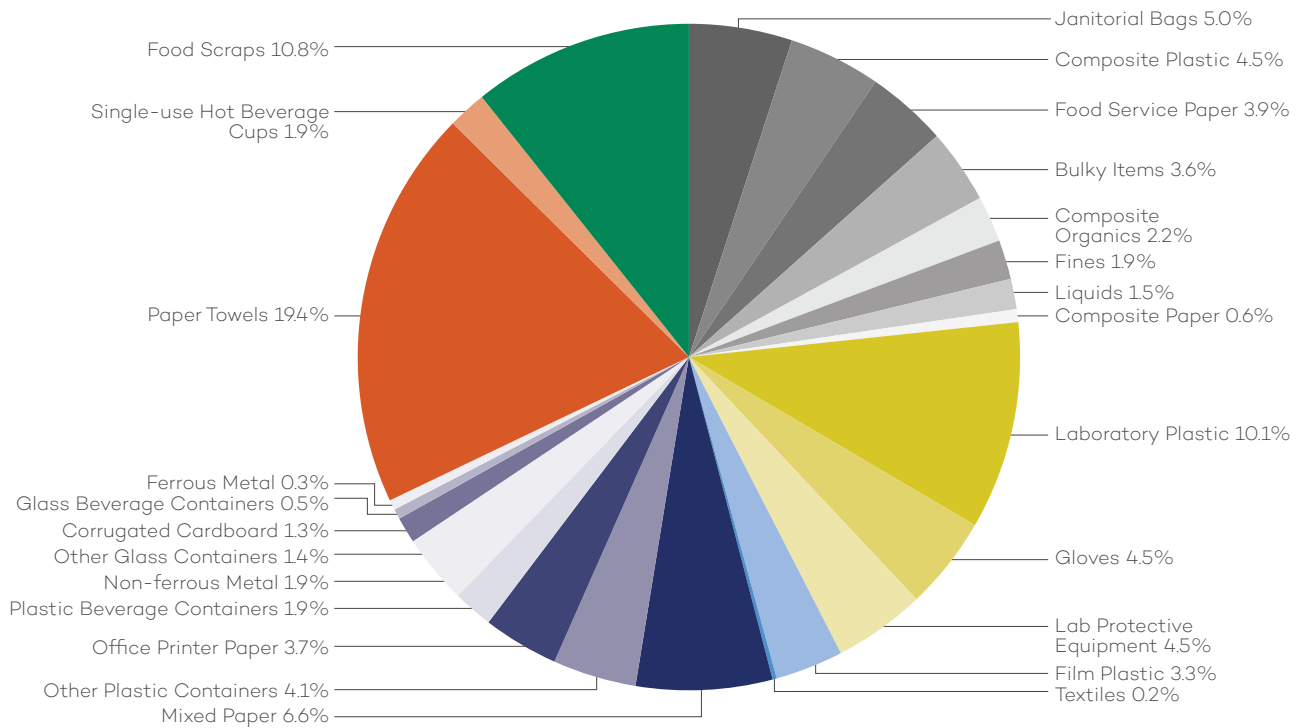
A complete list of actions for academic buildings be found in the Strategies section.

Material Opportunity of Landfill Waste in Academic Spaces Compared to Campus Route Sample



Academic + Laboratory

2017 Composition of Waste from Academic Spaces with Lab



Academic Spaces + Lab: What is in the waste?

According to the 2017 waste characterization study, 22% of the waste stream consists of Northwestern recyclables. Eleven percent is made up of organic materials that could be suitable for composting. Twenty-one percent of the waste stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated.

Twenty-three percent of the waste stream consists of material such as rigid laboratory plastics, textiles, and plastic film that could be diverted through source-separated collections.

