FY 2022-23

NC Public College & University Solid Waste & Materials Management Annual Report

North Carolina Department of Environmental Quality
Division of Environmental Assistance and Customer Service
1639 Mail Service Center
Raleigh, NC 27699-1639

Recycling and Materials Management Section
recycleright@deq.nc.gov

Delaney King
919-707-8145
Delaney.King@deq.nc.gov

Executive Summary

This report presents recycling and waste data from public universities and community colleges in North Carolina in FY 2022-23. During the past reporting cycle, 40 of 76 colleges and universities completed a survey administered by the N.C. Department of Environmental Quality's Division of Environmental Assistance and Customer Service (DEACS). The submitted surveys provided recycling and waste data for this summary report.

The tons of material that responding schools recovered for recycling is significantly lower than in the most recent years, which may be due, in part, to continued fallout from COVID-19 as well as the make-up of participating schools. There is a certain degree of natural variation in data between years based on which schools answer the survey. Still, of the 40 schools that responded in FY 2022-23, 31 also answered the survey for the previous two years. Because of the relative consistency in data points, it is likely there may be other reasons for the fall in recovered materials.

In compliance with N.C. General Statute 130A-309.14, each school has implemented some type of recycling program to capture traditional recyclables (paper, cardboard, plastic, metal cans, and glass bottles). Several schools have implemented practices to continually improve their recycling programs and achieve waste diversion beyond their statutory requirement:

- Seventy-six percent of reporting schools have paired waste and recycling bins together, or "twinned" bins in some capacity;
- Ninety-three percent of all reporting schools have recycling bins in academic and office buildings. Colleges and universities also frequently place recycling bins in dining facilities, athletic venues, pedestrian walkways, and at special events;
- Approximately 70 percent of surveyed universities have compost programs to divert food waste from landfill disposal.

To improve the effectiveness and efficiency of recycling programs, DEACS recommends that colleges and universities budget to expand their recycling outreach, twin all their public bins, recover non-traditional recyclables, and donate excess food and material goods. While recommended, DEACS recognizes that school budgets may not have the funds to expand their recycling budgets. Schools can contact DEACS to learn how other programs have overcome similar challenges.

About DEACS - RMMS

The Recycling and Materials Management Section (RMMS) in N.C. DEQ's Division of Environmental Assistance and Customer Service (DEACS) works with recycling businesses, local governments, and state agencies. The Section provides data-based technical assistance to colleges and universities. Using data from this report, DEACS offers solutions to common recycling challenges such as contamination, low participation rates and implementation of new programs on college campuses. Staff members frequently make site visits to North Carolina colleges to offer face-to-face assistance, and staff also presents data and recycling strategies at regional conferences. Contact Delaney King (delaney.king@deq.nc.gov) with requests for technical assistance or data about collegiate recycling.

Table of Contents

Introduction

State agencies are required by North Carolina General Statute 130A-309.14 to recycle office paper, newspaper, aluminum cans, glass, and plastic bottles. State agencies are also required to recycle fluorescent bulbs and must comply with statewide landfill bans, which prohibit the disposal of the following materials in landfills: used oil and oil filters, antifreeze, yard trash, wooden pallets, tires, lead acid batteries, plastic bottles, aluminum cans, televisions, and computer equipment.

Forty public universities and colleges reported data in FY 2022-23, which constitutes 53 percent of public collegiate entities.

A list of reporting schools is provided below. DEACS distributes a survey to schools and compiles the data for this summary report. While the reporting process is voluntary, it is worthwhile for all schools to collect data and track progress on their solid waste programs, costs, and diversion efforts. These data provides some perspective about how schools can improve their solid waste reduction and increase recycling.

Figure 1. NC Public College and University Respondent Map

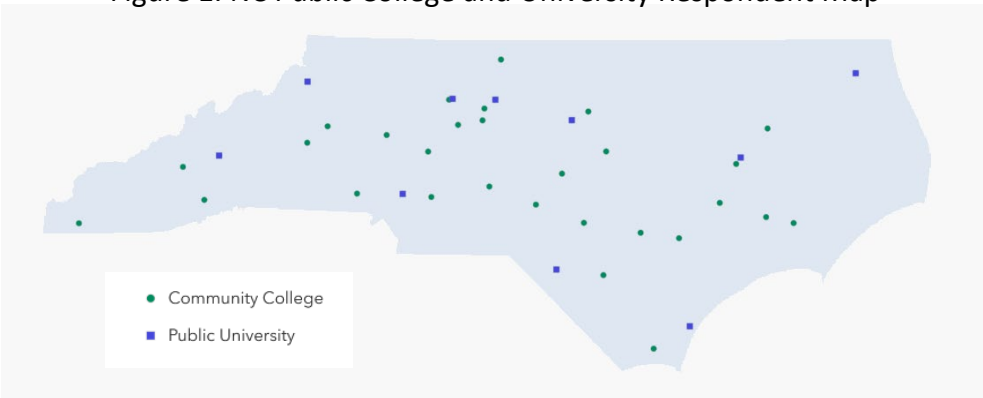

Figure 1. Of the 76 public colleges and universities, 40 schools across the state responded to the annual survey.

