FY 2024-25

NC College & University Waste Prevention & Diversion 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
recyclerright@deq.nc.gov

Prepared by Hannah Stroot
Community Recycling Specialist

Executive Summary

North Carolina colleges and universities play a vital role in advancing waste prevention, material recovery, and the circular economy through purchasing decisions, campus operations, and educational leadership. The Fiscal Year (FY) 2024–25 College and University Waste Prevention and Diversion Report analyzes data from 56 participating institutions, providing insight into current practices, emerging trends, and future opportunities to strengthen waste prevention and diversion programs across higher education.

The report highlights encouraging progress in waste prevention through source reduction and reuse. Nearly half (48%) of participating institutions reported Environmentally Preferable Purchasing (EPP) policies, which encourage the purchase of recycled-content, recyclable, compostable, reusable and other environmentally preferred products. Approximately 77% of reporting institutions operated campus surplus property programs, and most four-year institutions also managed programs that collect and redistribute student-generated materials, including durable goods and edible food. Reporting institutions documented approximately 756 tons of reused materials, equivalent to 6 pounds per capita.

Traditional recycling programs were nearly universal among reporting institutions. Single-stream recyclables accounted for 52% of reported traditional recycling tonnage, followed by separated cardboard (34%), paper products (11%), and plastic, metal, and glass containers (4%). Reporting institutions diverted approximately 6,085 tons of traditional recyclables, equivalent to 39 pounds per capita.

Institutions continued to expand collection of hard-to-recycle materials that require specialized collection systems or processing due to their unique characteristics, regulatory requirements, or potential environmental impacts. These materials, which include scrap metal, construction and demolition (C&D) debris, electronics, and other items, represented the largest diversion category reported. Participating institutions collected approximately 10,391 tons of special recyclables, equivalent to 69 pounds per capita.

Food waste diversion has also become an important component of campus waste management. Fourteen institutions reported composting or animal feeding operations, collectively diverting approximately 2,253 tons of food waste, equal to 21 pounds per capita. These diversion programs are complemented by source-reduction efforts, including strategic food ordering, surplus food recovery, and education. While composting is one of the most effective near-term opportunities to divert additional food waste from landfills, many institutions face barriers related to limited staffing, funding, contamination, and access to processing infrastructure.

Across all reporting institutions, approximately 43,667 tons of materials were reportedly managed through reuse, recycling, composting, and landfill disposal. Of this total, 24,182 tons were disposed of in landfills, equivalent to 162 pounds per capita. Landfill disposal has surpassed pre-pandemic levels, underscoring the need for continued expansion of waste prevention and diversion programs. Collectively, participating institutions achieved a reported 45% waste prevention and diversion rate during FY 2024–25.

Looking ahead, the report identifies three priorities: preventing waste at the source through stronger purchasing and reuse programs; increasing diversion by targeting food waste, traditional recyclables, and C&D debris; and advancing innovation through student engagement, pilot projects, and cross-campus collaboration. Together, these strategies will strengthen sustainable materials management and further position North Carolina colleges and universities as leaders in the circular economy.

Table of Contents

Executive Summary 1
Introduction 5
Participating Institutions 6
Waste Prevention 7
Environmentally Preferable Purchasing 7
Program Spotlight 8
Reducing Food Service Waste 8
Program Spotlight 9
Reuse 10
Surplus Property Programs 10
Student-generated Materials 10
Examples on Campus 12
Reuse Tonnage 12
Waste Diversion 14
Traditional Recyclables 14
Recycling Access 14
Container Placement 15
Recycling Service Providers 16
Recycling Collection Methods 17
Traditional Recycling Tonnage 18
Special Recyclables 19
Special Collection Programs 20
Program Spotlight 21
Special Recycling Tonnage 23
Lithium-ion Batteries 25
Food Waste 26
Wasted Food Pathways & Diversion Strategies 26
Food Waste Diversion Tonnage 28
Compost Program Barriers 29
Compost Program Design & Implementation 31
Program Spotlight 32

Compost Program Management 32
Landfill Disposal 33
Solid Waste Disposal Tonnage 34
Waste Assessments 34
Five-year Trends 35
Education & Outreach 37
Strategies 38
Approaches by Institution Type 39
Program Spotlight 40
Conclusion & Recommendations 42
Conclusion 42
Recommendations 43
Waste Prevention 43
Material Recovery & Landfill Diversion 43
Innovation & Campus Engagement 44
References 45
Appendix A 47
Participating Institutions 47
Public Two-Year Institutions 47
Public Four-Year Institutions 47
Private Four-Year Institutions 47
Appendix B 48
Volume-to-Weight Conversion Factors 48
Appendix C 50
Institutional Reporting Rates for Tonnages 50
Appendix D 51
FTE Student & Staff Populations of All Institutions 51

Introduction

North Carolina colleges and universities are significant generators of materials and hold substantial purchasing power that can be leveraged to support circular material management systems. This dual role—as both material generators and institutional buyers—positions colleges and universities as key actors in advancing closed-loop systems where materials are minimized, reused, and kept in use for as long as possible. In addition, NC colleges and universities have some of the most robust waste prevention and diversion programs in the state, making them particularly valuable to study as models for sustainable materials management.

As state-funded entities, public institutions of higher education are subject to recycling and procurement requirements under the following North Carolina General Statutes (G.S.):

- G.S. 130A-309.14 requires the recycling of office paper, newspaper, aluminum cans, glass bottles, and plastic bottles;
- G.S. 130A-310.60 requires the recycling of fluorescent bulbs;
- G.S. 130A-309.10 requires compliance with statewide landfill bans (see Special Recyclables for more details); and
- G.S. 143-58.2 and G.S. 143-58.3 require the purchase of products with recycled content, including recycled paper and paper products.

To support compliance and track progress, the North Carolina Department of Environmental Quality (DEQ), through its Recycling and Materials Management Section (RMMS) within the Division of Environmental Assistance and Customer Service (DEACS), administers an annual survey of higher education institutions and compiles the results into this summary report. While statutory requirements apply specifically to public institutions that receive state funding, the FY 2024–25 survey includes both public and private not-for-profit colleges and universities to provide a more comprehensive view of waste prevention and recycling efforts across the state's higher education sector.

The survey captures both prevention and diversion strategies, including source reduction, reuse, recycling, animal feeding, and composting. Questions address program design, infrastructure, education and outreach, and collection tonnages for reuse, diversion, and disposal. While participation is voluntary, the data offer valuable insights to help institutions monitor performance, identify opportunities for improvement, and strengthen solid waste prevention and diversion programs statewide.

Tonnage data in this report do not fully capture statewide activity and are subject to uncertainty due to reporting limitations and estimation methods. Reporting was particularly inconsistent for reuse and special recyclables compared to traditional recyclables, food waste, and landfill disposal. Many institutions collect and divert these materials but do not systematically track their weights.[1] Consequently, some institutions did not report weights for all materials collected, while

[1] Based on comments in institutions' reports. Weight tracking was particularly limited for reuse and special recycling.

others estimated weights using volume-to-weight conversion factors (see Tables B1–B5 in Appendix B).

To support transparency in data coverage, Tables C1–C5 in Appendix C provide a breakdown of institutional reporting rates for each tonnage category. To improve comparability across years with varying levels of survey participation, year-over-year comparisons are presented on a per capita basis using the full-time equivalent (FTE) student and staff populations of reporting institutions (see Appendix D).

Participating Institutions

The FY 2024–25 survey was distributed to all two-year and four-year public and private not-for-profit colleges and universities in North Carolina. A total of 56 out of 125 public and private institutions (45%) participated. Public institutions accounted for most participants, with 64% of public institutions participating. In contrast, only 16% of private institutions participated. Figure 1 below shows the geographic distribution of participating institutions by institution type and illustrates broad representation across the state. A complete list of reporting institutions is also provided in Appendix A.

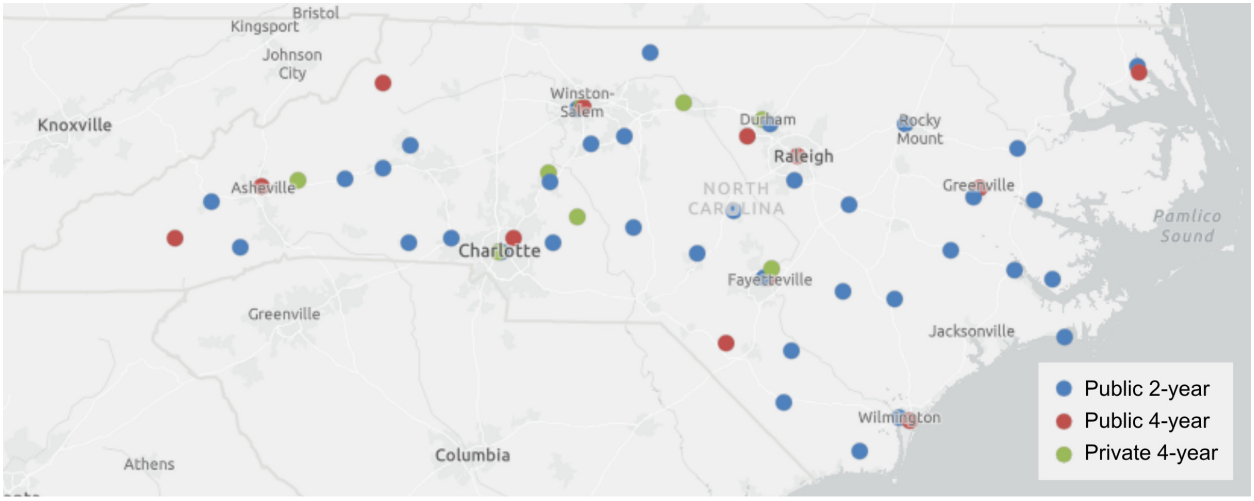


Figure 1. Map of participating colleges and universities, FY 2024–25.

The sample of 56 participants is subject to selection bias, as institutions with dedicated sustainability and/or waste reduction and recycling staff are more likely to participate. Because these individuals often lead the implementation of best practices, the findings may overstate the prevalence of waste prevention and diversion efforts and overall performance. This bias is particularly relevant for private institutions, which have not historically been required to report these data. In general, findings for private institutions carry high uncertainty and should not be considered representative due to the small sample size. However, this marks the first year of targeted outreach to private institutions, and participation is expected to increase over time, improving the robustness of future analyses.

Not all participating institutions responded to every survey question. When data were missing or incomplete, those responses were excluded from relevant analyses; as a result, sample sizes (n) may vary across figures and tables.

Waste Prevention

In line with the U.S. Environmental Protection Agency (EPA) waste management hierarchy, North Carolina's solid waste management policy prioritizes source reduction and reuse as the most effective strategies for minimizing waste, followed by recycling and composting. Consistent with this framework, many institutions are employing approaches to prevent waste before it is generated.

Environmentally Preferable Purchasing

One of the primary ways institutions can prevent and reduce waste is through Environmentally Preferable Purchasing (EPP) policies, which guide procurement decisions toward products with reduced environmental impacts.

A total of 26 EPP policies were reported, representing 48% of responding institutions. Public two-year institutions accounted for more than half of all reported policies, while public four-year institutions had the highest adoption rate, with 73% of respondents reporting EPP policies. Results for private four-year institutions are less representative, with only three institutions reporting EPP policies.

Across institutions with EPP policies, the most addressed product attributes include:

- recycled-content products (62% of policies),
- recyclable products (46% of policies),
- compostable products (35% of policies), and
- products with take-back programs (31% of policies).

Policies that prioritize recycled content, recyclability, and compostability align with existing state requirements and emerging policy direction. Under G.S. 143-58.2 and G.S. 143-58.3, public institutions are required to purchase products with recycled content, including recycled paper and paper products. Prioritizing recycled-content products alongside recyclable and compostable products supports both supply- and demand-side recycling market improvements and reinforces circular material management systems.

Other attributes included in EPP policies further support circularity. For example, take-back programs—included in 50% of reported public four-year institution EPP policies—call on vendors to reclaim products at end of life for reuse, refurbishment, recycling, or responsible disposal. Some institutions' policies also prioritize reusable, durable, secondhand, and refurbished/remanufactured products, all of which extend product lifecycles and reduce demand for new materials. EPP Policies could also require or prioritize products designed for disassembly. No institutions reported explicitly including this criterion in FY 2024–25.

Figure 2 provides a detailed breakdown of attributes covered by EPP policies across institution types. These attributes were adapted from the U.S. EPA's Final Guidance on Environmentally Preferable Purchasing. Among reporting institutions, EPP policy adoption is higher among four-year institutions, which also tend to have more comprehensive policies.

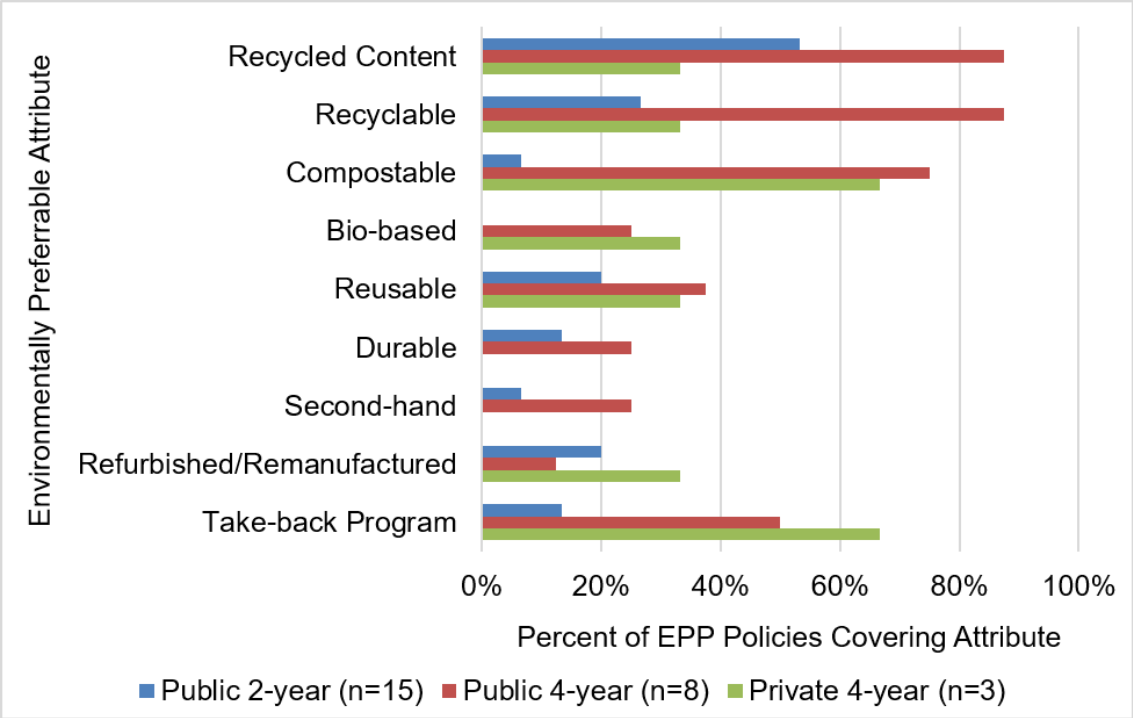


Figure 2. Attributes covered by EPP policies of surveyed institutions, FY 2024–25.

Program Spotlight

Embedding Sustainability in Procurement Systems

East Carolina University (ECU) embeds EPP into its procurement practices by providing education and training to financial and purchasing staff through an annual financial services workshop and an online resource hub that promotes consistent decision-making across departments. ECU's approach emphasizes practical implementation tools that translate policy ambition into everyday procurement behavior. Training focuses on addressing common barriers to adoption (such as perceived cost or quality concerns) and equipping staff with structured evaluation criteria for product selection—covering durability, recyclability, shipping impacts, resource intensity, and packaging. Decision-makers are further supported through accessible resources, including eco-label references and curated green product lists, helping establish sustainable purchasing as a standard operational practice.

Reducing Food Service Waste

Reducing waste associated with food service is a high-impact opportunity for waste prevention on college campuses. Dining operations can generate substantial amounts of disposable food

service ware, particularly for takeout meals, events, and other situations where reusable items may be less practical. Institutions can reduce this waste by prioritizing reusable food service ware and using compostable alternatives where reusable options are not feasible.

Reusable systems were the most widely adopted alternative and represent the preferred strategy for reducing food service waste. Among the 20 reporting four-year institutions:

- 90% used reusable trays, dishes, or utensils, and
- 95% used reusable takeout containers.

Compostable food service ware also plays a supporting role, particularly in situations where reusable items are not feasible (e.g., equipment downtime, convenience needs, or specific event settings). Among the 20 reporting four-year institutions:

- 60% used compostable trays, dishes, or utensils, and
- 50% used compostable takeout containers.