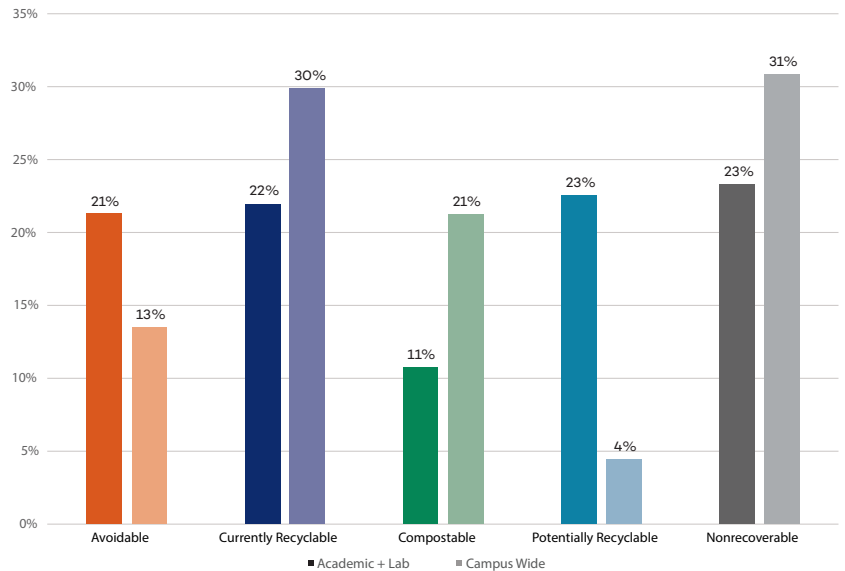
The remaining 23% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key actions

- Pilot source-separated recycling program for laboratory plastics and gloves.
- Incorporate recycling training and education with laboratory safety trainings.
- Create a mechanism for laboratories to transfer/donate unneeded working equipment to different units on campus or partners in the community.

A complete list of actions for academic buildings with laboratories can be found in the Strategies section.

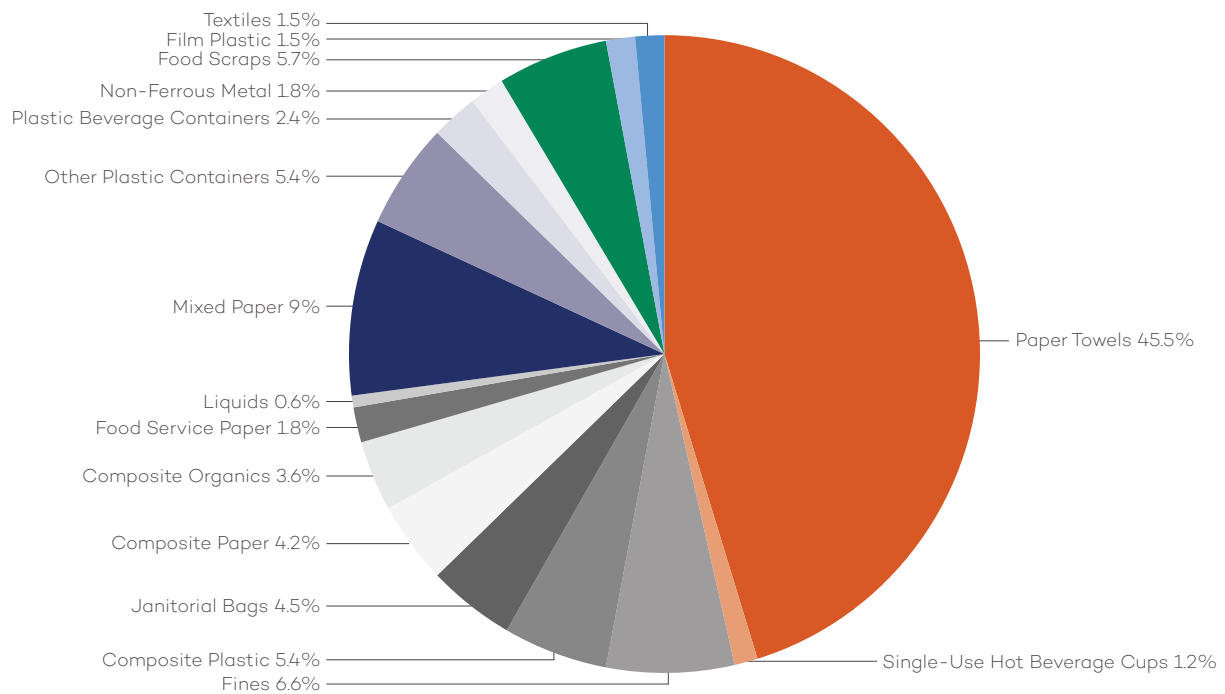
Material Opportunity of Landfill Waste in Academic + Lab Spaces Compared to Campus Route Sample



MULTI-ACTIVITY

Multi-activity buildings may have a unique purpose such as a library or a gym but may also house food service operations, instructional spaces, and offices. Examples include the Henry Crown Sports Pavilion and University Library.

