Urban Agriculture and

Municipal & Commercial Composting

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A Blueprint Developed by the Cass Clay Food Systems Initiative

Municipal & Commercial Composting

This issue brief will provides background information related to municipal composting programs and address the common concerns and benefits from a health, environmental, social, and economic standpoint. Appendices have been provided to share how regional jurisdictions are managing their municipal composting programs as well as example policy language from other jurisdictions.

Background

Every year, about 70 billion pounds of food is wasted in the United States. Most of this food ends up in the landfill, where it decomposes and releases methane, a potent greenhouse gas, into the atmosphere.[1] One way to keep that food waste out of the landfill is to compost it. Composting is the process of decomposition of organic material, which creates a nutrient dense material. The material can be an organic additive for gardens or fields. Creating a municipality that is responsible for the pickup and control of compostable materials makes composting accessible to all people in a community.

Over seven large cities and states nationally, including Vermont, Seattle, and Portland, have commercial food waste disposal bans, meaning restaurants, hotels, hospitals, and other large organizations have to divert their food waste from the landfill into a composting facility. Connecticut was the first state to make a statewide ban, requiring that companies that produce more than two tons of food waste per week send their food waste to a composting facility.[2]

Concordia College in Moorhead, Minnesota conducted a food waste study in 2014 and found that in just a day, 220-270 pounds of food can be wasted, amounting to about 6,600 pounds (3.3 tons) of food per month.[3] This institution sees around 2,700 customers per day. The college invested in a pulper, which will enable them to send their food waste directly to a composting facility when one is available.

Food waste programs generally do not create profit, private companies like Full Circle Organics Recycling Cooperative can take over municipal composting in a community.[4] Some communities that Full Circle serves have weekly drop sites in which customers drop off their compost for a small fee or have drop sites at government buildings. In full production, they accept food waste, yard waste, and compostable plastic.[5] Cities or companies may be able to sell compost to residents or farmers or the methane produced to utility companies for energy. The economic value per ton of compost is generally around $4, according to ReFED, a collaborative organization that has created the first ever Roadmap to Reduce US Food Waste.[6]

Over 40% of Americans believe they do not have time to worry about household food waste.[7] By creating a system that makes it just as easy to compost food as it is to throw it away, households will be able to reduce their waste easily and efficiently. Resident education will need to be administered in order to teach

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[1] "Food Waste in America." (2016) Feeding America. http://www.feedingamerica.org/about-us/how-we-work/securing-meals/reducing-food-waste.html?referrer=https://www.google.com/

[2] Henricks, M. "More States Ban Organic Waste in Landfills." (2014) http://www.americanrecycler.com/0114/2428more.shtml

[3] Pierson, R., Moyers, H., Gardke, K. "Plate Waste Study Results January 2016." (2016) Concordia College.

[4] Max Milinkovich, Personal Communication. (10/28/2015)

[5] Full Circle Organics (2016) http://www.fullcircle-organics.com/

[6] "Centralized Composting" (2017). ReFED. http://www.refed.com/solutions/centralized-composting

[7] "America Wastes $160 Billion in Food Every Year But Is Too Busy to Stop." (2016) Bloomberg. http://www.bloomberg.com/news/articles/2016-07-22/america-wastes-160-billion-in-food-every-year-but-is-too-busy-to-stop

people what sorts of things can and cannot be composted. The list below describes the materials that can and cannot be composted, according to the United States Environmental Protection Agency.[8]

Table 1. What to Compost*

What to Compost	What Not to Compost and Why
Fruits and vegetables Eggshells Coffee grounds and filters Tea bags Nut shells Shredded newspaper Cardboard Paper Yard trimmings Grass clippings Houseplants Hay and straw Leaves Sawdust Wood chips Cotton and Wool Rags Dryer and vacuum cleaner lint Hair and fur Fireplace ashes	Black walnut tree leaves or twigs - Releases substances that might be harmful to plants Coal or charcoal ash - Might contain substances harmful to plants Dairy products (e.g., butter, milk, sour cream, yogurt) and eggs - Create odor problems and attract pests such as rodents and flies Diseased or insect-ridden plants - Diseases or insects might survive and be transferred back to other plants Fats, grease, lard, or oils - Create odor problems and attract pests such as rodents and flies Meat or fish bones and scraps - Create odor problems and attract pests such as rodents and flies Pet wastes (e.g., dog or cat feces, soiled cat litter) - Might contain parasites, bacteria, germs, pathogens, and viruses harmful to humans Yard trimmings treated with chemical pesticides - Might kill beneficial composting organisms

*Not a complete list; various other materials are accepted by some composting programs, including protein foods.

