

IN-VESSEL COMPOSTING CASE STUDY

BOULDER COUNTY
SUMMER 2026

The Town of Nederland, CO is located in the front range of the Rocky Mountains and home to about 1,500 residents. The town is served by Boulder County's transfer station for trash, recyclables, organics and other hard-to-recycle materials.

CHALLENGES

Organics were previously collected in a 4,000-pound capacity trailer and driven to a third party for processing. The weekly round trip totaled 42-miles, returning with an empty trailer.

- Mountainous and Rural Geography
- Community Underserved by Commercial Hauling
- Low Population Density
- Hazardous Winter Weather
- Wildlife
- Constrained Site Footprint

OBJECTIVES

Increase Access

To increase participation in organics diversion drop-off program.

Reduce Driving Distances

To process material on-site and eliminate the need to drive down and back up the mountain.

Improve Circularity

To keep benefits local and increase access to finished compost.

SOLUTION

Installed In-Vessel Composting Unit

In spring 2025, Boulder County installed a 20' in-vessel machine from Green Mountain Technologies to process organic material and produce finished compost on-site at the transfer station.

OPERATIONS

- **Siting Considerations:** Single phase electrical, occasional water, level ground (concrete pad is optional).
- **Users:** Residents, Schools, Other Entities (case-by-case)
- **Inputs:** Food Scraps, Wood Chips from the County's Forestry Sort Yard across the street
 - ✗ **Not allowed:** Compostable packaging / serviceware
- **Recipe:** 2 parts wood chips, 1 part food scraps by vol., depends on moisture, adjusted as needed
- **Max Capacity:** 600 lbs. per day (80-110 tons / year)
- **Bulk Density:** >900 lbs. per cubic yard (~22.5 lbs. / 5 gal bucket)
- **Processing:** 21-day cycle from input to removal, another 30 days for curing
- **Staffing:** 2-5 hrs. / week, (previously 3 hrs. / week with trailer)
- **Permitting:** Registered with the state as a Conditionally Exempt Small Quantity (CESQ) Commercial Composting Facility

LOAD



PROCESS



FINISH



FINANCIALS

Cost

Originally approved to be covered through a state grant. County permitting held up process, delays caused County to lose grant funding.

The capital infrastructure was ultimately paid for by the county's Sustainability Tax, a 0.125% sales and use tax.

Current operations are covered by the county's general fund and the transfer station revenues. Staff utilize the site's mini track loader for moving material.

Fees

Cost to drop-off food scraps & organic materials

- 0-4 gallons: \$1
- 5-13 gallons: \$2
- 14-33 gallons: \$5
- 34+ gallons: \$7

Finished compost is available for residents to pick up for free.

CAPITAL COSTS

GMT Intermodal 20' Earth Flow	\$109,950
Freight, Commissioning, Training	\$12,850
Add-ons: Tote Tipper, Bear Proof Doors, Replacement Auger, Biofilter	\$37,161
Single Phase Power Connection	\$895
Total Capital Cost	\$160,856

ANNUAL IN-VESSEL IMPACT



**Travel
Miles
Saved**



**Tons
Diverted**



**MTCO2E
Emissions
Reduced**

"There was definitely a learning curve at the beginning to figure out the right mixture of material. But the automatic mixing of material makes the processing simple." - Billy Donovan, Operations Lead

"Instead of transporting nutrients away, we are closing the loop by turning refuse into a valuable soil amendment for local use."
- Michal Duffy, Zero Waste Program Manager

INSIGHTS

Look for Partnerships

Successful use of excess wood chips from Forestry Sort Yard also supports wildfire mitigation.

Consider Grant Timelines

Unable to execute on grant due to permitting / planning issues.

Decreased Wildlife Interaction

Food scraps are processed faster. Less attractive to bears, birds, and wildlife.

Decreased Odors

Material in the trailer became anaerobic in the summer, producing odors, which are eliminated with the unit.

Maintenance & Repair

Keep spare parts on hand. Routine maintenance includes lubing chains and gears.

Compostable Bag Issues

Compostable bags create issues by getting stuck on the auger and floating to the top of the pile.