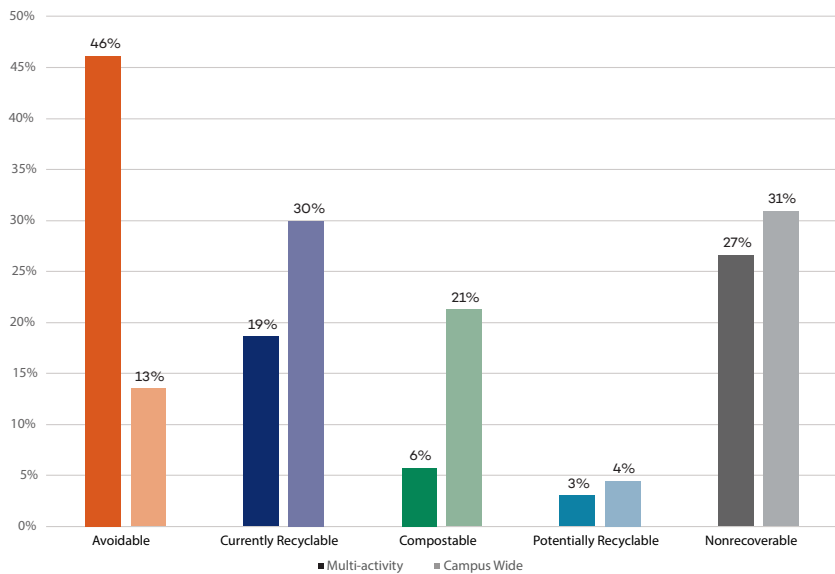
2017 Composition of Waste from Multi-Activity Spaces



Multi-activity: What is in the waste?

According to the 2017 waste characterization study, 19% of the waste stream consists of Northwestern recyclables. Six percent is made up of organic materials that could be suitable for composting. Forty-six percent of the waste stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Three percent of the waste stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

Material Opportunity of Landfill Waste in Multi-activity Spaces Compared to Campus Route Sample



The remaining 27% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key action

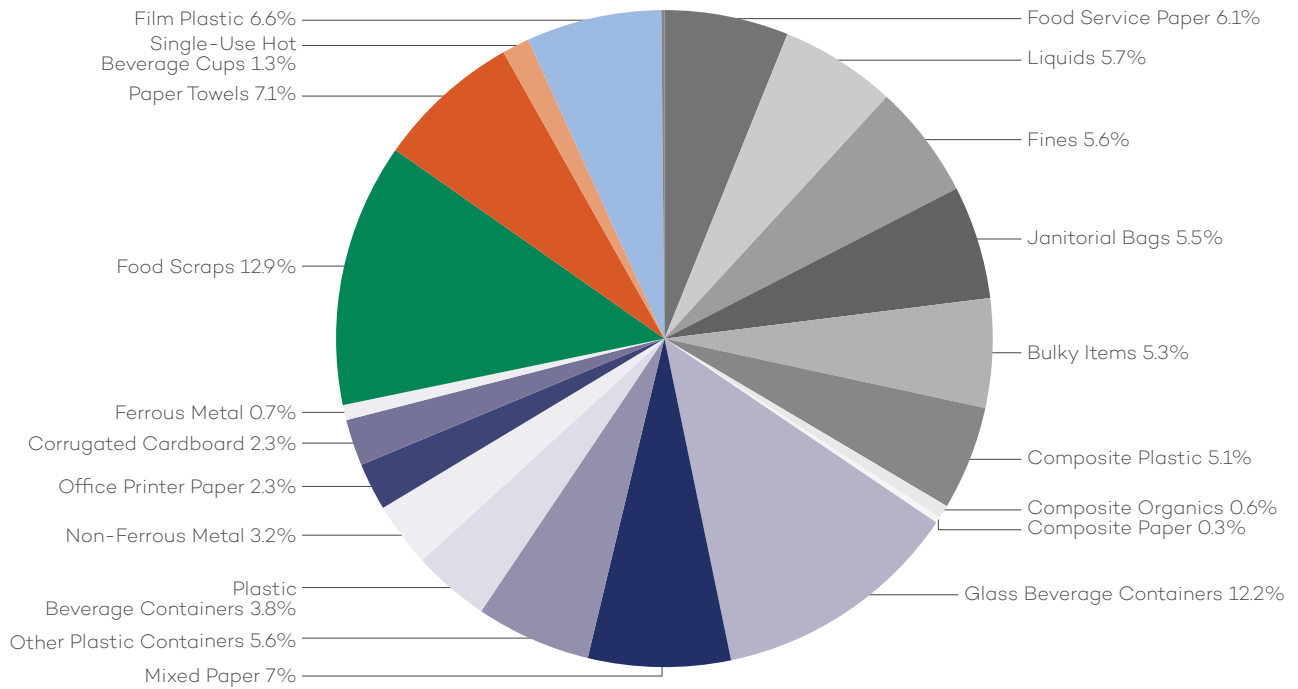
- Identify key restrooms in buildings to replace paper towels with hand dryers.

