## Olmsted County

# Capturing Value from Food Waste





Delivering sustainable resource management solutions for the community

## Olmsted County Solid Waste Goals

### Fiscal Responsibility and Fairness

- No property taxes
- 100% user fees
- Volume based fees
  - the more you "throw away" the more you pay
- Handle our waste in our own back yard (keep control of the wastes) and above ground

### Limit Future Liability

- Waste does not transfer title
  - generator of the waste is responsible for future harm caused by wast
- In our system the generator of the waste pays for the proper management
- Avoid future liability for environmental damage

### Sustainability

 Pivot the view from "waste" to "resource" to add value to the local economy and the environment









**Waste Reduction & Education** 



**Hazardous Waste Facility** 

**Integrated Solid Waste** 

**Management System** 



Recycling Center Plus



Kalmar Landfill



Waste-to-Energy Facility



**Compost Site** 





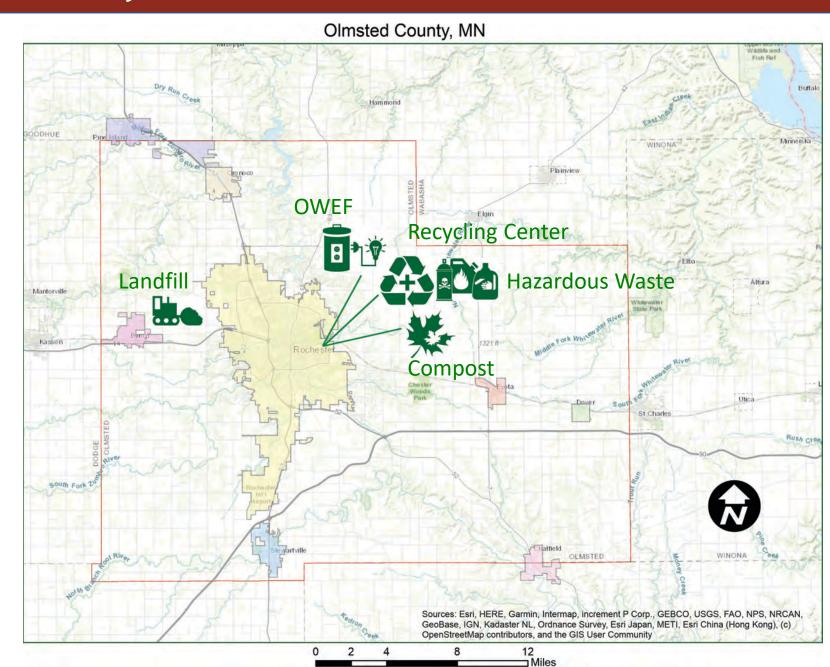


### Minnesota's waste hierarchy

Most Reduction preferred environmental Reuse option Recycling Composting Waste to energy Least preferred environmental Landfilling option



### **Solid Waste Facility Locations**





### **Olmsted County Hazardous Waste Facility**



**Reducing Risk to Human Health & Environment** 





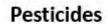






### Why Hazardous Waste Program is important?

Environmental - Toxicity reduction program









- Prevents Hazardous Materials from entering the municipal solid waste stream
  - protects other solid waste facilities Compliance (Hg emissions) and Safety (fires)



Manages 300 tons of material each year

**20,000** customers









### Olmsted County Recycling Center Plus





Provide a self-haul option for Garbage and Special Wastes







- Ships 3,000 tons of recyclables each year
- 70,000 customers

### Olmsted Waste-to-Energy Facility (OWEF)

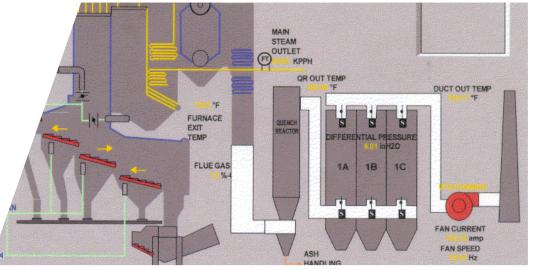


- **▶** Opened in 1987 & Expanded in 2010 (Process 400 tons per day)
- **➤** Converts garbage into locally renewable steam & electricity
- ➤ Reduces landfill waste by 90%
- **▶** 9 MW electrical capacity
- ➤ Sells energy as steam & electricity to 27 buildings on the District Energy System (DES)
- ➤ Processes 115,000 tons annually



- Waste is burned at about 2000°F
- Advanced combustion controls (fuel/air mix)
- All flue gases are contained and passed through heat recovery boiler
- All flue gases cleaned in Air Pollution Control (APC) system







Solid Waste Management Division

### **Yard Waste Composting Site**









**Compost Product** 

### Compost



- Manage 15,000 cubic yards of feedstock annually
- Distribute 8,300 cubic yards of compost



### **Kalmar Landfill**







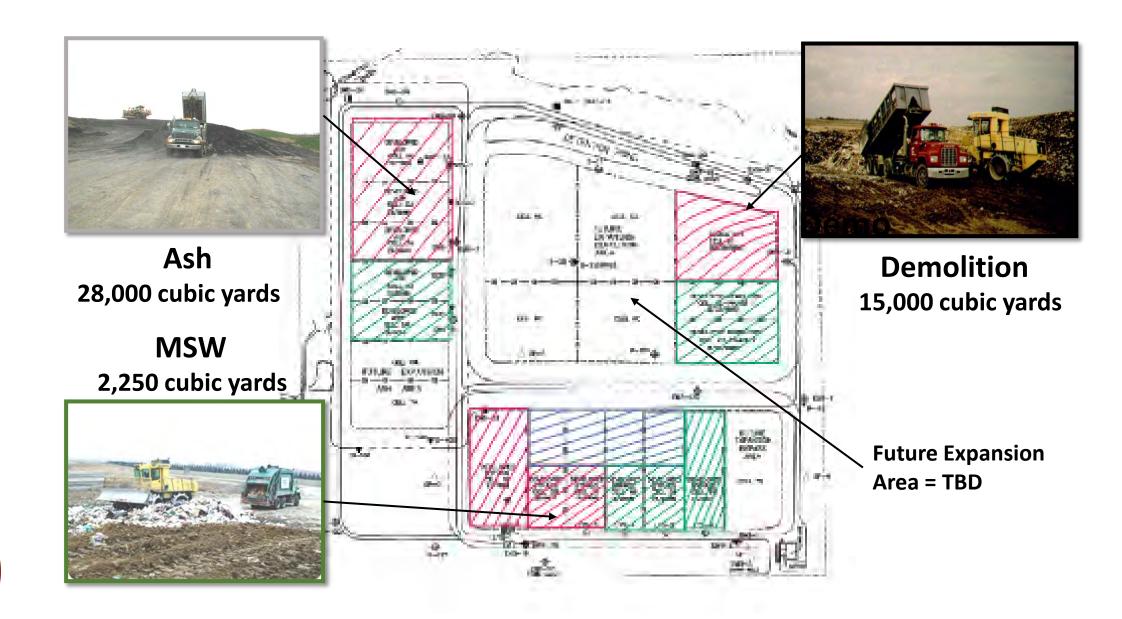


MSW (Garbage)



