Emory's History of Waste Diversion and Recycling

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## Introduction

On average, the world produces 1.3 billion tons of waste per year (Los Angeles Times 2016). The US is a leading contributor of waste, producing 254 million tons of waste in 2013 alone. The US is followed by China, which has a population four times the size and produced 190 million tons that year (Los Angeles Times 2016). So why is it that the US is producing so much waste? While there are many factors responsible, one of them is the low percentage of waste being recycled. In 2006, out of the 251 million tons of trash produced in the US, 55% of it was buried in landfills, 33% of it was recycled, and 12.5% was incinerated (National Geographic 2017). In order to reduce the massive amounts of waste being produced each year, recycling helps reuse materials, takes less energy, and produces less greenhouse gases than a landfill. At Emory University, recycling has been one of its earliest sustainability-related endeavors. By looking at the university as a microcosm for the world, recycling can have profound impacts on waste diversion, culture, and community.

The beginning of recycling at Emory started with a single white paper recycling bin introduced in the Woodruff library in 1989, and the recycling program at Emory has since spread across campus and now incorporates mixed paper, aluminum, plastic, cardboard, metal, glass, construction waste, batteries, light bulbs, and composting for food waste. What started as a single, modest white paper recycling goal has transformed into a University commitment initiated by the Sustainability Committee in 2005 to divert Emory's total waste stream by 65% by 2015 and revised in 2016 to divert 95% of non-construction waste (including food waste) from landfills by 2025. Emory now has its own Recycling Center that not only collects the University's recycled materials but also materials from nearby places in Atlanta such as office buildings at Grady Hospital, Executive Park, Downtown Decatur, the Carter Center, and Oxford College. Waste reduction and recycling at Emory has become an ingrained part of the campus's sustainable commitment and identity.

## Methods

This Report was written in Spring of 2017, as part of the course, Writing Emory's Sustainability History (ANT 385W) taught by Dr. Peggy Barlett. It builds on four reports completed in 2008:

- The Sparks of Sustainable Energy: Sustainable History at Emory (Mona Patel)
- Constructing a Movement, One Building at a Time: The History of Green Buildings at Emory University (Micah Hahn)
- Alternative Transportation (Andrew M. Foote)
- "Going Into a Place of Beauty": Forest Preservation and Restoration (Whitney Easton)

Our 2017 class chose eight sectors of action for research and interviews, to contribute to the oral and written history of sustainability efforts at Emory. The seven other topics are:

- Institutionalization of Change: A History of Emory's Office of Sustainability Initiatives (Kristen Kaufman)
- Teaching the Future: The Academic Infusion of Sustainability at Emory (Meggie Stewart)
- Carbon, Climate and Co-Generation: A History of Emory's Energy and Climate Commitments (Katelyn Boisvert)
- Greenspace at Emory: Finding the Balance (Orli Hendler)
- Sustainability in Campus Life: The Changing of Behavior (Jamie Nadler)
- Sustainable Healthcare at Emory University (Lauren Balotin)
- Stormwater Management and Water Conservation at Emory University (Kelly Endres)

This report was based on written materials, available quantitative and qualitative data, and interviews. Background information was obtained from the Emory Report, the Emory Office of Sustainability website, the Emory archives, the Emory Recycles Scrapbook and collections of various papers, photographs, and articles possessed by the interviewees. Interviews were scheduled via email, and in the revision process, interviewees were given the chance to review the document and provide feedback. We are especially grateful to interviewees for sharing their time and insights with us, and also to Ciannat Howett and other members of the Office of Sustainability for their generous help in constructing these histories. The individuals interviewed for this Report are listed below, with the date of interview:

**Lloyd Busch** (Reference Specialist at Library Service Desk; Former member of LEAF); 02/23/17

**Charles Forrest** (Retired: Former Director of Library Facilities); 02/09/17

**Dawn Francis – Chewning** (Educational Analyst III at LITS: Student Digital Life; 02/14/17

**Rex Hardaway** (Director/ Contract Administration in Finance); 03/24/17

**Henry Henderson** (Document Shredding Specialist, Staff Campus Services); 02/23/17

**Deena Keeler** (Assistant Director of Auxiliary Services); 02/10/17, 03/17/17, 04/13/17

**Joshua Majors** (Supervisor with Recycling/Waste/Document Management); 04/10/17

**Lora McDonald** (Academic Department Admin in Anthropology); 03/24/17

**Taylor Spicer** (Programs Coordinator for Office of Sustainability Initiatives); 03/23/17

**Chad Sunstein** (Assistant Director Emory Dining); 03/23/17

**Claire Wall** (Administrative Coordinator for Facilities Management); 02/22/17

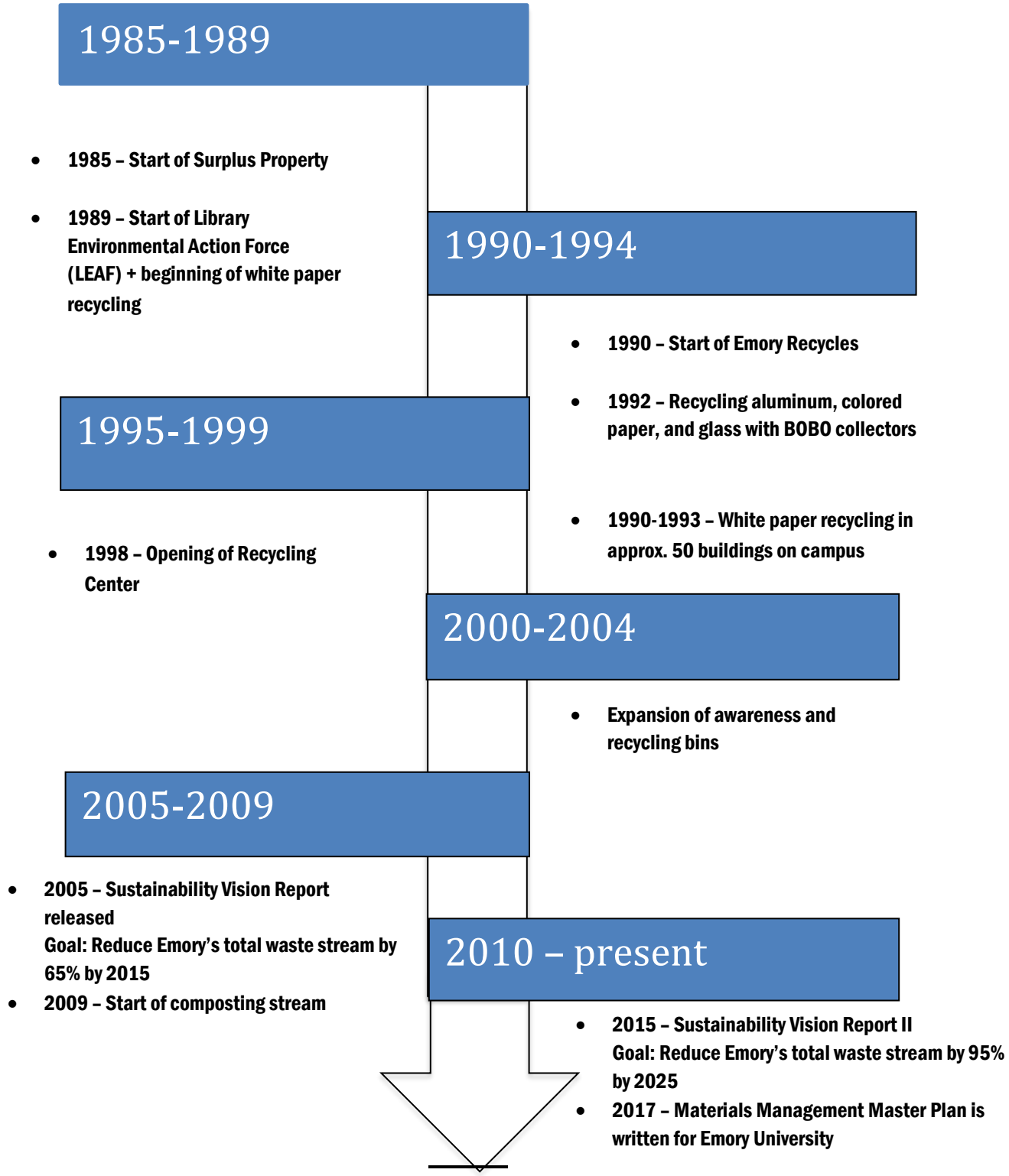
**Mirian Willis** (Custodian in Anthropology Department); 03/30/17

**Tynia Wooten** (Custodian in Anthropology Department); 03/30/17

The unfolding story of waste diversion at Emory can best be understood in two major sections: Campus Buildings and Dining. While both Campus Buildings and Dining contribute together to reduce Emory's total waste, the separation in this report is needed to emphasize programs that

are more general and available across campus and ones that are specific to campus dining. It is also important to note that Emory's Healthcare facilities have also made efforts to divert waste but will not be included in this report due to a more comprehensive account of the sustainability of Emory Healthcare written in Lauren Balotin's Sustainable Healthcare at Emory University report.