Two-year institutions are not included in this analysis, as many have limited or no on-campus dining services. In FY 2024–25, three public two-year institutions reported offering alternatives to conventional disposable food service ware: Beaufort County Community College, Carteret Community College, and Cleveland Community College.

Program Spotlight

Transitioning to a Technology-Enabled Reuse System for Campus Dining



Figure 3. A USEFULL container return station in UNCW's dining hall.

The University of North Carolina Wilmington (UNCW) is the first higher education institution in North Carolina to implement a fully plastic-free reuse system for takeout dining. This shift follows an earlier plastic container reuse program that proved unsustainable due to a 96% container loss rate driven by low returns and frequent replacement needs. To address these challenges, UNCW partnered with USEFULL, a reusable foodware company that provides durable containers and digital tools to manage their distribution and return.

USEFULL's stainless steel takeout containers are distributed through campus dining halls and can be checked out by students using campus ID cards or mobile credentials (see Figure 3). The system integrates with Transact Campus, a mobile application platform that tracks when containers are checked out and returned. This tracking has helped UNCW achieve higher return rates and nearly eliminate container loss, while the

platform's reporting tools allow the university to measure waste reduction, water savings, and emissions avoided. For UNCW, the system has reduced operational costs and administrative burden, while facilitating a plastic-free dining environment aligned with sustainability and public health priorities on this coastal campus.

Reuse

Another key waste prevention strategy is expanding reuse on campus through state and institutional surplus property programs as well as student-focused collection and redistribution initiatives. This section examines reuse activity across campuses and provides an analysis of reported reuse data to better understand trends and impacts.

Surplus Property Programs

Surplus property programs keep usable materials in circulation while reducing disposal costs and generating revenue through item sales. Public institutions are required to participate in the NC Department of Administration (DOA) State Surplus program under G.S. Chapter 143 Article 3A, which governs the redistribution of state-owned property. In addition, many institutions operate campus-level surplus programs to redistribute or sell items internally or to the public.

Among reporting institutions, campus surplus programs were operated by:

- 69% of public two-year institutions,
- 100% of public four-year institutions, and
- 75% of private four-year institutions.

These programs often serve as a central hub for furniture, equipment, and supplies that can be reassigned across departments or sold externally, supporting reuse and extending product lifecycles.

Student-generated Materials

Some institutions also collect student-generated materials for reuse. This practice was especially common in residential campus settings, with 100% of reporting public four-year and 88% of reporting private four-year institutions operating collection programs in FY 2024–25. In contrast, only 14% of reporting public two-year institutions operated such programs.

Figure 4 summarizes the collection strategies used by institutions with student-generated material reuse programs. Four-year institutions most commonly relied on move-out collection events, when large volumes of reusable items are generated as students vacate residence halls. Some also reported move-in collections, though these were less common since materials generated during move-in are typically recyclable (e.g., cardboard) rather than reusable goods (see Special Collection Programs). Among the relatively few public two-year institutions with reuse programs, year-round collection at designated drop-off locations was the most common approach. However,

only 11% of all reporting public two-year institutions offered year-round collection, reflecting the resources and staff capacity required to operate a collection system.

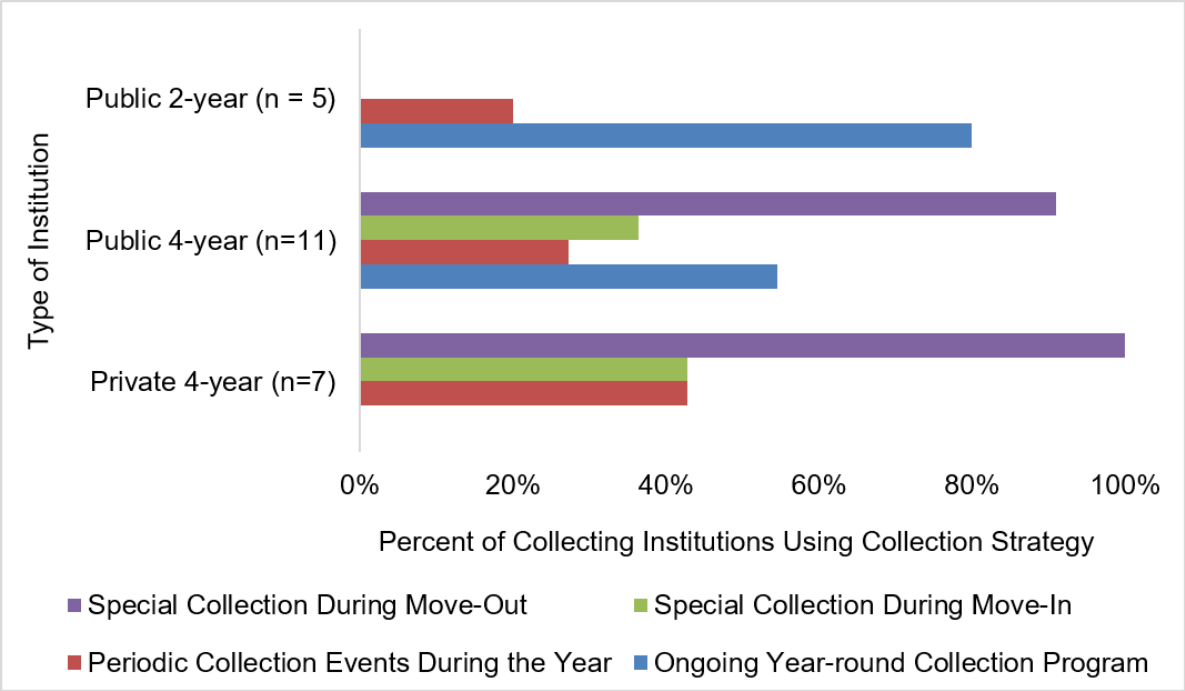


Figure 4. Strategies used to collect student-generated materials at institutions with collection programs, FY 2024–25.

Periodic collection events throughout the year were less common across institution types. These events are often tied to donation drives, campus events, or awareness campaigns and can be particularly effective at increasing participation and engagement, rather than solely maximizing collection volumes.

Reuse outlets include both on-campus redistribution and donation to external organizations, with many institutions using both approaches depending on material type and volume. This is particularly common among public four-year institutions, where 82% reported utilizing both outlets. A similar pattern was observed among reporting private four-year institutions: all donated materials to external organizations, and 57% also redistributed materials on campus. However, this finding should be interpreted with caution given the limited sample size for private four-year institutions. In contrast, 80% of reporting public two-year institutions relied on on-campus redistribution, while only 20% donated materials externally—likely reflecting smaller, more manageable collection volumes.

For four-year institutions, external partnerships play a particularly important role in managing large collection volumes during student move-out periods. For example, the University of North Carolina Asheville (UNCA) collected 3.42 tons of furniture, home goods, and clothing for Goodwill Industries International during their spring 2025 move-out. Similarly, the University of North Carolina at Chapel Hill (UNC-CH) and North Carolina State University (NC State) partner with

TROSA Thrift Store to manage donated materials, with NC State reporting 20.41 tons collected during its spring 2025 move-out. Whereas colleges and universities often lack the storage space, staff capacity, and operational systems needed to facilitate the redistribution of these reusable goods, external organizations are well-suited to manage the large donation volumes. As long as donation quality is properly managed, third-party partnerships are an effective, mutually beneficial solution.

Examples on Campus

Building a Student-Led Campus Reuse Network



Figure 5. Students shopping for second-hand clothes at Carolina Thrift's annual sale.

Carolina Thrift is a student-led nonprofit at UNC-CH working to keep used clothing and dorm supplies out of landfills through campus reuse initiatives. The organization collects donated items from residence halls, nearby student housing, and other campus and community locations, redistributing them through a large annual back-to-school thrift sale during move-in weekend as well as additional pop-up events throughout the year. By extending the lifespan of secondhand goods and making them more affordable and accessible, Carolina Thrift promotes more sustainable consumption practices within the campus community.

Beyond direct reuse efforts, Carolina Thrift reinvests proceeds from its sales into broader campus sustainability initiatives through its Sustainability Fund. The fund awards $100-$500 grants to support innovative, student-led projects, including campus litter collection campaigns, composting initiatives, and circular economy educational programming.

Reuse Tonnage

Eighteen institutions (32% of survey respondents; 14% of all institutions) reported reuse weights for surplus property and student-generated materials. There was particularly limited representation from public two-year and private four-year institutions (see Table C1 in Appendix C for the full breakdown of reuse reporting rates by institution type).

Across reporting institutions, material reuse totaled approximately 756 tons, or 6 pounds per capita. Figure 6 illustrates the range of materials captured, with large volumes of mixed materials and furniture. A significant portion of “mixed materials” consists of furniture from move-out and surplus programs; the furniture was not reported separately by weight. Notably, pallet reuse accounted for 72 tons, driven by a single institutional program (NC State). Edible food, electronics,

and textiles contributed smaller but meaningful shares (approximately 5%, 4%, and 3%, respectively). Other items reported for reuse include cooking equipment, paint, office/school supplies, shoes, and fashion accessories.

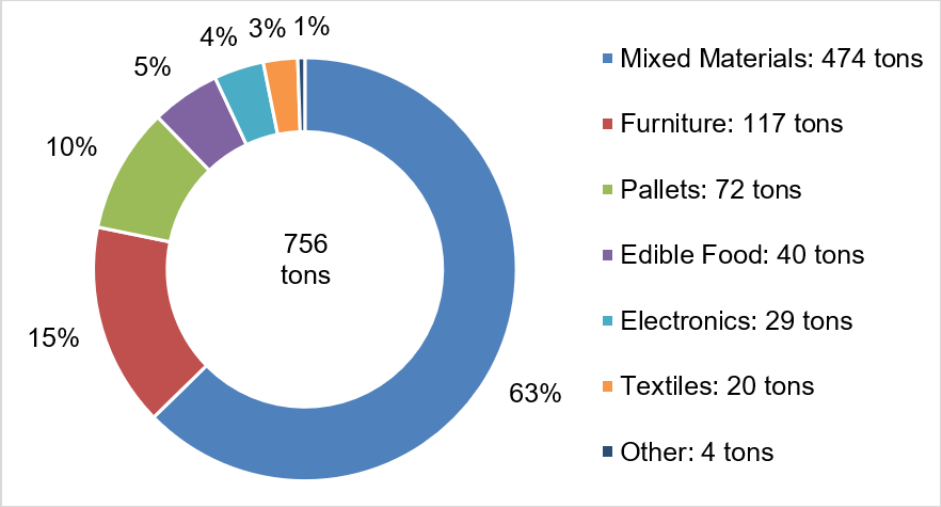


Figure 6. Total reuse tonnage by material type from all reporting institutions, FY 2024–25.

Figure 7 shows the distribution of reuse by institution type. Public four-year institutions account for the majority of reported reuse (89%), followed by private four-year (10%) and public two-year institutions (1%), reflecting differences in participation and reporting. As participation increases, particularly among private institutions, this distribution may become more balanced. Across institution types, furniture represents the largest material category, with all types also reporting reuse of food, textiles, and office/school supplies. Only public four-year institutions reported pallet and electronics reuse.

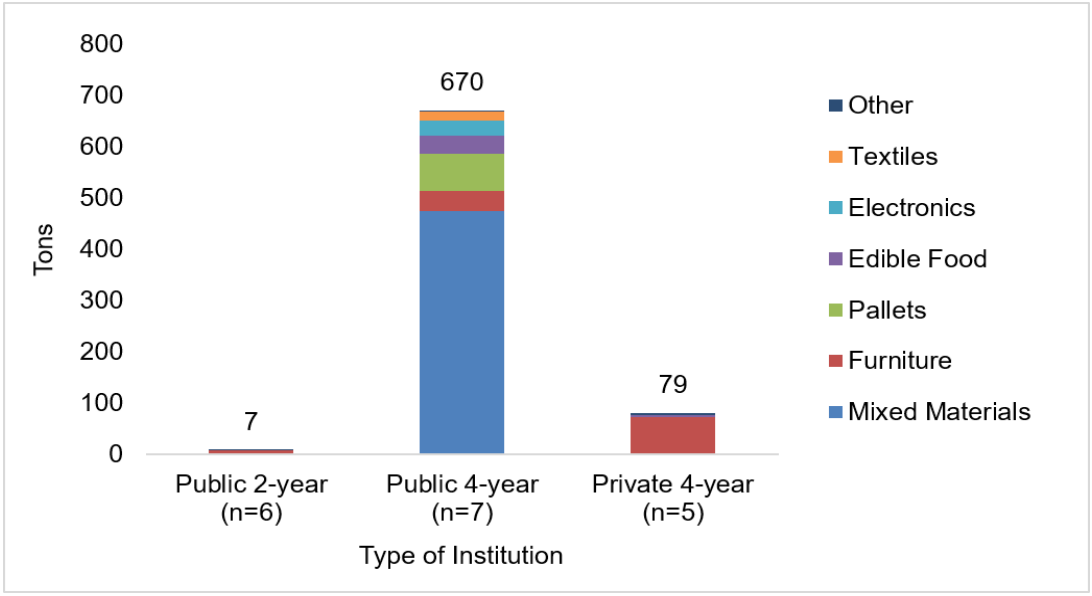


Figure 7. Reuse tonnage by material and institution type, FY 2024–25.

These data highlight the important role of reuse in preventing waste and advancing more circular material flows on college campuses through both institutional programs and student-focused initiatives.

Waste Diversion

Complementing waste prevention efforts, diversion programs prevent materials from entering landfills at the end of their useful life. Many institutions divert discarded materials through traditional recycling, special recycling, and food waste composting and animal feeding programs.

Traditional Recyclables

Recycling plays an important role in diverting materials from landfill disposal and returning them to productive use, supporting the transition to a circular economy. It is prioritized in both the U.S. EPA waste management hierarchy and North Carolina's solid waste management policy. In North Carolina, this priority is further reinforced by G.S. 130A-309.14, which requires public colleges and universities to establish programs for collecting traditional recyclable materials generated on campus. The statute specifically mandates the recycling of office paper, newspaper, aluminum cans, glass bottles, and plastic bottles, and further requires that recycling containers be readily accessible and, to the extent possible, co-located with trash receptacles. This co-location strategy, commonly referred to as "twinned bins," is widely recognized as a best practice for increasing recyclable material capture. The following analysis evaluates institutional collection systems and progress toward meeting these requirements.

Recycling Access

Most reporting institutions demonstrate strong adherence to G.S. requirements for readily accessible collection infrastructure. Recycling programs were nearly universal among reporting institutions, with 51 of 53 schools operating or contracting for traditional recycling services.[2] The two exceptions included one private four-year institution with no recycling program and one public four-year institution that recycled only cardboard.

Among the 51 schools with traditional recycling programs, 98% provide recycling collection in academic buildings and 92% in office buildings. Collection in dining halls was reported by 64% of institutions, partially reflecting the limited presence of dining facilities at two-year institutions. Among four-year institutions with on-campus housing, all reported providing recycling collection in residence halls. Collection in outdoor and other high-traffic locations—such as pedestrian walkways, athletic venues, and special events—is less common, with just under half of institutions reporting coverage in these areas. Figure 8 illustrates variation in collection locations by institution type, with public four-year institutions reporting the broadest collection coverage overall.

[2] Three institutions did not complete this section of the survey, so the total number of institutions is 53 instead of 56.

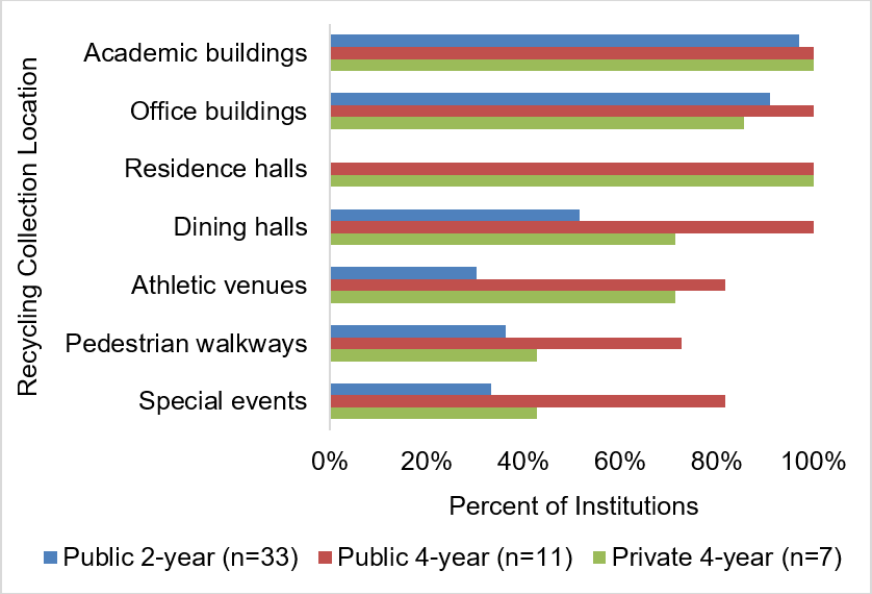


Figure 8. Recycling collection locations at institutions with traditional recycling programs, FY 2024–25.