Appalachian State University
Beaufort County Community College
Bladen Community College
Blue Ridge Community College
Brunswick Community College
Caldwell Community College and Technical Institute
Central Piedmont Community College
Craven Community College
Davidson-Davie Community College
Durham Technical Community College
East Carolina University
Elizabeth City State University
Fayetteville Technical Community College
Forsyth Technical Community College
Gaston College
Guildford Tech Community College
Haywood Community College
James Sprunt Community College
Lenoir Community College
Martin Community College
Mitchell Community College
Montgomery Community College
Pamlico Community College
Pitt Community College
Randolph Community College
Rockingham Community College
Rowan Cabarrus Community College
Sampson Community College
Sandhills Community College
Stanly Community College
Tri-County Community College
UNC Asheville
UNC Chapel Hill
UNC Charlotte
UNC Greensboro
UNC School of the Arts
UNC Wilmington
Wake Technical Community College
Western Piedmont Community College

Education and Outreach

Education Methods

Education directed to students and employees is essential to operating a functioning recycling program on a college campus. Signage and various forms of outreach help people know what materials do and do not belong in the recycling bin. The absence of educational outreach exacerbates problems such as contamination and low recycling rates. Because contamination lowers the value of recyclable materials or can make these materials unusable, recycling markets emphasize the importance of clean, non-contaminated recycling loads. Therefore, proper outreach and education is vital to ensure quality recyclable material.

Figure 2 identifies the various methods colleges and universities use in their education and outreach efforts. The most popular strategies among community colleges and universities are the use of labeling bins as well as using signs or stickers to identify acceptable items. This strategy is low-cost, requiring little financial or time investment from the institutions. Still, over 60 percent of residential colleges and universities surveyed also employ social media, flyers, or posters, in-person presentations or meetings, tabling at campus events, and education during orientation. The survey demonstrates higher educational institutions use a mix of print, online, and in-person outreach methods in their efforts to educate staff and students about appropriate recycling practices, but low-cost options are the most popular.

Figure 2. Waste Diversion and Recycling Education Strategies Used by NC Public Colleges and Universities

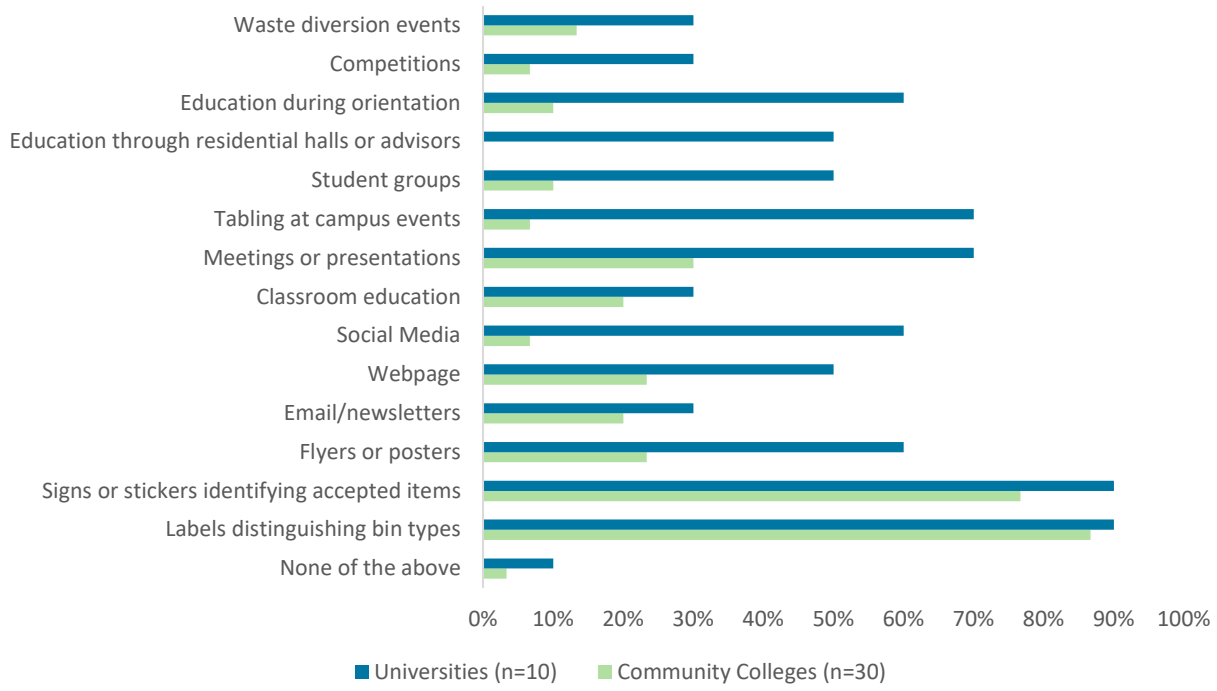

Figure 2. Surveyed schools use a variety of waste diversion and recycling education strategies. Signs and labels are the most popular strategy.

Outreach Campaigns

In addition to in-house education methods, the survey asked schools to report on any large-scale outreach campaigns used to educate people on their campuses. DEQ primarily uses the Recycle Right NC social marketing campaign, which focuses on reducing contamination in the recycling stream by informing the public about what is and is not recyclable. Fewer respondents than in last year's report indicated using the Recycle Right NC campaign. However, universities noted they also use national recycling campaigns, including Campus Race to Zero and America Recycles Day. Campus Race to Zero is an eight-week national competition held each spring to encourage colleges and universities to benchmark and improve efforts to reduce or eliminate waste. America Recycles Day, celebrated on November 15, is a national initiative of Keep America Beautiful to promote and celebrate recycling. Keep America Beautiful offers promotional materials and guidance for event planning and education to all types of public and private organizations, including schools. The challenge encourages schools to recycle plastic bottles and brings awareness to the economic and environmental benefits of recycling plastic bottles in the Carolinas.