# Timeline: Waste Diversion in Campus Buildings



## Surplus Property + Reselling of Used Furniture

While recycling bins were not introduced at Emory until 1989, the concept of reusing previously owned goods was introduced at Emory in 1985 with the formation of the group Surplus Property (Emory Report 2016). This group was originally housed in the 1762 Clifton Building and created by the Procurement Division under the direction of Rex Hardaway, who now works as the director of contract administration in the financial division at Emory. The original purpose was to place back into circulation pieces of equipment such as used furniture and laboratory equipment that were being thrown away or underutilized by other departments (Hardaway 2017). The business model of the group at the time was that Surplus Property would collect used but still functioning furniture and equipment from different staff, faculty, or departments at Emory and then hold the objects for a certain number of days to sell to other departments at a discounted rate (Hardaway 2017). After that time, the products would be available to the larger public for purchase. Surplus Property would keep 15% of the profit, and the department who donated the material would keep 85%. Eventually Surplus Property merged with Campus Services. Although the concept remains the same, the donors are no longer financially rewarded for sending in their products, which according to Hardaway (2017) may no longer provide departments an incentive to transfer their property to Surplus Property—they may elect instead to sell their used furniture and equipment themselves. While originally the group worked as a grassroots group of volunteers, it now works as part of the university and has contracted workers.

One concern that emerged more recently with Surplus Property was that it needed a way to ensure that used electronics would be sanitized and data would be erased properly to guarantee the privacy of the donor and provide security for any confidential material on the device. Surplus Properties oversaw electronics repurposing at Emory until 2016. At that time, these materials were moved to Library and Information Technology Services (LITS) where they are currently managed through a third-party vendor.

Surplus Property was able to divert 385.48 tons of surplus furniture from local landfills in 2015 alone. According to a 2016 Emory News Report, the program that year was headed by Milton Thomas who was the supervisor of staging and surplus property for Emory's Facilities Management division (now retired) and James Harper, administrative assistant for Facilities Management Auxiliary Services which includes recycling and surplus (Emory Report 2016).

## Library Environmental Action Force and Start of White Paper Recycling

Following the success of Surplus Property, the introduction of recycling bins began in 1989 when various staff members in the Woodruff Library created the Library Environmental Action Force (LEAF). The members of the force were Brandon Scott, Ann Martin, Jeanne Buss, Cathryn Carlson, Christi Craig, Tim Cravens, Mary Elberhart, Ken Scott, Elaine Wagner, Scott White, Sue Reed, Carolyn Brown, and Lloyd Busch (Emory Recycles 2017:2). When discussing

the team with Busch (2017), a former member of LEAF who now works at the Library Service Desk, he did not feel as though the group had a leader rather it was just a committed group of individuals who wanted to see change.

According to Hardaway (2017), a letter from members of the library requesting a recycling bin circulated at a staff meeting of the Vice President for Business. At the time, Hardaway was part of the staff. As the letter circulated the meeting, nobody was interested in the task and passed it on until it landed in front of Hardaway. Since he had a history of interest in recycling, he agreed to work with the library members.

While Busch (2017) does not remember exactly, LEAF was formed either because the University approached them or because they had heard the University wanted to do white paper recycling. According to a General Libraries Emory General News article in 1990, the library was selected to be the test site for white paper recycling (Emory Recycles 2017:1). Hardaway acknowledges that some students had been collecting recycling materials in different departments and selling them for extra cash previously, but LEAF was the first initial group and the driver for the presence of recycling at Emory. Hardaway wanted to create a recycling group that did not rely on staff, so it became a grassroots project consisting of volunteers in the library and himself. According to Busch (2017), while the majority of the LEAF members have either retired or passed away, he is confident that if I asked the other remaining member about it she would also say, "I don't remember much about it, but I'm glad we did it." While many of the details of the initiation have been lost in time, the overall point remains that this team was the first step towards a soon-to-be campus wide initiative that became an important part of Emory's sustainability efforts.

The pride among the members can be seen in the October 8, 1990, issue of the Campus Report in which members of the LEAF team were featured in a photograph for their efforts for the white paper recycling in the library (Emory Recycles 2017: 3). While the reporter wanted to take a photo of just the recycling bin for the article, Busch tried to think of a way to make the photo as interesting as he could. Busch decided to jump in the bin while other LEAF members posed around him to create the following image used in the report:


**Cleaning up their act:** *Ever since they began a pilot program for recycling white paper in January, the Libraries Environmental Action Force (LEAF) has taken its role as Emory's premiere recycler quite seriously. Due in part to the success of the project, the University approved a campuswide white paper recycling program in September called Emory Recycles. LEAF members include, clockwise from bottom left, Ken Scott, Kelly Kautc, Cindy Runyon, Scott White, Elaine Wagner, Brandy Scott, Sue Reed and Lloyd Busch.*

Figure 1. LEAF story from 1990 Campus Report

According to Busch (2017), two months after LEAF's initial meeting they were already recycling. LEAF had monthly meetings with Hardaway, and once they achieved their goal of recycling in the Library, the group disbanded (Busch 2017). Although short-lived, their efforts inspired others to continue to pursue recycling on Emory's campus. While Emory is still using the acronym LEAF, it is no longer affiliated with the Library Environmental Action Force as is now used for the Library Employees Advocacy Forum.

Perhaps the initiation of white paper recycling was so successful because it was greatly needed. According to Busch, before the initiation of LEAF, the library was throwing out 7-10 bags of white paper a day, mainly from copier discards (2017). In an Emory Report article from September of 1990, it said "Each year, Emory produces 11 thousand tons of solid waste. Estimates indicate that 30 percent…is high-grade white paper." The university continues to consume large amounts of white paper and it currently purchases 47 million sheets of copy paper per year (Hardaway 2017).

Both Charles Forrest, the former director for Library Facilities, and Busch stated that there was no pushback against recycling from the institution as far as they knew. Among the staff in the library, they regarded the recycling bin with no questions as to whether it was something they wanted to do (Forrest 2017). Busch believed that Emory supported this movement as part of their value to "support good things." Although this statement is broad, many interviewees used similar expressions when discussing the interest from the institution. Forrest discussed the institution's desire to ask "can we do that in a better way?" when discussing the diversion of waste that influenced the spread of recycling bins, and Dawn Francis-Chewning, the educational analysist for Student Digital Life, expressed pride in the University's support for recycling (2017). Perhaps Emory is unique in that it does not view sustainability as a business (Majors 2017). Certain recyclable materials such as construction debris and composting are disposed of at a cost to the University, yet the collection is still supported by the institution (Majors 2017). Overall,

the sentiments from these interviewees express a belief that Emory's interest in recycling was reflective of overall goals to be progressive and support sustainable change.

In addition to this support, the system was also simple for the librarians to adapt to. The workers in the library were given a folder on their desks for white paper, and once a week they would dump that into the larger recycling bin (Busch 2017). Even now, Busch keeps two bins under his desk (white paper and colored paper) and takes them to the larger recycling once a month. Busch emphasized his amazement at how problem-free and easy it was and currently still is to recycle in the library. The availability and simplicity of recycling in the library undoubtedly garnered major support for this new initiative at Emory.

However, Hardaway (2017), who worked on the more logistical side of recycling did note that there were challenges associated with the implementation of recycling. He stated that operationally it was a mess. White paper recycling became victims of the marketplace. When the white paper market had a high return value, the company that would pick up the paper would come. But, if the market did not have a high return, nobody would come to pick it up because nobody had any use for it (Hardaway 2017). Forrest (2017) noted that the high return on investment from white paper recycling was one of the incentives for the University to agree to support recycling. Forrest similarly mentioned that one of the challenges of implementing recycling was making sure that the white paper recycling would end up paying for itself.

Another challenge that came with implementing recycling was influencing behavior. Deena Keeler, the assistant director for auxiliary services, mentioned that in the 1980s very few people were recycling on campus (2017a). Similarly, Forrest discussed his surprise at people who always just threw things away without considering recycling. The challenge then became to educate people about recycling and this new direction that Emory was taking with waste diversion. However, this challenge is not necessarily isolated to white paper recycling, rather it relates to broader issues regarding recycling at Emory which will be discussed further below.

