

2018 Organics Diversion Feasibility Study Summary

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Prepared for:
CITY OF PHILADELPHIA
DEPARTMENT OF STREETS



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Opportunities for Reclaiming/Recycling City Organics

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Laying the Groundwork for Organics Management

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- **Greenworks Philadelphia 2009-2015**
 - Organics Diversion Study ID'ed as a future initiative
- **Phila. Municipal Waste Management Plan Update 2017-2026**
 - Recycling Advisory Committee, Organics Subcommittee input
 - References to pending Organics Diversion Study
- **Philadelphia Zero Waste Program 2016**
 - Zero Waste and Litter Cabinet formed
 - 90% Reduction/Diversion Goal by 2035
- **Organics Diversion Feasibility Study 2018**

Organics Diversion Feasibility Study 2018

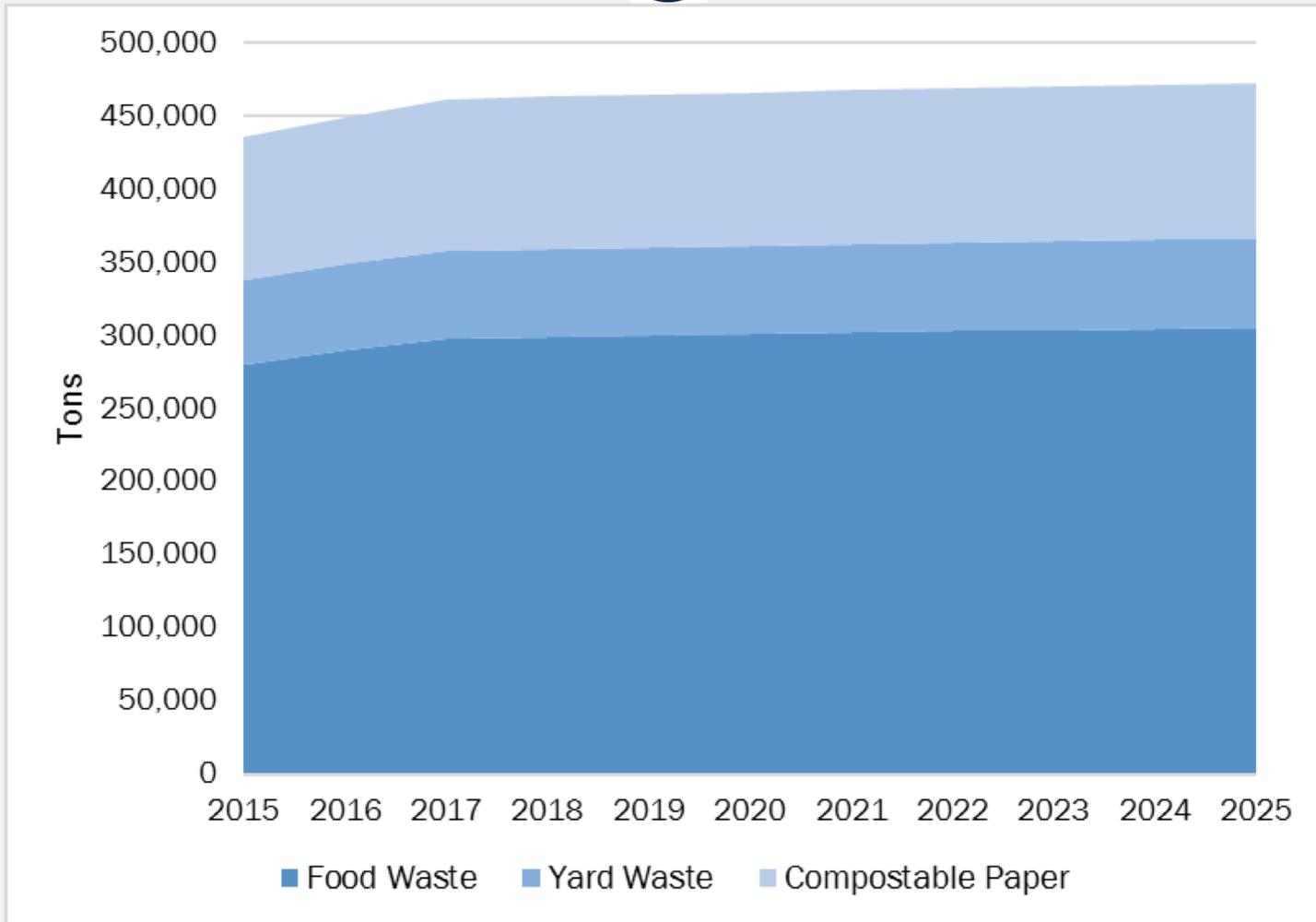
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- Data Gathering
- Waste Characterization and Organics Projections
- Regional Marketplace Assessment
- Successful Organics Program Benchmarking
- Public and Private Processing Options
- Organics Collection Options
- Strategies for Expanding Organics Diversion



