Our Campus Composts
A 2018-19 Review of Current Practices

US Composting Council®

The US Composting Council, as part of our mission to advance compost manufacturing, compost utilization, and organics recycling, aims to help campuses reach their sustainability goals through training, resources and sharing of best practices among campuses and compost manufacturers, organics recyclers and other member allies. Composting food scraps and other on-campus materials helps campuses meet their sustainability and zero waste goals as well.

This white paper, based on a series of interviews and study of seven campuses during 2018, highlights current common practices at startup and program maintenance to provide an assessment of current challenges and successes for campuses. The goal is to provide direction to the USCC, its members and higher education institutions with a template for tools, training and conversation among campus colleagues in sustainability, facilities, dining and housing who are often responsible for these programs.

The Association for the Advancement of Sustainability in Higher Education (AASHE) STARS program, in 2018 identified 753 US programs, with 351 campuses self-identifying that they are composting for a total of 172,159 tons per year, an average of 491 annual tons per campus. The growing demand for more programs and expansion in all nooks and crannies of the campus is something USCC is addressing with resources and training.

aashe member
The Association for the Advancement of Sustainability in Higher Education

For Starters: Is There a Campus Mandate?

Where do composting programs originate and live in campus departments? Whose department does it fall under? Who is the champion, and in whose job description is it most likely to land? Is there support from the top for organics diversion?

Interviews revealed that many campus composting programs are initiated as a result of student pressure. Grassroots student groups often form volunteer efforts to either collect food waste and transport to community composting structures, or students approach faculty or staff to initiate a program.

USCC followed up with a survey* to find out how campus programs got their start (see compostingcouncil.org/ourcampuscomposts). Approximately 30% of the respondents (a mix of students and university employees) stated that the program began with students! Not far behind though, 24% said the program was initiated through administrative staff. In some cases, it began as a partnership; in others, it was faculty generated. In a few cases, it began to solve a waste problem in the community or on campus.

Sixty percent of the respondents said there is no formal mandate for composting; 17% said it came from a directive from the top level (such as the president's office) and 16% said it was started as an element of a campus zero waste policy.

USCC Campus Organics Program Initiation Survey*

Student-Initiated Programs: 29%

Administration Initiated Programs: 24%

**The survey had a 24% return rate with 395 people being surveyed in the USCC's Our Campus Composts group, as well as responses from AASHE's Connect list serv.*

Case In Point:

APPALACHIAN STATE UNIVERSITY

1999 was the startup year for the composting program at Appalachian State University. The campus's facility is permitted for pre- and post-consumer food waste, but until last fall only pre-consumer waste was recycled into compost, at about 275 tons per year. Now the program has expanded to collect post consumer organics as well, through green event planning, events in the student union, large campus events, a few academic buildings, and all residence halls.

The finished compost is used in landscape applications on campus.

The idea was first proposed in a class under the Department of Sustainable Technology and the Built Environment in conjunction with the campus Waste Reduction and Recycling Office. Not only was it supported by that department, but it was also embraced by the Office of Environmental Services (housekeeping) and incorporated into the strategic plan of the institution, which helped the program flourish.

One of the bays at Appalachian State where composting takes place.

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Choosing the Framework for Collection

Do campus facilities departments, which, in our interviews, were most often faced with the task of composting collection and production, have enough employees and budget to provide the infrastructure for collection? In more cases than not, interviews identified that most campuses find themselves seeking either an addition to existing trash collection contracts or finding an organics hauler to provide transportation to an off-site tipping location) in the region. Campuses often have difficulty finding space and resources to conduct on-site composting.

Case in Point:

UNIVERSITY OF MARYLAND

UMCP is an urban campus, nestled in the midst of the busy City of College Park, MD, population 32,000. Although it is a land-grant school, the amount of space available for new projects on campus for agricultural activities has diminished over the years, so when considering diverting food scraps, Bill Guididas, assistant director for administrative services in the facilities department, looked outside campus for resources.

They turned to the Prince Georges County Western Branch compost facility, which was in expansion mode and open to increased amounts of food waste. "Why would we try to find somewhere on campus, which is hard, when we have this great facility right in our own county?", Guididas said.

Funding: Where Does It Come From?

Funding is a vital component to address in an organics recycling program. While the most obvious method is developing budget lines in facilities, dining and housing programs, new programs find themselves competing with existing budget lines and struggling to secure funding. Many universities interviewed rely either on "green" or sustainability surcharges, grants or pilot project funding, but successful programs skillfully employ metrics to define their financial contribution to campus coffers, most often by demonstrating savings in landfill expenses.

Green, or sustainability funds are supported by student fees ($10-15) that are added to each student's tuition. The fund provides resources for projects that encourage sustainable activities (which can put composting in competition with other desirable sustainability goals such as solar, energy conservation, transit improvements and other green programs). Most funds allow faculty and students to apply, which is a way to engage students in research and project proposals that will have a positive impact on the campus community.