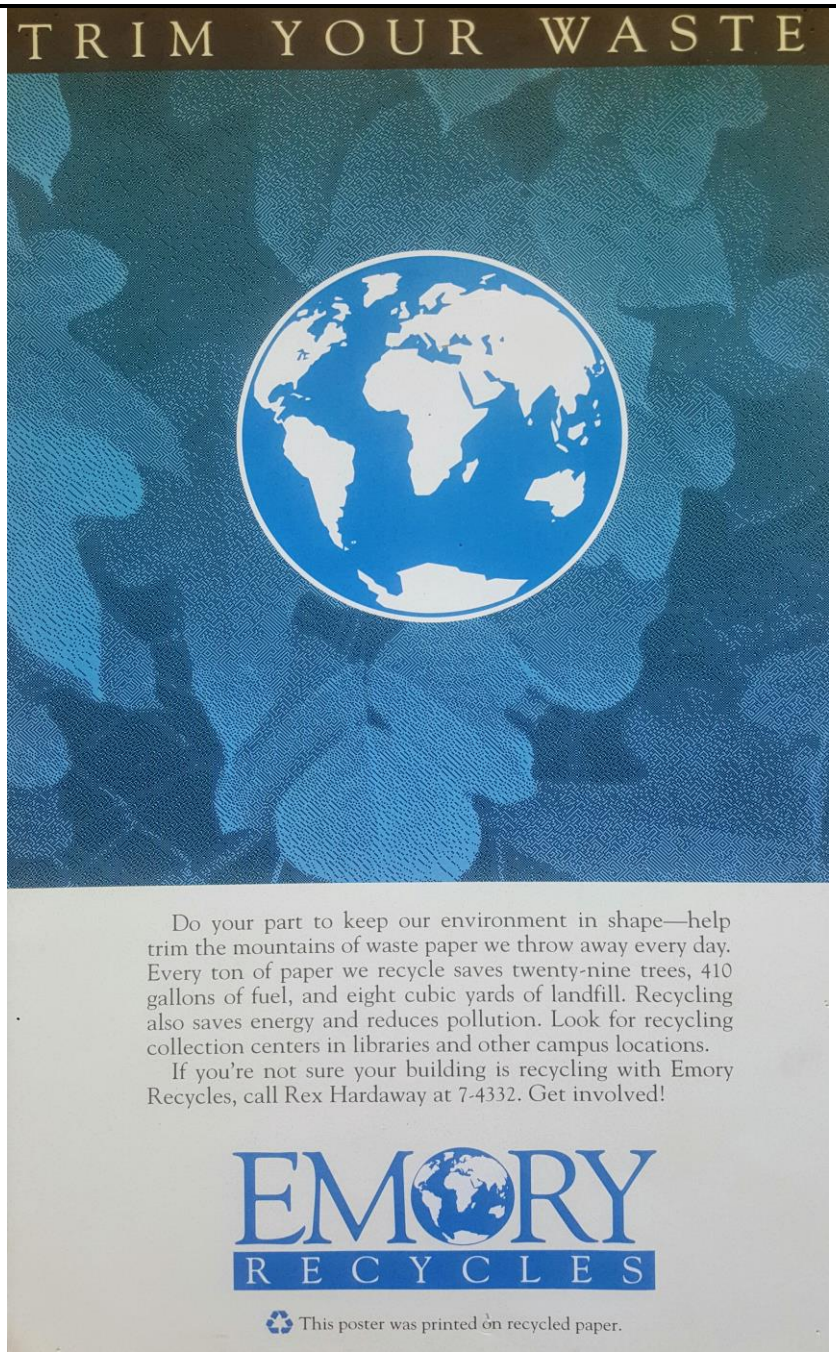



Figure 2. Original (1990) poster for Emory Recycles (courtesy of Rex Hardaway)

The Emory Recycles program was an extension of LEAF and announced to the whole campus in an open letter from President James T. Laney in September of 1990 (Emory Recycles 2017:3). The program was university-funded and "dedicated to recycling the 3,000 tons of high-grade white paper produced annually by the school and its affiliates" (Emory Recycles 2017:10). It was

recorded that by removing this one material from the landfill, Emory was able to eliminate over 20% of the entire volume of solid waste in a single year. That translated to over $31,000 saved in landfill costs (Emory Recycles 2017:10).

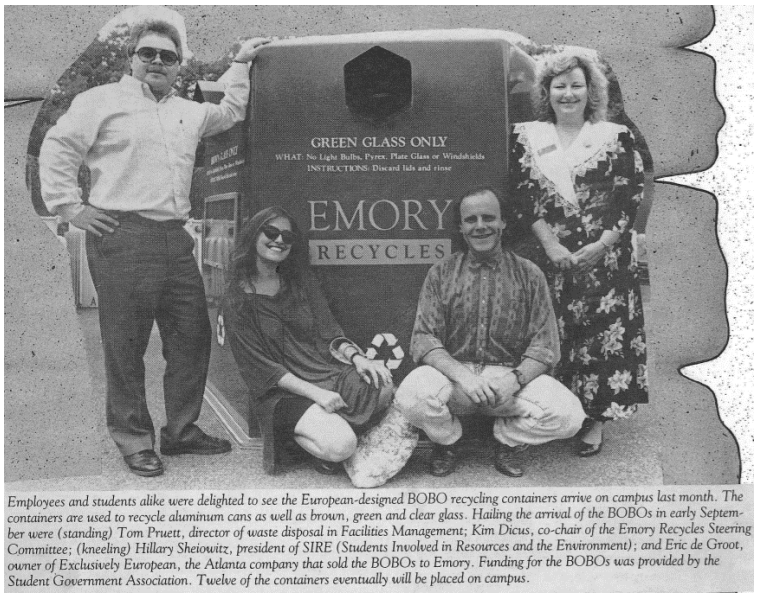
Emory Recycles was a program comprised of faculty and staff, yet there was also an institutional governance structure in the form of the Emory Recycles Steering Committee. This committee was formed the same year as Emory Recycles in order to oversee the new program (Emory Recycles 2017: 6). The Emory Recycles Steering Committee was headed by Rex Hardaway. He asked each department to appoint a building representative that would attend monthly meetings with him to discuss how each department was doing with waste diversion (Hardaway 2017). After these meetings, the Steering Committee would report to the rest of campus how much recycling was picked up. This Committee later merged with Emory Recycles.

At the time of its conception, Claire Wall, the administrative coordinator for Facilities Management, believes the goal of Emory Recycles was to recycle white paper. She also stated that she always likes to tell people it was to do the right thing; it saves money and it educates the students (Wall 2017). Although Wall laughed at her statement, its simplicity and focus on doing something because one knows it is the right thing reflects the aforementioned sentiments of many other interviewees.

However, the Senate's Committee on the Environment evaluated the proposal for Emory Recycles in 1990, and it was not as complimentary. The evaluation criticized that the overall goal of Emory Recycles was unclear. The report claimed that the exclusion of students in the residence halls from the program was "disturbing," claiming that the "failure to adequately include students (living in dorms) in the ER program is intellectually, educationally and morally untenable at an institution ostensibly devoted to higher learning." Emory Recycles responded to this claim by stating that "student have never been excluded" and that the program "excludes no one and invites participation by everyone" since the group functioned through grassroots volunteer support. However, not only was the committee disappointed in the lack of student inclusion, it was also skeptical of the potential for campus participation in recycling citing that in 1990 only 22 building out of 174 buildings on campus (12.6%) were recycling after two months of the program's inception. In response to these claims, Emory Recycles noted that the 22 buildings were considered an accomplishment after countless hours of volunteer effort. Nonetheless, Emory Recycles was approved and continued to spread recycling across campus.

In November of 1990, 22 more buildings in addition to the library added white paper recycling (Emory Recycles 2017: 4). These buildings included office buildings, administrative buildings, and computer centers. According to an article in the Emory Recycles scrapbook discussing the start of colored paper recycling, Myra Coker (recycling coordinator with the waste corporation BFI) reported that in October of that year, Emory recycled 11.1 tons of white papers, which save 189 trees, $550 in landfill charges and 16 cubic yards of landfill space (Emory Recycles 2017:6). Although this article does not have a date, it most likely took place between 1990 and 1991. In another article in the Emory Recycles scrapbook, it states that white paper recycling nearly doubled to 45 buildings in November (Emory Recycles 2017:7). While this article is also not dated, it most likely also took place in 1990.