Projected Organics in City Waste Stream 2015-2025

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Waste Composition and Quantities

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- 2010, 2017 Residential Disposed Waste Characterizations
 - Residential food scraps up 7% from 2010
 - Overall residential organics 30.6% (up 4% from 2010)
- Generation of Food Waste, Yard Waste, Compostable Paper
 - Residential Generators: 140,000 tons/yr (42,000 tons est. recoverable)
 - Commercial Generators: 295,000 tons/yr (62,000 tons est. recoverable)
 - Combined: 435,000 tons/yr (104,000 tons est. recoverable)

Conclusion: ~100,000 tons/yr organics processing potential need

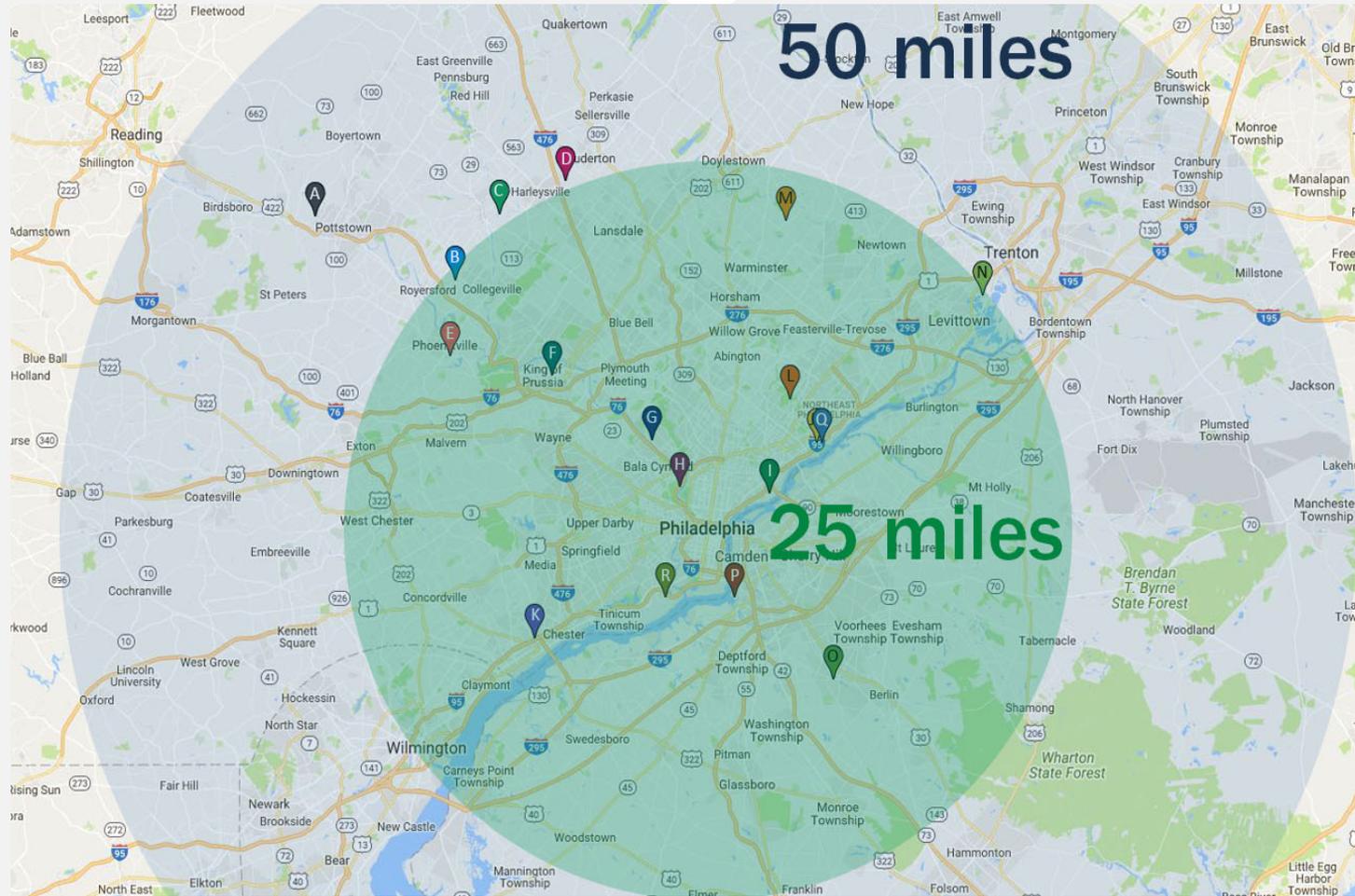
Regional Marketplace Assessment

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- **Within 25-mile distance of downtown Philadelphia**
 - 6 existing yard waste sites, limited capacity
 - 1 prison food waste composting site, limited to prison wastes
- **Within 50-mile distance**
 - 4 additional yard waste sites, limited capacity
 - 2 additional food waste/compostable paper sites w/ some capacity
- **50+ miles**
 - Hauling cost, tip fees become major considerations
