



Food Waste Composting Feasibility Study

May 17, 2022

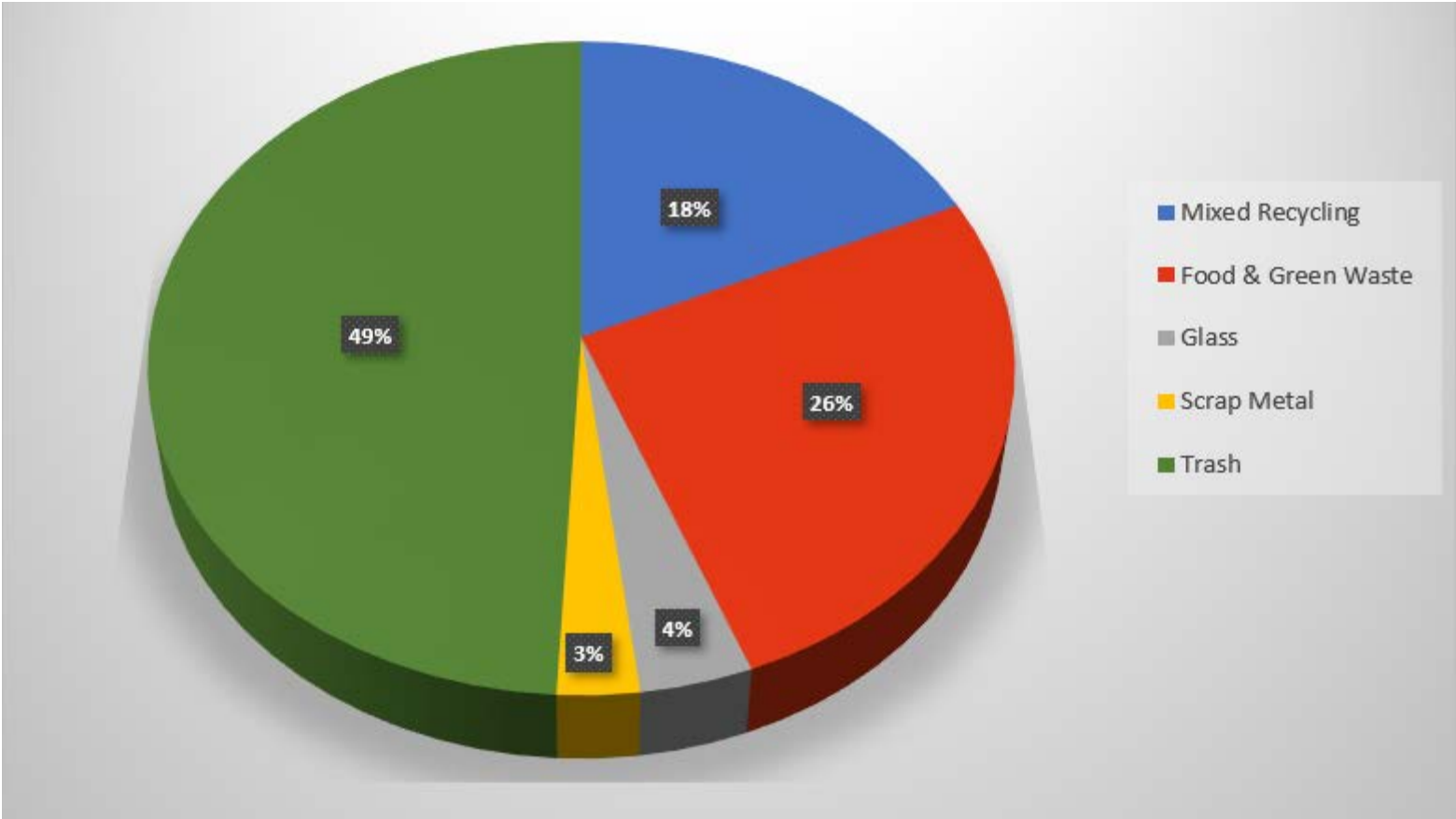


Project Goal and Objectives

Identify the most cost-effective location, technology, and collection plan for food waste processing

- ✓ Provide a roadmap of what is best for the County and the environment
- ✓ Use as a decision-making guide