The next year in 1991, white paper recycling started in residence halls in addition to all fraternities (Emory Recycles 2017: 8). In 1992, six recycling containers known as BOBOs were placed outdoors across campus near different popular buildings (Emory Recycles 2017: 5).




*Employees and students alike were delighted to see the European-designed BOBO recycling containers arrive on campus last month. The containers are used to recycle aluminum cans as well as brown, green and clear glass. Hailing the arrival of the BOBOs in early September were (standing) Tom Pruett, director of waste disposal in Facilities Management; Kim Dicus, co-chair of the Emory Recycles Steering Committee; (kneeling) Hillary Sheiowitz, president of SIRE (Students Involved in Resources and the Environment); and Eric de Groot, owner of Exclusively European, the Atlanta company that sold the BOBOs to Emory. Funding for the BOBOs was provided by the Student Government Association. Twelve of the containers eventually will be placed on campus.*

The BOBO recycling containers were used to recycle aluminum cans and brown, green, and

Figure 3. Student and Staff Celebrate Arrival of BOBOs (Emory Recycles Scrapbook)

clear glass. The first of these containers was funded by the student government. These were popular because nobody could see their waste inside (Hardaway 2017). The BOBO containers were in place for 15 years. In addition, the same year as they were introduced, it was also reported that 72 aluminum recycling containers ordered from the Coca-Cola Co and shaped like large Coke cans were placed near campus vending areas that offer aluminum canned beverages (Emory Recycles 2017:5).

## Recycling Center

Within just three years from the initial start of recycling, white paper recycling was available in around 50 different buildings on campus. The University worked with the company BFI to pick up Emory's recycling (Emory Recycles 2017). Emory no longer works with BFI, rather the current companies are Southern Green Industries, Emory's waste vendor, and PRATT, Emory's recycler for paper and cardboard (Henderson 2017). Emory Recycles also works with other recyclers in the Atlanta market for glass, metal, construction debris, aluminum, and mixed paper. Vendors of our waste have not always been these current companies, rather they change depending on whoever can sort our waste at the best price to maximize savings from recyclables (Hardaway 2017). However, as aforementioned, if there was not a marketplace for the waste product, then the companies would not come to pick up the containers. In addition, the more the marketplace went down, the more companies charged for material pickup. According to Hardaway (2017), the marketplace was so volatile that it led to the group hiring staff as part of

Campus Services. This decision would not only ensure that the materials would be picked up but also that the materials could be held on campus and later sold when the markets were higher. This need for recycling to be institutionalized led to the on-campus Recycling Center (Hardaway 2017).
The Recycling Center was built in 1998. In an Emory Report article highlighting the opening of the new Recycling Center, it stated that they no longer had to ship recyclables at the University's expense to off campus processing centers (Emory Report 1998). The new center allowed for more recyclables to be held and allowed the University to generate income from processing them. In 1997, Emory recycled nearly 440 tons of materials including 188 tons of white ledger paper. At the time, baled white paper sold for $155 a ton, newspaper for $20-30 a ton, and cardboard for $65-75 a ton (Emory Report 1998). These data demonstrate the revenue Emory would be gaining with the start of the new center.

The goal of the center was not just to handle the University's recycling need, but also that of surrounding neighborhoods. The Emory recycling coordinator at the time, Elaine Gossett, contacted different neighborhood organizations to inform them that the center was available to them to drop off recyclables 24 hours a day (Emory Report 1998). The desire to include neighbors in recycling programs extended to the drop off site located at the CVS in Emory Village. According to Joshua Majors, the supervisor of recycling, waste, and document management, Emory used to have community drop off sites at a nearby Whole Foods and Shell Station in addition to the CVS. These locations no longer exist as drop off sites after Emory Recycles had to reduce staff after the 2008 recession.

Wall (2017) referred to the initiation of the Recycling Center as a huge step for the university. Currently, rolling carts from buildings get taken to the Recycling Center weekly or bi-weekly. The staff is around eleven people. According to Wall, there is one supervisor, three people in the shredding shop, four people in the recycling shop, and three are designated to pick up and sort recyclables (Wall 2017). However, the staff often moves in and out of these different roles. While the Recycling Center originally only collected glass, white paper, newspaper, tin cans, and aluminum, it now collects plastic, cardboard, metal, mixed paper, and composting for food waste in addition to the original items. When staff member of the Recycling Center, Henry Henderson, gave me a tour of the Center, I asked him how does Emory Recycles and the staff at the Recycling Center coordinate together, he told me "I like to think of us all as a team." He emphasized that there was not a separation between different staff members, rather all the members of Emory Recycles and staff at the Recycling Center collaborate well. Henderson's sentiments encouraged the idea that the goals of the campus was to work together as one to divert Emory's waste stream from the landfill.

While the Recycling Center offers many benefits, one challenge of the center is the difficulty of recycling glass. There are markets for colored co-mingled glass, but when it is contaminated it is sent to the landfill (Keeler 2017c). While the Recycling Center was designed in order to sell products at a time when the market was good in order to generate higher revenue, that was not always possible with glass. However, while there are challenges associated with this one commodity, that does not mean other commodities fare the same. This example demonstrates the importance of source sorting.

Source sorting is the process that Emory uses where it asks the consumers to sort as much of their waste upfront as opposed to using single stream bins. Single stream bins do exist on campus

in mostly outdoor areas, but inside the buildings there are mostly individual bins for each commodity. While single stream systems are easier and some people may desire this system instead, Wall (2017) states that Emory's program is quite comprehensive so they are able to collect high value and high quality material. In addition, the recyclables are able to be baled and sold by themselves without contamination. These bales can be sold at a higher price. It is when the materials are mixed that it reduces the profit (Hardaway 2017). In addition, the cost of separating the materials exceeds the benefit of selling the uncontaminated recyclables (Hardaway 2017). The co-mingled stream is separated at PRATT and those materials that cannot be recycled are incinerated to power PRATT's plant.

## Sustainability Vision Reports and Current Waste Diversion Data

Although the Recycling Center has effectively institutionalized materials sorting, Hardaway (2017) also mentioned the problem with recycling becoming so institutionalized that people do not think about waste the way they used to. In other words, he does not think that Emory has adopted the reduce-your-waste goal as much as they have adopted recycling. Now that bins are everywhere, people do not have to think about their waste, they just have to think about sorting it. Hardaway wonders when the conversation will change from waste diversion to "let's not have waste at all." Hardaway was not the only interviewee that mentioned this concept of waste. Forrest (2017) also mentioned something someone had once told him is that you cannot throw anything away because it is always there somewhere. It may be out of your life, but it is there somewhere. When the interviewees are referencing the institutionalization of waste diversion, they are in part referencing the Sustainability Vision Reports.

The first Sustainability Vision Report was released in 2005 by the Sustainability Committee, and it states "We seek to be a global model through attention to this region and its natural cycles, efficiency in the use of resources and the reduction of waste, and restorative action in the built environment." The first Vision Report initiated the goal of reducing 65% of Emory's total waste stream, recycling 100% of electronics waste and road construction materials, and composting, recycling, or reusing at least 95% of food waste, animal bedding, and building construction materials. This goal was quite impressive considering that less than 10 years prior in 1998, Emory had only been diverting 10% of its total waste stream (Terrazas 1998). In order to meet this new goal, one of the recommendations in the report included expanding awareness of and participation in recycling and waste reduction.

While Emory was not able to achieve its first strategic plan goal of reducing the total waste stream by 65% by 2015, Emory was able to divert 95% of construction waste from landfills and diverted over 40% of non-construction and non-hazardous waste (Sustainability Visioning Committee 2016). The revised goals for 2016-2025 are the following:

- All university events will be zero municipal landfill waste by 2020
- Divert 95% of non-construction waste from municipal waste landfills (except regulated lab and medical waste).
- Compost, recycle, or reuse at least 95% of food waste, non-hazardous animal bedding, and construction materials.

- Strengthen administrative mandates for recycling and composting throughout the university, healthcare, and related enterprises; eliminate all desk-side trashcans on campuses by 2020.
- All university functions will be plastic bottle free to the extent possible.
- Meet or exceed leading healthcare industry rates of waste reduction/reuse/recycling to 37%.
- Divert 20% of non-hazardous medical waste from municipal landfills
- Support culture change towards "reduce, repair, restore, and reuse" mentality and "cradle to cradle" purchasing.