**Demolition** 

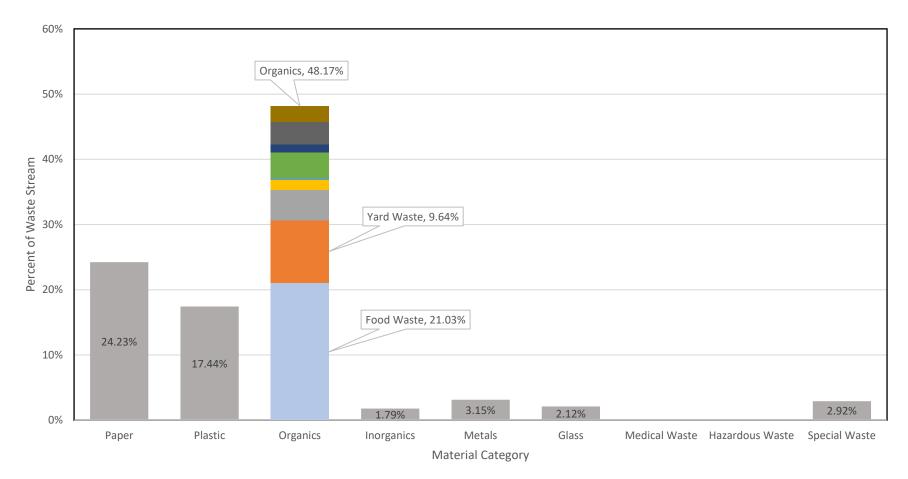






### 2019 WASTE CHARACTERIZATION STUDY

❖ Food Waste is the largest proportion of our trash - comprising over 21 percent of the trash by weight









### LANDFILLING

### Landfilling Food Waste

- Decomposes Releasing Methane
- CH4 20+ times more Potent than CO2
- Takes Up Valuable Landfill Space
- Hinders Recovery of Nutrients
- Loss of Valuable Chemical Compounds







Source: MPCA



### **RESOURCE RECOVERY**

### Food Waste is not an ideal fuel for Resource Recovery

- High Moisture Content
- Low Heat Value
- Hinders Recovery of Nutrients
- Loss of Valuable Chemical Compounds





Source: MPCA



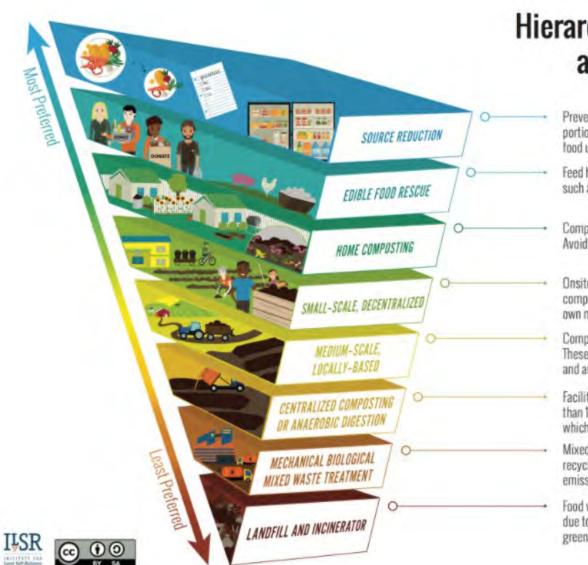


### Food Waste Facts



#### EPA Food Waste Estimates

- Over 76 billion pounds per year of food waste reaches landfills and wasteto-energy facilities
- 30-40% of all available food available in the U.S. is wasted
- 22% of municipal solid waste (MSW) is discarded food material
- Across the globe, food loss and waste combined carbon footprint of 4.4 billion metric tons of CO2 equivalent
- Landfills are the 3<sup>rd</sup> largest source of human-related methane emissions
- 31% of food loss at retail and consumer level





Prevention. Do not generate food waste in the first place! Reduce portions, buy what you need, and organize your fridge for optimal food usage.

Feed hungry people. Divert food not suitable for people to animals such as backyard chickens or to local farmers' livestock.

Composting in backyards or in homes. Avoid collection costs!

Onsite composting or anaerobic digestion, and community composters can accept material from off-site or simply process their own material.

Composting or anaerobic digestion at the small town or farm scale. These systems handle typically between 10 and 100 tons per week and are designed to serve small geographic areas.

Facilities serving large geographic areas that typically handle more than 100 tons per week. Material generally leaves the community in which it is generated.

Mixed garbage is mechanically and biologically processed to recover recyclables and reduce waste volume and the potential for methane emissions before landfill disposal.

Food waste should be banned from landfills and trash incinerators due to their high capital costs, pollution, and contribution to greenhouse gas emissions.



#### Food Waste Prevention

#### Optimize the Harvest

- Estimated 17 million tons of surplus produce generated at the farm level
- Avoiding what is grown to what is harvested avoiding overproduction and harvesting as much as possible

#### Enhance Production Distribution

- Use technology to produce food where it is sold
- Transportation and supply chain efficiency

#### Maximize Product Utilization

- Design facilities, operations, and menus that use as much product as possible and minimize losses
- Transportation and supply chain efficiency

#### Reshape Consumer Environments

- Drive consumers toward better food management and less waste
- USDA Food Keeper app FoodKeeper App | FoodSafety.gov











#### Strengthen Food Rescue

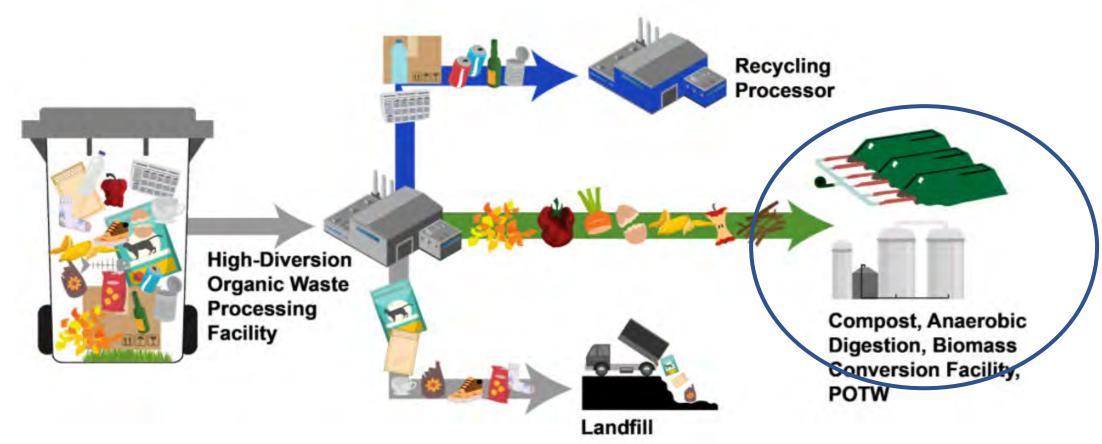
- Only 3% of surplus food ends up being donated
  - Increase coordination and capacity of food relief agency
  - Address distribution bottlenecks and improve interagency communication

#### • Recycle Anything Remaining

- Capture the nutrients, energy or residual value of the material
  - Food to Animals
  - Composting
  - Anaerobic Digestion
  - Co-Anaerobic Digestion









 Composting Site Not require an MPCA solid waste permit since each site is purposely intended not to exceed the 120 cubic yard minimum of material stored at any one location at any time as stated in Minn. Rules 7035.