Case in Point:

UNIVERSITY OF MARYLAND TERP FARM

University of Maryland has funded more than 120 projects with $2 million-plus in sustainability funds since 2011. Moreover, the concept of a sustainability fund has over a 90% approval rating among the student body, according to the university.

In the 2012-2013 academic year the University of Maryland used the sustainability fund to open the Terp Farm, whose mission is to supply fresh local food to the university's dining halls. Managed by the Department of Dining Services, College of Agriculture and Natural Resources, and the Office of Sustainability, the Terp Farm uses compost made from University of Maryland food scraps collected on campus and composted at the nearby Prince George's County compost facility. They divert between 450-550 tons of food waste each year. Guy Kilpatric, the Terp Farm manager, hopes to find avenues to become more financially self-sustaining by supplying farmers markets and other outlets with fresh produce.

Guy Kilpatric, education manager of the University of Maryland Terp Farm, uses campus compost to grow produce for student dining.

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Organics Collection Methods

Organics collection begins in various places in universities; most often, at campus events, and secondarily, on-campus restaurants. Then they are rolled out in residence halls and classroom buildings. Most universities find that the best place to collect organic waste is "back of house," with pre-consumer waste. This method provides experience with less contaminated feedstock, because universities can employ dining staff who are trained with organics disposal.

When beginning organics collection programs, experienced managers recommend budgeting time for intense communications and planning before beginning the project.

Case in Point:

APPALACHIAN STATE

Appalachian State University's dining hall staff are "in house", or employed by the university. Using in-house staff removes a level of communication when process changes and customer services policies are affected.

Once the back-of-house effort is achieved, the next frontier is post-consumer waste. This is sometimes processed by dining staff (back of house) or students can be educated to sort after meals. Contamination may be greatly reduced by training dining staff to sort waste, but campuses find engagement of students is a benefit when they make organics disposal a habit. In-cafeteria/restaurant sorting can be a daunting task, but universities are experimenting with messages, education and proper signage and placement of bins to make their programs work.

Residence halls don't produce the quantities of organic waste found in dining halls; but adding the option for compost bins in dormitories answers student demands for campus-wide collection. Smell and convenience were expressed as top problems of implementing organic waste bins in residence halls.

Data from the **University of British Columbia** has measured the effectiveness of organics collection by comparing a single bin on a main floor to a practice of multiple bins on every floor.

The findings determined that providing bins on each floor is more effective. Students in residence halls with multiple floors are reluctant to throw away a banana peel in a bin that is several flights down/up. Moreover, convenience for emptying the bins is important to avoid odors from food degradation. The University of British Columbia recommends keeping the compost collection bin in a room that is well ventilated and to collect it regularly.

The movement of students in and out of residence halls every year after being trained to recycle organics can provide challenges. Signage alone is not always effective for incoming students who are adjusting to a new living environment, whether they are freshman students coming to a new dorm or upper-class students in graduated housing. Many campuses task resident assistants or Eco-representative (RA's) with organics collection education, such as a meeting during orientation week or at the beginning of the school year.

University of British Columbia bin and signage.

Case in Point:

WASHINGTON AND LEE UNIVERSITY

In 2002, a foundation grant from the Mellon Foundation helped Washington and Lee University initiate its program on its "back 40", acreage that had been previously used by the Virginia Department of Transportation but became available for trials of windrow, aerated static pile and backyard composting methods. The grant also helped the campus begin a now-flourishing Campus Kitchens project, serving surplus food to recipients of 60,000 to 100,000 meals per year in the campus's home of Rockbridge County.

While the food rescue program has taken off, managers of the composting program are still seeking a permanent source of funding at the university. Responsibilities for various aspects of collection and education do not all lie within one department, making it difficult at times to coordinate education methods (especially to avoid contamination) and oversee the compost operation. After the trial comparison, Washington and Lee managers settled on Aerated Static Pile system with two bays and floor aeration and drainage. The program also employs a pulper and dewaterer at the dining hall to capture plate scrapings.

The facilities department is responsible for the backhoe used to manage the pile and Work-study students and student volunteers

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manage the collection of 700 lbs per day on campus. "The grant planted the seeds," says Bill Hamilton, Biology Department Chair and volunteer manager of the compost operation over the years; but expansion is limited until a permanent source and home for funding are secured.

On-Campus Compost Production

Many campuses find lack of space or urban neighbors can be a roadblock to compost production. According to Larry Armstrong, manager of the Webb Farm at the **University of Delaware**, one major restriction in expanding composting from their small operation is the tight footprint available to the school. Universities in those cases often turn to regional haulers and producers. In some cases farms near campus may already accept materials for compost who can be approached to take university food and green scraps. This can provide a great relationship with local farmers around campus and may promote local food sourcing as well.

Some institutions implemented digestors and dehydrators, which dry out the organic materials prior to composting and make them easier to transport. See the Composting Collaborative's PreTreatment Directory at https://www.compostingcollaborative.org/pretreatment-directory/ for a thorough list of alternatives.