Following the goals of the Sustainability Vision Report II, in the fiscal year of 2016, the campus-wide waste stream had 4,300 tons of recycling and 3,500 tons of solid waste which is equivalent to a diversion rate of 55%. The following chart demonstrates the percentage of each material diverted that year:

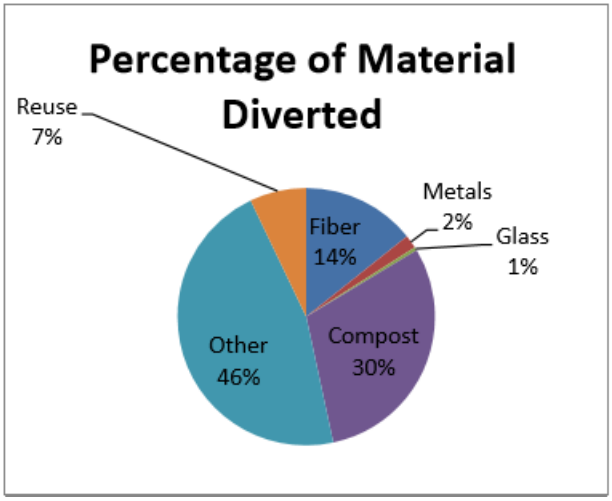



Figure 4. Percentage of Material Diverted, 2016 Fiscal Year. (Source: Campus Services Waste Tonnage and Diversion Data)

Compared to 2015, 2016 has an overall higher rate of waste diversion. The differences between the diversion rates per month for fiscal year 2015 and 2016 can be observed in the graph below:

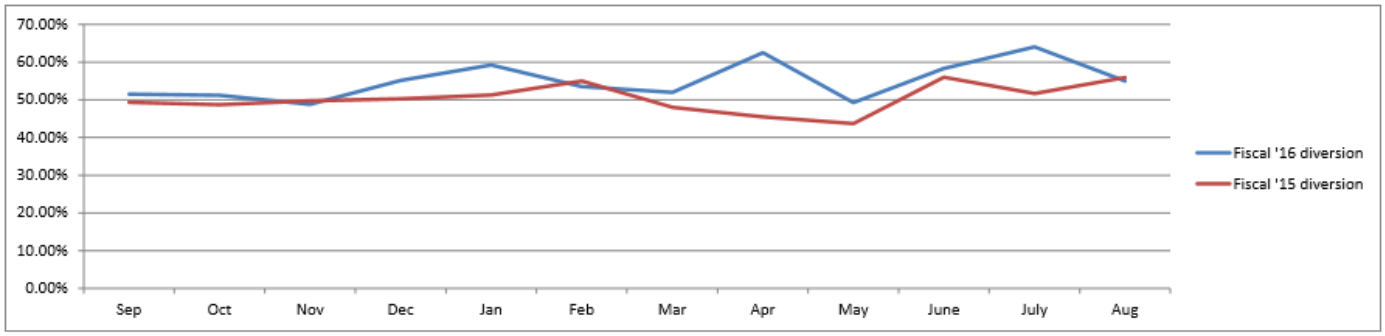



Figure 5. Waste diversion rates per month 2015 and 2016, 2016 Fiscal Year. (Source: Campus Services Waste Tonnage and Diversion Data)

While waste diversion rates vary by month, it is clear from this graph that in general, there were higher waste diversion rates per month in 2016 compared to 2015.

## Department, Staff, and Student Participation and Problems with Bins

While for the most part, Emory supported waste diversion, the movement was met with some disinterest from different departments. This problem is evident in an article in the Emory Recycles Scrapbook, "Garnering support from scores of departments with vastly different interests and organizational cultures has been a challenge for Bowen and the other Emory Recycles Steering Committee members. Nevertheless, Bowen feels that Emory is doing a good job with its recycling program" (Campus Services 2017:14). Since it references the steering committee, this article most likely took place in the 1990s. However, in my interview with Lora McDonald, Administrative Assistant for the Anthropology Department, she mentioned differences between departments that demonstrates some were more willing to incorporate waste diversion than others. I chose to focus on the Anthropology department because it is one of the campus's leaders in terms of pushing for sustainability (McDonald 2017).

In 2013, there was a cohort of graduate students interested in sustainability that kick started the presence of sustainable initiatives in the Anthropology Department. Their names were Ioulia Fenton, Christina, Rogers, and Sarah Whitaker. They initially worked with faculty and staff, and in their second year they included undergraduate students as part of their team. Waste was one of the biggest components of their initiative. This team asked questions on how to expand recycling and composting and how to make the anthropology department as zero waste as possible.

The zero waste initiative in this department started with coffee. As a staple in many department lounges, coffee can often involve many unsustainable elements such as paper cups, plastic stirrers, paper sugar packets, and individual plastic creamers. The first action of the zero waste initiative was to do a drive to collect reusable ceramic mugs. Eventually, the Anthropology Department replaced the plastic stirrers with bamboo and bought containers to hold sugar and creamer as opposed to individual packets (McDonald 2017). While these actions can appear small, it was just the start of many different zero waste initiatives in the department. For events, the department now uses all compostable dining ware and no longer needs to bring the recycling bin to events because they just need a compost bin. Trash cans have been removed from the

kitchen and replaced with recycling and composting bins. While the department is trying to get all of the offices to remove their trash cans, there has been pushback from some faculty who want to keep theirs. According to McDonald (2017), the desire to remove trashcans is unlikely to succeed as the department gets new people who are not accustomed to the system.

Similarly, Majors (2017) noted that there has also been pushback in the attempt to remove trash cans from other buildings. He states that people are afraid that changing the trash bins to recycling bins will be smaller in volume and they will not have adequate bins to dispose of their waste. While Majors has assured them that it will be possible to successfully remove trash bins, it still remains a challenge to overcome the perception that the recycling bins will be overflowing (2017).

Another difficulty within the Anthropology Department is the amount of foot traffic they get from different people coming in and out of the building. This traffic is a problem for the waste bins because the bins look different in almost every building on campus. According to McDonald (2017), it is hard to communicate which bins are for composting and which are for recycling when they look different all over campus. The reason for this change in aesthetic is because as new departments decided they wanted to start recycling, they wanted the newest and latest recycling bins (Wall 2017). While Emory Recycles has tried to get a standard bin throughout the campus, not all departments can afford the standard (Wall 2017). Emory Recycles will direct departments to the standard "Slim Jim" model for waste receptacles, which cost $90. This price may be too much for some departments or they are not interested in the aesthetics of this model. For example, in the Rose Library in the Woodruff Library that holds Emory's archives and various formal events, they searched specifically for high end recycling bins (Forrest 2017).

While Emory has tried to associate the colors blue with recycling and green with composting (Willis 2017), the whole campus has yet to completely adopt this color-coded system. Nonetheless, McDonald (2017) would like to see a uniform bin in order to help people understand into which bins to throw their waste. Wall (2017) also notes that it is not just students, faculty, and staff who occupy this campus. Many people come on and off this campus because of the hospital and other activities. The lack of standardized bins and the complexity of source sorting make it hard for people who are just visiting campus. For example, below are the photos of the same compost bin taken on a Saturday where there was the Hack Emory competition (a coding competition with outside teams as well as Emory teams) as well as a track and field meet on campus [Figure 6] and the following Wednesday, an average school day with no large events as far as I was aware [Figure 7].


Figure 6. Food waste bin on Saturday March 25th, the day of Hack Emory and a track and field meet.


Figure 7. Compost bin with only compostable food containers on Wednesday March 29th, an average day with no large events.

The materials tossed in Figure 6 are largely plastic whereas the materials disposed of in Figure 7 are mainly compostable dining ware and food. While this example is not a complete survey of all the waste bins on campus and it is possible that this example occurred just by chance, it does highlight Wall's point that there is an extra challenge of educating people on which bin to throw items in because Emory frequently hosts a lot of visitors.

Similarly, custodial workers Mirian Willis and Tynia Wooten in the Anthropology Department also expressed the importance of educational opportunities for everyone in order to reduce waste contamination in recycling and composting bins. Wooten (2017) suggested that everyone should have to go through a training on what to recycle and compost. This training would help people who do not care which bin their waste goes into. According to Willis (2017), while some people did not care, majority of the people were excited by getting recycling and composting started. In response to people not caring Wooten stated, "I look at it [recycling] as far as we are a team. If we engage as a team, it would be great. To me, [recycling] is more work, but it is better." Willis followed up this statement by saying, "We can make the environment better if everybody does their part." These sentiments are important because it demonstrates that the only way to reach an overall waste diversion goal is to work together. Willis (2017) will even sometimes separate contaminants in the recycling and composting bins herself before taking them to the loading dock to be picked up for the Recycling Center.