A complete list of actions for multi-activity buildings can be found in the Strategies section.

SPECIAL USE

Special-use spaces are stand-alone facilities that have distinct functions on campus. This activity zone includes the Norris University Center and Ryan Field.

2017 Composition of Waste from Special-Use Spaces



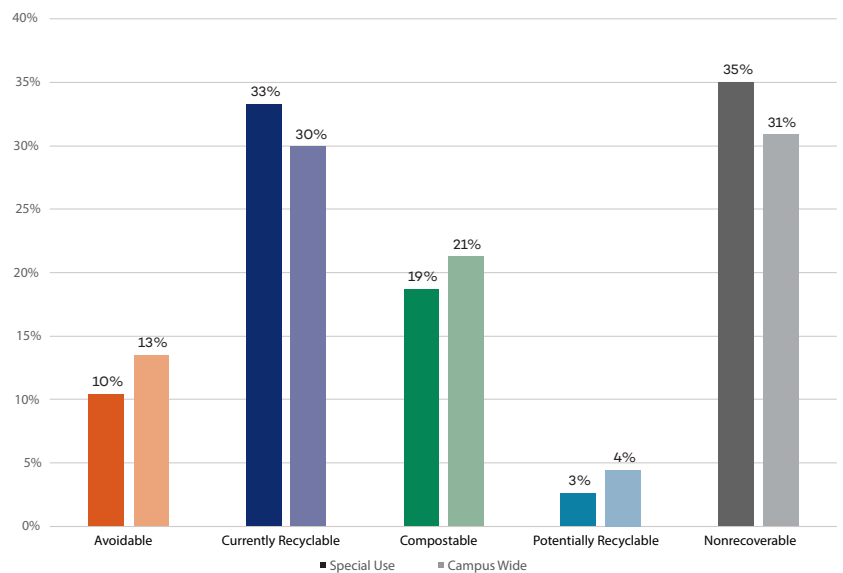
Special use: What is in the waste?

According to the 2017 waste characterization study, 33% of the waste stream consists of Northwestern recyclables. Nineteen percent is made up of organic materials that could be suitable for composting. Ten percent of the waste stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Three percent of the waste stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

The remaining 35% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

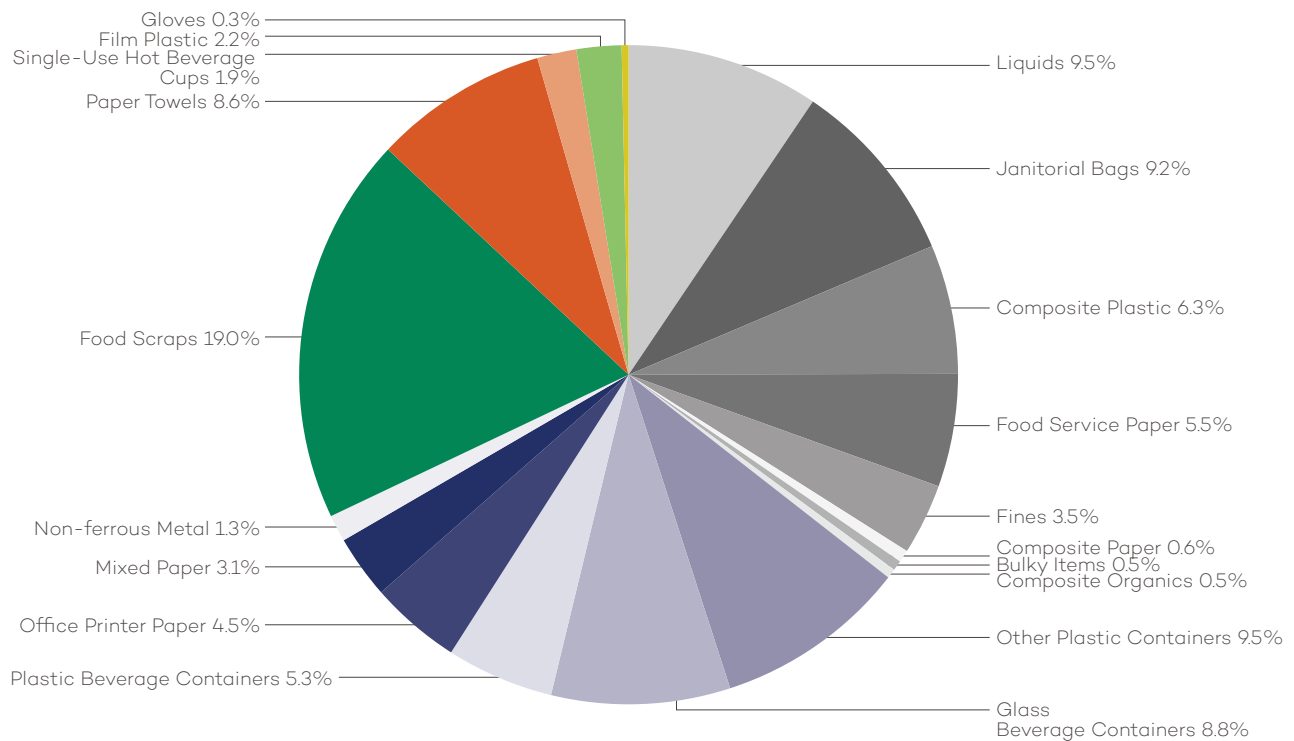
Key actions for special use spaces are outlined on the Norris University Center and Ryan Field pages.

