

# Auraria Sustainable Campus Program

**Auraria Compost Blueprint:  
Challenges and Solutions**

# Sections

---

01

Introductions

02

Context & Background

03

Research

04

Budget & Funding

05

Operations

06

Ongoing Initiatives

# Introductions

---



Chris Herr  
Director of Sustainability



Rylee McCone  
Sustainability Manager



Robbie Tepperberg  
Compost Operations Manager

# 7 Pillars of Sustainability

---



Alternative Transportation



Education & Outreach



Energy Efficiency



Food & Gardens



Renewable Energy



Waste Diversion



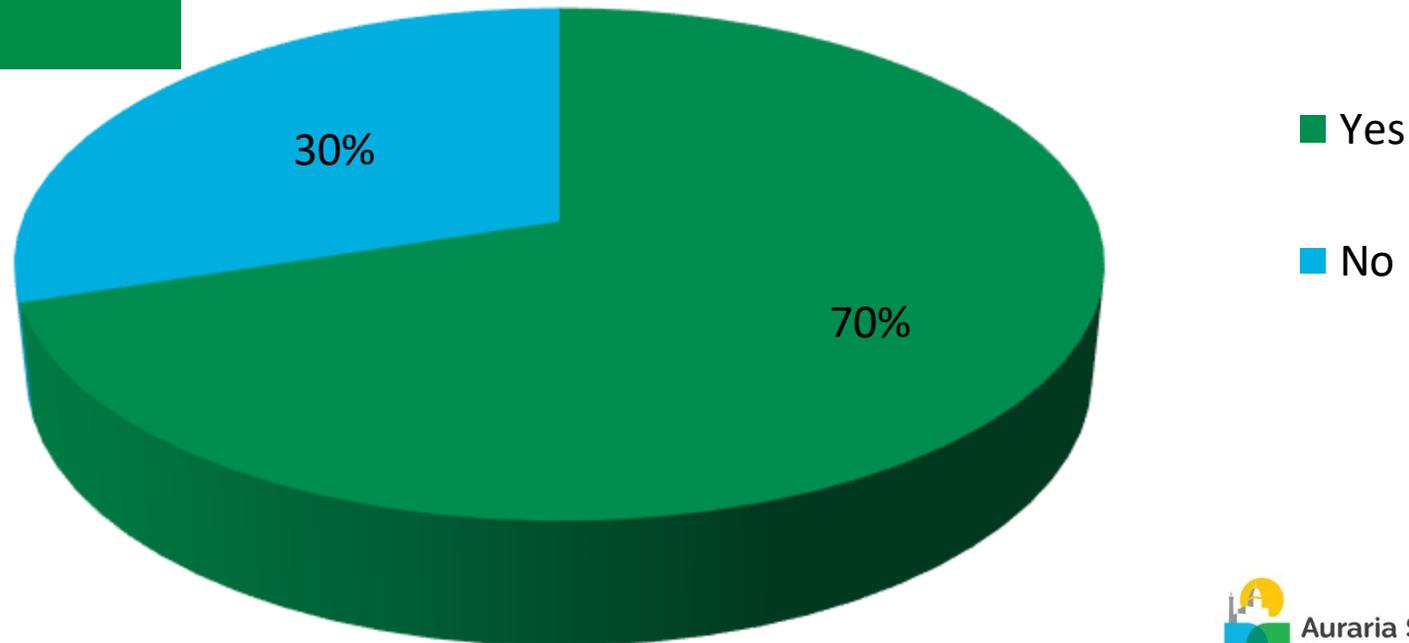
Water Conservation

The ASCP is a tri-institutional, student fee funded program working to reduce the Auraria Campus' dependence on fossil fuels and to reduce our overall ecological impact!