Wooten (2017) says that just by hearing from fellow employees that work in recycling, people can learn what trash does not belong there. In their opinion, the department can improve its waste diversion system is not only by offering an educational training program for everyone but also by offering a drainage option near the receptacles. Since convenience is a huge factor in determining whether people will recycle or not, Wooten and Willis wish there was a way to have a place to drain beverages next to the recycling bin because people are often unlikely to drain liquids in the bathroom and come back and toss the cans (2017). If the cans are not drained, the weight of the liquid can burst the trash bag. Nonetheless, Willis, who has worked at Emory since 1984 says there has been improvement in terms of recycling in the appropriate bins. One challenge when the department first put in the bins was that people used to just throw away

everything anywhere. Now there is a little more education regarding recycling and composting, yet there is still room for improvement. In continuing this improvement, Majors (2017) thinks that more education regarding recycling is essential. He believes that Emory cannot push recycling initiatives enough until recycling becomes instinctual as opposed to just throwing trash away.

The evolution in education surrounding waste diversion in terms of recycling can be seen in a student response section in the Emory Report in 1995 compared to now. In a comparison from a 1995 article in the Emory Report found in the Emory Recycles scrapbook asking students what materials they recycle and an imitation of the same study in 2017, it demonstrates there has been some improvement in student education, interest, and participation regarding recycling. The following figures are the picture printed in the Emory Report article, and five pictures of randomly selected students from the Woodruff Library, the Chemistry Building, and Cox Dining Hall that I asked as part of this report. These examples are not reflexive of the entire student body and this study was not scientifically conducted. Nonetheless, it does demonstrate an increase in recycling participation and knowledge among students:

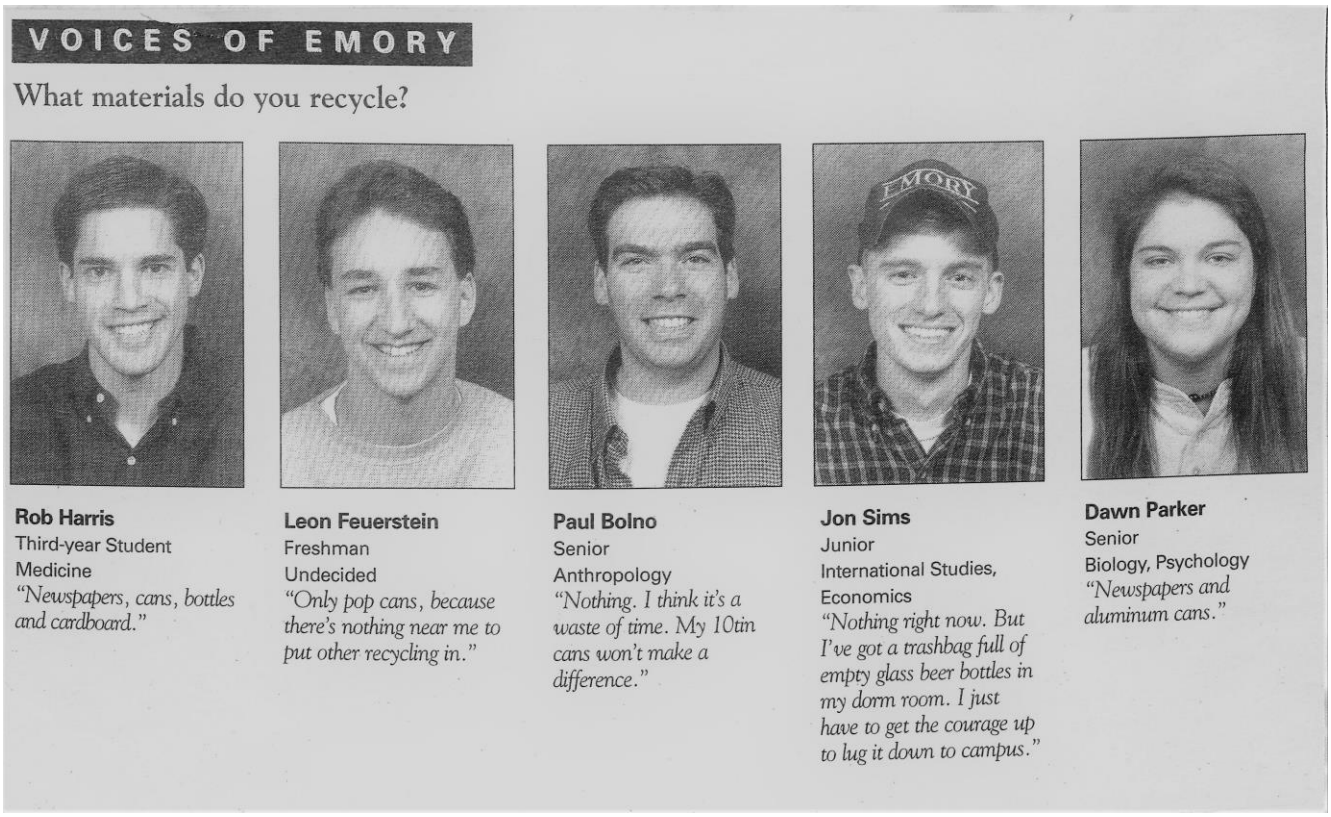



Figure 8. Student Reponses from 1995 (Emory Report)

What materials do you recycle?

**Alyssa Maita**
Freshman
Pre-business & Spanish
*"I recycle glass bottles, I think paper sometimes, plastic bottles, and plastic in general."*

**Savonce Lawrence**
Junior
English&Creative writing
*"I recycle plastic cups, plastic bottles, pizza boxes, and Cox containers."*

**Pamela Wong**
Senior
Biology
*"Paper and plastic!"*

**Ella Sherman**
Freshman
Biology&Psychology
*"Glass bottles, all plastic, aluminum cans, and paper when I find a trash can for it."*

**Brandon Chen**
Sophomore
Biology
*"Paper, glass, tin or soda cans, and other trash. I do what-ever Emory has."*

Figure 9. Student Responses 2017

## Recycling in Sustainable Literacy Survey

This increase in student participation and awareness can also be seen by recent data collected last year. In a campus-wide literacy survey sent to every student's (undergraduate and graduate) email account in the summer of 2016 by the Office of Sustainability Initiatives, the survey asked students about different sustainability habits for the academic year of 2015-2016. In a question asking how frequently the student acted to reduce waste on a scale of 1-7 (1 being never, 5 being often, and 7 being always) out of 1,097 responses, 70% marked often to always. In term of education, when the students were asked to indicate to which extent they found the following statements accurate, 51% of 1,034 students marked "completely accurate" for the statement "landfills waste produces methane; a potent greenhouse gas" and 52% of 1,032 students marked "completely accurate" for "another problem with landfills is that they are frequently placed in poor neighborhoods, contributing to environmental inequalities in quality of life." While perhaps these percentages do not appear significant, only 1% marked "not at all accurate" for the first question and 2% marked "not at all accurate" for the second question. The rest of the respondents marked a number in-between 1 and 5 that corresponded with varying degrees of accuracy with 5 being completely accurate. While this report does show active engagement in reducing waste and knowledge regarding waste, it is not a completely accurate representation of Emory's student body. Considering majority of the questions only had 1,000 responses and Emory's total student population is approximately 15,000, the responses could be skewed to people who are already interested in sustainability and thus willing to participate in this survey.