Material Opportunity of Landfill Waste in Special Use Spaces Compared to Campus Route Sample



Norris University Center

2017 Composition of Waste from Norris University Center



Norris University Center: What is in the waste?

According to the 2017 waste characterization study, 33% of the waste stream consists of Northwestern recyclables. Nineteen percent is made up of the organic materials that could be suitable for composting. Ten percent of the stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Three percent of the stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

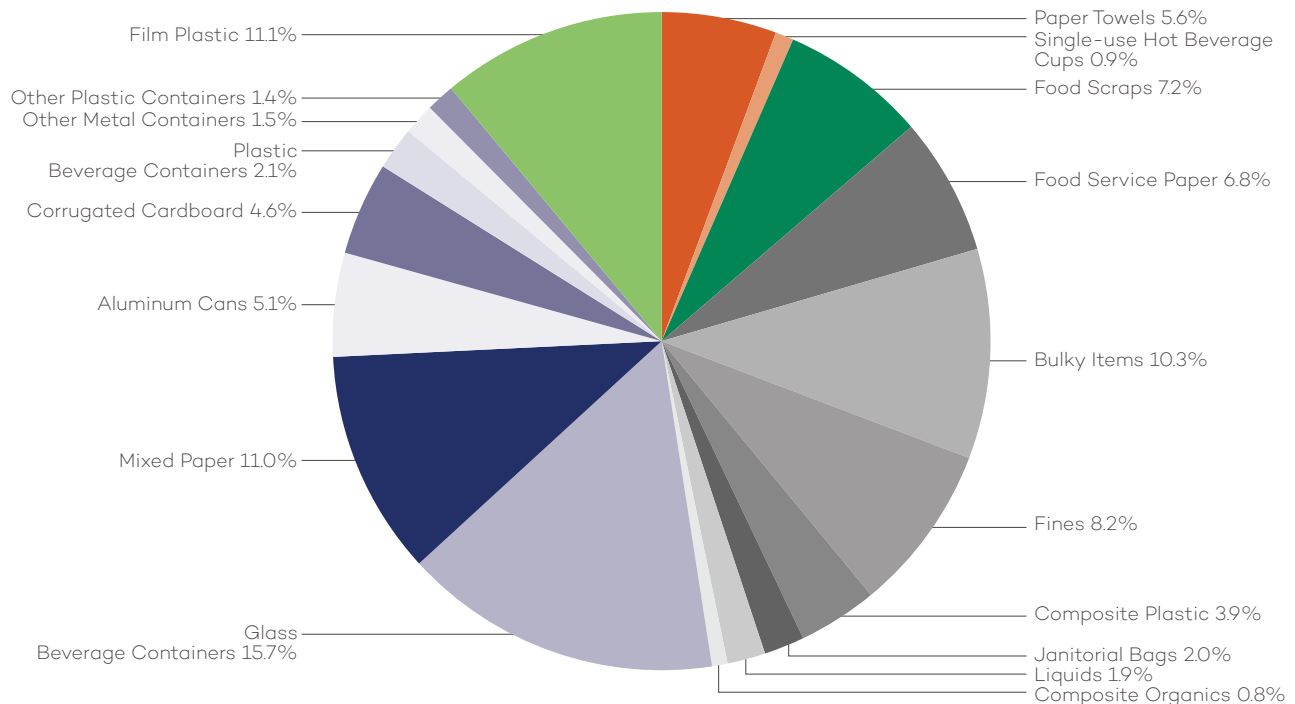
The remaining 35% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key actions