Johnson-Su Bioractor





SOUTH METRO

### Shakopee residents at odds with Mdewakanton Sioux over smelly compost facility

The tribe's compost facility is one of only two in the metro area.

By Erin Adler Star Tribune

MARCH 26, 2019 - 10:03PM



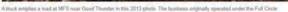
DAVID JOLES - STAR TRIBUNE

The Shakopee Mdewakanton Sioux Community opened the SMSC Organics Recycling Facility (ORF) in the fall of 2011.

# Free Press

### Compost Site had been dealing with MPCA issues







TRENDING RECIPES



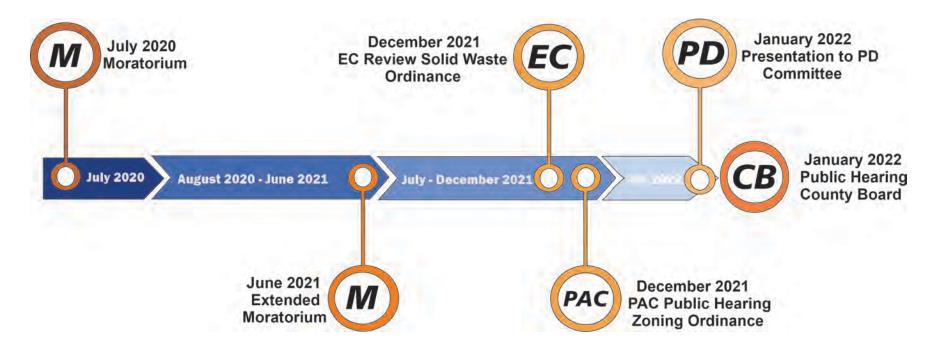
### **SOURCE-SEPERATED ORGANIC MATERIAL**





### Moratorium on Commercial Sites

- Moratorium on Commercial Composting Sites Began July 7, 2020
- Opportunity to study potential controls relating to the placement, operations, transport, and collection of the waste stream





### **SUMMARY OF CHANGES - DEFINITIONS**



3502.03 "Anaerobic Digestion" – means the process during which microorganisms break down Organic Material in the absence of oxygen in an enclosed vessel to produce energy and beneficial soil or agricultural supplements.

3502.06 "Collection Container" - Means the receptacle that is provided, designated, and serviced by the Commercial Hauler for the Collection of any Solid Waste including but not limited to bags, barrels, carts, dumpsters, roll-off containers, or compactors.





3502.07 "Compost" means the product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat during the composting process and stabilized to the point that it is beneficial to plant growth and can be used as a soil amendment without further processing.



3502.10 "Curbside Collection" means a Mixed Municipal Solid Waste, Yard Waste, Source Separated Organic Materials and/or Recyclable Materials Collection system whereby the Generators set waste containers at the curb adjacent to a roadway or, where this is not practical, in locations easily accessible for Collection by a Commercial Hauler.



### **SUMMARY OF CHANGES - DEFINITIONS**

3502.38 "Putrescible Materials" means waste that rapidly decomposes, which may give rise to objectionable odors and/or are capable of attracting or providing a food source for birds and potential disease vectors such as rodents.

3502.49 "Small Commercial Compost Facility" means a site that is less than 120 cubic yards in size and accepts Source-Separated Compostable Materials not generated on-site for processing into compost.









### **SUMMARY OF CHANGES - DEFINITIONS**

3502.53. "Source-Separated Organic Materials" means materials that:

- 1. are separated at the source by waste generators for the purpose of composting, anaerobic digestion or food to animals;
- 2. are collected separately from mixed municipal solid waste, and are governed by the licensing provisions of this ordinance;











### **SUMMARY OF CHANGES – HAULER LICENSING**

**3504.02, Subs. 1**: In Olmsted County, there are two classes of Solid Waste Commercial Hauler Licenses: Class A and Class B.

A Class A License is required in Olmsted County for Commercial Haulers to provide Hauler Services for Mixed Municipal Solid Waste, Industrial Waste, Recyclable Materials, Source-Separated Organic Materials, Construction Debris, Demolition Debris, and/or Infectious Waste. The County limits the number of Class A Licenses as described in the Subd. 2 below.

A Class B License is required in Olmsted County for Commercial Haulers to provide Collection and transportation of Source Separated Organic Materials only. The County does not limit the number of Class B Licenses. [License Fees]











### **SUMMARY OF CHANGES – STORAGE**





**Organic Materials from the Mixed Municipal Solid Waste Stream.** Yard Waste Recyclable Materials and Source Separated Organic Materials, as defined in this Ordinance, shall be excluded from Mixed Municipal Solid Waste.

#### 3505.02. Storage

When aggregated by a Generator for Collection by a Commercial Hauler, Yard Waste, Recyclable Materials, and Source Separated Organic Materials shall be placed in storage containers that are easily distinguishable from Mixed Municipal Solid Waste storage containers. Once said materials have been source-separated, they shall not be recombined with Mixed Municipal Solid Waste for any reason.

**Subs.1. & Subs. 2 Residential Sites and Commercial Sites.** All residential and commercial sites shall be maintained and kept in a reasonably clean and neat

condition.



### **SUMMARY OF CHANGES – COLLECTION**

**3505.03, Subs.3. Collection Frequency.** Solid Waste aggregated for Collection must, be collected regularly to preclude the development of odor, vector, vermin, and other Public Health Nuisance problems. Collection containers with Putrescible Materials must be collected, at a minimum, once per week.









### **SUMMARY OF CHANGES – FACILITY PERMITTING**

#### **3506.02. Source Separated Compostable Materials.**

**Subs. 2. Permitted Compost Sites.** Permitted Compost Site is a site that accepts Source-Separated Compostable Materials not generated on-site for processing into compost. Source-Separated Compostable Material sites located in Olmsted County, excluding Backyard compost sites, shall comply with the following Minnesota Pollution Control Agency Rules and amendments that may be adopted from time to time. Sites shall obtain a facility permit (Minnesota Rules, Part 7001.3375), provide notification (Minnesota Rules Part 7001.3410), and maintain operational compliance (Minnesota Rules Part 7035.2836 subparts 2 and 3). Yard Waste shall be separated from its container(s) at the time of delivery by the Person making the delivery. Commercial small-scale composting facilities under 120 cubic yards in size, that are not required to be permitted by the State of Minnesota shall obtain necessary permits as required by Olmsted County.









### **SUMMARY OF CHANGES – FACILITY PERMITTING**

A Small Commercial Compost Facility includes compost processing operations

which are greater than 4 cubic yards but less than 120 cubic yards.