Container Placement

Figure 9 illustrates the extent to which institutions with traditional recycling programs have implemented twinned bin systems. Private institutions reported the highest share of fully twinned systems (57%), though this finding is not representative given the small sample size. All public four-year institutions with traditional recycling have adopted twinned bins in at least some locations. Public two-year institutions show slower progress, with 27% reporting no twinned bins and 58% indicating partial implementation. Among institutions with partial adoption, an average of 50% of bins are twinned, indicating meaningful but incomplete progress toward full system integration.

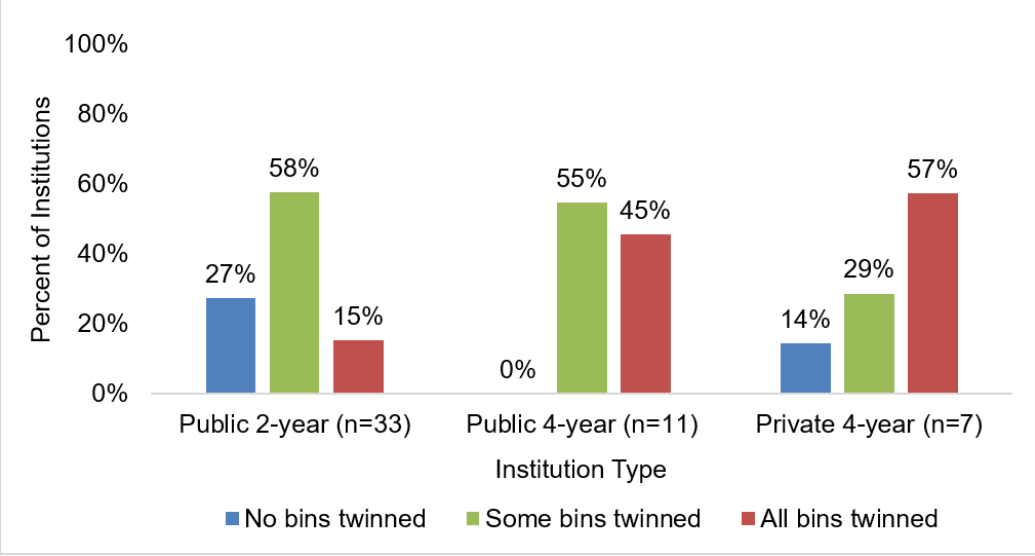


Figure 9. Twinned bin adoption rates among institutions with traditional recycling programs, FY 2024–25.

While transitioning to twinned bins can be straightforward when existing inventory can be reconfigured, many institutions face practical constraints. Expanding recycling access often requires purchasing additional bins to match existing trash receptacles, resulting in added capital and operational costs, while space limitations can further restrict implementation.

One approach some institutions have adopted to address these challenges is centralized waste stations, which consolidate trash, recycling, and composting (where applicable) into fewer, strategically placed locations. In addition to reducing the number of bins, servicing needs, and liner use, centralized stations can improve material sorting by encouraging more deliberate disposal behavior. A 2024 study by Busch Systems of 170 North American colleges and universities found that institutions that removed waste bins from some or most classrooms reported improved diversion rates (74%), reduced contamination (64%), and labor savings (93%), with little evidence of increased litter.

Recycling Service Providers

Colleges and universities rely on internal staff, private contractors, and/or local government partners to collect traditional recyclables on campus. Overall, 76% of reporting institutions utilize campus staff—including housekeeping, custodial, facilities, maintenance, and grounds teams—to manage recycling collection. Among these institutions, 23% supplement internal services with private contractors and 5% partner with local governments. Many institutions employ hybrid approaches, assigning different service providers to specific materials or campus areas (e.g., indoor versus outdoor collection). As a result, the shares shown in Figure 10 do not sum to 100%.

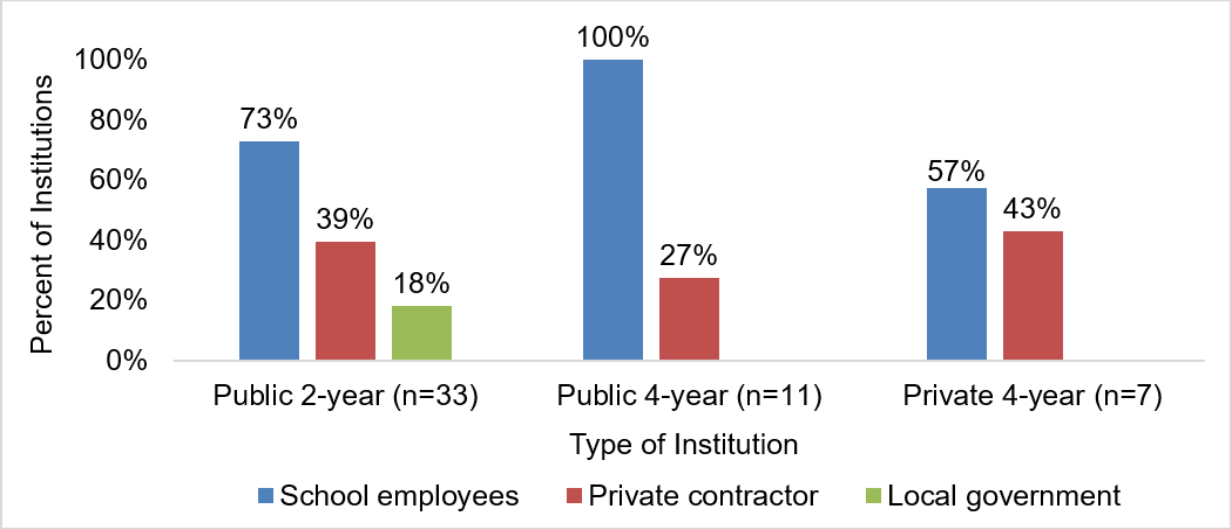


Figure 10. Recycling service providers among institutions with traditional recycling programs, FY 2024–25.

Service providers vary notably by institution type. Public four-year institutions are far more likely to rely on internal staff, with 92% reporting in-house collection, compared to 50% of private four-year institutions. This variation reflects differences in institutional scale, with larger public

institutions better positioned to maintain internal capacity and realize operational efficiencies, while smaller private institutions more often outsource these functions.

Public two-year institutions were the only group that reported partnerships with local governments for recycling collection. This reflects the role of North Carolina's community colleges as place-based institutions established to meet the educational and workforce development needs of their local communities, resulting in strong relationships with county and municipal governments. Their relatively low material volumes may also be more easily incorporated into existing local collection systems with minimal additional cost. Partnership models vary by institution. At Central Piedmont Community College, third-party custodial staff empty and consolidate recycling containers, while Mecklenburg County provides hauling services. College of the Albemarle uses a combination of municipal and private-sector partners, with the Town of Edenton collecting most traditional recyclables and private companies managing specific fiber-based streams such as shredded paper and cardboard. At Cape Fear Community College, campus staff are the primary collectors, with some support from the City of Wilmington for sidewalk receptacles.

Recycling Collection Methods

Recycling systems also differ in how materials are sorted and collected. Single-stream collection, in which recyclables are collected together, was the most common approach across all reporting institutions (58%), followed by source-separated systems (21%) and dual-stream systems (19%), while 2% reported no recycling collection. As shown in Table 1, preferences vary by institution type.

Table 1. Traditional recycling collection methods by institution type, FY 2024–25.

Institution Type	Single Stream	Dual Stream	Source Separated	No Collections
Public two-year institutions (n=33)	61%	12%	27%	0%
Public four-year institutions (n=12)	42%	42%	17%	0%
Private four-year institutions (n=8)	75%	13%	0%	13%

Single-stream systems were most prevalent among private four-year institutions (75%) and were also widely used by public two-year institutions, reflecting their operational simplicity and lower infrastructure requirements. Among public four-year institutions, single-stream and dual-stream systems—which separate fibers from containers—were equally common (42% each), suggesting a balance between convenience and material quality considerations. Source-separated systems, which require users to sort materials into individual streams, were less common overall due to higher operational demands and reliance on user participation. However, they can be effective where material streams are relatively uniform, such as campuses generating primarily fiber-based recyclables, or where local processing infrastructure and cost considerations favor separate collection.

Traditional Recycling Tonnage

Forty-two institutions (75% of survey respondents; 34% of all institutions) reported recycling weights. Table C2 in Appendix C shows the full breakdown of traditional recycling reporting rates by institution type.

Across reporting institutions, approximately 6,085 tons of traditional recyclables were collected. This equates to roughly 39 pounds per capita, nearly seven times higher than reported reuse per capita. Figure 11 illustrates the composition of materials collected. Single-stream recyclables account for the majority (52%), followed by cardboard (34%). Paper collected through both dual-stream and single-stream systems (including mixed paper, office paper, and shredded paper) represents 11% of total tonnage. Containers (plastic, glass, and metal) collected through both systems account for the remaining 4%.

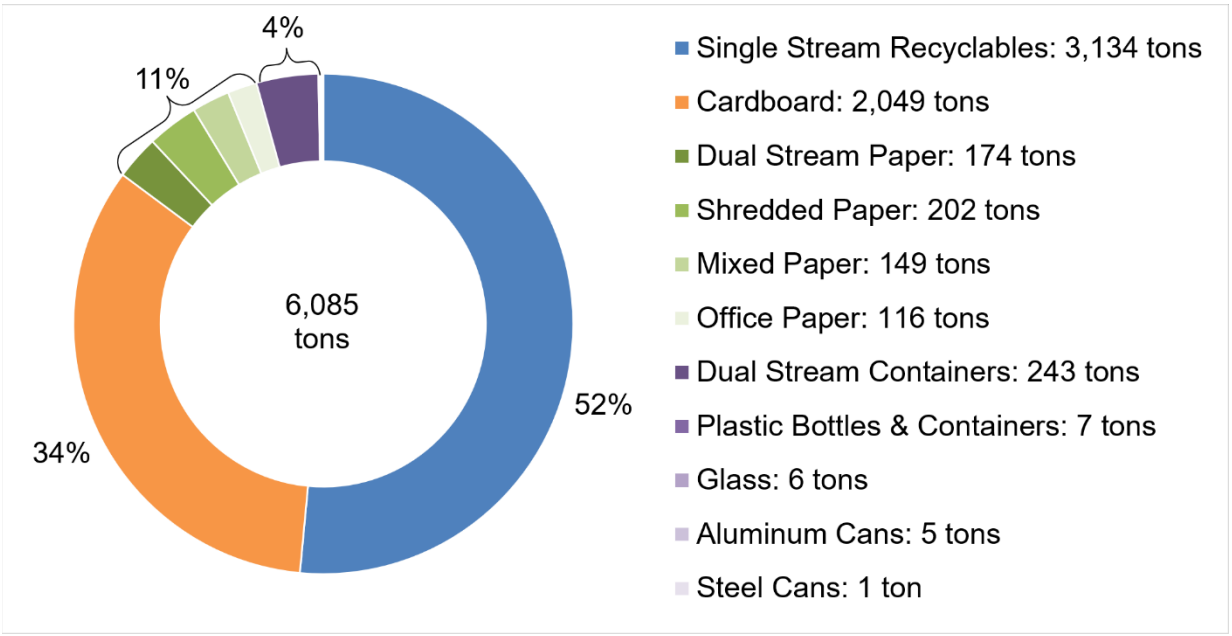


Figure 11. Total traditional recycling tonnage by material type from all reporting institutions, FY 2024–25.

Figure 12 shows the distribution of recycling tonnage by institution type. Public four-year institutions account for 52% of total traditional recycling, followed by public two-year institutions at 29% and private four-year institutions at 19%. This distribution reflects differences in survey participation, measurement capabilities, and campus populations. Of note, reporting private four-year institutions represent a relatively small share of all private four-year institutions (14%), yet account for a disproportionately higher share of total reported tonnage. If participation among private institutions approached levels seen among public institutions (around 50%), their overall contribution could be substantially higher. However, this projected outcome is highly uncertain due to selection bias, as participating institutions are more likely to have established recycling programs and may not be representative of the broader population of private four-year institutions.

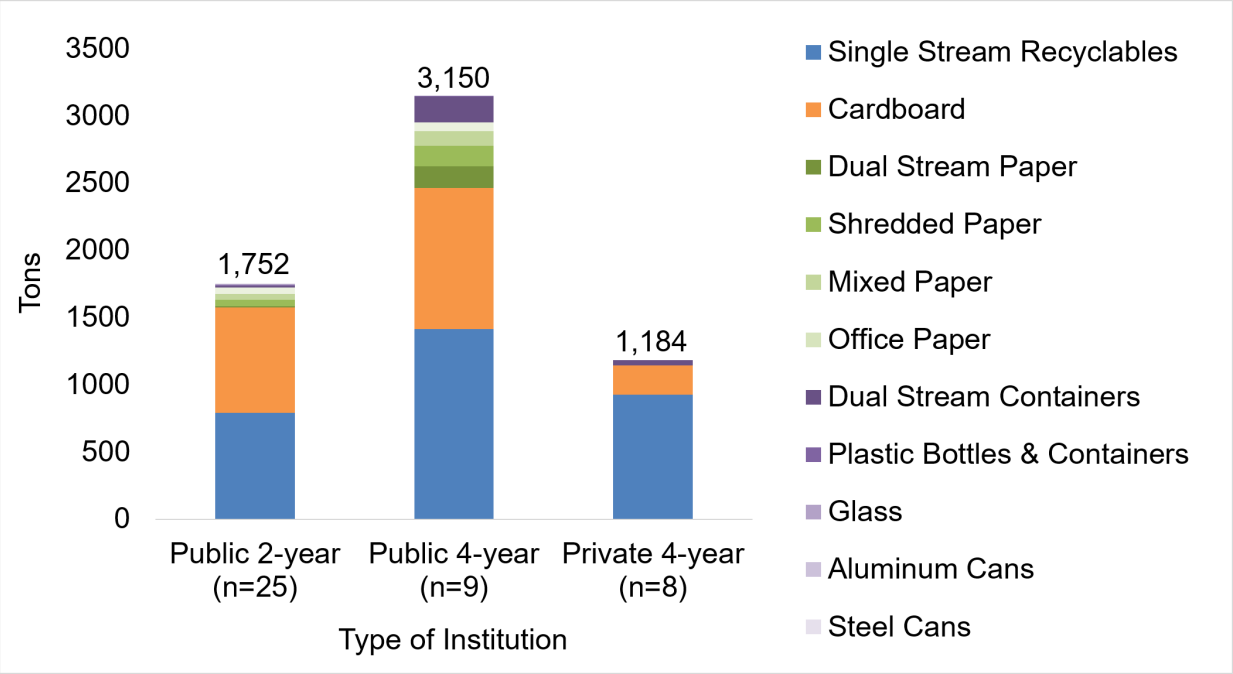


Figure 12. Traditional recycling tonnage by material and institution type, FY 2024–25.

Across institution types, single-stream recyclables represent the largest material category, although public two-year institutions report nearly equal amounts of cardboard. Public four-year institutions have the highest share of materials collected through dual-stream systems (11%), reflecting broader adoption of this approach. Source-separated collections account for 6% of total tonnage for both public two-year and public four-year institutions but were not reported by private four-year institutions, which rely more heavily on single-stream systems (78% of their total).

While incomplete, these data demonstrate the important role of recycling in diverting materials from disposal and supporting circular material flows on college campuses.

Special Recyclables

Special recyclables refer to materials that require distinct collection, handling, and processing pathways beyond traditional single-stream or dual-stream recycling systems. Some of these materials—such as electronics, batteries, and mercury-containing devices—pose environmental or health risks if improperly handled.

In North Carolina, the management of these materials is shaped by legislative requirements intended to divert them from landfill disposal, ensure appropriate recovery, and protect environmental health. Under G.S. 130A-309.10, a range of materials are subject to statewide landfill bans, meaning that both public and private educational institutions must comply with proper recycling and disposal practices for these materials. In addition, public institutions are required to recycle mercury-containing devices such as fluorescent lamps and thermostats under G.S. 130A-310.60.

