



From Pom-Poms to Requirements to Anaerobic Digestion - The Organics Recycling Journey in Hennepin County, MN

Hennepin County, MN

- Most populous county
 - 1.2 M (\approx 25% of state)
- Generate most trash
 - 1.4 M TPY
- Minneapolis – county seat
- From urban to rural



Organics Program History (2002-Present)

- Earliest county collection pilots
 - Residential – 2002
 - Schools – 2003
 - Businesses – 2005
- Infrastructure
 - Commercial collections routes
 - Animal feed: since 90's – 3
 - Organics for Composting: since 2005 – 7
 - Transfer stations
 - 2 accept organics for composting
 - County offers lower tipping fee since 2005
 - Organics Processing
 - 2 operating composters in metro area
 - County engaged in active AD procurement process



Assistance Pom-Poms

Financial Incentives

- Lower tipping fees for organics
- Organics exempt from SW taxes
- Grants for schools, cities, and businesses

Technical Assistance

- Waste audits & waste sorts
- Internal sorting stations
- Securing a hauler
- Container labels & signs
- Compostable bags & food ware
- Staff training



On the path to 75% recycling and zero waste to landfills

- County's Solid Waste Management Master Plan focuses on organics recycling
- Strategies:
 - Prevent waste
 - Requirements for cities and certain businesses
 - Capture maximum value from recovered materials
 - Improve and expand infrastructure



Internal Engagement – Establishing Support

Application of Requirements

- Which businesses/facilities are subject to the requirements?
- What info can be used to determine which facilities are subject to the requirements?
- For these requirements, what are organics – any revisions to the list?
- Which activities will satisfy the requirements?
- What constitutes compliance (what does it look like)?
- To what parts of the operations should requirements apply?
- Should the requirements be phased-in? How?
 - For initial group of facilities...promotion, warning, enforcement
 - For subsequent groups of facilities
- Should any exemptions/waivers be allowed?
- What should trigger enforcement?
- Anything else?

Guiding Principles

- Focus on facilities likely to generate large quantities of clean material
- Set trigger level where diversion can be done cost-effectively for the generator – break even or at a slight savings
- Avoid overwhelming existing processing capacity and encourage development of additional capacity
- Encourage development of efficient collection – start with large generators and phase in smaller ones, if needed, after costs hopefully come down