- Initial Application
  - **☐** Application Fee
  - ☐ Site Plan
  - ☐ Stormwater Management Plan
  - **☐** Operations Plan
  - ☐ Odor Response Management Plan
  - ☐ Financial Assurance
  - **☐** Proof of Insurance
- Annual Permit
  - **□** Reporting
  - **☐** Permit Fee





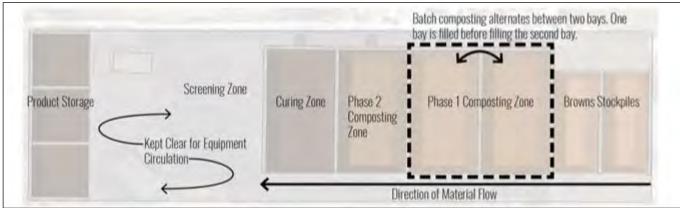


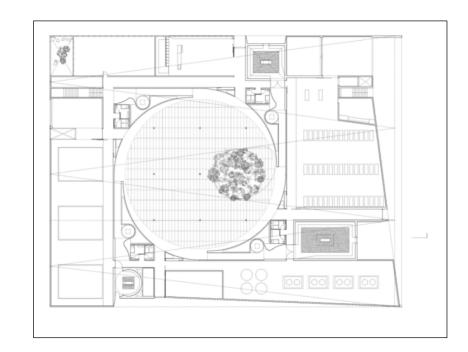


#### **SUMMARY OF CHANGES – FACILITY PERMITTING**

#### **Olmsted County Responsibilities**

- ☐ Zoning Siting Approval (Planning Advisory Commission)
- **☐** Review/Approve Application
- ☐ Issue Annual Permit
- **□** On-Site Inspections
- **☐** Review Annual Reports







#### **SUMMARY OF CHANGES – BACKYARD COMPOSTING**

3503.04 "Compost, Backyard Site" means a site used to compost vegetative food scraps, garden wastes, weeds, lawn cuttings, leaves and prunings. by an owner occupant, or lessee of a property. These sites do not exceed 5 feet x 5 feet square and a maximum height of 5 feet tall (or 4.6 Cubic Yards). Any finished compost produced shall be used on site and not transported off site or offered for sale.

Backyard compost sites shall be exempt from permitting requirements in 3506.02 Subsection 2 of this ordinance. Backyard compost sites shall not create a public nuisance or any conditions that adversely affect the environment or public health. Operations at the site shall not violate state or local laws, ordinances, rules, or regulations.









#### **SUMMARY OF CHANGES – ANIMAL FEED**

Subs.3. Source-Separated Animal Feed Sites. A Source-Separated Animal Feed site is a site that accepts Source-Separated Animal Feed. This includes Food-to-Livestock feeding programs and Food-to-Animal Feed Processing. Any Person who engages in commercial manufacturing or distribution of Source Separated Animal Feed must comply with the Minnesota Department of Agriculture Rules 1510.1930 to 1510.2230, 1510.2500 to 1510.2595 and Minnesota Statutes 25.341 to 25.39.



due to their high capital costs, pollution, and contribution to

Any Person who engages in transportation or feeding Source Separated Animal Feed to animals must comply with Minnesota Statutes 35.751 and 35.76.





#### Hierarchy to Reduce Food Waste and Grow Community Prevention. Do not generate food waste in the first place! Reduce portions, buy what you need, and organize your fridge for optimal Feed hungry people. Divert food not suitable for people to animals such as backyard chickens or to local farmers' livestock Composting in backyards or in homes Avoid collection costs! Unsite composting or anaerobic digestion, and community composters can accept material from off-site or simply process their Composting or anaerobic digestion at the small town or farm scale. These systems handle typically between 10 and 100 tons per week and are designed to serve small geographic areas. Facilities serving large geographic areas that typically handle more than 100 tons per week. Material generally leaves the community in Mixed garbage is mechanically and biologically processed to recover recyclables and reduce waste volume and the potential for methane and waste should be banned from landfills and trash incinerators



#### **SUMMARY OF CHANGES – AGRICULTURE EXEMPTION**

#### **Subs. 4 Prohibited Materials at Small Commercial Compost Facilities.**

Small Commercial Compost Facilities shall not accept the following materials: Mixed Municipal Solid Waste, Industrial Solid Waste human and pet feces, diapers, sanitary products, noxious weeds (as defined by the Minnesota Department of Agriculture and Minnesota Statute 18.77 Subd. 8), and badly diseased or insect-infested plants. Composting of animal carcasses is not allowed except as authorized by the Minnesota Board of Animal Health (BAH) and Minnesota statute 35.815, and MN Rule 1721). However, this ordinance is not intended to apply to the composting of animal carcasses in engaged in farming operation as defined in Minnesota Statutes Section 500.24 Subd. 2(a), or a zoo accredited by the Zoological Association of America.