Table 2. Landfills servicing Cass & Clay Counties

Site Name, Location	Run by	Jurisdictions served	Tons accepted/ yr	Charge to commercial sanitation companies	Size (acres)	Space Left	Yearly Profit
Fargo City Landfill, Fargo, ND	City of Fargo	Casselton, Valley City, West Fargo of ND, and Becker County in Minnesota	220,000 (in 2014)			7.2 years**	approx. $500,000
Clay County Landfill, Hawley, MN	Clay County	All of Clay, joint project with Perham (Perham incinerator)	100 tons	$12 per compacted yd $42 per ton	182	15-20 years	Not for profit

[8] "Composting at Home." (2016) US Environmental Protection Agency. https://www.epa.gov/recycle/composting-home

**City of Fargo- Solid Waste has submitted a design permit modification to the ND Department of Health that would provide an additional 25-30 years of landfill air space.

Table 3. Composting sites in Cass & Clay Counties

Site Name	Operated by	Jurisdictions served	Tons accepted per year	Material Accepted
South Elm	City of Fargo	Fargo, West Fargo, Valley City, Casselton, Becker Co., MN	Approx. 220,000	Yard waste
Composting Site	City of Moorhead	All of Clay County	Approx. 3,000 tons/yr	Yard waste
Yard Waste Program	City of Dilworth/ Fuchs Sanitation Maintains	Dilworth		Yard waste

Table 4. Sanitation companies servicing Cass & Clay Counties

Company Name	Contact Information	Jurisdictions served	Cost for trash pickup
City of Fargo	(701) 241-1449	Fargo	$6-14/ month, depending on size of bin
City of West Fargo	(701) 433-5400	West Fargo	$13/month
Ken's Sanitation	(218) 236-7940	Fargo, Moorhead	
Valley Disposal	(701) 277-0760	West Fargo	
Waste Management	(888) 275-1401	All	
Fuch's	(218) 498-2875	Hawley, Perley, Hendrum, Halstad, Hitteral, Shelly, Twin Valley, Ulen, Dillworth, Glydon	
Clay County Sanitations	218-299-5079	Moorhead	$6/cubic yd (non-compacted) $12/cubic yd (compacted)

Table 5. Framework for evaluating municipal composting program

DOMAIN	BENEFIT	CONCERN
Health	Contains macro and micronutrients often absent in synthetic fertilizers[9] Improves the overall air quality	Pathogens can be present in compost that contains manure*
Environment	Releases nutrients slowly[10] Compost-enriched soil retains nutrients better meaning less runoff to pollute waterways[11] Buffers the soil which brings pH levels to the optimum range for nutrient availability to plants Adding compost to soil makes it easier to work Compost-enriched soil contains beneficial insects, worms, and other organisms that burrow through soil keeping it well aerated May suppress diseases and harmful pests that could overrun poor, lifeless soil Encourages healthy root systems Can reduce need for chemical pesticides Preserves higher air quality by reducing the amount of methane gas released by landfills Reduces the amount of waste in landfills Reduces the effects of greenhouse gases by keeping waste out of landfills	Possible regrowth of pathogens in composted material Beneficial microbes in compost and other decomposing organic matter can activate certain disease-resistance systems in plant
Social	Offers an opportunity for closer cooperation between urban and rural communities in improving the area's economy Many commercial compost plant operators have found a profitable market among truck gardeners, nurseries, and landscaping operation Helps to raise awareness about the amount of food waste produced at residential, institutional and commercial levels[12]	Odor Appearance Possible effects on nearby property and property value if compost pile is not managed properly

[9] Pathogens and Public Health Concerns with Composting. Vermont State Website. http://www.anr.state.vt.us/dec/wastediv/compost/00Summerpdf/Pathogens45.pdf

[10] LaMeaux, E. "7 Benefits of Composting: How you can help the world with composting." (2014.) http://life.gaiam.com/article/7-benefits-composting

[11] Group, Edward. "10 Reasons to Start Composting." (2011.) Global Healing Center. http://www.globalhealingcenter.com/natural-health/10-reasons-to-start-composting/

Economic	Reduces amount of material going to landfill, reducing the cost of the landfill to the consumer Compost can be sold by the municipality to homeowners or farmers[13][14]	Jurisdiction cost of administering the composting system or monitoring and addressing issues

***** The state of Minnesota requires compost to be tested for contaminants (Arsenic, Cadmium, Copper, Lead, etc.) before it is sold. Compost cannot be sold if the concentration of these contaminants exceeds a predetermined amount (mg/kg).[15]

Types of Composting Programs:

Seattle[16]