Traditional Recycling

Public Space Recycling

Figure 3. Recycling in Campus Spaces at NC Public Colleges and Universities

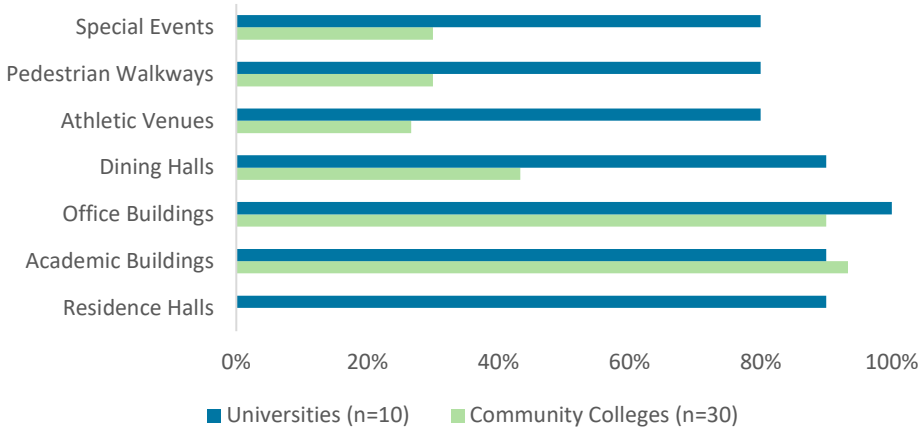

Figure 3. Surveyed schools indicate the most popular spaces for recycling bins on campuses are office and academic buildings.

The recycling survey asked colleges to detail where people on campus had opportunities to recycle. Specifically, colleges reported where bins are publicly located, what buildings had recycling collection, and the percentage of recycling bins paired with waste bins.

Placing bins in public areas is a best practice because students, faculty, and staff often need the opportunities to recycle away from their desks, offices, and dorm rooms. While walking through campus, people are more inclined to recycle when a bin is nearby.

As Figure 3 illustrates, most surveyed residential colleges and universities have a wide variety of locations where individuals can easily recycle. More than two-thirds of residential respondents report recycling bins

located in pedestrian walkways, athletic venues, dining halls, office buildings, academic buildings, residence halls, and at special events. In contrast, community colleges primarily report bins located in office and academic buildings. Although a lower percentage of community colleges have recycling bins in other spaces, it is important to remember that their facilities differ from residential institutions, so they may have fewer areas to offer recycling opportunities.

Along with having recycling bins widely available, twinning bins – pairing recycling and waste bins side-by-side in public areas- is a best recycling practice. Waste bins are more prevalent in public areas, so when recycling bins are co-located with waste bins, people are more likely to recycle. Further, when recycling bins are located next to waste bins, they have lower contamination rates because people are less likely to discard trash in them. Lone recycling bins are often treated as trash cans.

As Figure 4 demonstrates, around half of community colleges and 60 percent of residential colleges and universities surveyed pair at least some of their bins. Over 20 percent of all respondents pair all their bins. Approximately one-third of surveyed community colleges report not pairing any of their bins, but of the universities surveyed, all either pair all or some of their bins.

Figure 4. Recycling and Trash Twin Bins on Campuses at NC Public Colleges and Universities

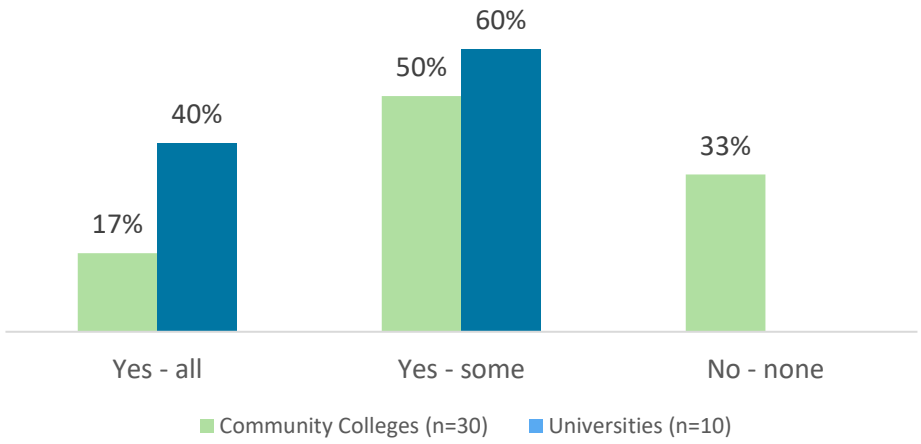

Figure 4. Seventy-six percent of reporting schools twin at least some of their recycling and trash bins on campuses.

Tons Recycled

Responding colleges and universities reported recycling 3,030 tons of traditional recyclable material in FY 2022-23, less than the 3,722 tons reported in FY 2021-22. Moreover, traditional recyclables made up a significantly lower percentage of the total materials generated than the most recent years. Notably, however, the participating respondents are not consistent year-to-year, introducing a natural amount of variability.