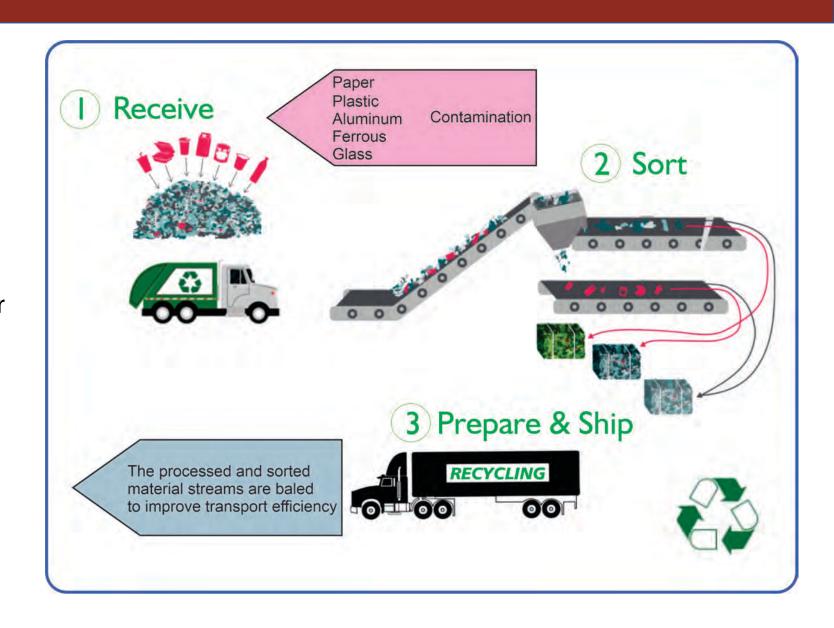
### Olmsted County MRF





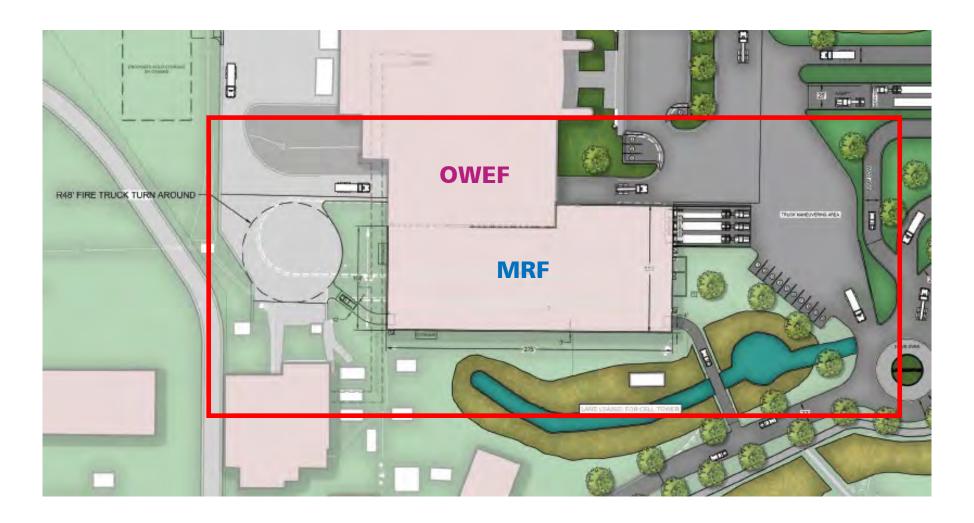
A materials recovery facility (MRF) is a specialized plant that:

- 1. Receives,
- 2. Sorts, and
- Prepares recyclable materials for regional brokers or mills to be made into new products