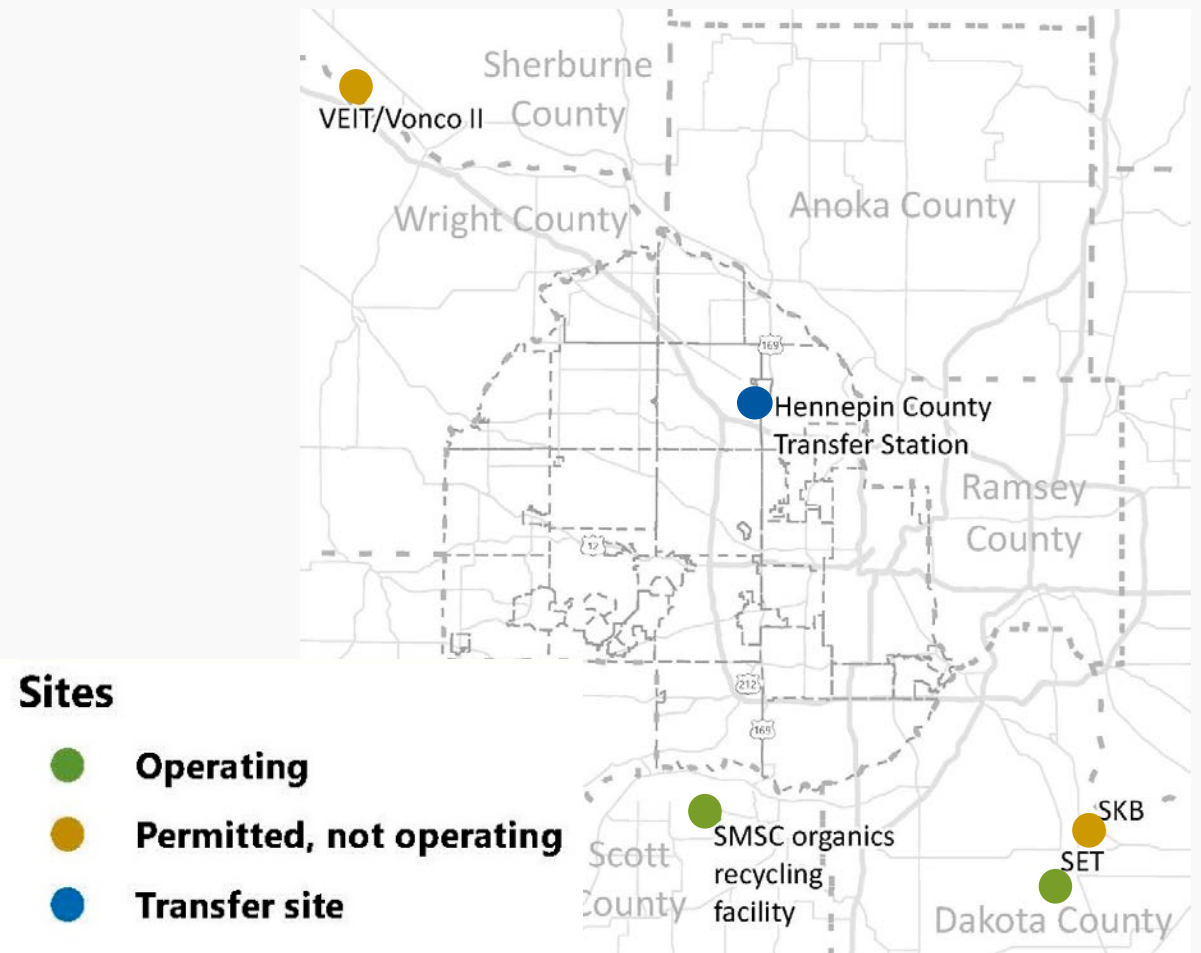
Planning for External Engagement

- Identify key stakeholders
 - Trade associations
 - Potentially covered businesses
 - General public
- Define the purposes
 - Provide info on proposal, timeline, and decision making process
 - Develop strong relationships
 - Ensure transparency
 - Enable supporters to easily weigh in
- Develop key messages
 - Provide your comments – impact the final requirements
 - If you support these requirements, consider testifying and submitting comments
- Create detailed timeline
 - Helps to convey urgency
 - We had 3 rounds of engagement spanning 2 years