- Pilot front-of-house food scrap collection at food court.
- Direct outreach campaign on mixed recycling, focusing on recycling containers.

Ryan Field

2017 Composition of Waste from Ryan Field



Ryan Field: What is in the waste?

According to the 2017 waste characterization study, 42% of the waste stream consists of Northwestern recyclables. Seven percent is made up of the organic materials that could be suitable for composting. Six and a half percent of the stream is made up of material such as paper towels and single-use cups that could be avoided or partially eliminated. Eleven percent of the stream consists of material such as textiles and plastic film that could be diverted through source-separated collections.

The remaining 27% of the stream consists of materials that are currently nonrecoverable, i.e., items for which recovery end markets or programs do not yet exist or are not yet available at Northwestern, including small-scale furniture, single-use equipment, and other non-recyclable paper, glass, and plastic items.

Key actions

- Replace paper towel dispensers with hand dryers.
- Provide tips and guides on green tailgating and zero-waste events to fans on Ryan Field webpages.

Strategies to Achieve Diversion Goal

The study team has integrated existing waste reduction and diversion programs and procedures, the results of the waste characterization study, and the feedback received via stakeholder engagement to compile an extensive list of strategies for improvement and expansion of waste diversion efforts at Northwestern. These strategies are tabulated in the following pages. Strategies are characterized by their potential level of impact (high, medium, or low), and the activity zones to which they apply are indicated. As noted previously, this allows sustainNU and building staff to identify strategies that correspond both to a building's primary function/ services offered and to secondary functions and services that may be housed therein.

Short-term strategies will be prioritized, including education for behavior change. This will focus on waste reduction opportunities and maximizing existing program capacity. Longer-term strategies will look at those efforts that may increase cost. This will include potential program expansions and infrastructure changes.



IMPACT	STRATEGY	ACTIVITY ZONE(S)								
		UW	A	SH	SHFS	GSH	AS	ALS	MA	SU
High	Develop a campus-wide outreach campaign to increase recycling literacy.	•								
High	Develop a directed outreach campaign to administrative and academic buildings to improve paper and plastic container recycling.	•								
High	Identify high-traffic restrooms to replace paper towel dispensers with hand dryers.	•								
High	Create a standardized list for recycling and refuse bin infrastructure.	•								
High	Expand the existing virtual system as an intermediate solution for relinquishing, trading, browsing, and claiming unused, unwanted, surplus, or bulk items. Include a public-facing system for inventory which can be designated for donation to external charities and/or sold to private individuals.	•								
High	Establish a protocol for project managers to re-purpose, reuse, and salvage fixtures and furnishings during construction and retrofits.	•								
High	Establish contracts for furniture surplus and donation outlets to channel items not needed on campus to others in the community and beyond.	•								
High	Audit procurement practices within individual departments to identify opportunities to reduce waste.	•								
High	Increase awareness and usage of reusable serving ware by the campus community and event hosts.	•								
High	Incorporate hand dryers—only restrooms in new building design specifications.	•								
High	Create a mechanism for custodial staff to communicate inconsistencies in bin infrastructure.	•								
High	Conduct bin audits to ensure standardized bins and signage across campus.	•								
High	Create a bin placement framework that custodial staff can implement.	•								

UW = University-wide; A = Administrative; SH = Student Housing; SHFS = Student Housing + Food Service; GSH = Greek Student Housing; AS = Academic Spaces; ALS = Academic + Lab Spaces; MA = Multi-activity; SU = Special Use