### MRF Facility and OWEF Campus





### Capturing New Opportunities







#### **Current System**







Waste-to-Energy Landfill



Twin Cities MRF





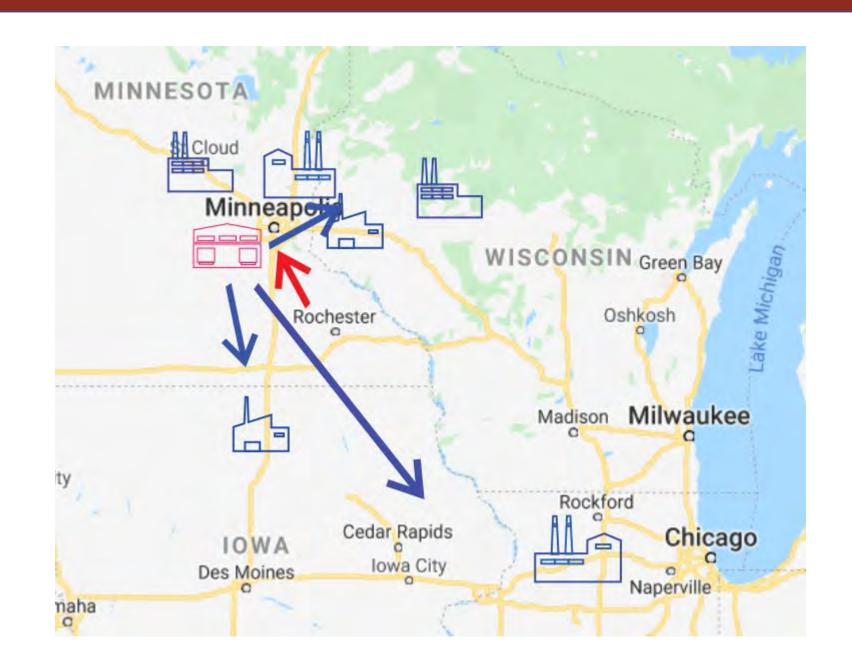
#### **SINGLE STREAM RECYCLING & TRASH COLLECTION**





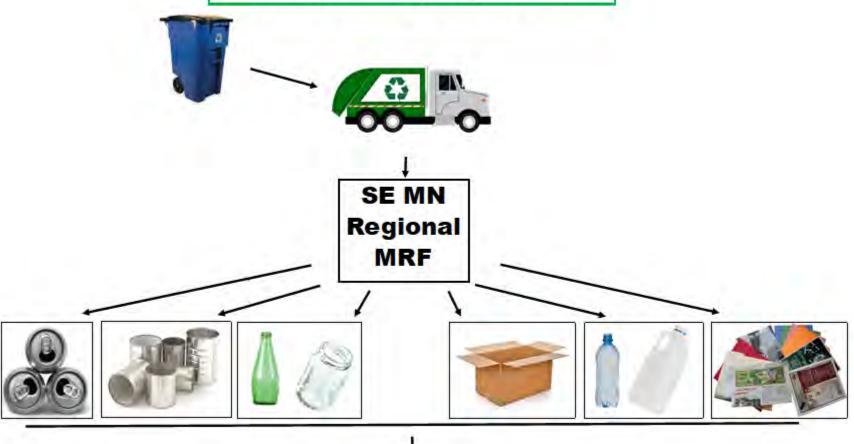








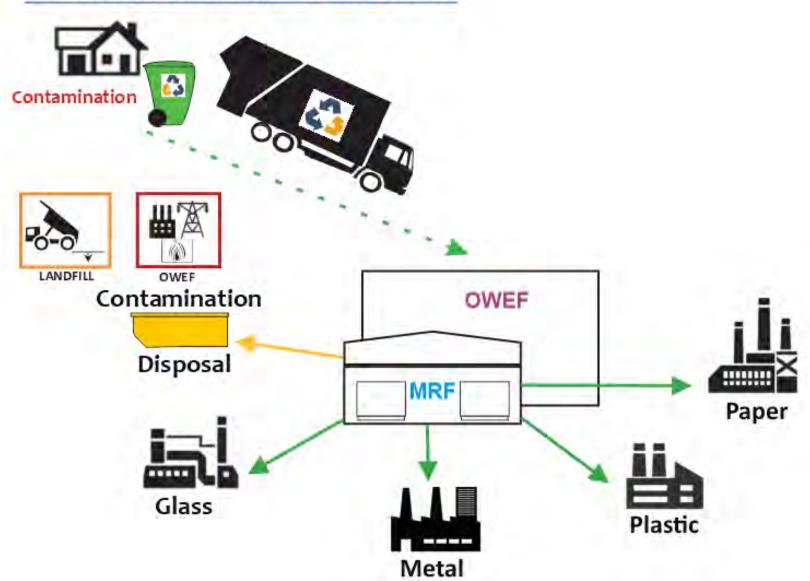
# Future Regional Recycling System



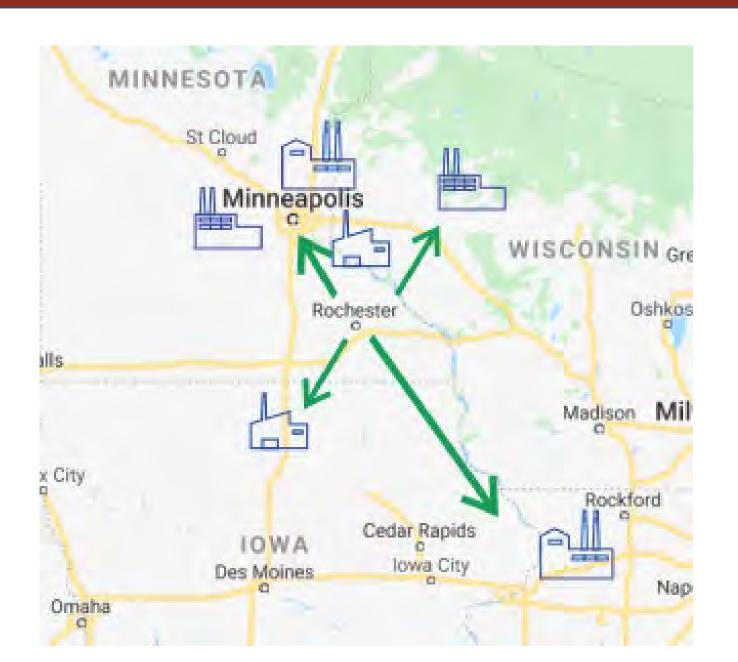




#### **Curbside Collection Services**

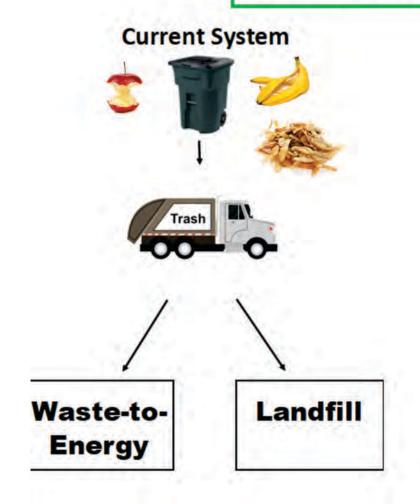








#### Future Food Waste Management System









Residents put food scraps into "food scarp bags" and place in their curbside trash container or dedicated dumpster for collection

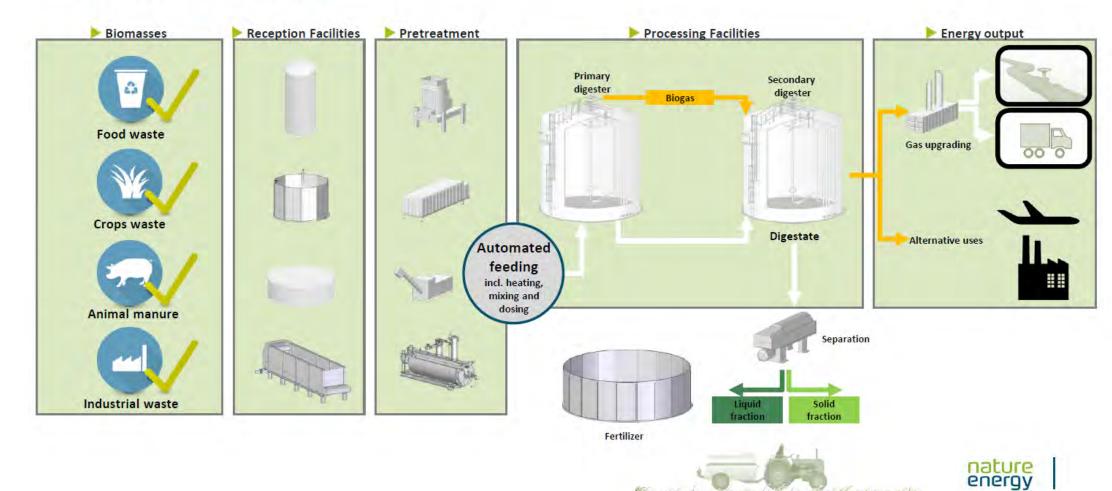
Haulers collect bags along with the trash

The bags are sorted from the trash at the MRF. Pretreatment equipment removing material and turning food waste into a pulp

Pulp recycled at an anaerboic digester facility



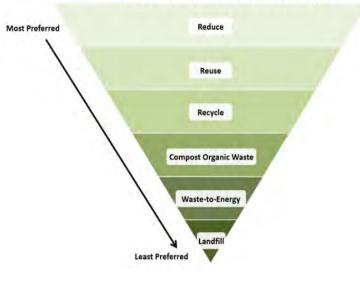
#### Plant concept





### Regional Benefits

- Assist Olmsted and other SE MN counties meet state recycling and long-range solid waste management goals
- Provide local businesses convenient access to a SE Minnesota MRF
- Increase local recycling rates and recover additional value from waste
- Allow waste material to move further up the waste hierarchy



Solid Waste Hierarchy



### Regional Benefits

- Prepare quality recyclable materials that are marketable for end-use manufacturers
- Market materials through the Southeast Minnesota Recycling Exchange (SEMREX)
- Reduce greenhouse gas emissions (GHG) by eliminating long transport of mixed recyclables to other areas for processing
- Opportunity to divert organic waste from landfilling and move material up the waste hierarchy