- Population: 652,405 (as of 2013)
- Curbside pickup and drop-off locations for compost available and required for residents and businesses
- Unlike in other cities, food and yard waste can be placed in the same cart, making it much easier for residents
- Seattle contracts with two companies to haul the material and two other companies to compost the material.
- Residents pay a fee based on the size of the cart. In combination with garbage fees, these fees cover the cost of composting. Prices and sizes are listed below:
    - 13-gallon: $5.45/month
    - 32-gallon: $8.20/month
    - 96-gallon: $10.50/month

Portland[17]

- Population: 609,456 (as of 2013)
- Curbside pickup and drop-off locations for compost available to residents and businesses
- Portland's composting program is part of the national Curbside Pickup Programs in which a number of communities throughout the United States have implemented composting programs with a curbside pickup option. Curbside pickup with a single bin is easiest for residents.
- Residents pay a fee based on the size of the container, in combination with garbage and recycling fees. There is no additional cost for the compost container. Prices and sizes are listed below:
    - 20-gallon: $24.50

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[12] Ek, Cecilia. Social and Economical Benefits of Mid-Scale On-Site Composting for Residential, Institutional, and Commercial Sectors. http://compostingcouncil.org/admin/wp-content/uploads/2011/11/Cecilia_EK.pdf

[13] Compost Fundamentals: Compost Benefits. Washington State University. http://whatcom.wsu.edu/ag/compost/fundamentals/benefits_benefits.htm

[14] Compost Fundamentals: Economic Aspects. Washington State University. http://whatcom.wsu.edu/ag/compost/fundamentals/benefits_economic.htm

[15] Minnesota Administrative Rules. (2015) The Office of the Revisor of Statutes, State of Minnesota. https://www.revisor.mn.gov/rules/?id=7035.2836

[16] Rates - Food and Yard Waste Cart. (2016) Seattle Public Utilities. http://www.seattle.gov/util/MyServices/FoodYard/HouseResidents/Rates/index.htm

[17] Standard Rates for Residential Garbage, Recycling, and Composting Service. (2016) The City of Portland, Oregon. https://www.portlandoregon.gov/bps/article/492501

    - 35-gallon: $29.15
    - 60-gallon: $35.00
    - 90-gallon: $41.50

Minneapolis[18]

- Population: 400,070 (as of 2013)
- 40% of residents have signed up for the program, the most of any voluntary program nationally
- Curbside pickup and drop-off options for compost
- After one year, the city report a 38% decrease in tons of garbage. The program is extremely popular among residents and businesses
- The initial roll-out of the program cost $800,000 and involved a switch to biweekly garbage pickup. Implementation of the program was paid for via an enterprise fund. The city owns and operates a transfer station and has contracts in place with two composting sites.
- Compost pickup is included in the garbage and recycling fees for the city.

Resources

Portland Composts! - Portland, Oregon Composting Service: https://www.portlandoregon.gov/bps/article/402972

Minneapolis, Minnesota Composting Service: http://www.ci.minneapolis.mn.us/solid-waste/organics/index.htm

Seattle, Washington Public Utilities Compost Service: http://www.seattle.gov/util/MyServices/FoodYard/HouseResidents/WhatsAccepted/index.htm

If you have questions, please contact Kim Lipetzky with the Fargo Cass Public Health Office at 701-241-8195 or klipetzky@cityoffargo.com.

[18] Residential Organics Recycling. (2016) City of Minneapolis. http://www.ci.minneapolis.mn.us/solid-waste/organics/index.htm

Appendix A: Compost Management in Regional Jurisdictions

Bismarck, ND
No municipal food waste program, only yard waste composting.

Duluth, MN
City has a regional center that manages organic waste drop-off site for community members and requires by ordinance that hospitals, grocery stores, restaurants and other institutions to compost their food waste (see Appendix B).

Grand Forks, ND
No municipal food waste program, only yard waste composting.

Lincoln, NE
No municipal food waste program, only yard waste composting.

Mankato, MN
Full Circle Organics has a drop site. Residents can purchase a $25 yearly permit to drop off food waste and compostable material.

Rochester, MN
The county (Olmsted) runs an outdoor compost site. The site accepts garden waste, grass and leaves, and sells the finished compost product at $0.50 per five gallon container.

Sioux Falls, SD
The city composts yard waste at their local landfill. The state of South Dakota requires a feasibility study to determine if an additional permit is required to compost food waste.

Appendix B: Municipal Composting Example Ordinances

Duluth, MN

SECTION 4.10 ORGANIC WASTE RECOVERY

4.10.1 Recovery

Every Person identified herein shall recover Organic Waste by removing it from the solid waste stream and segregating it for separate collection by a Recovery Service. All wrapping or packaging on the waste shall be removed prior to recovery of the waste. The Organic Waste shall be placed in a Container. The District may establish requirements for Containers for Organic Waste. Recovery of Organic Waste shall be in accordance with the requirements of this Ordinance.

