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The Zero Waste department tours the City of Phoenix materials recovery facility.
Program overview

Mission statement
Arizona State University’s Zero Waste department aims to create and implement programs to reach the university’s circular resources goal and strengthen overall institutional sustainability by designing lasting, universal models that support ASU as a global leader in sustainable solid-waste management.

Introduction
The Zero Waste Annual Report for Fiscal Year 2019 provides an overview of the solid-waste program at ASU from July 1, 2018 through June 30, 2019. The sustainability reporting boundaries for the university lie within the four main ASU Phoenix-metro based campuses: Downtown Phoenix, Polytechnic, Tempe and West.* This report also includes the Colleges at Lake Havasu City in the reporting boundaries.

*ASU’s SkySong, and ASU Barrett & O’Connor Washington Center in Washington, D.C., do not fall within program and reporting boundaries.

Goal
ASU has eight sustainability goals.
The Zero Waste department is responsible for managing the outcomes of the Circular Resources Goal. ASU defines a circular-resource system as one that achieves zero waste by adapting the goods brought onto campus to maximize their use before sending them back into the economy for the most productive use possible.

View ASU’s Sustainability Goals and Visions webpage for a full list of all university goals.

Key goal targets:

90%
Waste diversion from landfill by 2025.

30%
Waste aversion over the Fiscal Year 2008 by 2025.

The Zero Waste department teaches Sun Devil fans how to recycle at the women’s basketball Green Game.
Diversion rate

ASU defines diversion as the act of purposefully opting to send post-consumer materials and goods outside the institution to be remanufactured or reused, which includes donations, the sale of whole goods, recycling and composting, and purposefully purchasing goods that are easily diverted. Diversion is a function of the material makeup of goods purchased, and the individual choices community members make when disposing of goods and the systems the institution provides to support diversion.

The Zero Waste department tracks diversion each year to determine what percentage of the waste stream is being recycled, composted, reused and donated, and how ASU is moving closer to its 90% diversion goal.

Diversion rate is an industry-standard term used to track waste-diversion efforts. Universities, government entities and private businesses use diversion to track outgoing waste, which allows ASU to compare with other institutions.

The ASU diversion rate for FY 2019 was 41.8%.

ASU calculates diversion by tracking the percentage of material sent from ASU campuses to landfill, and what percentage was diverted from landfill by being either recycled, composted, donated or reused.

The FY 2019 diversion rate is down from FY 2018. This decrease is partly due to global shifts in recycling industries and changes to what is accepted internationally in recycling streams. In FY 2019, the Zero Waste department increased the quality of data through improved tracking methods, but the new locations included had lower diversion rates that impacted ASU’s overall total. Although overall diversion was slightly lower in FY 2019, the department saw an increase in specialty-recycling collection across the board.

University diversion rate in tons FY 2019

| Diverted | 3,908 | 41.8% |
| Landfilled | 5,433 | 58.2% |

ASU staff celebrates Earth Month events during April.
Total waste at ASU
FY 2008–FY 2019

Diversion Equation:
Tons Recycled + Tons Composted + Tons of Surplus + Tons Donated
Tons Landfilled + Tons Recycled + Tons Composted + Tons of Surplus + Tons Donated
\times 100

The ASU Zero Waste department monitors and tracks all solid waste leaving the university throughout the year. The data in this report represents known tracking as of Aug. 31, 2019. The Zero Waste department gains more confidence each year in reporting as we seek to eliminate gaps in data arising from university expansion, contract changes or programmatic shifts.
Aversion rate

ASU defines aversion as the act of preventing waste from entering the institution and influencing practices affecting how waste is circulated within the institution to reduce overall solid-waste output. Aversion is a function of the durability of goods, the individual choices community members make when purchasing and disposing of goods, and the systems the institution provides to support repair, reuse and exchange.

The Zero Waste department tracks aversion year-to-year by comparing the waste produced to the baseline year of 2008. This is done to see if the overall amount of waste produced through educational, research, and operational activities at ASU has reduced or increased.

**ASU produced 14% less waste per person in FY 2019 than in FY 2008.**

The waste reduction was achieved despite an increase in population and square footage, institutional and individual activities.

![Waste produced per person in pounds](image)

The average campus user created 242 pounds of waste in FY 2008, whereas the average campus user only created 208 pounds of waste in FY 2019. Total waste per person generated includes personal action and university operations.