### Approaching Crossroads



**Growth of Olmsted County** 



**Increasing OWEF Expenses** 



Lower OWEF Fuel Efficiency



**Limited OWEF Capacity** 



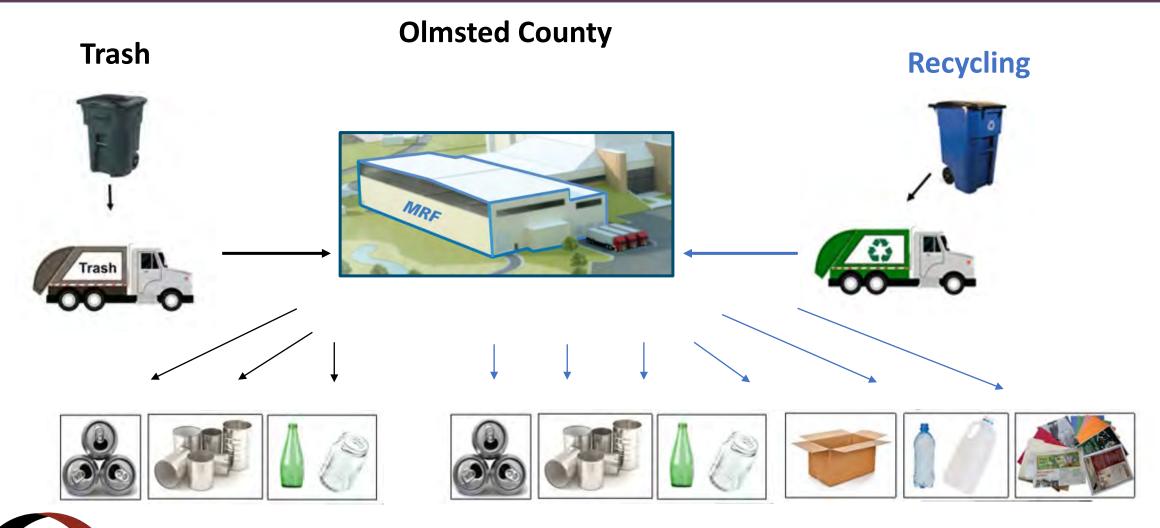
**Expansion of OWEF Timing** 



OLMSTED COUNTY MINNESOTA

Recoverable Material Leaving Region



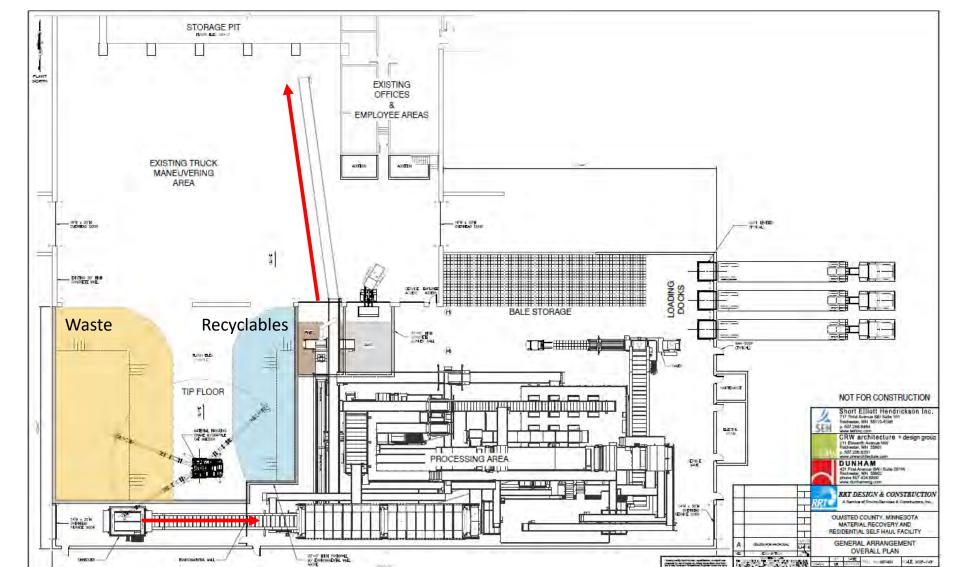




OLMSTED COUNTY MINNESOTA

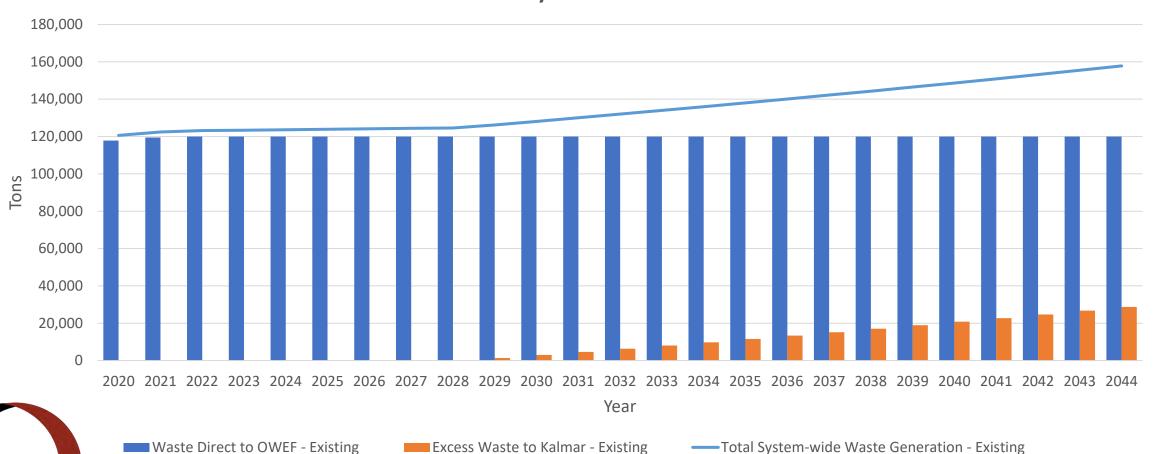
Recycling

### Conceptual Facility Layout



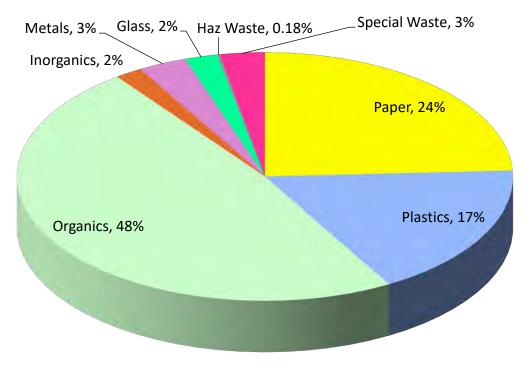


# Projected Waste Generation in Olmsted County with Current System



OLMSTED COUNTY MINNESOTA

### 2019 Waste Characterization



Specific Material	Composition (% by weight)
HDPE (#2 Plastics)	0.45%
PET (#1 Plastics)	1.40%
Office Paper	1.73%
Corrugated Cardboard	2.30%
Glass	2.12%
Aluminum Cans	0.59%
Ferrous Cans	0.41%
Other Ferrous	1.44%
Food Waste	20.70%
Total	31.14%



### Material Recovery – Revenue Stream

- Revenue: ~\$3,000,000
- Combined MSW and Single Stream recovery
  - MSW: 7.5% recovery
  - Single Stream: 78% recovery
- Single Stream Residuals
  - 22% to OWEF as fuel

Material Types	Estimated Recovery Tonnage	Historic AVERAGE CASE	Estimated Historic AVERAGE CASE
Mixed Paper	4,390	\$56	\$244,586
OCC	4,254	\$84	\$356,685
PET	991	\$242	\$240,191
HDPE Colored	324	\$240	\$77,813
HDPE Natural	170	\$602	\$102,657
Mixed Bulky Rigid Pl	3,782	\$46	\$172,440
UBC/Aluminum	1,303	\$1,142	\$1,488,176
Mixed Aluminum	0	\$683	\$0
Other Non-Ferrous	286	\$700	\$200,277
Steel Cans	997	\$95	\$94,977
Sheet Iron/Bulk Fe	2,020	\$48	\$95,965
Glass	4,267	\$0	\$0
100 and 1 + 12 de	138,000		\$3,073,767
Incoming Totals			\$3,073,767



# OWEF Operational Impact

Uptime

• Revenue Increase: ~\$3,600/day

Reduced Maintenance

• Estimated Savings: \$100,000/year

Reduced Hauling

• Ash: ~\$118,000/year

• Bypass: ~\$70,000/year

Air Pollution Control

• Estimated Savings: ~\$60,000

Indirect Impacts

• Reduce Hauling = Less GHG

• Lower Consumables = Less GHG





### Waste Management System Impact

	Current	System	Addition	of MRF
Facility	Project	Year	Project	Year
OWEF	Expansion	2035	Expansion	2047
Kalmar - Ash Disposal Area	Cell 6A	2021	Cell 6A	2021
	Cell 7A	2029	Cell 7A	2033
	Cell 8A	2040	Cell 8A	2048
	Cell 9A	2050	Cell 9A	
Kalmar - MSW Disposal Area	Cell 7B	2032	Cell 7B	2026
	Cell 8B	2040	Cell 8B	2033
	Cell 9B	2048	Cell 9B	2044
OWEF - MRF	Addition	-	Addition	2025