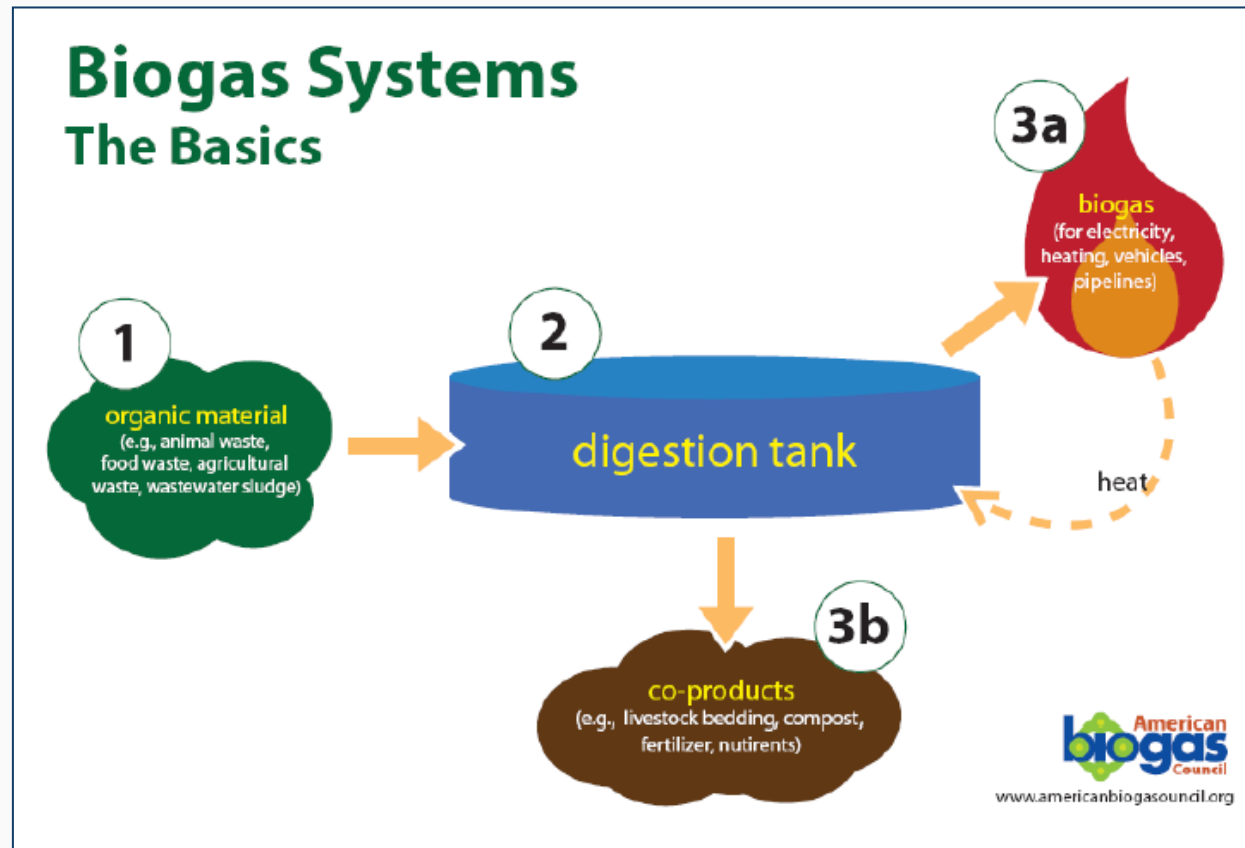
Improve organics processing infrastructure

- Stakeholders want the county to lead on improving organics infrastructure
- Our plan to ensure the system is in place to manage the increase in organics:
 - Working with local composters to maintain and expand capacity
 - Working to secure and diversify additional organics processing capacity through anaerobic digestion
 - Planning to increase organics transfer capacity

Organics sites in the Twin Cities



Anaerobic digestion



Biogas can be used for various forms of power. Each successive use requires more refining.

- Use the biogas “as is” to fuel a boiler
- Generate electricity (and use waste heat from the generator)
- Make compressed natural gas (CNG) to use as a vehicle fuel
- Make renewable natural gas (RNG) and inject it into a pipeline
- Produce green hydrogen, power fuel cells, ???

Creating a local circular economy for organics:

Use liquid and solid digestate, waste heat, and CO₂ to operate on-site farm, greenhouse, and aquaponics

Why anaerobic digestion?

Uncertain timeline for increased composting capacity

- Plans yet to be finalized
- New regulatory concerns about Per- and Polyfluoroalkyl Substances (PFAS) may delay site expansion or new sites

Better, higher use of organic material

- Produces clean, renewable energy (prior to composting)
- Reduces greenhouse gas emissions
- Produces beneficial products, e.g., fertilizer and compost

Ensure additional processing options

- Provides an opportunity for county to bring a portion of organics processing within its control
- Assures timely development of processing capacity

Anaerobic digestion-Request For Qualifications

“...requesting submissions from **qualified, experienced, and financially capable entities** that can verifiably demonstrate the ability to anaerobically **digest a minimum of 25,000 tons per year of source-separated organics** in an economically and environmentally sound manner to produce energy and beneficial soil or agricultural supplements.”