To support compliance, NC DOA offers Statewide Term Contracts that facilitate the responsible recycling of select materials for public entities. Currently, NC DOA maintains a contract for recycling electronic goods, which is mandatory for most public higher education institutions. NC DOA has also previously offered contracts for materials such as used motor oil and lead-acid batteries, though these are not currently active. As recycling markets, technologies, and policy priorities continue to evolve, these contracts are periodically updated or reintroduced, creating opportunities for expanded support in the future. For an updated list of available options, public institutions should visit the State Surplus Recycling Contracts webpage.

Special Collection Programs

Certain materials, referred to in this report as *special recyclables*, require dedicated collection programs because they cannot be processed through conventional recycling systems and must instead be sent to specialized recyclers. While many of these materials are collected behind the scenes by the staff who generate or manage them, some institutions also operate student-facing collection programs for items such as student-owned electronics, foam mattress toppers, and lab equipment (e.g., nitrile gloves, pipette tip boxes, PPE, lab plastics, and lab glass). Figure 13 summarizes the student-facing special collection programs reported by institutions, including move-in,[3] move-out,[4] student electronics, and lab equipment recycling programs.

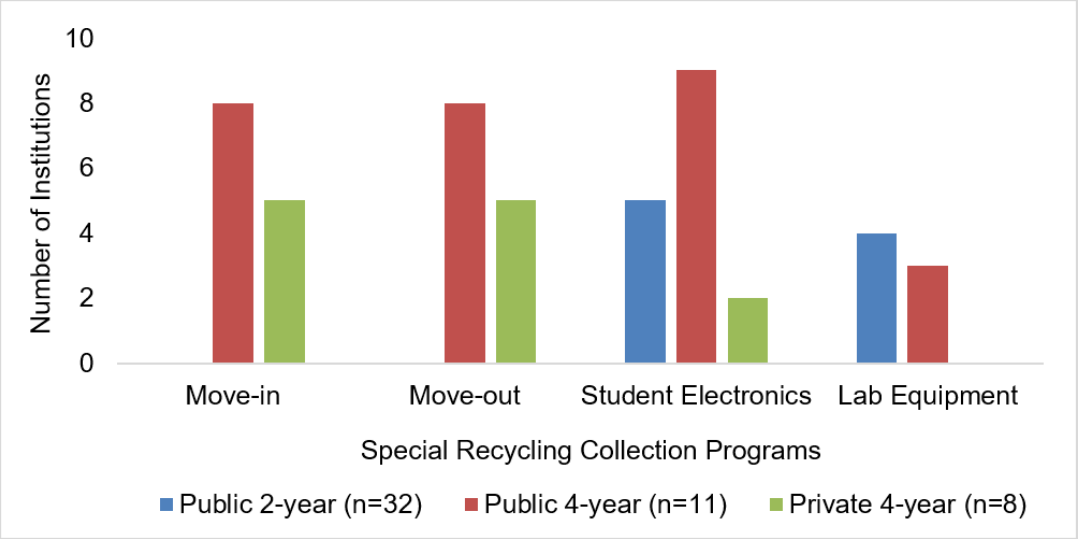


Figure 13. Special recycling collection programs by institution type, FY 2024–25.

As shown in Figure 13, 73% of public four-year institutions reported operating both move-in and move-out recycling programs. Among reporting private four-year institutions, 50% also operated both programs, while the remainder reported only one program or neither. Student electronics

[3] Although move-in recycling programs primarily target cardboard rather than special recyclables, they are included because they require dedicated collection infrastructure and staffing to manage the large volume of material generated during student move-in.
[4] Move-out collection programs often prioritize reuse but also provide an important opportunity to recover special recyclables, including foam mattress toppers, electronics, and textiles.

recycling was most common among public four-year institutions, with 82% offering collection programs, though several public two-year institutions and a few private four-year institutions also reported student-facing collection. Seven public institutions also reported laboratory recycling programs, highlighting a growing effort to recover specialized materials generated through teaching and research activities.

Program Spotlight

Rethinking Universal Waste Collection on Campus

Western Carolina University (WCU) recently expanded its universal waste collection program to improve access and increase diversion of materials such as electronic devices and accessories, printer cartridges, batteries, and light bulbs. Previously, the university maintained a single public collection bin located in the University Center. Recognizing an opportunity to make recycling more convenient, WCU expanded the program from one to nine collection bins strategically placed in high-traffic academic and administrative buildings across campus, with plans to continue expanding into additional non-residential buildings in the coming years.

The expansion builds on the University's broader efforts to improve campus recycling infrastructure, including the earlier installation of centralized waste stations with standardized signage throughout campus buildings. The new universal waste collection bins are strategically located alongside these waste stations and feature clear accepted-items labels that have helped reduce contamination. All collected universal waste is managed by Cleanlites Recycling, with bins inspected monthly to ensure timely collection and proper recycling.



Figure 14. A WCU waste station with its new yellow universal waste collection bin.

To support the expanded infrastructure, WCU implemented a comprehensive education and outreach campaign that included campus news articles, social media promotion, annual reminders to facilities staff, and Global Recycling Day programming in partnership with the Center

for Community Engagement and Service Learning. The university's student "Campus Recycling Leaders" also play a central role in managing the program by overseeing collections, conducting outreach and education, promoting safe handling practices, and coordinating shipments. Collectively, these efforts have increased campus awareness and participation, contributing to an impressive 206% increase in e-waste diversion.

Partnering with a Local Recycler to Address Move-Out Waste



Figure 15. A storage unit full of mattress toppers collected for recycling at UNC-CH.

The availability of local end markets can play a critical role in expanding diversion options for materials that are otherwise difficult to recycle. In spring 2025, UNC-CH piloted a foam mattress topper recycling program in response to a persistent move-out waste challenge. In previous years, discarded mattress toppers frequently ended up in campus donation bins only to be rejected by downstream donation organizations due to sanitation concerns.

To better manage this recurring waste stream, UNC-CH partnered with Bedex in High Point, a regional end market capable of processing foam materials, to collect and recycle used mattress toppers during student move-out. The pilot program exceeded expectations, filling an entire 16-foot storage unit and demonstrating strong student participation (see Figure 15). Building on this success, UNC-CH expanded collection efforts for its 2026 move-out, procuring a 53-foot trailer to store mattress toppers.

Expanding Opportunities for Weird Recycling

The University of North Carolina at Charlotte (UNCC) is expanding opportunities to divert materials beyond traditional recycling by investing in specialized collection infrastructure for hard-to-recycle items and organics. UNCC has expanded its network of "weird recycling centers" across campus to collect materials that are not accepted in standard recycling programs, including plastic film, small electronics, batteries, eyeglasses, rigid can carriers, and inkjet cartridges. By providing convenient collection locations, these centers help divert additional materials from landfill disposal while reducing contamination in its traditional recycling stream. To further improve recovery of specialty materials, the University operates a Styrofoam densifier that processes expanded polystyrene into a compact form that can be manufactured into new products such as insulation, picture frames, and crown molding.



Figure 16. A "weird recycling center" at UNCC's student union.

Special Recycling Tonnage

Forty-two institutions (75% of survey respondents; 34% of all institutions) reported special recycling weights. Table C3 in Appendix C shows the full breakdown of special recycling reporting rates by institution type.

Across reporting institutions, approximately 10,391 tons of special recyclables were collected, equating to 69 pounds per capita. Total tonnage in this category exceeds traditional recycling due to the inclusion of heavier materials such as yard waste, scrap metal, construction and demolition (C&D) debris, wood waste, pallets, appliances, mattresses, and tires. Table 2 shows the types and amounts of special recyclables collected.

Table 2. Total special recycling tonnage by material and institution type, FY 2024–25.

Special Recyclable	Public Two-year Institutions	Public Four-year Institutions	Private Four-year Institutions	All Institutions
Yard Waste	275.44	2,380.88	128.75	2,785.07
Scrap Metal	1,500.89	638.70	55.25	2,194.84
C&D Debris	39.08	2,132.14	1.00	2,172.22
Electronics	533.70	450.89	2.75	987.34
Animal Bedding	198.00	618.00	0.00	816.00
Clean Wood Waste	16.00	559.09	165.00	740.09
Pallets	19.68	264.74	5.10	289.52
Used Cooking Oil	1.41	102.28	58.86	162.55
Tires	11.26	29.30	2.00	42.56
Batteries	2.50	38.08	0.51	41.09
Fuel	0.00	32.59	0.00	32.59
Mattresses	1.50	30.97	0.00	32.47
White Goods	2.39	0.00	23.25	25.64
Fluorescent Bulbs	2.86	16.16	0.50	19.52
Used Motor Oil	3.84	13.13	0.35	17.32
Plastic Film	0.00	10.13	0.00	10.13
Styrofoam	0.00	7.55	0.00	7.55
Textiles	0.75	2.92	0.10	3.77
Toner Cartridges	1.78	1.00	0.11	2.88
Syringe Cases	0.00	2.03	0.00	2.03
Furniture	1.89	0.00	0.00	1.89
Used Antifreeze	0.63	0.53	0.00	1.16
Used Oil Filters	0.41	0.73	0.00	1.14
Other	0.68	1.14	0.00	1.82
Total Special Recycling	2,614.68	7,332.97	443.53	10,391.18

Yard waste accounts for 27% of total tonnage, followed by scrap metal (21%) and C&D debris (21%). Other materials—including electronics, animal bedding, clean wood waste, and pallets—also contribute meaningful shares. Public four-year institutions account for the majority of tonnage across most material categories. Two notable exceptions are scrap metal and electronics, where public two-year institutions account for 68% and 54% of reported tonnage, reflecting the presence of trades and technical training programs. Overall, public four-year institutions accounted for 71% of special recycling tonnage, followed by public two-year institutions at 25%, and private four-years at 4%. The share attributed to private institutions is projected to increase in the future as participation grows.

A single institution, NC State University, accounts for a substantial share of reported tonnage. The university reported approximately 2,794 tons of special recyclables, representing 38% of

public four-year institution totals and 27% of the overall total. This reflects a highly developed program that captures a wide range of materials, including more specialized streams such as laboratory materials and mattresses. The university also operates an on-site composting program that processes large volumes of yard waste, animal bedding, wood chips, and cooking oil. In addition, in-house hauling operations support more comprehensive tracking and data availability.

Lithium-ion Batteries

Lithium-ion batteries represent an emerging special recycling focus due to their growing prevalence in consumer products and the safety risks they pose when improperly managed. Beginning December 1, 2026, lithium-ion batteries will be banned from landfill disposal under G.S. 130A-309.10 to reduce fire risks in waste management systems and increase recovery of valuable materials. To support implementation, RMMS developed the statewide *Skip the Bin, Turn Your Batteries In* campaign. The campaign utilizes a centralized website, printed outreach materials, public radio announcements, and social media advertising to provide guidance on proper battery disposal and safe handling practices in coordination with local governments across the state.

In response to these developments, a new survey question was introduced to capture lithium-ion battery recycling data. A total of 21 institutions reported battery weights, including 11 public two-year, 8 public four-year, and 2 private four-year institutions. As shown in Figure 17, public four-year institutions accounted for 93% of total reported battery recycling, reflecting larger campus populations and higher participation rates. Public two-year institutions accounted for 6%, and private four-year institutions for 1%.

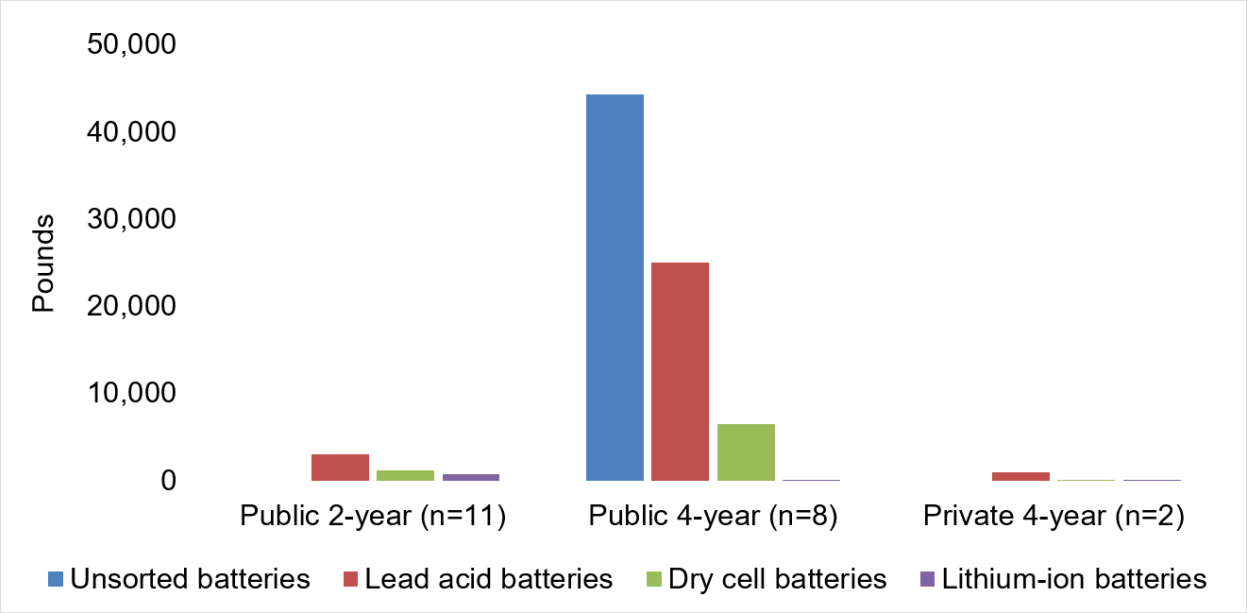


Figure 17. Pounds of batteries collected by battery and institution type, FY 2024–25.

Focusing specifically on lithium-ion batteries, public two-year institutions reported the largest share of identified lithium-ion battery weights (811 pounds, or 83%), compared to 156 pounds

(16%) reported by public four-year institutions. However, a significant portion of battery recycling reported by public four-year institutions was categorized as mixed or unsorted batteries, likely including lithium-ion batteries that were not separately tracked. As the landfill ban takes effect, improved tracking and reporting of lithium-ion batteries are expected, providing a more accurate picture of collection efforts over time.

Food Waste

Wasted Food Pathways & Diversion Strategies

The U.S. Environmental Protection Agency (EPA) Wasted Food Scale provides a framework for understanding food waste management pathways and prioritizing strategies that retain the greatest environmental and social value. For colleges and universities, where food waste is generated through dining, catering, and residential operations, the scale emphasizes a hierarchy that prioritizes prevention and redistribution before diversion and disposal. Many campuses already implement higher-value strategies such as food donation and surplus food redistribution, which represent important steps in reducing wasted food.



Figure 18. The U.S. EPA Wasted Food Scale.

For food waste that cannot be prevented or donated, campuses can pursue diversion pathways such as animal feeding, composting, or anaerobic digestion, though infrastructure and operational constraints may limit adoption of some approaches.[5] Disposal methods, including landfilling, incineration, and wastewater disposal, provide the least benefit and result in lost resources and

[5] Animal feeding operations and certain composting facilities must be permitted by NC DEQ.

increased environmental impacts. This framework helps contextualize current campus practices and identify opportunities to shift food waste toward higher-value management pathways.

Figure 19 translates the U.S. EPA Wasted Food Scale into specific strategies being implemented across North Carolina college and university campuses. The bar chart begins with prevention-oriented strategies such as strategic food ordering, food waste tracking technology, education and outreach, and the use of takeout containers to influence consumption patterns. It then progresses to redistribution pathways, including on-campus food recovery and donation, before moving to end-of-life diversion options such as animal feeding operations and composting.