Case in point:

NORTHERN ARIZONA UNIVERSITY

Northern Arizona University first installed a Somat waste reduction system and dehydrator in 2016 and has grown its use of the process as a pre-composting step. A second machine was added in 2018 and they now serve the two residential dining halls. NAU's Flagstaff campus serves over 22,000 students with more than 10,000 of those being full-time campus residents. The Somat system's purpose was to simplify transportation and handling of pre- and post-consumer material out of the main kitchen areas. The program began when TC Eberly, Executive Director, Campus Services and Activities, analyzed waste disposal costs in the face of needing to choose between more dumpsters or adding another compactor to keep up with kitchen waste output. He instead identified the high costs of disposing of pre-consumer and liquid/wet waste and decided to manage that instead through expansion of the compost program and adding dehydrated post-consumer product to their compost-bound output. They haven't look back since.

NAU's SOMAT has expanded the ability to recycle organics on campus.

The SOMAT has improved handling—25 gallon trash bags used to top out quickly, but with dehydrated material they can transport far more material using a 40 gallon trash bag. The material goes into a one-year modified windrow composting process (piles are turned instead of rows) that is managed with a front-end loader.

Eberly noted that large universities like theirs should analyze the electrical and space needs for the dehydrator before investing and understanding full installation costs. As a three-phase system, the electrical requirement is significant; it can be difficult to schedule the machine because it needs 12-hour periods of running time, which can be challenging when dining hall kitchens run 4 a.m.-11 p.m.

Outdoor Compost Production

There are many methods to compost food waste such as vermicomposting, windrow, aerated static pile, in-vessel etc.

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Case in point:

APPALACHIAN STATE UNIVERSITY

The campus uses a four-bay composting facility employing a custom aerated static pile method. The facility was designed by Advanced Composting Technologies and Green Construction of Boone. Since they are aerated static piles, the institution required perforated pipes, screeners, and mixer grinder. The perforated pipes supply the oxygen to the piles (instead of a turner which would do the same for a windrow system). Also, screeners help separate bulky aggregates or other unwanted material from the compost.

The screener was purchased through AppState's Renewable Energy Initiative, a student-led, student-funded organization that supports renewable energy and energy efficiency projects on campus. The mixer grinder breaks down material like compostable cups and bags more quickly. The site is used for student research as well as composting.

Education and Outreach

What are the best ways to grab the attention of students when it comes to a) encouraging them to separate and b) to do it right? Students arrive at campuses from a variety of geographic locations and are very diverse in their awareness of recycling and composting. Universities tell us signage should be eye-catching but detailed, which is a combination that can be a challenge to accomplish. Many universities opt for 3D representations of acceptable and unacceptable items, and all said they experiment with the right height (eye-level has become the standard, according to interviews) and location. Some universities craft creative rewards programs that provide incentives for students to separate and recycle, and many sponsor recycling fairs and educational events at student events to increase awareness.

Case in Point:

STANFORD UNIVERSITY

Stanford incorporates waste stations during sporting events that include bins labeled for recycling, composting, and material headed to the landfill. If enough volunteers are available, they station a volunteer nearby to explain proper disposal.

Julie Muir, the Zero Waste Manager at PSSI/Stanford Recycling says My Cardinal Green is an important program for driving participation. Run by the Stanford Office of Sustainability, faculty, staff and students can sign up for MCG by taking a survey on their current practices. The program gives them a personalized list of actions to do. As people complete these tasks they earn points; when they earn 100 points they receive a $75 reward, from money that comes from savings projected from campus sustainability programs (reduced energy use, water use, waste disposal).

Julie says the good part is that when volunteers are needed for compost and recycling programs, such as a waste audit or some other activity, the project is added to the volunteer activity database so people can get points for it. For example, volunteers can earn points for going on tours of the recycling center or for becoming part of the voluntary compost program.

Conclusions:

More and more campuses are adding programs because students are asking for them. Yet, campus staff is challenged to find money and long-term labor to run the programs due to student turnover.

While every campus has different conditions when they set up their composting programs, there are enough similarities among programs that for the campuses just beginning, it pays to talk to those who have already been doing composting. Staff members most often referred to the Association for the Advancement of Sustainability in Higher Education, and the College and University Recycling Coalition, both of which have robust list-servs. Students also find support and encouragement in the Post-Landfill Action Network, a student group focused on sustainability and zero waste. The USCC is collaborating closely with these groups to provide more technical information in the coming year about the composting process and equipment, contamination and finding composters in the region.

Authors: Matt Kirchoff, a masters degree candidate in machine learning/water resource management/public policy at the University of Delaware, was a USCC intern who conducted most of the interviews in collaboration with editing by membership manager Linda Norris-Waldt.

For more information on USCC resources, visit www.compostingcouncil.org/ourcampuscomposts.