Los Alamos County Waste Composition



Why Compost

- Viable solution for yard trimming material, current program generates excess material
- Requested by citizens & restaurants
- Reduces greenhouse gas production by removing organics from landfill
- Hauling & tipping fees increase yearly

Greenhouse Gas Reduction	
Current Impact	Projected Impact
160 MTCO ₂ E (2,572 tons of brush)	1,875 MTCO ₂ E (6,776 tons of brush & food)

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Composting Technologies

- Windrow
- Aerated Static Pile (ASP)
- Covered Aerated Static Pile (CASP)
- In-Vessel
- Anaerobic Digestion (AD)



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Composting technologies – Windrow



Advantages

- Can handle putrescible feedstocks
- Relatively low capital and operating costs
- Relatively low technology requirements
- No electric power needed
- Extensive industry experience

Disadvantages

- Large area required
- More labor intensive
- No means of controlling odors
- Exposure to weather can be problematic
- Harder to protect against vectors

Composting Technologies – Aerated Static Pile



Advantages	Disadvantages
• Reduced space requirements • Negative aeration with biofiltration can help control odors • Smaller surface area reduces weather impacts • Significantly shorter composting times • Biolayers covering piles deter vectors	• Slightly higher capital costs • Moisture loss is accelerated • Proper feedstock preparation and mixing needed • More operator skill needed • Three-phase electric supply usually needed

Composting Technologies – In-vessel

- Many different configurations
- Used rotary drum for Los Alamos Co. project



Advantages	Disadvantages
• Body of drum can be located outdoors, typically only ends need to be covered • Effective mixing and agitation of feedstocks and amendments	• Higher mechanical complexity due to drive system and loading/unloading systems • Drums and drive systems need periodic realignment • Air injection systems prone to clogging • Short composting time; finishing needed

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Digestion Technologies – Dry Fermentation

- Anaerobic digestion (AD) – extracts energy value from feedstocks before composting

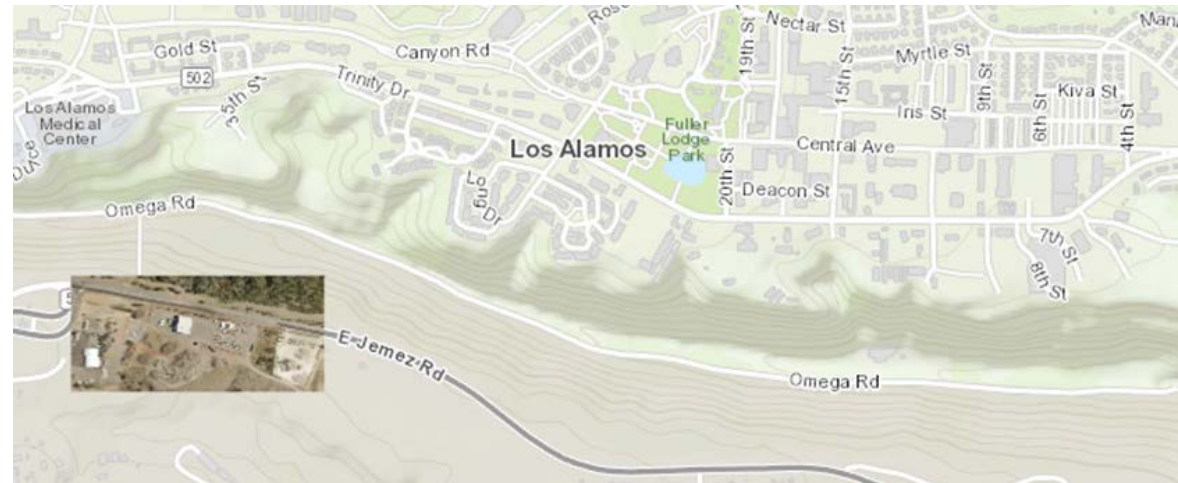
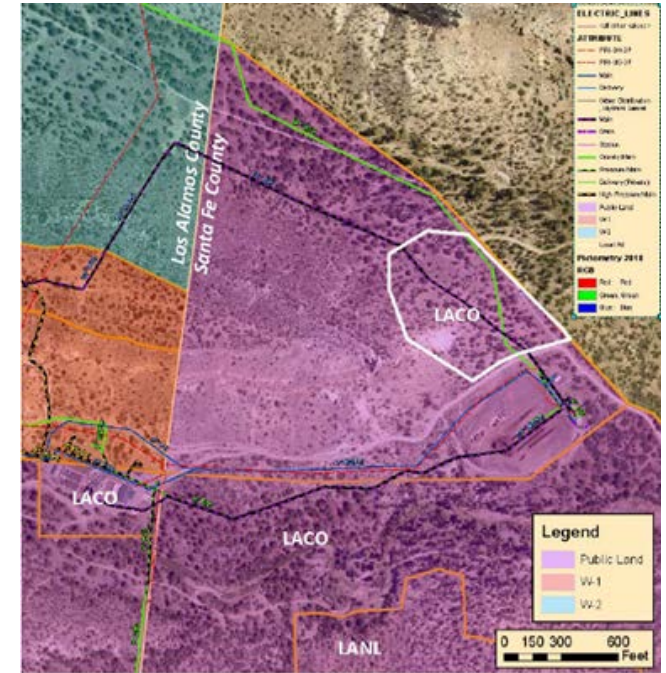