Still, a side-by-side comparison of the 31 schools that completed the survey for the past three years demonstrates that traditional recycling tonnage decreased in the most recent fiscal year. It is not clear why this is the case. Tonnage dropped significantly during the COVID-19 Pandemic, but last year's survey

data hinted at an initial recovery. It is likely that lingering effects of the pandemic are continuing to impact tonnage, but this does not completely explain the lower tonnage.

Recycling Collection Styles

Collegiate recycling programs collected most of their traditional recyclables in a single-stream system. In single-stream recycling, all traditional recyclable materials—cans, bottles, and paper—are collected in the same receptacles. Single-stream, or commingled recycling, is convenient and simple for users. As a result, recycling participation increases with single-stream, and the system is more efficient since staff empties fewer receptacles.

Figure 5. Single Stream Recyclables Collected by NC Public Colleges and Universities (tons)

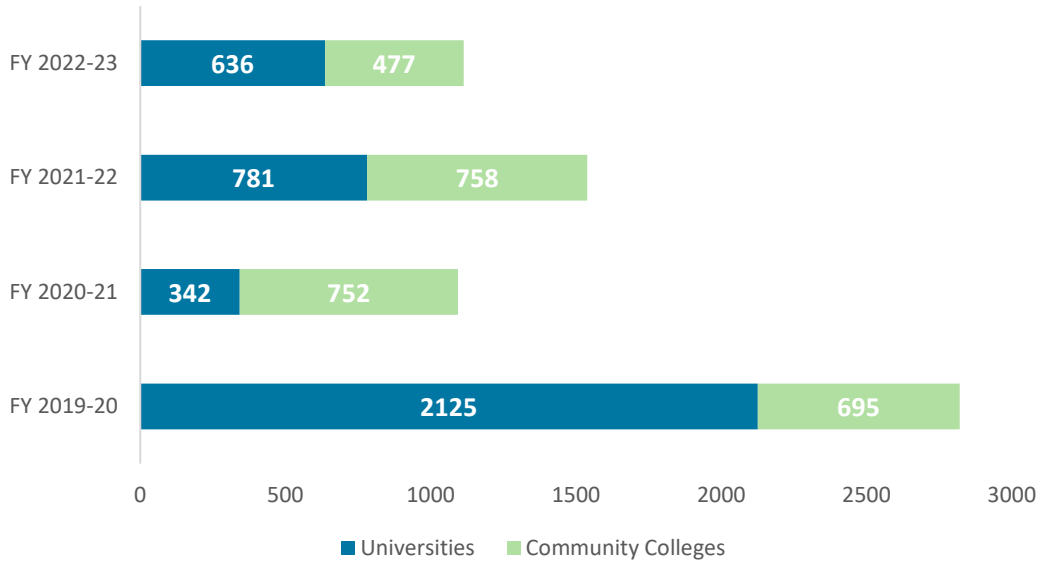

Figure 5. Single stream recyclable collection decreased significantly since before the COVID-19 pandemic.

Echoing the larger trend of traditional recyclables, single stream recyclable tonnage decreased in FY 2022-23, as shown in Figure 5. Unsurprisingly, the amount of commingled materials residential colleges and universities reported in FY 2020-21 sharply decreased in the pandemic's wake, but data last year gave the impression of some recovery. However, it may be too early for a clear trend to emerge. Still, one notable difference from the single stream in this year's data is a drop in relatively steady tonnage from community colleges.

Collegiate recycling programs collected most of their traditional recyclables in a single-stream system. The materials collected in dual-stream or source-separated programs were grouped into the following categories:

- Containers, including aluminum cans, steel cans, glass bottles and plastic bottles;
- Cardboard, which is often collected separately from other materials;
- Shredded paper, which is often shredded and recycled by a private company; and
- Mixed paper, including office paper, newspaper and paper cartons.

Figure 6. Traditional Recyclable Materials Collected by NC Public Colleges and Universities

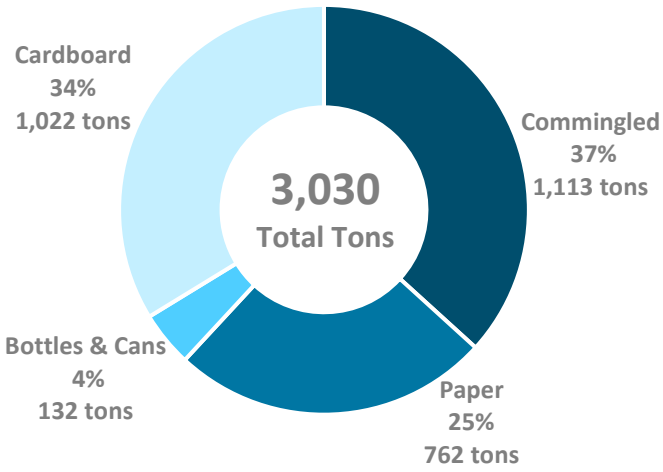

Figure 6. Commingled materials are the largest portion of the traditional recyclable material stream.

As depicted in Figure 6, schools report recycling 1,784 tons of fibrous materials, 132 tons of containers, and 1,113 tons of commingled materials in FY 2022-23.

Waste Roundup Case Studies: UNC Wilmington and Appalachian State

Two public North Carolina universities are leading regional waste management efforts by bringing local stakeholders together.

Both University of North Carolina at Wilmington and Appalachian State University recently invited local waste management stakeholders together for regular conversations to discuss collective problems and potential improvements for recycling in their communities.