Summary of responses

- 15 responses; wide variety of respondents
- Conducted follow up with 6 respondents
- Estimated total facility cost: \$14-\$44 million
- Estimated tipping fees: \$25-\$130 per ton

Anaerobic digestion-Request For Proposals

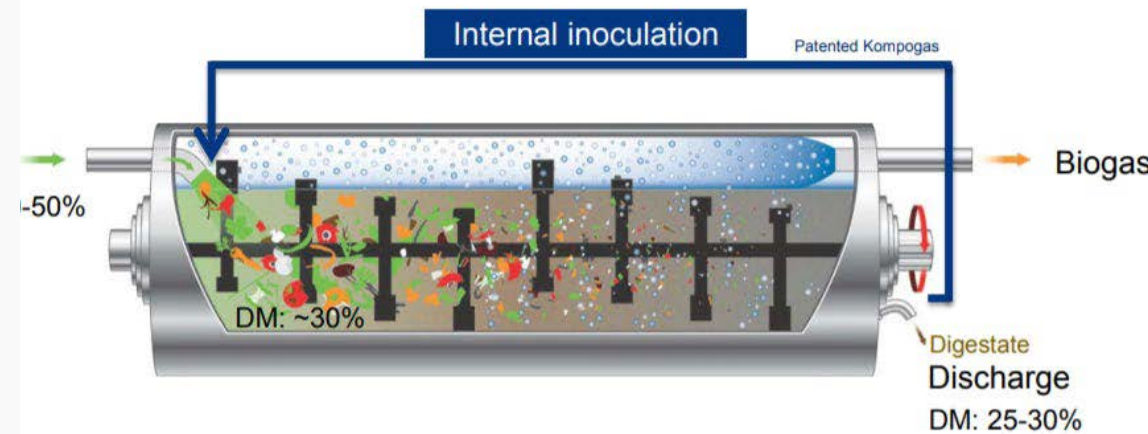
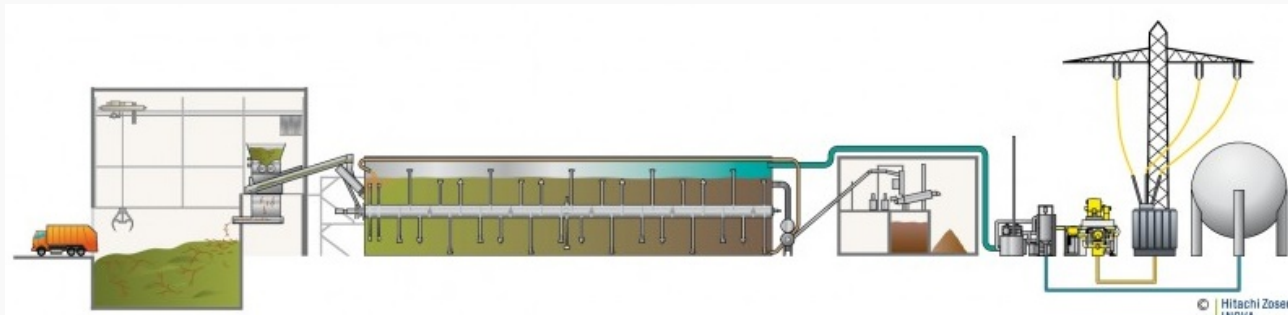
“...The County’s objective is to contract with a ...Proposer...to design, build, and operate an anaerobic digestion facility — using a dry, continuous, high solids system — capable of processing a minimum of 25,000 tons per year of source-separated organics in an economically and environmentally sound manner to produce energy and beneficial soil and/or agricultural products,”

- Site secured prior to RFP
 - In Brooklyn Park
 - Next to transfer station

Example of Dry AD

Hitachi-Zosen INOVA Kompogas AD – San Luis Obispo, CA

- *Capacity:* 36,500 tons/yr
- *Feedstock:* yard waste, SSO
- *Footprint:* ~1 acre
- *Outputs:* Biogas (electricity), liquid digestate (fertilizer), solid digestate (onsite compost)



Example of Wet AD

Harvest Energy Garden - Orlando, FL



Current Status

- AD RFP issued June 2021
- Proposals received December 2021
- Board resolution approved in June 2021
 - Added \$42M to capital budget for design and construction of an AD facility
 - Directed staff to Pursue \$21M in state bond funding
- The desired project timeframe is:
 - Q1/Q2 2023 - select a vendor
 - 2023 to 2025 - design, permitting, and construction
 - 2025 – commissioning and start up



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Hennepin County

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