Advantages	Disadvantages
• Recovered energy can be used to generate electricity or cleaned up to make renewable natural gas • Fully enclosed – deters vectors, controls odors	• Generally more expensive • Risk of fugitive methane emissions • Still need to compost residuals (digestate)

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Potential Site Locations

- Bayo Canyon
- Eco Station
- Overlook Park Area 1
- Overlook Park Area 2



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Bayo Canyon



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Eco Station – Eastern Area



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Overlook Park - Area 1



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Overlook Park – Area 2



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Collection Options



Collect in Existing
Carts/Container



Collect in New, Separate
Cart/Container



Drop-off collection

Collection Scenarios

RESIDENTIAL

Option 1 - Food in Existing Green Waste Collection Cart

A - Food Loose in Cart

B - Food in Biodegradable Bags in Cart

Option 2 - Food in (New) Food Waste Collection Container

A - Food Loose in Cart

B - Food in Biodegradable Bags in Container

Option 3 - Food Scrap Collection at Drop-Off Sites

A - 2 New Sites, Collection at Eco Station and Overlook Park

B - Four New Sites, Collection at Eco Station, Overlook Park and 2 Additional

COMMERCIAL

Option 1 - Food in (New) Food Waste Collection Containers

A - Food Loose in Bin

B - Food in Biodegradable Bags in Bin

OPTIONS FOR ORGANICS PROCESSING



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ESB Recommendation

On March 17, 2022, ESB unanimously recommended to implement a food composting system at Bayo Canyon using the windrow system and providing drop-off sites for residents and curbside collection for businesses.

Option 1: Anaerobic Digestion

Processing	Location	Residential	Commercial
Anaerobic Digestion	Bayo Canyon or Eco Station	Food n bags in YT Cart	Food in New Food Waste Container Bag-in-Cart

Option 2: In-Vessel System

Processing	Location	Residential	Commercial
In-Vessel System	Bayo Canyon or Eco Station	Drop Off Sites	Food in New Food Waste Container Bag-in-Cart

Option 3: Windrow with Residential and Commercial Collection

Processing	Location	Residential	Commercial
Windrow	Bayo Canyon	Food in bags in YT Cart	Food in New Food Waste Container Bag-in-Cart

Option 4: Windrow with Residential Drop Off Sites & Commercial Collection

Processing	Location	Residential	Commercial
Windrow	Bayo Canyon	Drop Off Sites	Food in New Food Waste Container Bag-in-Cart

Recommendation: Option 4: Windrow with Residential Drop Off Sites and Commercial Collection

Processing	Location	Residential	Commercial
Windrow	Bayo Canyon	Drop Off Sites	Food in New Food Waste Container Bag-in-Cart

Potential Cost Offsets

Estimated compost generation at 50% participation is 7,000 CY per year

Compost sales can be used to offset cost of program.	~\$70,000/yr based on \$10/cy loading fee
Hauling and tipping cost avoided for additional 2,102 tons of organics	\$108,568 at \$51.65/ton
Estimated total offsets	\$178,568/year

These can potentially offset the annual operating cost that were shown earlier

*Assumptions: Drop off sites and commercial collection

Summary

- Viable end market for yard trimmings
- Most cost-effective option
- Phase in program
- Reduces greenhouse gas emissions by removing organics from landfill
- Produces compost
- Meet citizens needs