Eastern Waste Roundup

UNC Wilmington started the effort in 2022 and invited the most directly involved waste entities: New Hanover County, City of Wilmington, and the regional material recovery facility (MRF), Sonoco. However, the group also included non-profit entities less directly tied to waste management, including Cape Fear River Watch, North Carolina Coastal Federation, Keep New Hanover Beautiful, and Plastic Ocean Project.

Because the participants have different demographics and focuses, their collective reach is significantly broader than any one organization. Moreover, organizations, like Plastic Ocean Project, that are less familiar with the recycling industry, can be informed by experts and share trustworthy information with their own stakeholders.

For instance, Feletia Lee, the Sustainability Director at UNC Wilmington, explained that after issues with lithium batteries at the local MRF were brought to the group's attention, Waste Roundup

members disseminated messaging around the dangers of lithium batteries and where to safely dispose of them.

Along with addressing specific issues, the Waste Roundup group has the potential to emphasize fundamental recycling education messaging across the members' respective demographics. Lee gives the example of helping people understand the distinction between accepted materials and recyclable materials. "Just because something isn't accepted [where you are] doesn't equate to it not being recyclable."

Similarly, as best practices and technology improve in any industry, rules change. Even more, the recycling industry is an integral element of the circular economy in which recycled raw materials are commodities prone to market shifts. It can be challenging to communicate these nuanced trends and updates to the public in simplified messaging. However, through regional groups like the Waste Roundup, disparate organizations can help reduce confusion and misinformation around waste management and recycling and instead build further understanding and trust.

Western Waste Roundup

The Waste Roundup initiated in the West by Appalachian State's Zero Waste Leadership team, comprised of Watauga County, the Town of Boone, and both regional MRFs, Republic Services and GFL, likewise aims to focus on maintaining credibility.

When there are notable recycling issues or accidents, they reduce the credibility of everyone in the recycling industry. Jennifer Maxwell, Sustainability Program Director at Appalachian State, adds with members all on the same page, the group helps ensure accountability.

In addition to coordinating consistent communication, the group also acts as a resource network by sharing what each is doing regularly and by establishing working relationships with each other. As questions or problems arise, they can ask each other for clarification and assistance and avoid larger problems or risk spreading incorrect information.

Partners can also find opportunities to work together. For example, Maxwell explains that Appalachian State and the Town of Boone already work together for Boonerang Music and Arts Festival, an annual street festival held every June, but working with the current Waste Roundup members, and potential future members, they hope to make the festival a zero-waste event.

Although waste roundup groups help streamline communication among regional partners, conditions may not be appropriate in all communities. Lee posits a roundup may be better suited to a physically small region with a limited number of partners in the waste and materials management sphere, as the case in both Boone and Wilmington.

Ultimately, these communities and their partners are finding an innovative way to sustain the region's current and future prosperity through the dissemination of credible, factual material management information, with the overarching goal of increasing their landfills' resiliency.

The groups are still green but, as Lee said, "For now it's enough that people are sitting down and having a conversation."

Other Recycling and Waste Diversion

Waste diversion and recycling has expanded beyond the traditional materials diverted in previous decades. Colleges seek new methods to reduce, reuse and recycle quality materials, and several schools have adopted solid waste plans to divert as much material from landfills as possible. As a result, organizations increased their recovery of materials like organics, electronics, construction and demolition waste, textiles, and hazardous waste.

Surplus and Donation

The N.C. Department of Administration's State Surplus Property Agency is the seller of all surplus supplies, materials and equipment owned by the State of North Carolina. Through the surplus process, items that are no longer needed or useful are evaluated to determine the preferred disposition method. Reusing, trading-in, selling or recycling is prioritized over sending items to the landfill.

Colleges and universities have also created opportunities for reuse by establishing programs to donate student-generated materials to individuals and organizations in need. Though only two surveyed community colleges note having a donation program, eighty percent of universities report offering a food donation program, and some collect other materials like clothing. Some of these programs occur at certain times of the year, like move-out, while others offer opportunities year-round at food pantries and free stores. For example, UNC Greensboro hosts a "Cram & Scram" sale where students can give away clothes, household goods, and furniture before moving out for the summer and the items are sold for 50 cents; the funding from this event goes back into recycling education for the campus.

Several schools also describe the donation efforts supporting individuals on campus, like Fayetteville Technical Community College's "Success Closet," which offers gently used business clothes to students for work or interviews. Some programs note they take excess materials off campus to a third party like Goodwill and The Salvation Army. The amount of food and clothing donations is not consistently tracked.

Waste Reduction Strategies

Along with donation efforts, colleges and universities employ other waste reduction strategies including offering reusable trays, dishes, utensils, take-out containers, compostable utensils, and compost programs. Residential universities surveyed indicate high usage of reusable materials in their campus dining operations. In fact, only 10 percent of surveyed universities note not employing any of these strategies. Dissimilarly, community colleges overwhelmingly tend not to use these waste reduction strategies; however, many community colleges do not offer campus dining options or have limited operations, thus reducing their ability to employ these strategies altogether.