Aversion is waste reduction and reuse. Departments and individuals can positively impact aversion in these ways: **Reduce**: Purchase less. Be mindful of how items will be disposed of after use. **Reuse**: Choose reusable items over items that need to be landfilled or recycled.
Since FY 2008, ASU’s population has increased 29% while total waste has increased only 11%. ASU created 14% less waste per person in FY 2019 than in FY 2008.

Potential reasons for aversion rate fluctuations:
- ASU’s increases in both population and square footage.
- Knowing more about our data.
- Waste reduction and reuse programming.

**Key reporting**

The Zero Waste department provides waste data to the following reports:
- Advancement of Sustainability in Higher Education Sustainability Tracking, Assessment and Reporting System
- The Game Day Recycling Challenge
- Pac-12 Zero Waste Bowl
- RecycleMania
- ASU annual sustainability operations review

ASU won the Pac-12 Zero Waste Challenge Fan Engagement Award during 2019 for efforts at the women’s basketball Green Game.

Photo courtesy of Sun Devil Athletics.
The Fiscal Year 2019 accomplishments

Ditch the Dumpster at move-in and move-out
The Zero Waste department again collaborated with Sparky’s Welcome Team during the Ditch the Dumpster 2018 at move-in. The Welcome Team consisted of seven volunteers who helped during the two-day move-in period. Volunteers helped break down boxes for recycling, collected Styrofoam for specialty recycling, and introduced incoming freshman to ASU zero waste efforts.

Ditch the Dumpster 2019 at move-out was bigger and better than in 2018. Donations were at an all-time high, with an institutional total of 66,470 pounds.
- 56,689 pounds of bulk items, appliances, clothing and furniture | Goodwill of Central Arizona.
- 4,564 pounds of food | United Food Bank and internal ASU programs.
- 4,641 pounds of clothing and small household items | Big Brothers Big Sisters of Central Arizona.
- 576 pounds of cleaning and hygiene supplies | The Centers for Habilitation.

Students contributed a total of 66,470 pounds of donations during move-out 2019. That is 7,425 pounds more than last year.

ASU Ditch the Dumpster helped provide 3,803 meals for our community.
**Green waste collection increase**

Green waste collection increased in FY 2019. The Zero Waste department expanded green waste collection on the Polytechnic and Tempe campuses collecting 268.41 more tons than in the previous fiscal year. ASU collected its palm fronds and trimmings and delivered them to the City of Phoenix Resource Innovation Campus, where they were transformed into livestock feed.

**Green waste diversion increased by 61% from FY 2018 to FY 2019.**

![Green waste collection chart]

**The Zero Waste department visits the City of Phoenix compost facility.**
Green Games
During the 2018–19 school year, ASU hosted eight Green Games among a range of campus sporting events. Eight student organizations — 119 total students — served as Zero Waste Ambassadors. Zero Waste Ambassadors successfully assisted with the diversion of 50,000 pounds of waste from the landfill during Green Games; that’s 27,050 pounds more than the previous year.

The football Green Game had a record-high in-game diversion rate of 80%. The tailgate had a 53% diversion rate where 46,445 tailgating fans recycled 4,500 pounds of material. During six home games in the 2018 football season, the concession vendor sold 2,692 reusable Zero Waste cups and provided 6,945 free refills, successfully diverting nearly 10,000 cups from the landfill. ASU won the Pac-12 Zero Waste Challenge Athlete/Player Engagement Award for Green Game football efforts.

During the football Green Game, ASU donated 1,523 pounds of surplus food.

New special-collections bins
The Zero Waste department worked with the Memorial Union in FY 2019 to implement a special-collections bin for batteries, printer cartridges and small electronic waste. The Zero Waste department and the MU staff will monitor the function of the new bin. The goal is to place additional bins in more locations throughout ASU.

The department simultaneously collaborated with Engineering Projects in Community Service, EPICS, to design and implement a new bin for specialty items collection. A student team designed a bin with problems presented by the Zero Waste department in mind. The Zero Waste department placed the student bin in the Student Pavilion for further testing. Over the next school year, the students will monitor and make changes to various bin interaction points, such as doors, height and labels.

Staff barbecue
Since 2011, ASU has worked to achieve zero waste at campus staff barbecues. All four staff barbecues achieved a diversion rate above 90% in FY 2019. The Zero Waste department ran a Raffle for Reuse program at the barbecues this year. Staff members were encouraged to bring a reusable fork to use at the barbecue, and 198 staff participated across four campus barbecues.