IMPACT	STRATEGY	ACTIVITY ZONE(S)								
		UW	A	SH	SHFS	GSH	AS	ALS	MA	SU
High	Partner with adjacent communities on signage, specialty wastes, surplus, and green waste strategies.	•								
High	Develop training protocols with custodial service provider for ongoing engagement of custodial staff in diversion efforts.	•								
High	Revise event reservation and catering forms to include sustainable options and Zero Waste event guide.	•								
High	Formalize tracking of tonnage of waste resulting from contracted construction and demolition (C&D).	•								
High	Develop a plan to support the establishment of a surplus operation on campus.	•								
Medium	Create guidelines for waste handling that address solid, universal, hazardous, and electronic waste.	•								
Medium	Develop guidelines and policies to minimize waste from printing and copying by replacing personal printers with central multifunction printers.	•								
Medium	Establish policies for purchasing, use, and end-of-life management of electronic office equipment using the State Electronics Challenge program checklist as guidelines.	•								
Medium	Add LED bulb recycling to source-separated collection.	•								
Medium	Formalize pallet and scrap wood source-separated collection.	•								
Medium	Include carpet recycling as a performance metric for contractors.	•								
Medium	Create specialty recycling protocols for units to suggest new source-separated collection.	•								
Medium	Establish normalized metrics to include per capita diversion and generation rate.	•								
Medium	Expand reusable serving ware option for retail, catering, and campus events. Provide all incoming students with a reusable container during orientation.	•								

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IMPACT	STRATEGY	ACTIVITY ZONE(S)									
		UW	A	SH	SHFS	GSH	AS	ALS	MA	SU	
Medium	Track waste generation in ENERGY STAR Portfolio Manager®.	•									
Medium	Continuously review and update comprehensive waste policy as markets for commodities expand.	•									
Medium	Use of point-of-sale systems in dining halls to track discounts given for reusable mugs. Use data to quantify impacts (costs, waste diverted, etc.) and post publicly to motivate community/encourage participation.	•									
Medium	Establish collaborative repair center to promote reuse (e.g., Illini Gadget Garage, which is focused on electronics, or Repair Café for all items).	•									
Medium	Create a Zero Waste event guide to complement existing sustainable events information.	•									
Medium	Develop student projects or competitions that promote reuse of materials generated on campus.	•									
Medium	Post a comprehensive disposal guide on sustainNU's website for everyday items.	•									
Low	Develop a strategy to increase compost collections for kitchenette and special events.	•									
Low	Conduct solid waste audits every five years to identify waste composition and opportunities for increased diversion.	•									
Low	Establish a printing and copying policy.	•									
Low	Create a Zero Waste Northwestern strategy that focuses on one waste reduction and diversion topic quarterly.	•									
Low	Make the height of "Mount Trashmore" correspond to the number of tons of landfill waste disposed of in the previous year. Take photos for comparison between years to document decreasing waste generation.	•									
Low	Link existing purchasing guidelines to sustainable events guidelines.	•									

UW = University-wide; A = Administrative; SH = Student Housing; SHFS = Student Housing + Food Service; GSH = Greek Student Housing; AS = Academic Spaces; ALS = Academic + Lab Spaces; MA = Multi-activity; SU = Special Use

IMPACT	STRATEGY	ACTIVITY ZONE(S)								
		UW	A	SH	SHFS	GSH	AS	ALS	MA	SU
Low	Include a form on sustainNU site for submission of ideas on materials reuse and waste reduction. Communications and Engagement Working Group could prioritize submissions and suggest ideas to involve students in implementation, bearing in mind existing student capstone programs, NSF campus grant fund, etc.	•								
Low	Participate in iFixit Technical Writing Project and incorporate into courses and/or collaborative repair center.	•								
High	Include compost bins in staff kitchenettes.		•							
High	Offer Composting to Greek Housing					•				
High	Track and report food losses and reductions in all dining facilities.				•				•	
High	Pilot liner-less collection for desk-side trash bins and locations.		•							
Medium	Pilot composting of front-of-house food scraps from food service operations.				•				•	
Medium	Include compost bins with refuse and recycling bins in public areas where food is served at catered events.				•				•	•
Medium	Expand Take it or Leave It program or employ a door tag system to indicate furniture and white goods left behind in rooms by students to increase reuse during move-out.			•	•	•				
Medium	Improve move-out electronics collection by employing a door tag system to indicate electronics left in student rooms.			•	•	•				
Medium	Include move-out recycling and waste reduction education in hall communications the last three weeks before move-out.			•	•	•				
Medium	Provide sustainable residential living training sessions during America Recycles Week.			•	•	•				
Medium	Include uncapped plastic bottles, empty pipette tip boxes, cardboard, foil, and metal in mixed recycling program for laboratories.							•		