Figure 7. Waste Reduction Strategies Employed

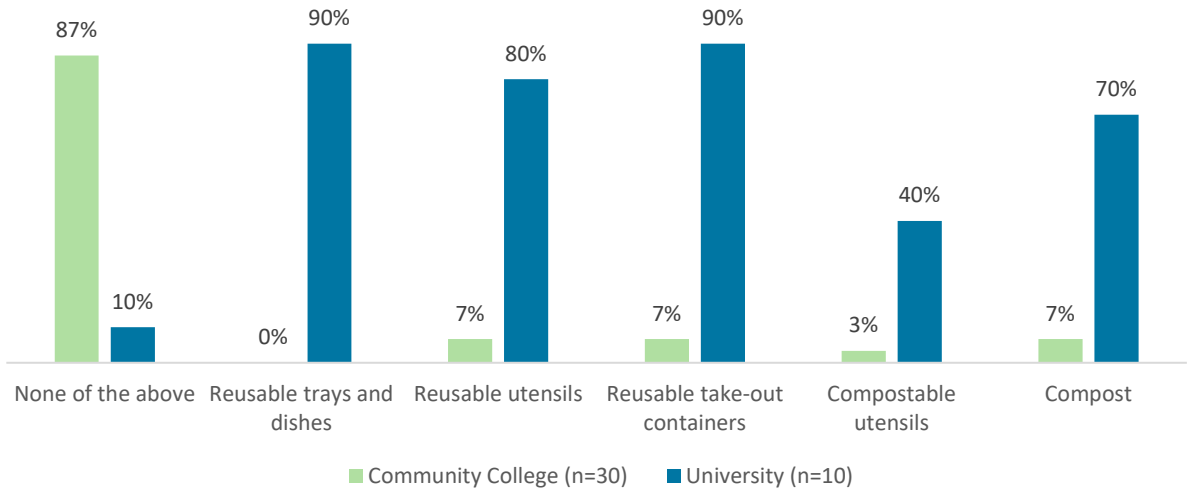

Figure 7. Most surveyed universities use a variety of waste reduction strategies, like using reusable materials.

In addition to reusable or compostable materials, some surveyed colleges and universities have procurement policies that encourage the purchase of goods with recycled content. Approximately 60 percent of universities and only 36 percent of community colleges note having a recycled content procurement policy. For more information on developing specifications for recycled content policies and access lists of suppliers, visit NC Purchasing Toolkit: Recycled Content Products developed by Waste Reduction Partners (WRP).

Schools also operate waste reduction programs around specific events. Paralleling the donation programs run during student move-out, some residential schools provide temporary cardboard collection during student move-in.

Organics Recovery

Residential colleges feed thousands of people daily, and they have expansive campuses that produce leaves and brush clippings. Recovering this organic material has become important in the field of waste reduction.

Responding colleges and universities recovered 464 tons of food waste (not including donated food) and 1,135 tons of yard waste and clean wood waste. Unlike the traditional recycling tonnage trend, organic tonnages increased compared to recent years. Table 1 illustrates the reported tonnages of surveyed respondents in both categories.

Table 1. Organic Tonnage Recovered by Public Colleges and Universities

Year	Food Waste (tons)	Yard Waste and Clean Wood Waste (tons)
FY 2022-23	464	1135
FY 2021-22	164	536
FY 2020-21	109	222

Among the nine schools that reported compost programs, more than two-thirds collect food scrap from the dining room area (post-consumer), the most popular collection location. Recycling programs typically locate compost bins with compostable liners next to trash and recycling stations for the diners' convenience. The higher cost for compostable liners is a common challenge for residence hall food scrap collection. Generally, compostable liners are more expensive than standard trash bags. Therefore, if a school were to consider implementing a compost program, program managers should consider the cost of liners in yearly budgets.

Figure 8. Composting in Campus Spaces at NC Public Colleges and Universities (n=9)

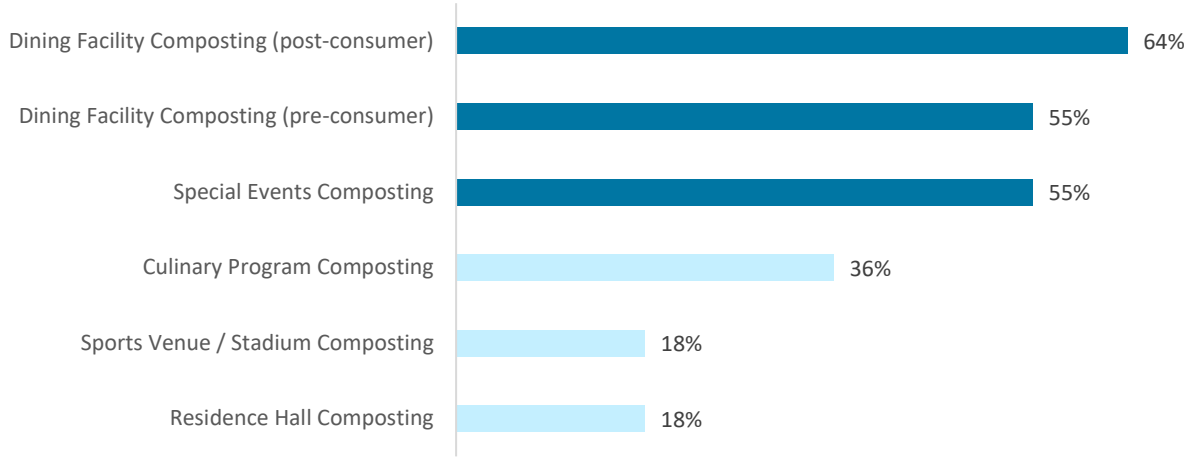

Figure 8. Of the nine schools that compost, seven collect post-consumer food scraps.