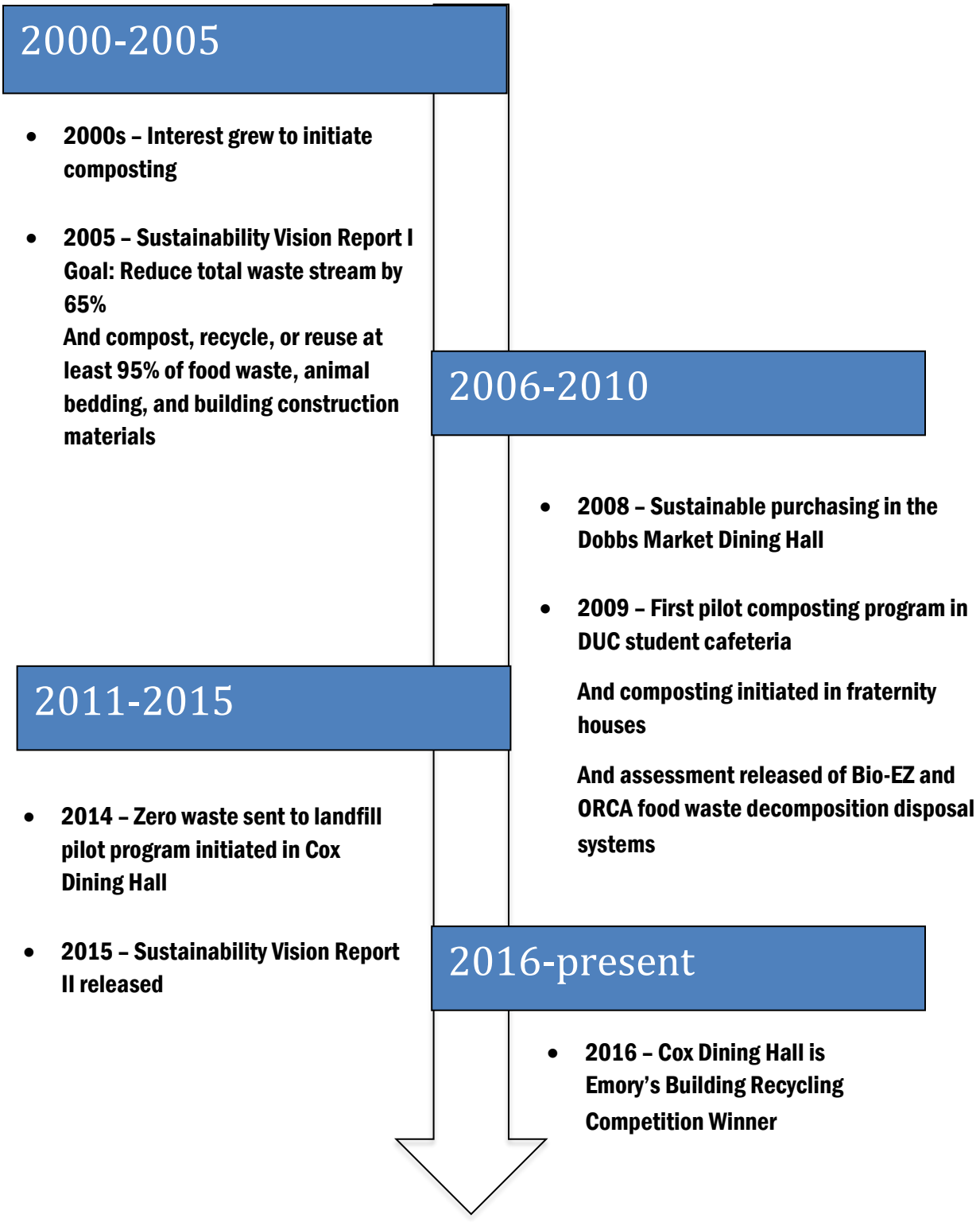
In my conversations with different student on campus about my report on Emory's history of waste diversion, there was consistent lack of interest in the topic of waste diversion. Responses

that I have received are that students only participate in recycling when it is convenient for them. Therefore, if the recycling containers are further away than the trash receptacles, more often than not they will opt for the trash receptacle. In addition, one student expressed to me that students only care about waste when it affects them. For instance, when there is an unpleasant stench emerging from the waste bins is when students will care about their waste. To add on to these sentiments, some students still believe in a rumor that Emory does not actually recycle, rather recycle bins and trash bins are dumped in the same container and send it to the landfill. Wall even stated that she has heard employees believe this rumor as well (2017). However, this rumor is not reflective of Emory's behavior, rather it reflects a lack of education about recycling. Wall likes people to tour the Recycling Center and Willis and Wooten wish people would hear more from the people who work with recycling in order to spread awareness (2017).

It is also important to note that this image of the lazy, disinterested, and skeptical student is not universal to all students. One student who I talked to said that she will go out of her way to recycle. She stated that it no longer feels like chore, rather it feels like she is doing a small part to make things better. Many students who are interested in sustainability will also go out of their way to make sure their waste is disposed of in the appropriate bins. In the literacy survey, 42% of respondents stated that their sustainability related behavior increased "a moderate amount" since they started attending Emory (Office of Sustainability Initiatives 2016). This response was the most popular, and the other results fell in a bell shaped curve ranging from "none" to "a lot." This statistic demonstrates that due to the presence of sustainability on Emory's campus, it is possible that even students who arrive disinterested will begin to care and adopt sustainable habits.

Perhaps these conflicting depictions of student interest in waste is due to the history of limited student participation with waste diversion on Emory's campus. Emory Recycles used to have student workers, but after the 2008 recession, people had to be laid off, and they could no longer afford student workers (Wall 2017). More often than not, my interviewees expressed they wished there was more student involvement and interest. While perhaps there is a lack of student involvement in the operational component of Emory Recycles, the Office of Sustainability Initiatives (OSI) has provided opportunities where students can be more involved in activities around materials management involvement (Keeler 2017). They have the infrastructure there for students to engage in as opposed to Emory Recycles that no longer has work positions available for students. Taylor Spicer, the program coordinator for OSI, says that student involvement comes and goes (2017). At zero waste events, they will sometimes have students stand by the bins to direct people with their waste. Some of these students have shown interest in sustainability with one student intern creating a "Green Team" last year to help improve student knowledge and practices regarding sustainability at campus events such as MLK Day of Service and America Recycles Week (2017). In addition, students are involved in on campus sustainable clubs. For more information regarding these events and clubs please see Jamie Nadler's report on Campus Life.

# Waste Diversion in Emory Dining Facilities Timeline



Emory Dining currently has many different sustainable practices such as waste diversion/ reduction, sustainable purchasing, and sustainable food practices. For more information regarding sustainable food on Emory's campus please see Peggy Barlett's report. The following information will focus specifically on the waste diversion/reduction practices of Emory Dining.

Emory Dining started its support for waste diversion and reduction after the release of the first Sustainability Vision Report (Spicer 2017). One of the earlier initiatives to reduce waste was to start with sustainable purchasing. While Emory Dining is still actively trying to reduce food waste to help achieve the 95% waste diversion from landfills vision goal, the Dobbs Market Dining Hall was perhaps the easiest. In 2008, Emory Dining and Emory Procurement initiated changes to the dining ware used by consumers and transitioned to more sustainable options which included the following adjustments:

| Current product | Emory Dining Replacement item |
|---|---|
| Hot cup with plastic coating | Paper cup with a PLA coating |
| Cold cups, wax coated | PLA cup |
| Clear plastic cups | Refillable mugs |
| Plastic utensils | Continue with current product but a different dispensing system or spudware |
| Foam clamshells (1 or 3 compartments) | Bagasse clamshells |
| Clear plastic clamshells and lids | PLA clear containers and paper containers using recycled fibers |
| Paper napkins | No change |
| Catering paper plates & supplies | Bagasse plates; spudware, Chinette options |

Figure 10. Improvement to Disposable Containers (Emory Dining and Emory Procurement 2008.

These sustainable changes in disposable ware were put in place by Emory Dining as a result of student pressure. Even though composting was not yet available, more expensive compostable materials replaced Styrofoam and plastic materials. Currently, this dining hall along with other buildings does have compost pickup, however the start of composting was not nearly as simple as the introduction of recycling or sustainable purchasing.

After the sustainability vision was written in 2005, the goals for composting organic matter became a priority for Emory Recycles. It was not until 2009 when the first permitted facility in Georgia opened, GreenCo Environmental, which allowed Emory to begin diverting organic waste to this facility in Barnesville, GA (Keeler 2017c). Prior to GreenCo, Emory was not able to start composting because Georgia restrictions on composting included strict landfill regulations. Therefore, it was hard to get a permit to build a composting zone and almost impossible near a residential neighborhood. In addition, many compost facilities had trouble staying open for a long period of time, so Emory at several points had to find new facilities that could accept compostables (Majors 2017). GreenCo later closed due to litigation and community concerns (Ciannat 2017), and Emory then switched to a company called Southern Green

Industries, which it currently still uses. The compost is sorted at the Southern Green Industry plant in Atlanta and then is delivered to the organic landfill in Laurens County in Dublin, Georgia (Keeler 2017c). This industrial-scale facility uses high temperatures to destroy pathogens and decompose materials like meat bones, paper products, and other items that are unavailable or harder to compost in residential composting system (Emory Report 2014). This composted material is returned after 90 days to be used in landscaping on campus. Composting for residential buildings was introduced successfully in 2009 when, according to Keeler (2017b), Emory put a compost bin in the Fraternity housing and Housing Offices.