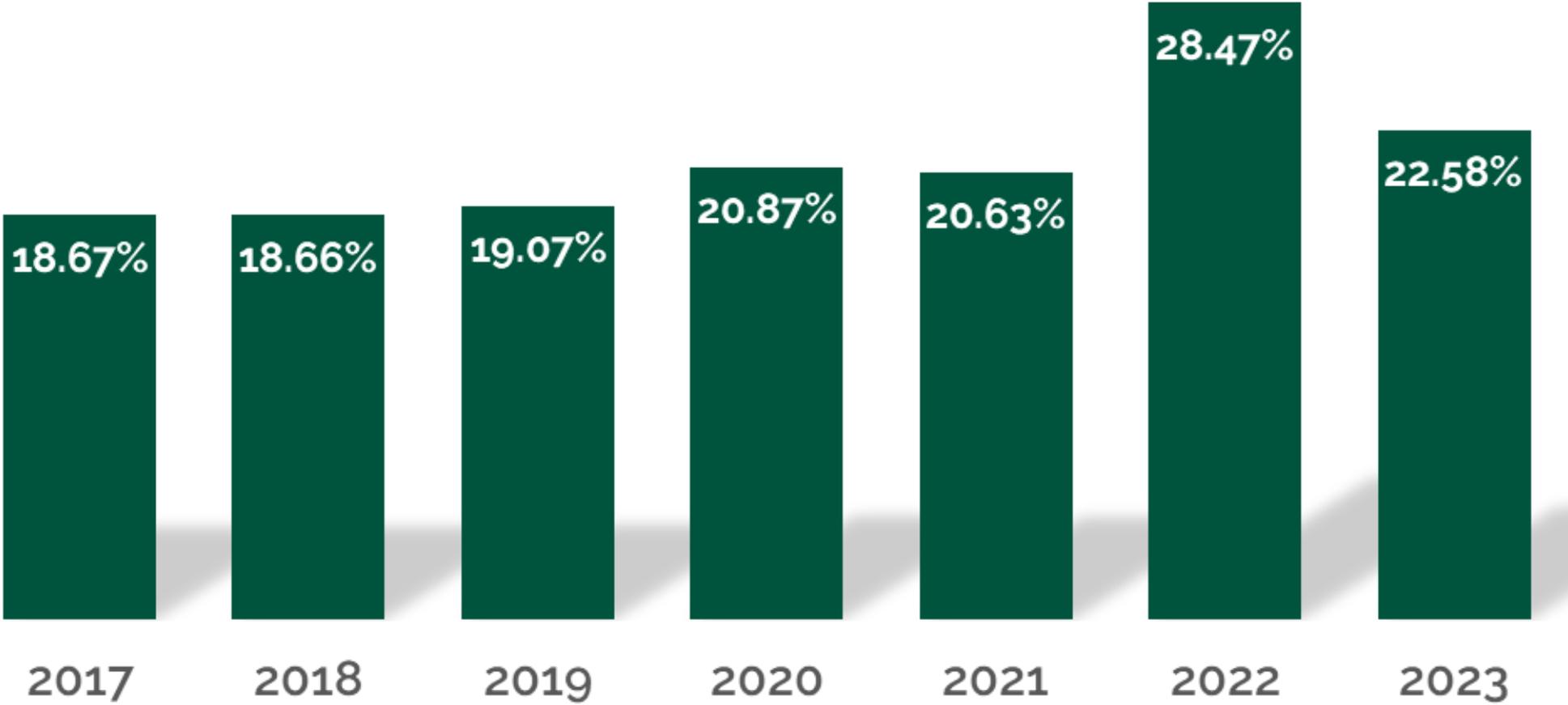
# 2020 Compost Referendum

## Compost Referendum (2020)

“Shall the students of the Auraria Campus (the Community College of Denver, Metropolitan State University of Denver, and University of Colorado Denver at the Downtown Denver Auraria Campus) authorize the Board of Directors of the Auraria Higher Education Center to assess each institution a student fee increase of \$3 per student, per semester, for an expansion of the current Auraria Sustainable Campus Program’s fee of \$5.58 to primarily fund the addition of composting services and the enhancement, and ongoing maintenance of waste diversion among campus buildings and exterior spaces.



# Annual Total Waste Diversion Rate



# How Compost Affects Campus

---

- Waste Diversion Goals
  - 35% by 2024
- GHG Emission Reduction (compost vs. landfill)
- Student Survey
  - Waste Diversion in top 3 priorities
- Compost Referendum
  - Honoring student values and fees



# Research

---

# In-Vessel Unit Considerations

---

- Current Needs vs. Future Demands
  - Volume per day, week, year
- Case Studies
- Material Compatibility
- Sourcing, Maintenance
- Desired Output
- Power Requirements
- Available Add-ons
- Permitting/ Licensing Requirements



# Site Considerations

---

- Location
  - Unit Dimensions
  - Shelter
  - Sorting Space
  - Curing Space (concrete bays vs. on ground)
  - Storage (supplies, compost, toters, vehicles)
- Additional Supplies and Infrastructure
- Pest Control and Odor
- Fire Mitigation for carbon materials
- Waste Water Management Plan

# Budget & Funding

---

# Budget Considerations

---

- Unit Cost
  - Add-ons
    - Chipper/Pulper
    - Hydraulic Lift
    - Carbon Filters
    - Sifters
- Staffing
- Certifications/Tests
- Additional supplies and infrastructure
  - Bins/Toters
  - Power washer
  - Chipper
  - PPE
  - Vehicles
    - Hauling
    - Moving Piles
  - Shelter
  - Storage

# Revenue Opportunities

---

- Reallocation of Compost Hauling Funds
- Event Compost Services
- Selling Compost



# ASCP Budget

---

- Student Fees, Compost Referendum
- Hauling fee from schools
- CDPHE FRWD Grant
- Future Event Revenue