As Figure 8 illustrates, approximately half of surveyed school compost programs have kitchen scrap (pre-consumer) and special events compositing. Other, though less popular areas for collection include on-campus culinary programs, sports venues/stadiums, and residence halls. Certain spaces like residence halls can be challenging logistically because of collection and monitoring contamination.

The surveyed asked schools that do not operate a compost program why that is, and the most common reason noted was lack of personnel. Interestingly, approximately three-quarters of the schools that have compost programs use private contractors rather than operate the program themselves on sight, requiring fewer personnel. However, the second most common obstacle to implementing compost programs was cost. In addition to lack of staffing and funding, gaps in composting infrastructure, namely private contractors and haulers in a region, likely exacerbate these existing composting challenges.

Special Waste

North Carolina General Statute 130A-309.10(f) bans many of these materials from landfill disposal in the state, so organizations must recycle items like electronic equipment, antifreeze, motor oil and filters, pallets, tires, and batteries. In addition, several schools report operating additional programs for special wastes like textiles and expanded polystyrene (Styrofoam).

Reporting schools recovered a total of 1,805 tons of special wastes. Table 2 shows a breakdown of special wastes collected by colleges and universities.

Table 2. Special Materials Recovered from NC Public Colleges and Universities

Special Material	Tons Recovered
Used Cooking Oil	24.3
Pallets	200.9
C&D Recycling	317.2
Scrap Metal	612.3
Electronics	526.6
Lead Acid Batteries	17.2
Dry Cell Batteries	3.9
Textiles	3.3
Motor Oil	4.7
Oil Filters	0.2
Anti-Freeze	0.8
Tires	25
Ink Cartridges	1.9
Expanded Polystyrene	7.9
Other Misc.	58.8
Total	**1,805**

Disposal

Tons Disposed

According to the survey, North Carolina public colleges and universities disposed of 14,987 tons. This tonnage includes both municipal solid waste (MSW) disposal and construction and demolition (C&D) waste disposal. Of that total, 14,836 tons (99 percent) were sent to a landfill for disposal and the remaining 151 tons disposed (1 percent) went to C&D landfills.

The ten reporting universities are responsible for 59 percent of the MSW disposal, and the 30 reporting community colleges are responsible for the remaining 41 percent of MSW material. Similarly, universities contribute 57 percent of C&D materials and community colleges contribute approximately 43 percent.

Table 3. Total Materials Disposed

Year	MSW (tons)	C&D (tons)	Total Landfilled (tons)	MSW (lbs)/Person
FY 2022-23	14,836	151	14,987	176
FY 2021-22	8,333	361	8,694	116
FY 2020-21	6,280	624	6,904	94

Because the number and makeup of schools participating in the survey differs each year and can lead to variable data, like the apparent sharp increase of landfilled material, it is helpful to have a more consistent measure to compare changes year-to-year. As a result, we use the pounds per capita of MSW generated, including full-time equivalent staff (FTE) and students enrolled at the university or community college. As depicted in Table 3, in FY 2022-23, the ratio was 176 pounds of MSW per person. In comparison, the previous two years had much lower ratios. In FY 2021-22, the survey indicated 116 pounds of MSW was generated per person, and in FY 2020-21, it was 94 pounds per person. Consistently, and unsurprisingly, residential universities generate more pounds of MSW per person than community colleges.

As colleges and universities continue tracking and estimating the amount of solid waste disposed, it is recommended that they consider the following best management practices:

- Include language in solid waste contracts to require monthly tonnage reports from the hauler. This can be actual weights if the capability exists or estimates from the hauler; or
- Request that the hauler periodically collects actual solid waste tonnage information. For example, during one week per quarter, the hauler collects all the school's regularly scheduled pickups and takes that material directly to a scale to be weighed before servicing other customers on the route.

Waste Assessment

Waste assessment studies are valuable tools for agencies to learn what they are discarding in their waste stream and how much of that material is recyclable. Understanding what and where material is being thrown away can help colleges direct recycling strategies to recover the most material possible. Best practices include measuring waste from several different types of buildings across several months. Studying various building types will provide more robust data about the nature of disposal across campus. Diversifying the times of year studied will show how waste and recycling rates differ from month-to-month.

Three universities and one community college conducted solid waste assessments in the last several years. Some administer the audits internally while other use external contractors or partners, including Waste Reduction Partners (WRP). Schools seeking advice on waste characterization studies can contact DEACS, which has data from other school and local government waste assessments, and staff can assist in identifying a partner organization to help with the study.

Summary and Recommendations

Based on reports submitted by 40 universities and community colleges, data shows that recycling recovery decreased, and waste generation increased during FY 2022-23 compared to the most recent fiscal years.

Of the 11,716 total tons of material generated by reporting colleges and universities in FY 2020-21, they recovered 46 percent of materials. In FY 2021-22, reporting schools generated 15,082 tons of material and recovered 45 percent of materials. In comparison, surveyed schools in FY 2022-23 report generating more tons of material, but only 27 percent of materials were recovered. Table 4 provides a comparison of materials generated by category for the past three years.