### MRF Project Costs

Description	<b>Estimated Cost</b>	
Sitework and Concrete	\$1.83M	
Pre-engineered Metal Building	\$1.33M	
Building Ancillaries	\$2.81M	
Processing Equipment	\$12.95M	
Construction Services (Permits, Overhead)	\$3.31M	
Design, Oversight and Contingency	\$2.69M	
Total	\$24.92M	
Grapple Excavator	\$450,000	
Annual Capital Expense	\$1,667,000	



- Interest 2.5%
- Bond term: 20 Years

#### When

OLMSTED COUNTY MINNESOTA



#### **Local Benefits**

- Delay OWEF Expansion
- Delay Ash Landfill Expansion
- Excess OWEF Capacity
- Decrease Ash Hauling
- Reduce Ash Metal Extraction Effort at Landfill
- Reduce GHG Emissions
- Integrate Organics Diversion



# QUESTIONS



#### Moratorium on Commercial Composting Sites



SOUTH METR

Shakopee residents at odds with Mdewakanton Sioux over smelly compost facility

The tribe's compost facility is one of only two in the metro area.

By Erm Adler Star Tripune MARCH 26, 2019 - 10:03PM



The Shakopee Mdewakanton Sioux Community opened the SMSC Organics Recycling Facility (ORF) in the fall of 2011.



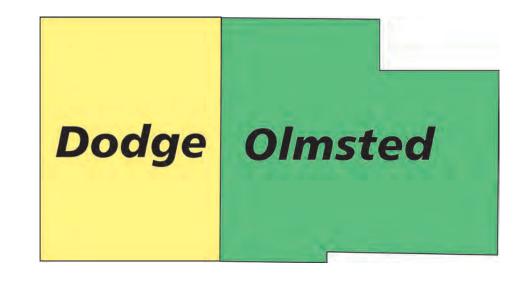
Compost Site had been dealing with MPCA issues



- Moratorium on Commercial Composting Sites Began July 7, 2020
- Concerns were raised in other Minnesota communities about contaminated stormwater, odor, nuisance rodents and other animals
- Opportunity to study potential controls relating to the placement, operations, transport, and collection of the waste stream

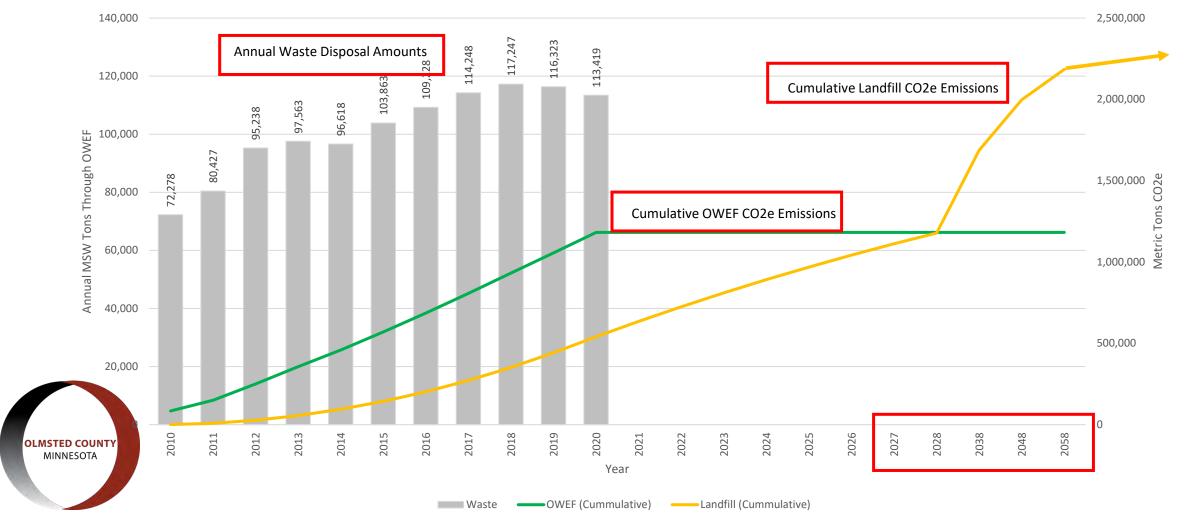


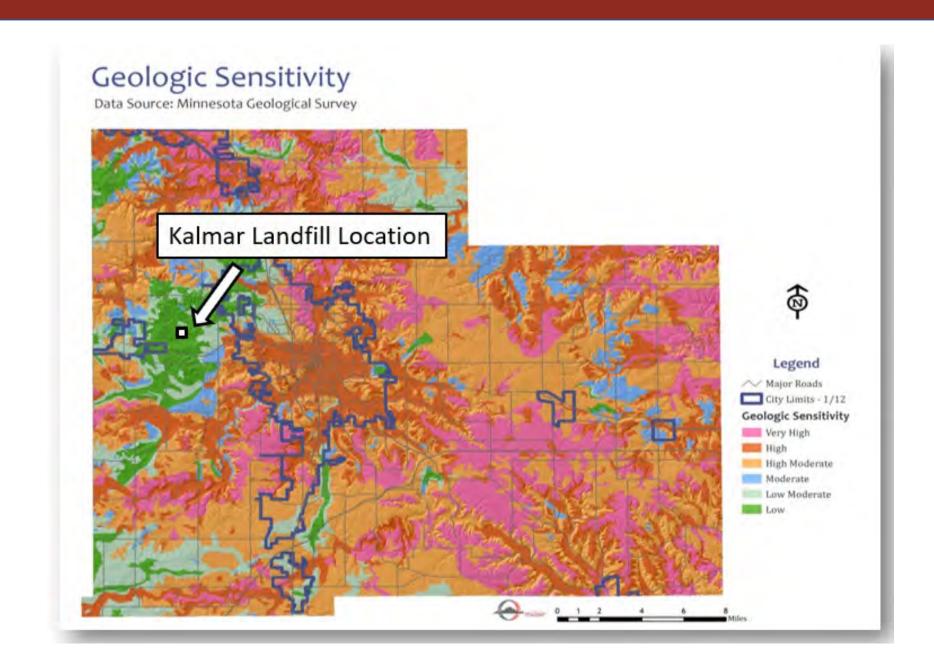
- 2 County Solid Waste Management System
  - Olmsted County Population = 162,847
  - Dodge County Population = 20,867
- Oversight By Olmsted-Dodge Solid Waste Management Joint Powers Board
  - 2 Olmsted County Commissioners
  - 2 Dodge County Commissioners
- Olmsted and Dodge counties have worked together since the 1980s to manage waste responsibly



#### **Emissions at OWEF**

Cummulative CO2e Emission Comparison of WTE vs. Landfill for Olmsted County







#### **Metal Recovery from Ash**



- Metals embedded within products
- Accounts for at least 2.5% extra material recovery
- Over 13,000 tons of ferrous metal recovered since 2011
- The recovery has yielded over \$2.9M in revenue



## Olmsted County Energy Park





Delivering sustainable resource management solutions for the community

### Olmsted County MRF