A. Pre-Consumer Organic Waste. The owners and operators of the following described commercial establishments located within the District shall separate Pre-Consumer Organic Waste for recovery:

1. Grocery Stores or commercial establishments with grocery departments that occupy 5,000 square feet or more of Floor Area.
2. A Restaurant or Catering Business which is issued a medium or large Food Handling License by the Minnesota Department of Health.
3. Post Secondary institutions with enrollment of more than 1,000 full time students which provide meals prepared on-site for students.
4. Hospital or Nursing Home providing prepared meals to employees, patients, guests, or residents.
5. A food manufacturer or processor that occupies 5,000 square feet or more of Floor Area.
6. An Assisted Living Facility.
7. A Correctional Facility.

B. Other Commercial establishments. The District may designate other commercial establishments to separate Pre-Consumer Organic Waste or other Organic Waste for recovery. Such a designation may be established by Board resolution and shall be effective upon publication once in a newspaper having general circulation in the District.

C. Industrial Organic Waste. No Person shall deposit Industrial Organic Waste in the solid waste stream without prior approval of the Executive Director.

D. Effective Date. The effective date(s) for this subsection shall be determined by subsequent board resolution(s), and shall be effective upon publication once in a newspaper having general circulation in the District.

4.10.2 Voluntary Participation

Any Person can voluntarily recover Organic Waste at an earlier date than is required by this Ordinance.

4.10.3 Prohibition

No Person other than the licensed Recovery Service which provides services to the particular structure shall collect or gather Organic Waste at the particular structure.

4.10.4 Limitation on Disposal and Co-Mingling

Source-separated Organic Waste shall not be deposited in the solid waste stream. The Executive Director in his or her sole discretion may waive this prohibition on a case by case basis for good cause. Organic Waste that has been source-separated must not be contaminated or co-mingled by the Collector in a manner which would make the Organic Waste unusable by the Recovery Facility. Restaurants and Catering Businesses required to separate Organic Waste for recovery shall post signage in a visible location in the food preparation areas. The signage will be provided by the District.

4.10.5 Recovery Service

For the health, safety, and welfare of the residents of the District, the following requirements applicable to the removal and disposal of all Organic Waste are established:

A. License required. No Person shall collect or remove Organic Waste within the District without first obtaining a Recovery Service license from the District. The process for obtaining a license is set forth in Sections 6.2.1, 6.2.2, 6.2.4–6.2.8. At a minimum, the Recovery Service must meet the following standards:

1. Transport the Organic Waste in a leak-proof container or vehicle and in a manner that prevents the release of liquids.
2. Provide a letter of certification signed by the applicant verifying that the vehicle(s) to be utilized for collection conform to the requirements of the District.
3. Provide a certificate(s) of an insurance company authorized to do business in the State of Minnesota certifying that the applicant has in full force and effect a policy or policies of insurance insuring the applicant,

its agents and employees, and its vehicle(s) in an amount of not less than One Hundred Thousand Dollars ($100,000) for bodily injuries to any one person, not less than Two Hundred Fifty Thousand Dollars ($250,000) for bodily injuries in any one accident, and not less than Fifty Thousand Dollars ($50,000) for property damage in any one accident. Such insurance shall not be subject to cancellation or modification without fifteen (15) days advance written notice to the licensing authority.

4. The applicant shall maintain such vehicles in good repair and shall comply with all laws, rules and regulations applicable to such vehicles.
5. All such vehicles shall display identification numbers and in a color which contrasts with the color of the vehicle, on the sides and rear thereof.
6. Assure that the Organic Waste is transported to a Recovery Facility.
7. Comply with the all District regulations, ordinances and the Solid Waste Management Plan.
8. In order to minimize contamination of waste streams, a Collector shall on Containers of Organic Waste clearly display the label “food waste only” on the Container. The markings shall be legible from a reasonable distance and be displayed in a manner and location obvious to people using the Container.
9. Organic Waste Containers shall be maintained in a manner to reasonably prevent excessive odor.

A Recovery Service license must contain the limitation that the license may be revoked at any time for violation of District regulations and ordinances.

B. Any licensed solid waste Collector may provide Recovery Service, if the Collector meets all of the Recovery Service requirements. This provision is not intended to limit licenses to collect and transport Organic Waste to solid waste Collectors, or to require all solid waste Collectors to provide Recovery Service.