There were some challenges with new waste disposal systems installed in Cox Hall (known as the ORCA) and the Bio EZ, located at the Conference Center Hotel. A sustainability assessment of the "food waste decomposition disposal systems" clarified that these disposal systems were not actually composters, but rather used enzymes to break down solid pre-consumer food waste into liquid food waste that was then put into the sewer system. The machines did reduce the amount of food waste being sent to landfills, and according to the assessment, "Cox Hall can produce up to 700 pounds of vegetable waste every day (weekends and summer months excluded). The waste water of the Cox Hall ORCA machine flows into the sewer, but Emory recently installed a storage system to contain ORCA waste water for treatment and possible secondary uses such as campus landscaping." The assessment's measurements showed that these machines used more water and energy to break down the food scraps, and while the machines did help to reduce landfill costs, this benefit was offset by rising water costs. Overall, the ORCA used 506 gallons of water/day and the Bio-EZ used 516 gallons of water/day (Lacy et al. 2009). Even though these machines did not necessarily have any environmental benefits, the assessment reported that they did boost employee morale. The kitchen staff enjoyed tossing the scraps into these machines under the belief they were doing something to help improve the environment. The boost in employee morale is overall reflective of the interest in sustainability and composting on Emory's campus. Keeler stated that it was the Emory community coupled with the sustainability goals for 95% diversion of organics that supported the push to initiate the collection of organics on the Emory campus.

The year 2009 was also huge for composting, in that Emory had found a way to compost animal bedding (Emory Report 2010). Previously, the animal bedding made primarily of wood waste was incinerated or sent to a landfill. This animal bedding largely came from lab rats and mice. Under the new program the non-infectious bedding material was sent to the compost facility with GreenCo, who also collected Emory's dining compost at the time (Emory Report 2010). Between November 2009 and April 2010, Emory was able to divert 68 tons of animal bedding compost from landfills (Emory Report 2010). In addition, between July 2009 and July 2010, Emory diverted 196 tons of combined bedding and food waste from landfills for composting (Emory Report 2010).

In 2014, OSI initiated along with Emory Dining a pilot program in the Cox Dining Hall to reduce landfill waste to zero (Emory Report 2014). Trash bins were removed from the dining hall and replaced with recycling and compost containers. The support for this movement required a huge effort, not just from Emory Dining, but also from the food service contractee (Sodexo at the time). The Office of Sustainability Initiatives had a huge role in programming and educating about the new receptacles. However, this transition to zero waste in Cox Hall did have some

challenges. One challenge was that pre-consumer food scrap sorting faced pushback because the kitchen staff did not want to be working all day with smelly compost in a cramped kitchen (Hardaway 2017). However, this problem is solved by frequent pickups of the food waste. The pre-consumer waste is essential to the compost because the raw food scraps assist the deterioration of the compost more than the post-consumer food scraps.

Another challenge is that while there is pre-consumer sorting in the kitchens, a lot of the sorting requires consumers to sort their waste into the appropriate recycling and composting bins. According to Chad Sunstein, formerly the Associate Director of Campus Dining, Emory Dining started focus groups to decide how to make sorting easier for customers. They asked how to inform the public without confusion about what to do with their waste. To help with this problem, shadow boxes were created of what products go into which bin outside of Cox Hall (Francis-Chewning 2017). In the summer of 2014, a group of students, staff, and members of OSI emptied the bins outside of Cox to see if the updated signage and new bins were effective (Emory Report 2014). Volunteers sorted through the waste and found that "of the 30 pounds of material that ended up in compost bins, the audit found only about two pounds of material that should have been deposited in recycling bins, including chip bags, ketchup packets, soup trays, cracker wrappers, sauce cups and the tops of sushi containers" (Emory Report 2014). However, no landfill waste was found in the composting bins, only recyclables. An accurate audit of recyclable materials was not available because there were not full bags of recyclables available. This report was conducted during the summer where there are considerably less students on Emory's campus. Nonetheless, the University is still trying to assist with the problem. In the Emory Report article, Francis-Chewning stated, "Emory has really made a difference in the way we handle what we call trash. I don't know anywhere else that composts the way Emory does" (Emory Report 2014). In my interview with Francis-Chewning (2017) she was very proud to announce that Cox Hall had just won the Emory University Building Recycling Competition for 2016. Cox Hall diverted 2,600 pounds of waste in 2015 and 9,490 pounds of waste in 2016 (Emory Recycling Competition Report 2016).

However, Keeler (2017) acknowledges that there is still a very large contamination problem with the compost and recycling bins at Cox dining hall. According to Majors (2017), post-consumer sorting of compostable waste in general is still a huge problem. One of the reasons for this problem is that there is a lack of consistency in the look of recycling and compost bins on campus, as mentioned earlier (Majors 2017). Another issue of concern, separate from contamination, is that even though Emory supports compostable plastics, sometimes the compost facilities will not accept this commodity because it takes longer to break down than other compostable items (Majors 2017).

Even though there are challenges with the Cox dining hall bins, this example demonstrates the success composting can have on Emory's campus. Nonetheless, this locale cannot necessarily be used as a model for the other facilities for two specific reasons. One reason is that Cox Hall is able to monitor what products are being bought and disposed of within the dining facility. Cox Hall is mainly effective because they have been able to combine sustainable purchasing along with detailed signs for which of the products available in Cox Hall go into which bin. However, Emory has fifteen dining facilities in total (Sunstein 2017), and in places like the library or dining facilities that are a part of buildings that have different purposes, waste can be brought from anywhere, so there is not a realistic way to capture visuals of the exact products to be

thrown into each bin. Another reason is that Emory Dining works with outside companies who have dining places on campus. Sunstein (2017) states that Emory tries their best to make sure the outside companies purchase sustainably and have recyclable and compostable products, but not all caterers comply. Nonetheless, Emory Dining continues to improve composting a little each year (Sunstein and Spicer 2017).

## Conclusion

Waste diversion was able to transform into multiple types of recycling, in multiple locations across campus, and be processed and baled on site, through a grassroots commitment by different faculty and staff. In one aspect of my interview with Charles Forrest (2017), he said there was a point where he was offered a different position as the budget director in the library. When making his decision of which position to choose he said "You have to think about what gets your juices flowing." When he walked into the library, Forrest did not think about the budget, rather he thought about the beauty of the space and "felt the energy" and wanted to do something to make it better (2017). His passion for the space led him to contribute toward making the Candler Library renovations the first LEED-certified renovation project on campus, along with pushing for the expansion of recycling. His commitment to the beauty of the space and desire to improve it demonstrates one aspect of the university community that desired to see their campus improved through environmentally conscious actions. This example is only one testimony of many that the interviewees gave when expressing their pride in creating an environmentally conscious community at Emory.

This commitment to Emory was not only visible in my interviews but also in articles recorded in the Emory Recycles Scrapbook. In one article dated in 1995, the co-chair of Emory Recycles at the time, Fiona Bowen, discussed her habit of trash diving to reduce the amount of garbage that Emory sent to landfills. The article states, "Helping people understand that recycling is a circular process is one of the main things that Bowen feels must be done" (Campus Services 2017:12). While Bowen was referencing her interest in purchasing recycled products to help close the purchase-to-waste loop, her passion for recycling and focus on education are qualities that have made this grassroots movement possible. This article stood out as one of many testimonies echoed by my interview with Dawn Francis-Chewning, who also admitted to diving in trash bins in order to make sure everything that could be recycled was recycled (2017). Francis-Chewning volunteers to stand by trash bins at events and help people who are confused about recycling discard their waste properly. In addition, she also leads recycling demonstrations for library employees to help people understand which products go into which bins. The willingness of staff to sort trash and educate others demonstrates the passion of the people involved in making recycling a committed part of the University.

When I asked Deena Keeler what she was most proud of with recycling at Emory, she said it was the participation and culture that has developed at Emory (2017a). She emphasized that the interest in waste diversion at Emory started on a grassroots level and, today, still has great support from dedicated faculty, staff, and students who support the goals for waste diversion that are written in the sustainability vision for 2025 (Keeler 2017c).

The presence of waste diversion and recycling at Emory did not just happen overnight, rather it has taken over 30 years of committed individuals to push for something they believe in. In regards to the total waste produced in the world each year, perhaps we could all benefit from setting certain waste diversion goals. Since 2000, the World Bank has contributed $4.5 billion to support solid waste diversion programs all over the world (Los Angeles Times 2016). In some places, informal waste workers have been given formal employment opportunities in waste management to assist with this global crisis. While the world wide waste production rate will not go down overnight, with the commitment of these individuals and the institutionalization of commitments into programs, eventually there can be progress.

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