- **Proposed Anaerobic Digestion (AD) facilities, future composting facility expansions within region are key to future regional capacity growth**

Potential Organics Processing Sites

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City's Organics Processing Facilities

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Fairmont Park Entrance Gate
and Scale



Dept. of Prisons Aerated Static
Pile Compost Bins



Fairmont Park Compost Pad
and Windrows



Northeast Philadelphia Maintenance
Shop Brush Processing Area

Organics Processing Options In/Near City

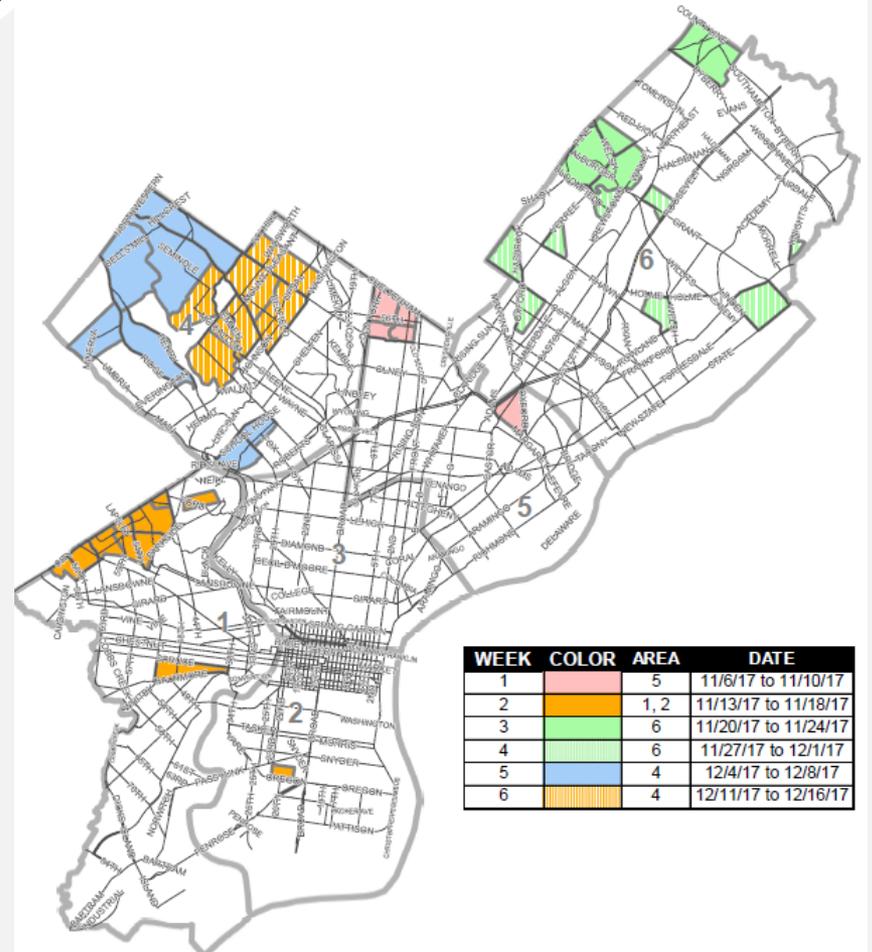
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- **Fairmont Park Organics Recycling Center:** Potential to process 4,500-9,000 tons/yr of yard waste
- **Second Parks and Recreation Site:** Potential to develop composting capacity of 9,000-18,000 tons/yr of yard waste
- **Philadelphia Prison System Compost Site:** Just expanded to ~900 tons/yr of food waste and organics
- **Philadelphia Water Department:** Investigating adding pre-processed food scraps to existing anaerobic digesters, est. 35-70,000 tons/yr food waste capacity
- Other **Anaerobic Digestion (AD)** projects in City and in NJ could add significant capacity
- **Small Scale Neighborhood Composting Projects:** Small capacity growth possible