## Supplies & Equipment

1- Composter	(\$191,200.00)
1- Truck w/Lift	(\$80,000.00)
72- 96 Gallon Toters	(\$25,000.00)
2- Woodchipper	(\$8,000.00)
2- Pressure washer	(\$2,000.00)
1- Tent structure	(\$50,000.00)
Supplies (other)	(\$15,000.00)
Bag liners	(\$5,000)
<b>First Year One-Time Expenses Total</b>	<b>(\$376,200.00)</b>

\*Tent structure may be acquired at no cost

\*\*Grant funds provided \$129,000

## Supplies & Equipment

1- Composter	(\$151,049.00)
2- Electric Tricycles	(\$17,100.00)
80- 35 gallon Toters	(\$8,519.00)
1- Woodchipper	(\$3,000.00)
1- Pressure Washer	(\$349.00)
Fabricated Shipping Container	(\$9,722.00)
Supplies (other)	(\$3,760)
Bag liners	(\$4,200)
Contingency	(\$2,640, 10,000, 11,000)
<b>First Year One-Time Expenses Total</b>	<b>(\$221,339)</b>

# Operations

## A Multi-Faceted Approach

---

# Collection

---

- Deployed forty 35-gallon toters at recycling and landfill docks
- Onboarded and trained all vendors
- Trained custodial teams on "green bag to the green bin"
- Swap toters at each pickup



# Hauling

---

- Custom built trikes by Mainstreet Pedicab
- Ideal for small campus footprint
- Student focused hauling
- Money saving on maintenance costs
- Can hold roughly 800lbs
- ~15 collection sites around campus



# Sorting

---

- All organics and contamination are weighed
- Minimal sorting needed for back of house
- Safety is number one concern
  - Use gloves and food tweezers to pick out contamination
- Takes one staff member roughly 3 hours to sift through ~750lbs of compost



# Processing

---



- BioCoTech M4 in-vessel aerobic composter
  - Roughly 20ft x 3.5ft
- Continuous flow
- Max capacity- 900lbs as food dehydrator
  - Retention time is ~72 hours
- 200-400lbs daily as composter
  - Retention time is ~2/3 weeks
  - Capable of processing compostable ware



### INSTALLATION

Indoor/Outdoor protected from weather



### DIMENSIONS

L 219 in, H 62 in, D 36.5 in  
\*2 ft operational space around footprint.



### AUTOMATIC COMPUTER

Temperature control  
Air extraction  
PLC display and control  
Sequence controlled dispensing of finished compost  
Adjustable dispensing time interval



### DAILY CAPACITY

132 Gal, 937 Lbs, 0.7, Yds<sup>3</sup>, 0.5 t



### Estimated MTCO<sub>2</sub>e reduction

42 MTCO<sub>2</sub>e/Year



### ELECTRICAL CONSUMPTION

Main Motor: 1 kW  
Heat Tracing: 5 kW  
Fan: 0.25 kW  
Output Motor: 0.25 kW  
Max consumption: 6.5 kW/h



### POWER SUPPLY

200-240 vac, 50-60 Hz, 30 Amp



### NET WEIGHT

3748 Lbs



### ADDITIONAL FEATURES

Lift for containers, customizations upon request  
Cloud connectivity and control  
*\*installation requirements may change with additional features.*

# Closing the Loop

---



- Testing soil with MSU's Earth and Atmospheric Science and Biology Departments
- Use compost to amend grasses, trees, plants on campus

# Benefits

---

- More efficient and reliable use of student fees
- Creation of student jobs
- Demonstrative educational opportunity
- Sorting is easier (consistent materials across vendors and consistent guidelines)



# Benefits (cont'd)

---

- Compost under one system campus-wide
- Closed loop system
- Monetary savings (hauling, added fees, fertilizer)
- Consistent pick-up schedule
- Fewer chemicals for campus landscaping
- Increased, healthier green spaces
- Cleaner water runoff
- Easier process for custodial staff

# What Next?

---

# Ongoing Initiatives

---

- Vendor Policy
- Event Policy
- Updated Signage
- Green Office Program
- Internal and External Events
- Bathroom Composting
- Education and Outreach Campaigns
- Training Videos for BOH and Offices

# Questions

---

Robbie Tepperberg

[Robert.tepperberg@ahec.edu](mailto:Robert.tepperberg@ahec.edu)

303-556-8482

Rylee McCone

[Rylee.mccone@ahec.edu](mailto:Rylee.mccone@ahec.edu)

303-556-8046

@AurariaSCP



## Annual Operating Costs

FT staff	(\$81,000.00)
Student staff	(\$40,000.00)
General Maintenance & Repair	(\$15,000.00)
<b>Sub-Total</b>	<b>(\$136,000.00)</b>

## Annual Revenue

AHEC	\$22,000.00
CU Denver	\$15,000.00
<b>Sub-Total</b>	<b>\$45,000</b>
<b>Annual Total Operating</b>	<b>\$99,000</b>