C. Continuing obligations. All Persons providing Recovery Service, in addition to any other requirements contained in this Ordinance or other District ordinance or regulation, shall assure that Organic Waste separated by the generator shall not be placed in the solid waste stream.

D. Reports. Each Recovery Service shall provide all reports required under Section 4.10.7.

E. Collection Frequency. A Recovery Service must collect recovered Organic Waste on a frequency of not less than once a week, except that during the months of November through March, the frequency can be extended to every other week.

4.10.6 Executive Director Discretion

A. Any person required to recover Organic Waste may petition the Executive Director to suspend the provisions of this Ordinance if the petitioner demonstrates Recovery Service is not available to the petitioner. The Executive Director may impose conditions, such as a limitation of time, on the suspension as the Executive Director determines in his or her sole discretion. At any time during a suspension, the Executive Director may determine that Recovery Service is available to the petitioner and notify the petitioner in writing that the suspension is terminated.

B. The Executive Director may, in his or her sole discretion, determine that a particular load of Organic Waste separated for Recovery, or a particular load of Industrial Organic Waste, be accepted at the Transfer Station for disposal due to contamination, rejection of the waste by all available Recovery Facilities or such other reasons which the Executive Director finds reasonable.

C. The Executive Director may, in his or her sole discretion, may on good cause shown by an applicant vary the terms of this Ordinance as applied to a particular applicant. Any application for a variance must be in writing and set forth in detail the reasons in support of granting the variance.

4.10.7 Reports

Each Collector and Recovery Facility which collects or manages Organic Waste for beneficial reuse shall submit such reports to the District as the Executive Director determines are necessary. Failure to provide timely complete reports is grounds for suspension or termination of a license.

4.10.8 Enforcement and Inspection

A. Inspection and evaluation of Containers and Recovery Service providers shall be made by the District in such frequency as to ensure consistent compliance by owners, occupants, and Recovery Service providers with provisions of this Ordinance. Each owner, occupant or Recovery Service provider shall be required to allow free access to authorized representatives of the District, or to authorize representatives of any other governmental agency at any time for the purpose of making such inspections as may be necessary to determine compliance with the requirements of this Ordinance, or any other applicable statute, ordinance or regulation.

B. The District shall have the right to inspect private property to determine if a Recovery Service provider or Container is in compliance with the provisions of this Ordinance.

C. Suspension and revocation of a license shall follow the same procedure as set forth in Section 3.5.

4.10.9 Exclusion

A. Quick-serve food service establishments that offer as the primary method of service, at all meal times, food and drink orders taken at and served to the customer at a self-service counter are excluded from the requirements in Section 4.10.1. A and B.

B. Nothing in this Ordinance shall preclude a food establishment from donating to a food bank, shelter or Second Harvest left over or unsold food that is safe for human consumption.

Appendix C: Composting Educational Material

THREE SIMPLE STEPS FOR FOOD SCRAP COLLECTION[19]

1. Place your kitchen compost container in a convenient location in your kitchen. You can line your container with approved liners.
2. Include the food! Collect food scraps while preparing meals, scraping plates and cleaning the fridge of leftovers - every little bit counts.
3. Empty your kitchen container, including the liner, into your green Portland Composts! roll cart as frequently as you like. Place your green roll cart out for weekly pickup.

YES — put these items in your green compost roll cart

Food Scraps:

- meat, poultry, fish, shellfish, bones
- eggs and eggshells, cheese, dairy products
- bread, baked goods, pasta, rice, beans, nuts, seeds
- coffee grounds, filters, tea bags
- vegetables and fruit
- paper napkins and paper towels
- pizza delivery boxes
- table scraps, plate scrapings, leftovers, spoiled food

Yard Scraps:

- weeds, leaves, vines, grass
- small branches (less than 4 in thick and 36 in long)
- flowers
- house plants
- plant clippings

NO – keep these items out of your compost roll cart

- plastic and produce bags
- non-approved compostable plastic bags
- compostable plastic takeout containers and utensils
- paper plates, cups and cartons
- coffee cups
- fast food wrappers, packaging, takeout containers and waxed paper
- facial tissue
- pet waste

[19] Portland Composts! https://www.portlandoregon.gov/bps/article/402972

- cat litter
- animal bedding (including straw and chicken manure)
- animal carcasses from hunting and fishing waste
- large amounts of grease, cooking oil and liquid
- fireplace ashes
- dirt, rocks, sod
- lumber, treated wood, sawdust, stumps
- large branches (more than 4 in thick or 36 in long)
- Styrofoam™, metal and glass
- corks
- diapers (including those labelled "compostable" or "biodegradable")
- textiles, clothing, linens, shoes
- household garbage