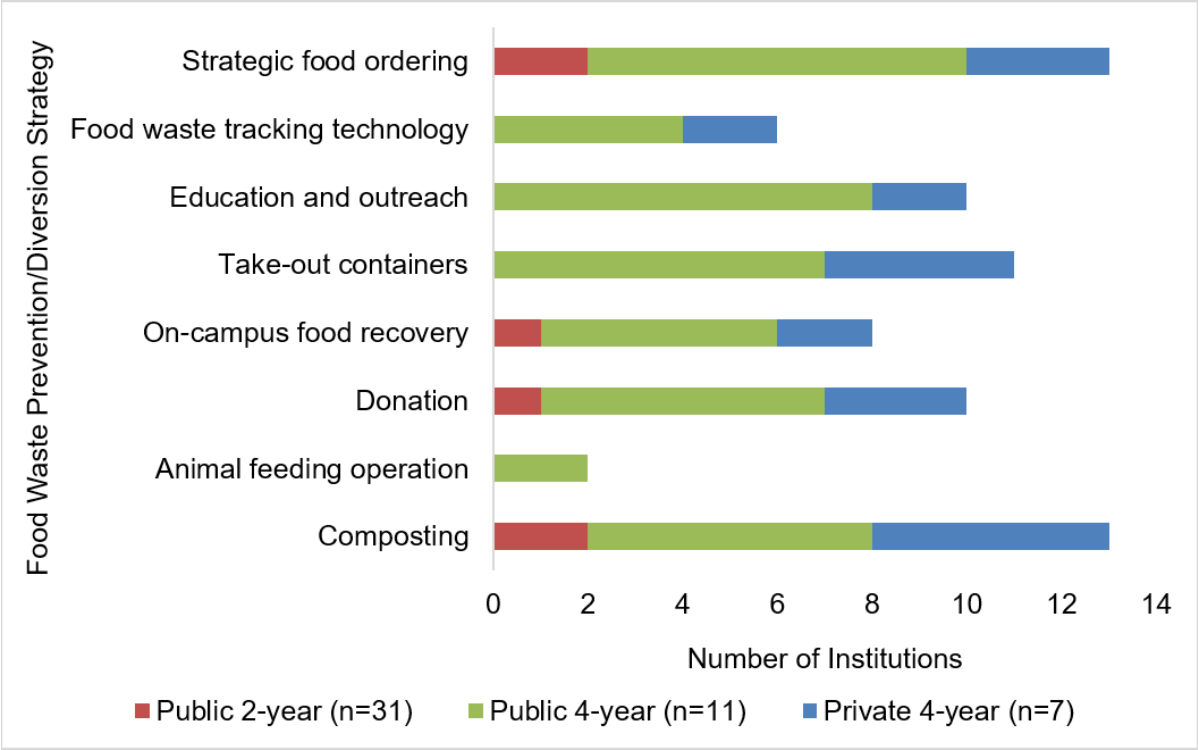


Figure 19. Food waste prevention and diversion strategies, FY 2024–25.

There is strong engagement across the EPA's Wasted Food Scale. At opposite ends of the hierarchy, strategic food ordering and composting are the most widely implemented strategies, with 13 institutions reporting use of each. Many campuses are taking a multifaceted approach to reducing food waste, with takeout containers, education and outreach, and food donation also among the more widely adopted strategies. Several institutions are incorporating technology-based solutions, such as food waste tracking tools, to better understand and reduce waste. Animal feeding remains a less common pathway, reflecting both its potential and logistical constraints.

The following sections examine food waste diversion through animal feeding and composting in greater detail.

Food Waste Diversion Tonnage

Twelve institutions reported food waste diversion weights. While this represents only 10% of all institutions, it accounts for 75% of survey respondents with food waste diversion programs. Although food waste diversion initiatives are growing in popularity, they remain far less common than traditional or special recycling programs. For food waste diversion reporting rates by institution type, see Table C4 in Appendix C.

Across reporting institutions, approximately 2,253 tons of food waste were diverted from landfill disposal. This represents an increase of nearly 1,000 tons from FY 2023–24. The increase was driven primarily by a larger number of institutions reporting food waste diversion tonnage this year (twelve institutions compared to five last year), including the addition of five private four-year institutions. Among the five institutions that reported food waste diversion tonnage in both fiscal years, all reported increases in diversion this year. On a per capita basis, food waste diversion was roughly 21 pounds—nearly four times higher than reuse per capita and over half the amount of traditional recycling per capita.

Composting accounted for 2,138 tons (95%) of reported food waste diversion, while animal feeding accounted for 115 tons (5%). By comparison, food waste prevention through external donation or on-campus redistribution totaled 39 tons. This disparity suggests a gap between the higher-value pathways prioritized in the hierarchy and those most commonly implemented. That said, donation and redistribution activities are less consistently measured and tracked than composting and hauling operations, so reported prevention weights may underrepresent actual activity.

Figure 20 shows total food waste diversion tonnage by institution type and diversion pathway. Public four-year institutions accounted for approximately 1,676 tons, or 74% of the reported total. Private four-year institutions accounted for 574 tons, or 25% of total reported tonnage, reflecting their significant contribution to this year's overall increase in reported diversion. In contrast, public two-year institutions accounted for only 2 tons, or approximately 0.1% of the total. This reflects the comparatively limited food service operations and resulting lack of food waste diversion programs on many commuter-based community college campuses.

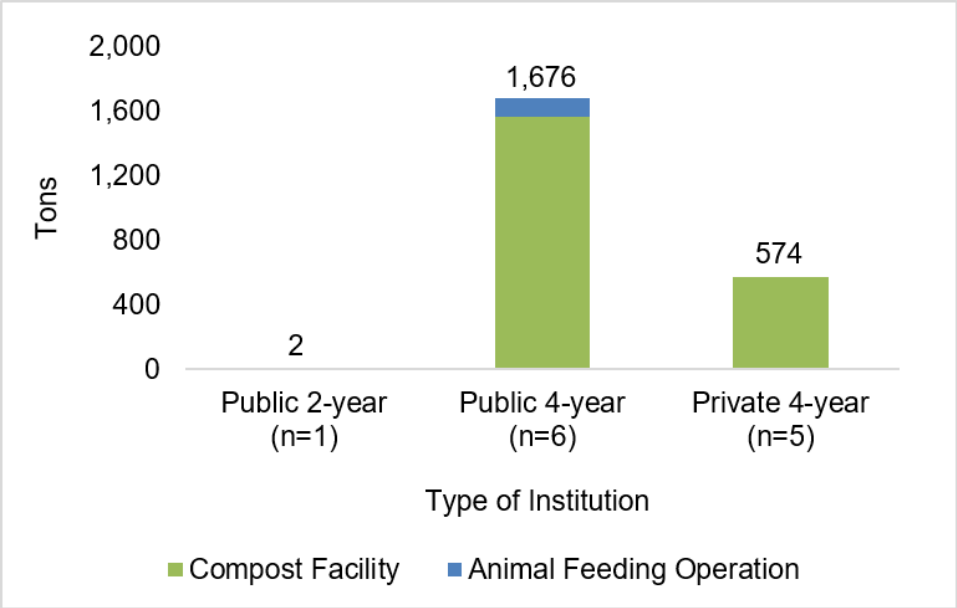


Figure 20. Food waste diversion tonnage by diversion pathway and institution type, FY 2024–25.

Table 3 highlights the five institutions reporting the highest food waste diversion tonnages. NC State reported the highest diversion at 891 tons, accounting for approximately 40% of all reported tonnage. Duke University followed with 348 tons (15%), while the University of North Carolina at Charlotte (UNCC), Appalachian State University, and Elon University accounted for 12%, 9% and 8%, respectively. Notably, three of the four institutions that reported on-site composting operations were in the top five.

Table 3. Top five institutions for food waste diversion tonnage, FY 2024–25.

Institution Name	Institution Type	Tonnage
North Carolina State University	Public four-year	891.08
Duke University	Private four-year	347.95
University of North Carolina at Charlotte	Public four-year	274.74
Appalachian State University	Public four-year	207.45
Elon University	Private four-year	186.64

Compost Program Barriers

Composting is often the most immediate and viable diversion strategy available to campuses. However, institutions seeking to develop or expand composting programs continue to face a range of barriers, as shown in Figure 21. Limited staff capacity was the most frequently cited challenge, reported by 19 institutions, underscoring the operational demands of implementing and maintaining composting programs. Cost was the second most common barrier, cited by 13 institutions, reflecting expenses associated with infrastructure, collection, hauling, and

processing. Contamination and lack of stakeholder support were also notable barriers, reported by ten and nine institutions, respectively. Notably, no private four-year institutions identified stakeholder support as a barrier, which may indicate comparatively strong institutional support or access to resources for composting in this sector.

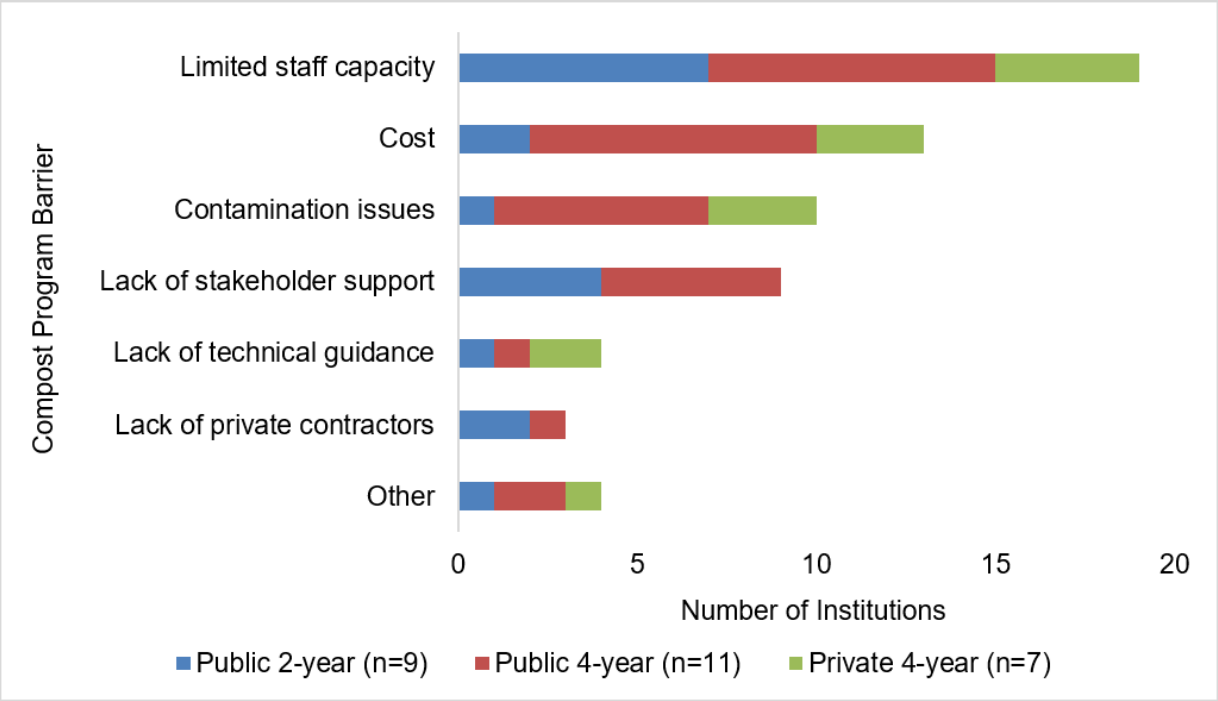


Figure 21. Barriers to starting or expanding food waste composting, FY 2024–25.

Additional challenges include limited access to information or technical guidance, a lack of private contractors or regional processing infrastructure, and space constraints for on-site operations. Some institutions also noted that relatively low volumes of food waste can make programs difficult to justify, while others cited limited access to accurate baseline data from waste haulers—both underscoring the importance of reliable food waste data in building support for composting programs. One institution also reported reduced leverage when working with contracted dining service providers, highlighting how procurement requirements and contract language can constrain implementation.

Notably, two institutions with existing composting programs—Central Piedmont Community College and Johnson & Wales University Charlotte—reported no challenges, indicating that when systems are designed and established to align with campus needs, perceived barriers may be limited. However, these conditions may shift over time as programs expand or operational contexts change.

Overall, these findings illustrate that, while composting is widely recognized as a practical diversion pathway across campuses, implementation and expansion are often constrained by a combination of operational, financial, and structural factors.

Compost Program Design & Implementation

When it comes to implementation, effective composting programs often benefit from a phased approach, particularly when institutions face staffing, cost, contamination, and other operational constraints. Pilot programs and incremental rollouts allow institutions to test operational logistics, build staff capacity, and refine practices before expanding to additional campus settings.

Dining halls and campus food service operations are the most common entry point for composting programs, driven by high diversion potential and the ability to focus on pre-consumer waste streams. As shown in Figure 22, all four-year institutions with composting programs collect pre-consumer food waste from dining facilities. These programs rely on staff to separate materials, resulting in cleaner waste streams and reducing the need for broad student engagement, though staff training remains essential. No public two-year institutions reported composting in these settings, reflecting the limited scale of on-campus dining operations.

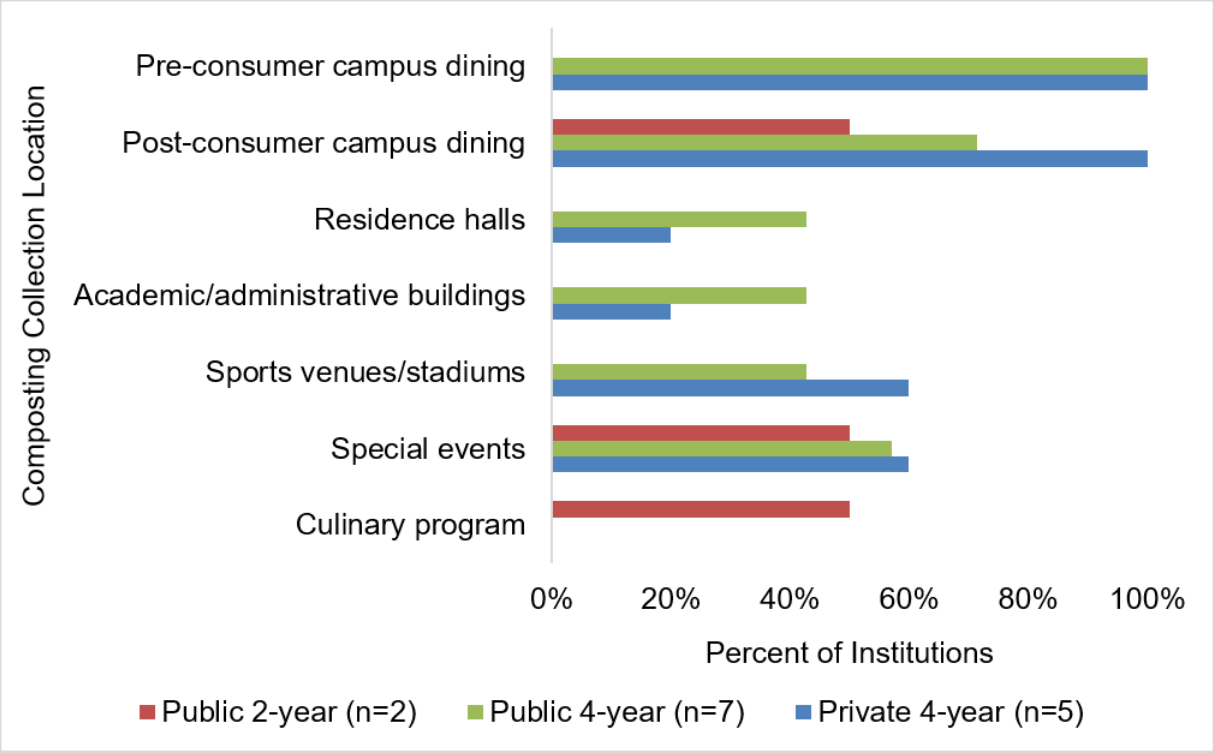


Figure 22. Food waste composting collection locations at institutions with programs, FY 2024–25.

Many institutions expand to post-consumer composting in dining halls once pre-consumer systems are established. Among institutions with composting programs, all private four-year institutions, most public four-year institutions, and one public two-year institution reported post-consumer collection in dining facilities. These programs vary in design, with some relying on staff to sort uneaten food from back-of-house tray or dish return systems, while others depend on student sorting or use a hybrid approach that combines both systems.

Beyond dining facilities, composting programs are most commonly extended to special events and athletic venues, where waste streams can be more controlled. In contrast, residence halls and academic or administrative buildings present greater challenges due to higher contamination risks, increased coordination needs, and the potential for pushback if systems are not well managed. One institution also reported collecting food waste from a culinary program, highlighting a practical starting point for campuses seeking to pilot composting in smaller, more controlled environments with fewer participants to train.

Program Spotlight

Bringing Composting into Residence Halls & Office Spaces

Residence hall composting programs remain uncommon on college and university campuses due to the logistical challenges of serving dispersed living spaces and maintaining low contamination rates. In fall 2024, Catawba College launched an opt-in Residence Hall & Office Space Compost Pilot Program to expand composting beyond its dining hall operations. Students, faculty, and staff were invited to enroll through an online form, allowing the college to identify interested participants and strategically place countertop compost bins in residence hall kitchens and employee break rooms. The pilot began with 19 student participants across eight residence halls and 18 faculty and staff participants in 11 office break rooms.