Raffle for Reuse per campus:
- Downtown Phoenix: 39 staff.
- Polytechnic: 27 staff.
- Tempe: 87 staff.
- West: 45 staff.
Villas and Vista del Sol Compost program
The Zero Waste department launched a composting pilot with students who live in the Villas and Vista del Sol residence complexes. The VVDS students, who have kitchens in each room, created and managed resident involvement in the pilot program. The Zero Waste staff provided signage, bins and serviced compost bins. Forty-eight students passed a quiz and then received a code to the compost shed to get their compost bin. Pilot participants checked out a bin for one week before checking them back in for service. There are currently 24 bins available to check out. During the spring semester pilot, students checked out all 24 bins each week.

Volunteer programs
The Zero Waste department general volunteer program seeks to increase ASU community opportunities to participate in waste reduction and diversion programs.

The department offers ongoing volunteer opportunities focused on sorting Blue Bag material, traditionally hard-to-recycle items, and engagement at sporting events.

During the FY 2019, 106 individuals participated in 71 unique volunteer occasions and completed 261 hours of service, which earned the department a bronze-level President’s Volunteer Service Award.

Zero Waste services
The Zero Waste service team was busy again this year. The team completed collection routes each week and accomplished daily service requests on each campus. During this fiscal year, the service team also transitioned to a new service request system to align with Facilities Development and Management. In FY 2019, the service team completed 2,513 recycling requests at 158 individual buildings across four campuses.

The Zero Waste service team completed 2,513 requests, 270 more requests than FY 2018.
ASU collects different types of materials in the streams listed below. The Blue Bin commingle and organics programs have had steady growth year-to-year.

<table>
<thead>
<tr>
<th>Material category</th>
<th>Weight (tons)</th>
<th>Portion of the total waste stream</th>
<th>Composed of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trash</td>
<td>5433.38</td>
<td>58.2%</td>
<td>Municipal and operational solid waste sent to landfill.</td>
</tr>
<tr>
<td>Food waste</td>
<td>838.54</td>
<td>9.0%</td>
<td>Food waste, napkins and compostable food service items from athletics events and dining halls.</td>
</tr>
<tr>
<td>Green and yard waste</td>
<td>711.59</td>
<td>7.6%</td>
<td>Branches, grass clippings, palm fronds, plant trimmings, wood and yard waste.</td>
</tr>
<tr>
<td>Scrap metal</td>
<td>181.55</td>
<td>1.9%</td>
<td>Scrap metals salvaged from HVAC upgrades, plumbing retrofits and other operational projects.</td>
</tr>
<tr>
<td>Inert</td>
<td>6.30</td>
<td>0.1%</td>
<td>Concrete, sand and asphalt.</td>
</tr>
<tr>
<td>Specialty recycling</td>
<td>141.67</td>
<td>1.5%</td>
<td>Items collected through specialty programming; the material breakdown can be found in the specialty recycling table.</td>
</tr>
<tr>
<td>Donations</td>
<td>46.20</td>
<td>0.5%</td>
<td>Donations collected during Ditch the Dumpster at move-out as well as donations collected throughout the year in residence halls and items donated to Treasures for Teachers.</td>
</tr>
</tbody>
</table>

**Total Waste**  9341.39
A closer look at specialty recycling

The specialty-recycling stream makes up 1.4% of the total waste diverted from ASU. This stream encompasses many programs and tracking systems. The stream covers hazardous and difficult-to-recycle items such as batteries, light bulbs and motor oil. The stream includes auxiliary items that cannot be recycled in the Blue Bin commingle program but can be recycled through other processes. Some material streams in the chart below are part of university operations, whereas individuals can influence others through personal purchasing choices made by students, faculty and staff on campus.

More information about specialty-recycling drop-off locations can be found on the Zero Waste webpages. Online visitors also can find specialty-recycling options to use in their offices and departments, and how best to decrease their use of single-use and difficult-to-recycle items whenever possible.