Table 4. Total Materials Generated by NC Public Colleges and Universities (tons)

Material	FY 2021	FY 2022	FY 2023
Traditional Recyclables	3,026.16	3,721.59	3,030.25
Organic Materials	429.75	806.12	1,598.34
Other Recyclables	1,969.82	2,204.77	1,805.00
Donated Goods	11.21	16.06	N/A
Disposed Waste	6,279.51	8,333.40	14,987.06
Total	**11,716.44**	**15,081.94**	**21,420.65**

Figure 9. Materials Discarded or Recycled by Public Colleges and Universities

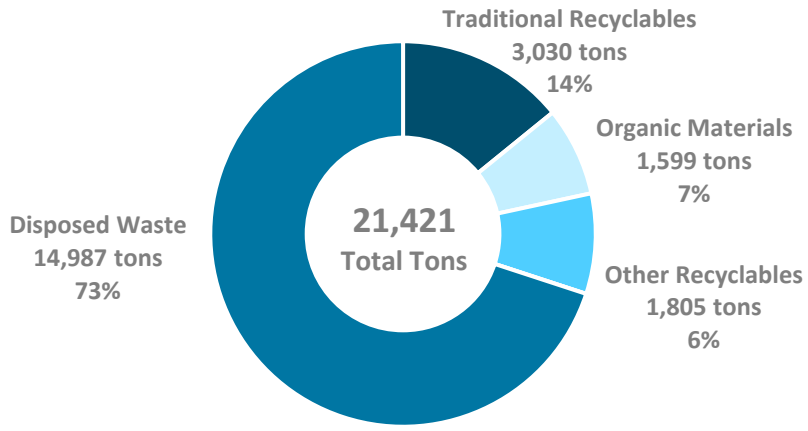

Figure 9. Approximately 73 percent of materials were disposed of rather than recycled by public colleges and universities.

Figure 9 shows the amount and distribution of recyclable and solid waste materials managed by the 40 reporting schools. Responding schools generated a total of 21,421 tons of material in FY 2022-23. Of that total, 14,987 tons (73 percent) were sent to a landfill for disposal, and a total of 6,434 tons of materials (traditional recyclables, other recyclables, and organics) were recovered.

Despite the decrease in recovered materials, recycling and waste reduction programming remains relatively accessible across campuses, though particularly at public universities. Traditional recycling collection points are ubiquitous in spaces like academic and office buildings and are also available in dining spaces, athletic spaces, public walkways, etc. Moreover, approximately three-quarters of public colleges and universities surveyed report pairing recycling bins with trash bins to some degree across campuses.

Participating schools employ a variety of waste reduction strategies like composting, hosting special events, having reusable food containers, utensils, and trays in dining spaces, and providing donation opportunities. Likewise, these schools also described a range of education and outreach methods including bin labels, signage, tabling, and education at orientation or through student groups. Among schools with the highest rates of diversion, they practiced a few common best strategies:

1) Abundant outreach – Most schools placed signage or labels directly on bins, but the highest performing college recycling programs invested in educational materials beyond information at recycling stations. DEACS encourages public recycling systems to:

a. Budget about $1 for outreach for every student and employee under its purview;
b. Expand outreach efforts beyond signage at recycling stations; and
c. Use clear and consistent messaging to avoid confusion.

2) Work with your MRF operator – Schools can work with the operator of their MRF to create a service contract for long-term stability for both organizations and create uniform messaging about recycling based on the accepted materials for the MRF.

3) Twinned bins – Twinned bins in public spaces have several benefits.

a. People are more likely to recycle if given the opportunity. Recycling bins next to trash bins reminds people that certain items belong in the recycling container.

b. People are less likely to treat a twinned recycling bin as a garbage can. If a recycling bin is left alone without a trash bin, people are more likely to throw garbage—food and non-recyclable waste—into the recycling container. Any contamination diminishes the quality of the entire recycling mix.

c. Public-space recycling bins remind people to recycle. Seeing recycling bins next to trash bins in public may remind them to recycle at home too.

4) Recover non-traditional materials – Much of the increases in collegiate recycling during the past several years stem from expansions in non-traditional recycling. Several public and private colleges have proven the effectiveness of on-site composting and partnerships with commercial composters. Colleges can also work with contracted food service providers to determine an organics management plan at their dining halls.

5) Donation and reuse of materials – Reusing commodities is more environmentally sustainable than throwing them away. Colleges and universities should use contracts and services available through the State Surplus Property Agency and Division of Purchasing and Contract to manage office furniture and supplies, equipment, vehicles, and special recyclables such as scrap metal, motor oil and filters, electronics, and fluorescent bulbs. Food banks also accept edible pre-consumer food across the state. DEACS encourages colleges to measure their tonnage of donations to better estimate their waste reduction progress.

6) Peer-to-peer collaboration – A key objective of DEACS is to foster inter-organizational collaboration for colleges and universities to encourage the employment of best management practices for waste reduction. One entity may face a challenging recycling problem, while another may have already solved a similar obstacle.

a. **Collegiate Recyclers Coalition** – One opportunity for connecting is through the Collegiate Recyclers Coalition (CRC), a council of the Carolina Recycling Association. The CRC holds quarterly meetings and an annual workshop to share information and network with related partners. More information can be found by contacting DEACS, or by visiting the CRC website.

b. **MRFshed collaboration** – A MRFshed includes all communities that feed recyclables to a single MRF. DEACS encourages colleges and universities to work with their surrounding community, haulers, and regional MRF to use a common set of educational recycling materials. This will help provide consistent messaging and reduce confusion for students, faculty and staff that live, work and spend time both on-campus and in the surrounding community.