To support successful participation, Catawba equipped each collection bin with clear guidance on acceptable materials and relied on its Environmental Stewards—a team of paid student sustainability employees—to manage the program. The students collected, emptied, and cleaned bins on a weekly basis, adjusting the pickup schedule based on use. During collections, they also monitored contamination and provided targeted education to participants when issues arose, helping improve sorting practices. The Environmental Stewards have also helped increase awareness of composting through social media content that showcases how the residence hall composting program works and encourages broader campus participation.

Collected food waste and BPI-certified compostable materials are transported to Gallins Family Farm (now Triad Compost Services), where the material is composted alongside pre- and post-consumer food waste diverted from campus dining operations. The success of the pilot demonstrates that residence hall composting can be effective when paired with participant commitment, dedicated student staffing, and ongoing education. Catawba has since expanded the program to provide compost collection at more than 26 locations across campus throughout the academic year.

Compost Program Management

Institutions vary in how they manage the collection, processing, and end use of compostable materials. The most common approach is reliance on external service providers to handle off-site hauling and processing. Overall, 67% of institutions with composting programs utilize private contractors for these services, with one such institution also reporting a public partnership in which

the county manages compost processing. In contrast, 27% of institutions operate on-site composting facilities, where campus staff are responsible for collection and processing.

The distribution of how compost programs are managed is relatively consistent across institution types, as shown in Figure 23. However, there is a growing trend overall toward institutions constructing on-site composting facilities to manage food waste and other compostable materials. This model provides greater operational oversight, can reduce long-term costs, and typically allows finished compost to be returned to campus for use in landscaping and soil health improvements rather than being distributed elsewhere by the processor. This approach supports closed-loop systems and reduces emissions associated with transporting heavy organic materials.

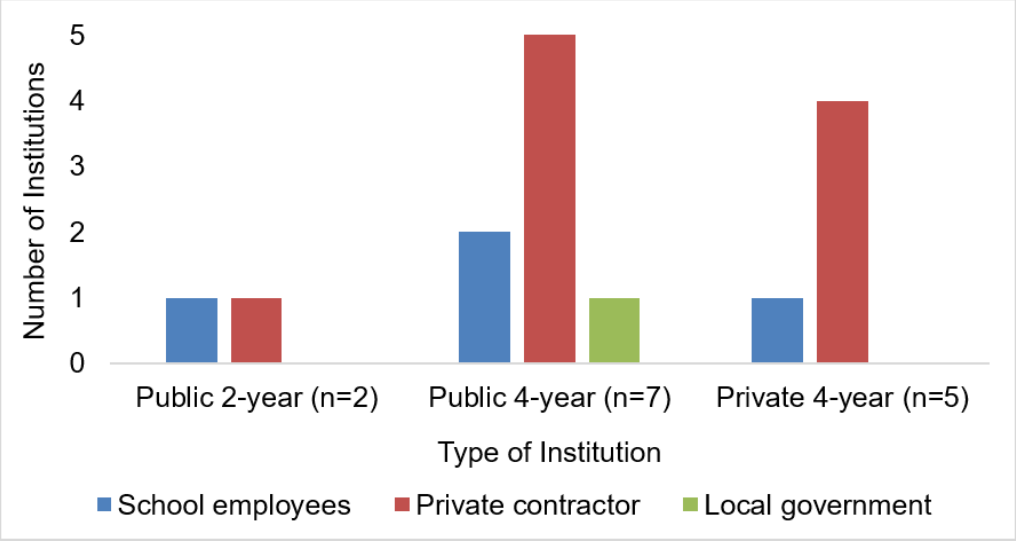


Figure 23. Food waste composting service providers, FY 2024–25.

Ultimately, the different management models involve important trade-offs. While on-site systems offer greater control and potential environmental benefits, they require sustained staffing capacity, technical expertise, and capital investment. In contrast, reliance on private contractors can significantly reduce operational burden and staffing needs while leveraging established off-site infrastructure for hauling and processing. Third-party arrangements also support local composting businesses, contributing to regional circular economy development. Overall, the most appropriate model depends on institutional context, capacity, and program goals.

Landfill Disposal

Despite waste prevention and diversion efforts, a substantial portion of materials generated on college and university campuses is still sent for landfill disposal. Understanding the scale and composition of disposed materials can help institutions identify opportunities for additional waste prevention, reuse, recycling, and composting interventions.

Solid Waste Disposal Tonnage

Solid waste disposal data provide insight into the quantity of materials still being landfilled across reporting institutions. Thirty-nine institutions (70% of survey respondents; 31% of all institutions) reported solid waste disposal weights. See Table C5 in Appendix C for landfill disposal reporting rates by institution type.

Reporting institutions collectively disposed of approximately 24,182 tons of solid waste, equivalent to roughly 162 pounds per capita. This exceeded the combined per capita weight of materials diverted through reuse, traditional recycling, special recycling, animal feeding, and composting, underscoring the continued opportunity to reduce landfill disposal. Table 4 presents total disposal tonnage and pounds disposed per capita by institution type. Public four-year institutions accounted for the majority of disposal tonnage (54%), followed by private four-year institutions (28%) and public two-year institutions (18%).

Table 4. Solid waste disposal tonnage and pounds disposed per capita by institution type, FY 2024–25.

Institution Type	Total Tons Disposed	Pounds Disposed per Capita
Public two-years institutions (n=24)	4,427.43	95.43
Public four-years institutions (n=8)	13,093.98	167.45
Private four-years institutions (n=7)	6,660.77	265.51

Per capita disposal provides additional context by accounting for differences in institution size and reporting participation. Based on aggregate tonnage and population data of reporting institutions, disposal was approximately 95 pounds per capita for public two-year institutions, 167 pounds per capita for public four-year institutions, and 266 pounds per capita for private four-year institutions. These results indicate that, among reporting institutions, private four-year institutions had the highest reported landfill disposal per campus user, while public two-year institutions had the lowest.

These differences partly reflect variation in campus operations. Most public two-year institutions are primarily commuter campuses with few or no residence halls and limited dining facilities, resulting in lower overall waste generation. In contrast, residential four-year institutions typically generate more waste through housing, dining, and other campus activities. Nonetheless, the per capita figures should be interpreted as broad sector-level indicators rather than representative of individual institutions, as waste generation and reporting practices can vary considerably within each institution type.

Waste Assessments

Waste sorts, audits, and related assessments are important tools for improving landfill diversion programs. By identifying the types and quantities of materials being discarded, these

assessments can help institutions target contamination issues, improve education and signage, guide infrastructure investments, and identify opportunities for additional recycling, composting, or reuse initiatives. The U.S. EPA's Instructions on Conducting Waste Assessments provides additional guidance and resources for planning and conducting these assessments.

Eight reporting institutions have conducted a solid waste assessment, including one public two-year institution, six public four-year institutions, and one private four-year institution. Assessment scope and methodology varied, ranging from comprehensive campus-wide waste audits to targeted evaluations of specific buildings, waste streams, or operations. Some audits were organized internally by facilities or sustainability staff, while others relied on external consultants to carry out the assessments and analyze results. Several institutions engaged student organizations and volunteers in waste audits, using the process as both a data collection tool and an educational opportunity to increase awareness of contamination and disposal behaviors.



Figure 24. East Carolina University's first "Landfill on the Lawn" event: a single-day waste audit conducted at Fletcher Residence Hall in March 2025 involving 495 pounds of material.

Five-year Trends

Figure 25 presents five-year trends in reported reuse, recycling, food waste diversion, landfill disposal, and overall waste prevention and diversion performance across participating institutions. To improve comparability across years with varying levels of participation, all values are presented as aggregate pounds per capita. For each year, total reported tonnage was converted to pounds and divided by the combined FTE student and staff population of the institutions reporting data for that year. FTE population data are based on the preceding academic year, as this represents the most recent complete FTE data available when the report is prepared

(see Appendix D for additional methodology details). The overall waste prevention and diversion rate was also calculated using these aggregate per capita values rather than total tonnages.

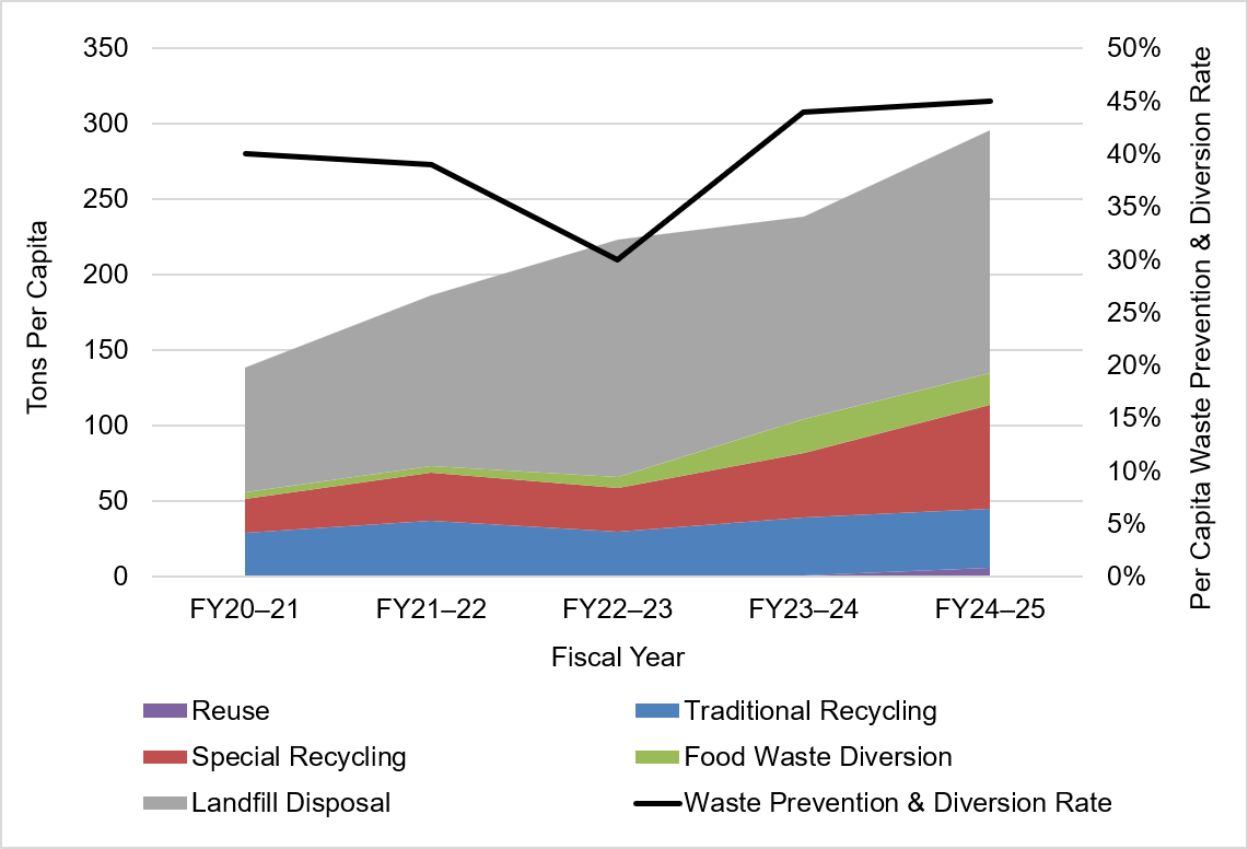


Figure 25. Per capita reuse, traditional recycling, special recycling, food waste diversion, and landfill disposal, FY 2020–21 through FY 2024–25.

These trend data should be interpreted with caution and viewed as rough estimates rather than precise statewide performance indicators. Reporting rates vary substantially across years and material categories, with institutions often reporting data for some material streams but not others. As a result, the calculated prevention and diversion rates reflect the best available data but likely understate or overstate true performance in any given year. Despite these limitations, several broader trends emerge.

Reuse data are only available beginning in FY 2023–24, when the survey first began collecting data on reuse, specifically donation weights. In FY 2024–25, the survey expanded reuse reporting to include additional activities such as materials managed through surplus property programs and on-campus redistribution. As a result, reported reuse per capita increased substantially in FY 2024–25, rising by 477% to almost 6 pounds per capita.

Traditional recycling remained relatively stable over the five-year period, generally ranging from approximately 29 to 39 pounds per capita. After a decline in FY 2022–23, traditional recycling rebounded in FY 2023–24 and remained essentially flat in FY 2024–25. This stability is reflected

in a modest year-over-year increase of approximately 2% (less than 1 pound per capita) between FY 2023–24 and FY 2024–25, alongside a larger overall increase of approximately 36% (10 pounds per capita) across the full five-year period.

Special recycling experienced substantial growth over the five-year period, increasing 205%, or 46 pounds per capita, from approximately 23 pounds per capita in FY 2020–21 to nearly 69 pounds per capita in FY 2024–25. The increase accelerated in the most recent year, with special recycling growing 63%, or 27 pounds per capita, between FY 2023–24 and FY 2024–25. This growth likely reflects expanded infrastructure and outlets for managing these materials, as well as improved tracking and reporting across campuses.

Food waste diversion showed the greatest overall percentage increase among prevention and diversion categories over the five-year period, rising from about 4 pounds per capita in FY 2020–21 to 21 pounds per capita in FY 2024–25. This is a net increase of 391%, or nearly 17 pounds per capita. Total reported food waste diversion tonnage also increased each year, indicating steady expansion in collection efforts.

Landfill disposal provides an important counterpoint to prevention and diversion trends by illustrating the volume of materials that continue to be discarded rather than recovered. Reported landfill disposal increased substantially over the five-year period, rising from approximately 83 pounds per capita in FY 2020–21 to 162 pounds per capita in FY 2024–25. Disposal increased by approximately 20% (27 pounds per capita) between FY 2023–24 and FY 2024–25 and by approximately 95% (79 pounds per capita) over the full five-year period. While much of this increase reflects the rebound from reduced campus activity during the COVID-19 pandemic, FY 2024–25 disposal levels now exceed pre-pandemic (FY 2019–20) levels, indicating that landfill disposal has not only recovered but surpassed historical norms as campus operations have returned to full capacity.

Overall waste prevention and diversion rates fluctuated between 30% and 45% over the five-year period, with FY 2024–25 achieving the highest diversion rate at 45%. Growth in special recycling was the primary driver of this improvement, although steady increases in other diversion categories also contributed. Because these rates are calculated using incomplete and inconsistently reported datasets across multiple waste streams, they should be interpreted as broad indicators of statewide trends rather than precise measures of institutional performance.

Education & Outreach

Education and outreach are key components of campus waste prevention and diversion programs, shaping how effectively students and staff engage with reuse, recycling, and composting systems. This section examines the range of strategies institutions use to communicate expectations, build awareness, and support correct material handling behaviors.

Strategies

Education and outreach strategies used by reporting institutions can be broadly grouped into three categories: infrastructure and operational, passive communication, and active engagement. Infrastructure and operational strategies focus on enabling correct behavior at the point of disposal through systems such as bin labeling, signage, and staff training. Passive communication strategies, including flyers, webpages, and email, provide information broadly with limited interaction. In contrast, active engagement strategies, such as classroom education, tabling, and peer-to-peer outreach, involve direct interaction and are typically more resource-intensive to implement.

Figure 26 shows which strategies are used by each institution type. The strategies are grouped by category and listed from most used to least used within each category.