<table>
<thead>
<tr>
<th>Material</th>
<th>Weight (tons)</th>
<th>% of total waste stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallets</td>
<td>35.94</td>
<td>0.39%</td>
</tr>
<tr>
<td>Fat, oil, grease</td>
<td>28.01</td>
<td>0.30%</td>
</tr>
<tr>
<td>Wood</td>
<td>23.11</td>
<td>0.25%</td>
</tr>
<tr>
<td>Mattresses</td>
<td>18.76</td>
<td>0.20%</td>
</tr>
<tr>
<td>Lightbulbs</td>
<td>9.64</td>
<td>0.10%</td>
</tr>
<tr>
<td>eWaste</td>
<td>6.53</td>
<td>0.07%</td>
</tr>
<tr>
<td>Soft plastic</td>
<td>3.41</td>
<td>0.04%</td>
</tr>
<tr>
<td>Food donations</td>
<td>3.22</td>
<td>0.03%</td>
</tr>
<tr>
<td>Batteries</td>
<td>2.94</td>
<td>0.03%</td>
</tr>
<tr>
<td>Coffee pods</td>
<td>2.37</td>
<td>0.03%</td>
</tr>
<tr>
<td>Toner cartridges</td>
<td>2.22</td>
<td>0.02%</td>
</tr>
<tr>
<td>Motor oil</td>
<td>2.01</td>
<td>0.02%</td>
</tr>
<tr>
<td>Rubber gloves</td>
<td>1.44</td>
<td>0.02%</td>
</tr>
<tr>
<td>Styrofoam</td>
<td>1.18</td>
<td>0.01%</td>
</tr>
<tr>
<td>Banners and scrap fabric</td>
<td>0.39</td>
<td>0.00%</td>
</tr>
<tr>
<td>Snack wrappers</td>
<td>0.26</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shoes</td>
<td>0.16</td>
<td>0.00%</td>
</tr>
<tr>
<td>Water filters</td>
<td>0.09</td>
<td>0.00%</td>
</tr>
<tr>
<td>Writing utensils</td>
<td>0.02</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>141.7</strong></td>
<td><strong>1.5%</strong></td>
</tr>
</tbody>
</table>
Waste makeup by location

Diversion rate by location

<table>
<thead>
<tr>
<th>Campus</th>
<th>Diverted (tons)</th>
<th>Landfilled (tons)</th>
<th>Diversion rate</th>
<th>Landfill rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tempe campus</td>
<td>2437.15</td>
<td>3614.76</td>
<td>40.3%</td>
<td>59.7%</td>
</tr>
<tr>
<td>Downtown Phoenix campus</td>
<td>254.07</td>
<td>647.43</td>
<td>28.2%</td>
<td>71.8%</td>
</tr>
<tr>
<td>Polytechnic campus</td>
<td>494.17</td>
<td>883.11</td>
<td>35.9%</td>
<td>64.1%</td>
</tr>
<tr>
<td>West campus</td>
<td>408.15</td>
<td>195.47</td>
<td>67.6%</td>
<td>32.4%</td>
</tr>
<tr>
<td>ASU Colleges at Lake Havasu City</td>
<td>24.12</td>
<td>24.01</td>
<td>50.1%</td>
<td>49.9%</td>
</tr>
</tbody>
</table>

Diversion rates differ
Diversion rates vary by campus and are influenced by the type of waste generated at each campus and ASU’s ability to divert it. The Downtown Phoenix campus has the lowest diversion rate. As a more urban campus, its waste stream is mostly comprised of classroom, dorm room and dining hall waste.

The West campus has a high diversion rate, in part because of its large property and robust green-waste collection program. The Polytechnic campus and the ASU Colleges at Lake Havasu City have comparable diversion rates, due to the similar waste streams and diversion abilities. The Tempe campus has the most diverse waste-collection program but also is the largest waste producer. With a diversion rate of 40.3%, Tempe is the most similar to the university-wide diversion rate.
Looking ahead

Bin upgrades
The Zero Waste department will work with the ASU Admission Services team and University Sustainability Practices to implement a new diversion bin in the future Sun Devil center, as well as develop sustainability talking points for future Sun Devils tours.

In partnership with the Memorial Union bin, the Zero Waste department will work to upgrade and standardize waste collection bins while also expanding public-facing compost collection opportunities within the MU.

The Zero Waste department will partner with ASU Libraries to place special-collection recycling bins within the libraries to expand the special-collections programs.

Continue engagement programs
The Zero Waste department will continue to expand engagement programming with more interactive activities planned throughout the year with internal ASU partners.

Future programs include:
- Trading Post events | Residence hall students may participate in Ditch the Dumpster year-round by exchanging gently used clothing items.
- eWaste collection events | Departments may clear out storage closets and recycle unused or outdated electronic items.
- Zero Waste Ambassador opportunities | Student groups may earn funds for their clubs and gain hands-on experience with the Zero Waste department.

Expanding compost collection
The Zero Waste department will expand the compost program in FY 2020. Initial program expansion will include office kitchenettes where bins previously were requested. Further program growth will begin at the fall and spring semester openings until full deployment is achieved.

Zero Waste
Reduce | Reuse | Recycle

Visit zerowaste.asu.edu for more information about recycling markets, diversion-program changes, and help with purchasing decisions and switching to reusables.