UW = University-wide; A = Administrative; SH = Student Housing; SHFS = Student Housing + Food Service; GSH = Greek Student Housing; AS = Academic Spaces; ALS = Academic + Lab Spaces; MA = Multi-activity; SU = Special Use

IMPACT	STRATEGY	ACTIVITY ZONE(S)								
		UW	A	SH	SHFS	GSH	AS	ALS	MA	SU
Low	Send move-in recycling and waste reduction strategies to students prior to move-in day, possibly as part of a sustainNU video series.			•	•	•				
Low	Purchase only BPI-certified compostable ware.				•				•	
Low	Increase efficiency of food rescue in retail, student dining, and catering.				•				•	
Low	Pilot nitrile glove recycling in labs and kitchens.				•			•	•	
Low	Create year-round textile collection stations in residence halls.			•	•	•				
Low	Include sawdust from woodshops in composting.									•
Low	Provide facility trade shop recycling trainings.									•
Low	Explore composting of animal bedding.							•		
Low	Utilize stockrooms to donate functioning lab equipment to local K-12 schools.							•		
Low	Recycle personal protective equipment in laboratories through manufacture take-back programs.							•		
Low	Utilize stockroom to store empty Styrofoam containers, gel ice packs, unwanted but functioning lab supplies, etc. for reuse.							•		
Low	Recycle lab water purification cartridges through manufacture take-back programs.							•		
Low	Establish chemical inventory/sharing system for surplus chemicals.							•		
Low	Create recycling guide for laboratories.							•		
Low	Establish film recycling program.				•	•		•	•	

UW = University-wide; A = Administrative; SH = Student Housing; SHFS = Student Housing + Food Service; GSH = Greek Student Housing; AS = Academic Spaces; ALS = Academic + Lab Spaces; MA = Multi-activity; SU = Special Use

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Glossary

Aluminum and tin cans	Aluminum beverage cans and tin cans used for food
Bulky items	Large materials such as couches and tires
Capture rate	The quantity of a material diverted divided by the total quantity of that material present in the waste stream
Composite glass	Items that contain glass as the predominant category and another material
Composite metal	Items that contain metal as the predominant category and another material
Composite organics	Items that contain organics as the predominant category and another material
Composite paper	Items that contain paper as the predominant category and another material
Composite plastic	Items that contain plastic as the predominant category and another material
Corrugated cardboard	Non-food-soiled corrugated cardboard
Diversion	The management of materials by reduction, reuse, recycling, and composting
Diversion rate	The percentage of materials diverted from landfilling to be recycled, composted, or reused
Expanded polystyrene	Commonly known as Styrofoam
Electronic waste	Items that operate using either a battery or power cord
Fines	Remnants left after sorting is complete, typically consisting of dirt, sawdust, small food scraps, etc.
Food scraps	Food preparation wastes, food scraps, spoiled food
Glass bottles and jars	Glass food and beverage containers
Green waste	Debris such as grass clippings, leaves, garden waste, brush, and trees
Non-food service paper	Newsprint, magazines, office paper
Other plastic containers	Plastic containers not used for containing water, fruit juice, sports drink, ice tea, wine, liquor, beer, or soda water and similar carbonated drinks
Paper food service ware	Paper kitchen products including paper cups and food-soiled paper
Paper towels	Bathroom towels, napkins
Plastic beverage containers	Plastic containers used for containing beverages
Refuse	The fraction of the waste stream that has no current feasible further use, i.e., it cannot be currently recycled or biologically treated in the region. This is the fraction sent for disposal.
Regulated materials	Materials regulated under federal or state solid waste management laws that pose a substantial or potential hazard to human health or the environment when improperly managed
Source separation	Segregating various wastes at the point of generation to make diversion viable
Transfer station	Facility where material is transferred from collection vehicles to larger trucks for longer-distance transportation
Trash bags	Bags used to contain waste materials
Waste	A generic term used to describe materials no longer wanted by the original user. Waste may refer both to materials that can be processed or reused and to materials currently not designed to be processed or reused
Waste reduction	Using techniques at the source to eliminate the creation of wastes
Waste stream	The total flow and volume of solid waste across both campuses that is recycled, composted, reused, and disposed of in landfills
Zero waste	Refers to efforts to reduce solid waste disposal to zero by waste reduction, efficient consumption, and recovery practices

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**together,
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