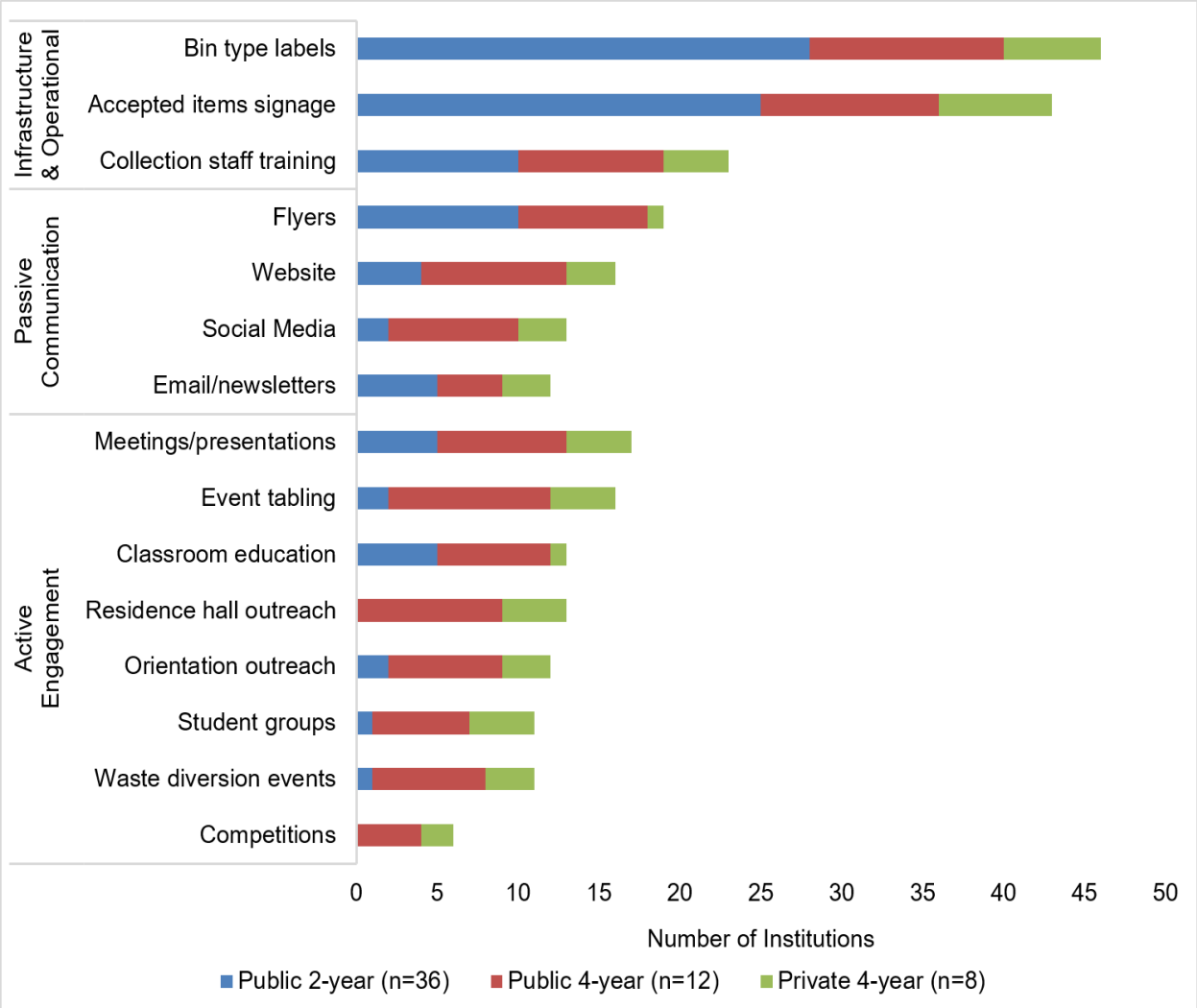


Figure 26. Education and outreach strategies by institution type, FY 2024–25.

Approaches by Institution Type

The results indicate that infrastructure and operational strategies are the most widely implemented approaches across all institution types. Labels distinguishing bin types and bin signage identifying accepted items are used by 82% and 77% of all reporting schools, respectively. Training for staff collecting materials is less common overall (41%) but is more frequently reported among four-year institutions (75% of public four-year institutions and 50% of private four-year institutions) than public two-year institutions (28%).

Differences become more pronounced when examining passive communication and active engagement strategies. Public and private four-year institutions consistently report higher use of both strategy types compared to public two-year institutions. Among public two-year institutions, there is a clear tapering in adoption as the level of effort and staff capacity required increases. While only 17% did not report using any infrastructure and operational strategies, 69% did not report using any passive communication strategies and 78% did not report using any active engagement strategies. This pattern reflects structural and capacity constraints at many two-year institutions, where commuter populations and shorter student engagement periods limit the feasibility of sustained, resource-intensive outreach approaches. While less common, some public two-year institutions demonstrate that more sustained and active engagement approaches are achievable with targeted effort.

The opposite pattern is observed among four-year institutions, which report greater use of active engagement strategies than passive communication approaches. All public four-year institutions reported using at least one active engagement strategy, while 25% did not report using any passive communication strategies. A similar trend is observed among private four-year institutions, where 50% did not report using any passive communication strategies compared to 38% that did not report using any active engagement strategies. These findings suggest that four-year institutions are more likely to prioritize higher-touch, interactive approaches, supported by more established campus communities and longer-term student engagement. Still, both passive communication and active engagement play important roles in a robust education and outreach program; see the Program Spotlight section for case studies on effectively leveraging each strategy.

Among the active engagement strategies, incentive- and event-based strategies are the least commonly reported overall. While some public and private four-year institutions report hosting waste diversion events or competitions, participation remains limited across all institution types, with very low reported use among public two-year institutions. Despite lower overall adoption, these strategies can play an important role in raising awareness and encouraging participation when implemented as part of broader programming (see Catawba College in the Program Spotlight section).

Overall, this distribution of strategies highlights a reliance on low-touch, scalable interventions, which are effective for establishing baseline knowledge and supporting correct disposal behaviors. However, the comparatively lower use of active engagement approaches may limit opportunities to address persistent contamination challenges and reinforce behavior over time. At the same time, differences across institution types underscore that not all strategies are equally

feasible in all contexts, particularly where staffing, resources, and campus structure vary. Expanding higher-engagement strategies where feasible may complement existing infrastructure and further support waste prevention and diversion outcomes.

Program Spotlight

Using Strategic Communications to Increase Move-Out Diversion

NC State used a coordinated communications campaign to increase student participation in waste diversion during the FY 2024–25 move-out period. The University's Waste Reduction and Recycling Office partnered with University Housing and other campus units to meet students with consistent waste diversion messages throughout the move-out process. On campus, students encountered updated residence hall billboards and flyers, along with PackRat A-Frame signs at donation collection locations. The campaign was further amplified through digital channels, including university websites, news articles, sustainability newsletters, and collaborative Instagram posts.

One strategy proved particularly effective: partnering with University Housing to leverage its substantially larger social media following. By sharing waste diversion messages through University Housing's Instagram account, the campaign reached more than 27,500 students as they prepared to move out. Compared with the previous year, student donations increased by 54% and the number of mattress toppers collected for recycling increased by 200%. This effort demonstrates how strategic partnerships and coordinated communications can significantly increase participation in campus waste diversion programs.



Figure 27. NC State's Instagram stories promoting waste diversion during move out.

Using Campus Events to Promote Textile Reuse and Waste Prevention

Catawba College launched Sustainable Fashion Week as a creative way to engage students and the broader campus community around textile reuse, waste prevention, and sustainable consumption. Held February 6–11, 2025, the event combined hands-on activities, educational programming, and community engagement to highlight the impacts of clothing consumption and the value of extending textile lifecycles.

The centerpiece of the event was a sustainable fashion show featuring redesigned and repurposed clothing. Student designers selected thrifted items during a college-supported trip to Goodwill Industries and transformed them into new creations inspired by the United Nations Sustainable Development Goals (see Figure 28). The finished designs were showcased by student models in a production supported by student set designers. The event generated strong interest, with 70 tickets sold in advance and approximately 20 additional attendees joining the standing-room audience.

Additional programming expanded the conversation around sustainable textiles through a screening of *Buy Now! The Shopping Conspiracy* followed by a panel discussion with experts in philosophy, sociology, and marketing; a “Sustainability by Design” lunch and learn featuring a local sustainable apparel company; and a sewing workshop. Together, these activities engaged an additional 50 members of the campus community.

The success of the inaugural Sustainable Fashion Week led Catawba to make the event an annual tradition. The second year expanded programming to include a weeklong Catawba Swap for clothing, shoes, and accessories, a larger venue for the fashion show, and additional sustainability activities. Through creative, interactive programming, Catawba demonstrates how campus events can increase awareness, encourage participation, and promote waste prevention.



Figure 28. Student-designed garment inspired by United Nations Sustainable Development Goal 14: Life Below Water.

Conclusion & Recommendations

Conclusion

North Carolina colleges and universities continue to demonstrate leadership in waste reduction through a wide range of initiatives spanning sustainable procurement, reuse, recycling, animal feeding, composting, and student engagement. In FY 2024–25, reporting institutions managed approximately 43,667 tons of materials, including 756 tons of reuse, 6,085 tons of traditional recycling, 10,391 tons of special recycling, and 2,253 tons of food waste diversion (see Figure 29). Together, these efforts resulted in a waste prevention and diversion rate of 45%, demonstrating the significant impact of campus programs to reduce landfill disposal.

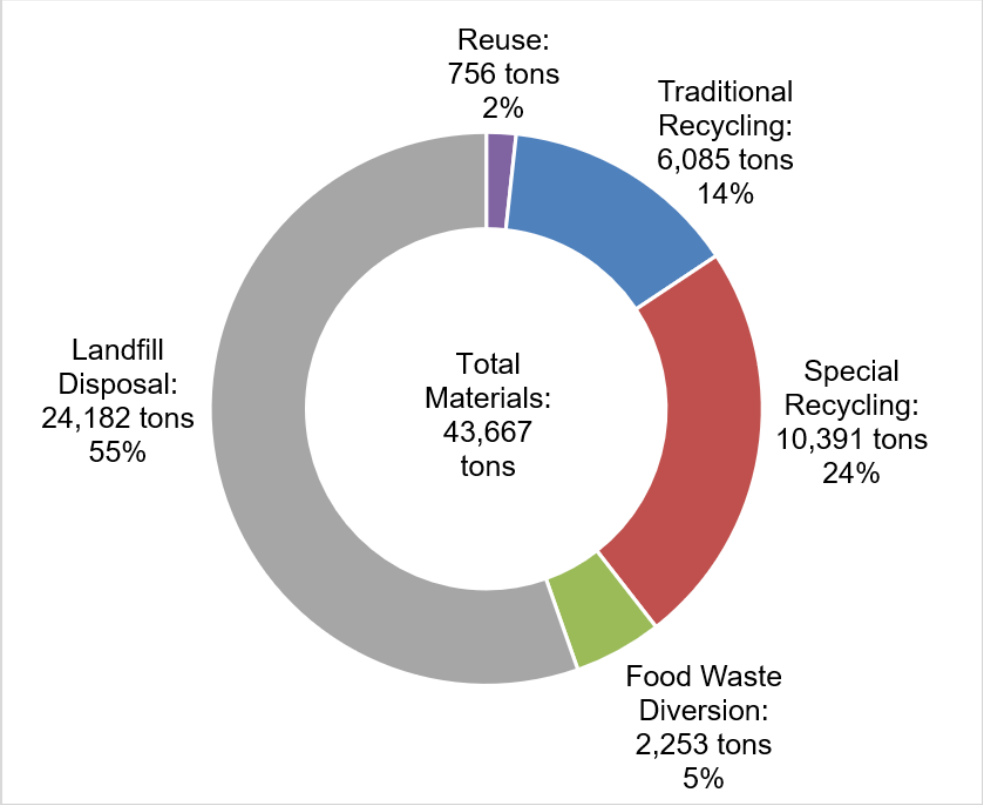


Figure 29. Total reported material tonnage by management pathway, FY 2024–25.

At the same time, landfill disposal remains the largest component of the reported material stream, with 24,182 tons disposed, equivalent to 162 pounds per capita. Many opportunities remain to expand prevention, reuse, recycling, and composting efforts, particularly for materials that remain prevalent in the landfill stream. While participation and program maturity vary across institution types, many campuses have established strong foundations and are continuing to strengthen programs as staffing, funding, infrastructure, and end markets allow. Continued progress will depend on expanding access to diversion opportunities, improving material recovery,

strengthening data collection and reporting, and identifying new opportunities to reduce the amount of material sent to landfill.

Recommendations

Survey results highlight several opportunities for colleges and universities to further reduce waste generation and increase diversion.

Waste Prevention

- **Prevent waste through sustainable purchasing.** The greatest environmental and economic benefits are achieved by preventing waste before it is generated. Institutions should strengthen EPP policies by prioritizing durable, repairable, reusable, recycled-content, recyclable, and compostable products while reducing unnecessary single-use items and excess packaging. Purchasing decisions should also reflect available recovery infrastructure so products can be effectively reused, recycled, or composted at end of life. Achieving this requires stronger collaboration between procurement and campus waste management staff, along with access to purchasing data that enables waste reduction opportunities to be identified before products enter the campus waste stream.
- **Extend the life of campus materials.** Waste reduction and recycling staff can play a key role by expanding campus donation and move-out recovery programs, strengthening partnerships with campus housing, surplus property operations, and local nonprofit organizations, and increasing opportunities for the redistribution of reusable materials on campus. Institutions can make donation and reuse the easy option by improving collection infrastructure, including temporary collection sites, centralized reuse areas, and signage. Institutions should also improve tracking and reporting of reuse metrics alongside recycling tonnage to better demonstrate the environmental and economic value of waste prevention and material reuse.

Material Recovery & Landfill Diversion

- **Target materials with the greatest diversion potential.** Statewide waste characterization results indicate that approximately two-thirds of North Carolina's landfilled municipal solid waste (MSW) stream could be diverted through existing recycling and composting programs.[6] Colleges and universities can achieve the greatest gains in diversion by prioritizing the material streams with the highest recovery potential while continuing to expand innovative recycling programs for more challenging materials.
    - **Food waste:** Food waste represents one of the largest opportunities for additional diversion, accounting for approximately 22% of MSW disposed of in North Carolina landfills. Institutions should continue investing in strategies across the EPA Wasted

[6] To view the full 2025 NC Waste Characterization Study, visit DEACS' Data, Annual Reports and Publications webpage.

Food Scale, prioritizing source reduction and surplus food recovery while expanding composting programs and partnerships that increase access to organics processing.

- **Traditional recyclables:** Readily recyclable materials—including paper, containers, and other commonly accepted recyclables—account for over one-third of MSW going to landfill in NC. Continued investments in convenient collection infrastructure, standardized signage, contamination reduction, and education can help capture a greater share of these materials. Periodic campus waste assessments can further identify opportunities to improve recovery rates and target high-volume recyclable materials unique to individual campuses.
- **Construction & Demolition Debris:** C&D debris accounts for approximately 10% of North Carolina's landfilled MSW. Given the frequent renovation and capital improvement projects on college and university campuses, expanding C&D recycling programs presents a significant opportunity to divert large volumes of material from disposal. As leaders in innovative recovery programs for specialty waste streams, colleges and universities are well positioned to strengthen partnerships with C&D recyclers and further advance circular materials management.

Innovation & Campus Engagement

- **Continue piloting innovative solutions and engaging campus communities.** Colleges and universities provide unique environments for testing new approaches to waste reduction while educating future leaders. Continued investment in student engagement, behavior change campaigns, pilot projects, and cross-campus partnerships can accelerate adoption of innovative waste reduction strategies and generate scalable practices that benefit campuses across North Carolina. As many institutions have demonstrated through initiatives such as specialty recycling programs, move-out recovery efforts, and food waste reduction pilots, higher education can serve as a testing ground for solutions that advance circular economy principles and inform broader waste reduction efforts statewide.