Current City Organics Collection

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- 6-week seasonal leaf waste collection in subset of neighborhoods
- 23 drop-off sites for yard waste, open year round
- No City-provided commercial sector organics collection (private sector)



Current Organics Collection

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Leaf Collection with Rubber
Tire Loader



Leaf Vacuum



Leaf Collection with
Mechanical Sweeper Collection



Yard Waste Drop-off Site

Options to Expand Organics Collection

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- **Expand Geographic Coverage:** Expand the current leaf waste collection to entire City
- **Increase Duration of Collection Service:** Extend residential curbside collection from 6 weeks to 9 months and add grass
- **Implement Comprehensive Curbside Organics Collection:** Convert the curbside program to accept yard waste, grass, and food waste collection year-round to entire City
- **Add Commercial Organics Collection Route(s)** to capture food wastes from downtown areas

Cost of Organics Collection Options

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Residential Collection Option	Annual Tons Collected	Estimated Annual Cost (including continued Mechanical Leaf Collection)	Cost/Ton	Estimated Diversion Rate	Monthly Cost per Household
Current Mechanical Leaf Collection	1,687	\$190,161	\$113	0.4%	\$1.93
Opt. 1: Universal Leaf Collection	4,360	\$1,542,851	\$354	0.9%	\$1.74
Opt. 2: Seasonal Yard Waste Collection	28,734	\$9,738,516	\$339	6.3%	\$1.84
Opt. 3: Full Year Organics Collection	41,544	\$15,719,594	\$382	9.0%	\$2.22
Opt. 4: Downtown Commercial Collection	2,275	\$185,539	\$82	N/A	N/A

All Organics Collection Expansion Options Have Equipment, Manpower, and Cost Impacts

Transportation and Processing Cost of Current Organics Processing Facilities

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Facility	Available Capacity, tons/yr	Distance (mi.)	\$/ton Transfer Facility Fixed Cost (1)	Yard Waste Transfer and Haul		Food Waste Transfer and Haul	
				Tons/Load	Cost per Load	Tons/Load	Cost per Load
Organics Diversion LLC	15-30,000	15	n/a - Direct Haul	20.0	\$138.00	22.5	\$155.25
DCSWA Compost Farm	10,000	22	n/a - Direct Haul	20.0	\$202.40	n/a	n/a
Waste Mgm't Warner East	TBD (permitted for 20,000)	29	\$3.80	20.0	\$186.20	n/a	n/a
FCS Pottstown	20,000	43	\$3.80	20.0	\$230.80	22.5	\$259.65
FCS Easton	24,000	67	\$3.80	20.0	\$290.40	22.5	\$341.78
Veteran Compost	17,000	70	\$3.80	20.0	\$300.00	22.5	\$353.25
Prince George's Co MD MES Site	TBD (under expansion)	140	\$3.80	20.0	\$524.00	22.5	\$589.50

Recommendations

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- Improve the operations, equipment and processing capabilities of the Fairmont Park Composting Site
- Develop the NE Philadelphia Maintenance Shop Site into a windrow composting site
- Support the Public Works Department to investigate the feasibility and cost of preprocessing food waste for anaerobic digestion
- Continue to track the Organics Diversion AD project in New Jersey
- Revise the City's ordinances and regulations to encourage further organics diversion

Recommendations (continued)

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- Support private installation of kitchen sink grinders
- Longer term, expand curbside collections of yard waste, and in the future, food waste and compostable paper
- Determine the interest and processing capacity for a downtown commercial organics collection program
- Reserve space at the Philadelphia Northwest Transfer Station site for possible future addition of an organics transfer facility
- Community/Neighborhood Organics Programs should be encouraged to continue and to grow
- Support all program changes with ongoing public education