References

Busch Systems. (2024). *Indoor Waste & Diversion Practices at Colleges & Universities*. https://www.buschsystems.com/wp-content/uploads/2024/10/Centralized-Survey-Results_Main-Report.pdf

Maryland Department of the Environment. (2025). *Volume to Weight Conversion Table*. https://mde.maryland.gov/programs/land/WasteManagement/Documents/2025%20MRA%20tonnage%20reporting%20survey%20guidelines.pdf

National Center for Education Statistics. (n.d.). *Integrated Postsecondary Education Data System (IPEDS).* U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/ipeds/

North Carolina Department of Environmental Quality. (2025). *2025 NC Waste Characterization Study*. https://www.deq.nc.gov/about/divisions/environmental-assistance-and-customer-service/recycling-and-materials-management/data-annual-reports-and-publications

North Carolina Department of Environmental Quality. (n.d.-a). *Animal Feeding Operations*. https://www.deq.nc.gov/about/divisions/water-resources/water-quality-permitting/animal-feeding-operations

North Carolina Department of Environmental Quality. (n.d.-b). *Composting*. https://www.deq.nc.gov/about/divisions/waste-management/solid-waste-section/special-wastes-and-alternative-handling/composting

North Carolina General Statutes § 130A-309.04 (2026). https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/BySection/Chapter_130A/GS_130A-309.04.html

North Carolina General Statutes § 130A-309.10 (2026). https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/BySection/Chapter_130A/GS_130A-309.10.html

North Carolina General Statutes § 130A-309.14 (2026). https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/BySection/Chapter_130A/GS_130A-309.14.html

North Carolina General Statutes § 130A-310.60 (2026). https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/BySection/Chapter_130A/GS_130A-310.60.html

North Carolina General Statutes § 143-58.2 (2026). https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/BySection/Chapter_143/GS_143-58.2.html

North Carolina General Statutes § 143-58.3 (2026). https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/BySection/Chapter_143/GS_143-58.3.html

North Carolina General Statutes, Chapter 143, Article 3A (2026). https://www.ncleg.gov/EnactedLegislation/Statutes/HTML/ByArticle/Chapter_143/Article_3A.html

ReFED. (n.d.). *Meal Equivalents*. https://docs.refed.org/methodologies/solutions_database/meal_equivalents.html

U.S. Environmental Protection Agency. (1999). *Final Guidance on Environmentally Preferable Purchasing for Executive Agencies*. https://www.epa.gov/sites/default/files/2015-09/documents/finaleppguidance.pdf

U.S. Environmental Protection Agency. (2016). *Volume-to-Weight Conversion Factors for Solid Waste*. https://www.epa.gov/smm/volume-weight-conversion-factors-solid-waste

U.S. Environmental Protection Agency. (2025). *Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy*. https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy

U.S. Environmental Protection Agency. (2026). *Wasted Food Scale*. https://www.epa.gov/sustainable-management-food/wasted-food-scale

Appendix A

Participating Institutions

Public Two-Year Institutions

Beaufort County Community College
Bladen Community College
Blue Ridge Community College
Brunswick Community College
Caldwell Community College and Technical Institute
Cape Fear Community College
Carteret Community College
Central Carolina Community College
Central Piedmont Community College
Cleveland Community College
College of the Albemarle
Craven Community College
Davidson-Davie Community College
Durham Technical Community College
Fayetteville Technical Community College
Forsyth Technical Community College
Gaston College
Haywood Community College
James Sprunt Community College
Johnston Community College
Lenoir Community College
Martin Community College
McDowell Technical Community College
Montgomery Community College
Nash Community College
Pamlico Community College
Pitt Community College
Randolph Community College
Rockingham Community College
Rowan-Cabarrus Community College
Sampson Community College
Sandhills Community College
Southeastern Community College
Stanly Community College
Wake Technical Community College
Western Piedmont Community College

Public Four-Year Institutions

Appalachian State University
East Carolina University
Elizabeth City State University
Fayetteville State University
North Carolina State University
University of North Carolina Asheville
University of North Carolina at Chapel Hill
University of North Carolina at Pembroke
University of North Carolina Charlotte
University of North Carolina School of the Arts
University of North Carolina Wilmington
Western Carolina University

Private Four-Year Institutions

Catawba College
Duke University
Elon University
Johnson & Wales University-Charlotte
Methodist University
Montreat College
Pfeiffer University
Salem College

Appendix B

Volume-to-Weight Conversion Factors

The conversion factors in this appendix are provided as recommended estimates to assist institutions that do not have direct weight measurements for certain materials. These factors promote greater consistency in statewide reporting; however, institutions may use alternative conversion factors or internally developed methodologies if they more accurately reflect local conditions or operational practices.

Reported material weights may therefore be derived from a combination of direct scale measurements, hauler-provided weights, and estimated weights based on volume-to-weight conversion factors. Hauler-provided weights may include their own estimation methods or rounding practices, introducing another source of uncertainty. RMMS does not track which methodology each institution uses for individual material categories.

Table B1. Recommended volume-to-weight conversion factors for reuse.

Material	Volume	Equivalent Weight	Source
Edible food	1 meal	1.2 lbs	ReFed
Mixed textiles (loose)	1 cubic yard	150 lbs	U.S. EPA

Table B2. Recommended volume-to-weight conversion factors for traditional recycling.

Material	Volume	Equivalent Weight	Source
Commingled containers, cardboard, and paper	1 cubic yard	92 lbs	U.S. EPA
Commingled containers, cardboard, and paper – no glass	1 cubic yard	139 lbs	U.S. EPA
Containers (plastic, aluminum, steel, glass)	1 cubic yard	70 lbs	U.S. EPA
Containers (plastic, aluminum, steel) – no glass	1 cubic yard	32 lbs	U.S. EPA
Mixed PET and HDPE (loose)	1 cubic yard	32 lbs	U.S. EPA
Mixed plastic containers #1-7 (loose)	1 cubic yard	40.4 lbs	U.S. EPA
Aluminum cans (uncompacted)	1 cubic yard	46 lbs	U.S. EPA

Steel cans (uncompacted)	1 cubic yard	112.5 lbs	U.S. EPA
Glass bottles (loose)	1 cubic yard	380 lbs	U.S. EPA
Corrugated containers (flattened)	1 cubic yard	106 lbs	U.S. EPA
Corrugated containers (baled)	1 cubic yard	900 lbs	U.S. EPA
Paper cartons (uncrushed)	1 cubic yard	50 lbs	U.S. EPA
Newsprint (loose)	1 cubic yard	580 lbs	U.S. EPA
Mixed office paper (loose)	1 cubic yard	323 lbs	U.S. EPA

Table B3. Recommended volume-to-weight conversion factors for special recycling.

Material	Volume	Equivalent Weight	Source
Yard waste	1 cubic yard	400 lbs	U.S. EPA
Lead-acid battery (motorcycle)	1 battery	9.5 lbs	MDE
Lead-acid battery (car)	1 battery	39 lbs	MDE
Lead-acid battery (truck)	1 battery	53 lbs	MDE
Used motor oil	1 gallon	7 lbs	MDE
Used motor oil filter	1 filter	1 lb	MDE
Used motor oil filter (uncrushed)	1 drum	175 lbs	U.S. EPA
Used antifreeze	1 gallon	9.8 lbs	MDE
Used cooking oil	1 gallon	7.5 lbs	U.S. EPA
Fluorescent light	1 bulb	0.83 lbs	MDE

Table B4. Recommended volume-to-weight conversion factors for food waste diversion.

Material	Volume	Equivalent Weight	Source
Food waste	64-gallon toter	150 lbs	U.S. EPA
Food waste	1 cubic yard	463 lbs	U.S. EPA

Table B5. Recommended volume-to-weight conversion factors for solid waste disposal.

Material	Volume	Equivalent Weight	Source
Commercial MSW (uncompacted)	1 cubic yard	138 lbs	U.S. EPA
Mixed residential, institutional, commercial MSW (uncompacted)	1 cubic yard	250-300 lbs	U.S. EPA
Mixed residential, institutional, commercial MSW (compacted)	1 cubic yard	400-700 lbs	U.S. EPA

Appendix C

Institutional Reporting Rates for Tonnages

Table C1. Institutional reporting rates for reuse tonnages.

Institution Type	Reporting Institutions	Percent of Respondents	Percent of Total
Public Two-Year Institution	6	17%	10%
Public Four-Year Institution	7	58%	41%
Private Four-Year Institution	5	63%	10%
All Institutions	18	32%	14%

Table C2. Institutional reporting rates for traditional recycling tonnages.

Institution Type	Reporting Institutions	Percent of Respondents	Percent of Total
Public Two-Year Institution	25	69%	43%
Public Four-Year Institution	9	75%	53%
Private Four-Year Institution	8	100%	16%

All Institutions	42	75%	34%

Table C3. Institutional reporting rates for special recycling tonnages.

Institution Type	Reporting Institutions	Percent of Respondents	Percent of Total
Public Two-Year Institution	27	75%	47%
Public Four-Year Institution	9	75%	53%
Private Four-Year Institution	6	75%	12%
All Institutions	42	75%	34%

Table C4. Institutional reporting rates for food waste diversion tonnages.

Institution Type	Reporting Institutions	Percent of Respondents	Percent of Total
Public Two-Year Institution	1	50%	2%
Public Four-Year Institution	6	67%	35%
Private Four-Year Institution	5	100%	10%
All Institutions	12	75%	10%

Table C5. Institutional reporting rates for solid waste disposal tonnages.

Institution Type	Reporting Institutions	Percent of Respondents	Percent of Total
Public Two-Year Institution	24	67%	41%
Public Four-Year Institution	8	67%	47%
Public Four-Year Institution	7	88%	14%
All Institutions	39	70%	31%

Appendix D

FTE Student & Staff Populations of All Institutions

FTE student and staff populations are sourced from the Integrated Postsecondary Education Data System (IPEDS) using the "12-month full-time equivalent enrollment" and "Total FTE staff" variables. IPEDS defines "staff" as including both faculty and operational staff. FY 2023–24 represents the most recent IPEDS data available at the time of analysis. For consistency in five-year comparisons, the prior year's FTE populations were applied to each reporting year.

Table D1. FTE student and staff populations for all two-year and four-year public and private not-for-profit colleges and universities in North Carolina, FY 2019–20 to FY 2023–24.

Institution	FY 2019–20 Population	FY 2020–21 Population	FY 2021–22 Population	FY 2022–23 Population	FY 2023–24 Population
Alamance Community College	3,365	3,171	3,103	3,270	3,500
Appalachian State University	22,000	22,567	22,958	23,046	24,023
Asheville-Buncombe Technical Community College	5,294	4,988	4,805	4,871	4,822
Barton College	1,356	1,387	1,362	1,405	1,352
Beaufort County Community College	1,302	1,251	1,433	1,506	1,493
Belmont Abbey College	1,696	1,735	1,773	1,795	1,902
Bennett College	376	290	270	256	260
Bladen Community College	1,292	1,151	1,200	1,103	1,082
Blue Ridge Community College	2,209	2,206	2,482	2,517	2,438
Brevard College	922	964	964	937	998
Brunswick Community College	1,385	1,439	1,403	1,567	1,655
Cabarrus College of Health Sciences	482	623	517	545	803
Caldwell Community College and Technical Institute	2,934	2,949	2,768	2,873	2,907
Campbell University	7,343	7,089	6,662	6,406	6,128

Cape Fear Community College	7,162	7,323	8,364	7,360	8,485
Carolina Christian College	80	92	61	65	69
Carolina College of Biblical Studies	147	127	124	124	153
Carolina University	797	958	798	715	752
Carolinas College of Health Sciences	487	512	584	393	443
Carteret Community College	1,268	1,020	1,391	1,360	1,361
Catawba College	1,544	1,489	1,518	1,462	1,540
Catawba Valley Community College	3,324	3,064	3,409	3,135	3,157
Central Carolina Community College	4,351	4,058	3,926	4,009	4,223
Central Piedmont Community College	15,817	13,941	13,601	14,605	15,631
Charlotte Christian College and Theological Seminary	155	182	140	130	90
Chowan University	1,430	1,242	1,104	975	808
Cleveland Community College	2,068	1,719	1,921	2,032	2,216
Coastal Carolina Community College	3,952	3,763	3,676	3,614	3,602
College of the Albemarle	1,894	2,001	1,687	1,722	1,752

Craven Community College	2,805	2,357	2,168	2,163	2,286
Davidson College	2,888	2,867	2,919	2,988	2,962
Davidson-Davie Community College	3,473	3,501	3,496	3,728	3,972
Duke University	35,600	33,917	32,802	34,676	35,056
Durham Technical Community College	4,188	3,950	3,709	3,798	4,087
East Carolina University	30,873	30,629	29,758	29,132	28,773
Edgecombe Community College	1,480	1,269	1,286	1,013	1,050
Elizabeth City State University	2,068	2,235	2,275	2,324	2,309
Elon University	8,101	8,449	8,295	8,366	8,568
Fayetteville State University	6,497	6,631	6,323	6,694	6,933
Fayetteville Technical Community College	10,555	9,218	7,039	8,225	8,946
Forsyth Technical Community College	6,383	5,999	6,197	6,730	7,077
Gardner-Webb University	3,651	3,726	3,519	3,150	3,150
Gaston College	4,153	4,174	4,522	4,847	5,895
Greensboro College	1,124	1,018	888	981	1,011
Guilford College	1,840	1,713	1,531	1,475	1,485
Guilford Technical Community College	8,865	8,477	8,101	8,225	8,845

Halifax Community College	1,054	872	937	964	1,007
Haywood Community College	1,312	1,194	1,078	1,029	1,051
Heritage Bible College	54	38	36	35	33
High Point University	6,729	7,269	7,573	7,765	7,794
Hood Theological Seminary	119	124	123	121	108
Isothermal Community College	1,757	1,706	1,620	1,571	1,683
James Sprunt Community College	1,190	1,218	1,354	1,193	1,256
Johnson & Wales University-Charlotte	1,749	1,531	1,384	1,269	1,299
Johnson C Smith University	1,814	1,491	1,418	1,369	1,441
Johnston Community College	3,979	3,826	3,697	3,896	4,434
Jung Tao School of Classical Chinese Medicine	91	84	111	112	127
Lees-McRae College	1,034	1,006	1,052	1,068	1,086
Lenoir Community College	2,123	1,963	1,932	1,781	1,835
Lenoir-Rhyne University	2,997	2,888	2,504	2,415	2,378
Livingstone College	1,336	1,124	1,111	1,025	1,019
Louisburg College	626	622	632	519	491
Manna University	142	184	182	221	205
Mars Hill University	1,343	1,272	1,222	1,185	1,225

Martin Community College	750	511	594	626	636
Mayland Community College	896	811	771	769	825
McDowell Technical Community College	759	712	886	884	927
Meredith College	2,226	2,216	2,198	1,873	1,983
Methodist University	2,291	2,059	2,185	2,117	2,108
Mid-Atlantic Christian University	196	172	162	159	174
Mitchell Community College	2,292	2,243	2,560	2,717	2,935
Montgomery Community College	699	632	611	630	627
Montreat College	1,041	1,024	1,141	1,166	1,206
Nash Community College	2,347	2,015	2,015	1,943	1,960
North Carolina A & T State University	13,466	13,664	13,937	14,343	15,023
North Carolina Central University	8,560	8,467	8,309	7,952	8,519
North Carolina State University at Raleigh	41,237	40,817	41,049	41,748	42,811
North Carolina Wesleyan University	2,107	1,931	1,694	1,517	1,667
Pamlico Community College	494	307	278	311	315
Pfeiffer University	1,318	1,329	1,344	1,214	1,006

Piedmont Community College	1,048	956	930	973	1,034
Pitt Community College	7,362	5,801	6,182	6,070	6,453
Queens University of Charlotte	2,702	2,602	2,400	2,211	2,162
Randolph Community College	2,188	2,043	1,857	1,973	2,059
Richmond Community College	2,310	2,141	2,010	2,002	2,091
Roanoke-Chowan Community College	543	435	450	468	503
Robeson Community College	1,606	1,615	1,621	1,702	1,773
Rockingham Community College	1,496	1,186	1,098	1,061	1,650
Rowan-Cabarrus Community College	4,973	4,717	4,543	4,516	4,545
Saint Augustine's University	1,209	1,180	1,331	1,213	945
Salem College	795	626	551	547	596
Sampson Community College	1,458	1,445	1,469	1,378	1,440
Sandhills Community College	3,284	2,990	3,076	2,890	3,636
Shaw University	1,442	1,461	1,273	1,203	1,072
Shepherds Theological Seminary	94	117	116	165	172
South Piedmont Community College	2,336	2,281	2,424	2,500	2,679

Southeastern Baptist Theological Seminary	2,309	2,362	2,132	1,889	2,017
Southeastern Community College	1,305	1,115	1,137	1,020	1,163
Southeastern Free Will Baptist Bible College	91	87	94	103	102
Southwestern Community College	1,852	1,854	1,893	1,804	1,583
St. Andrews University	1,025	1,118	1,037	929	894
Stanly Community College	1,958	1,861	1,753	1,854	1,832
Surry Community College	2,670	2,322	2,117	2,094	2,052
Tri-County Community College	953	827	859	860	847
University of Mount Olive	2,764	2,531	2,142	2,108	2,417
University of North Carolina Asheville	3,959	3,795	3,629	3,348	3,341
University of North Carolina at Chapel Hill	42,722	42,523	43,932	44,128	45,732
University of North Carolina at Charlotte	31,508	30,579	30,046	29,908	30,868
University of North Carolina at Greensboro	20,720	19,941	19,095	18,073	18,131
University of North Carolina at Pembroke	7,789	8,073	7,874	7,320	7,302
University of North Carolina	1,548	1,518	1,579	1,562	1,570

School of the Arts					
University of North Carolina Wilmington	18,296	18,430	18,340	18,309	18,874
Vance-Granville Community College	2,438	2,334	2,303	2,317	2,383
Wake Forest University	15,513	16,034	16,833	17,277	17,920
Wake Technical Community College	17,121	16,822	16,223	17,165	18,321
Warren Wilson College	999	931	1,052	985	976
Watts College of Nursing	138	148	150	161	184
Wayne Community College	2,286	2,595	2,453	2,502	2,622
Western Carolina University	12,784	12,520	12,218	12,107	12,341
Western Piedmont Community College	1,427	1,334	1,182	1,258	1,293
Wilkes Community College	2,247	2,033	2,000	2,005	2,076
William Peace University	1,044	955	879	848	843
Wilson Community College	1,539	1,528	1,328	1,324	1,174
Wingate University	4,369	4,196	3,979	4,042	3,835
Winston-Salem State University	5,769	5,794	5,736	5,543	5,338