



## Northeast Digestion Roundtable 2018

Quarterly webinars to share technical operations experiences & advance best practices regarding anaerobic digestion in this region.

# WELCOME.

## NEDR # 11: ADvancements Around the Region

### INSTRUCTIONS

Click to see list of participants

More controls & settings

Ask questions / chat

Leave meeting / Exit

Audio control & details

waiting for the host...

+1.866.970.0070

Conference ID:  
236-940-048

This box pops up when you click the audio control. Pick a phone number & dial in, entering the conference ID.

# NEBRA NE Digestion Roundtable

October 5, 2018

John Fischer, MassDEP



Massachusetts  
Department  
*of*  
ENVIRONMENTAL  
PROTECTION

CLEANENERGYRESULTS

## Operational Capacity – Food Waste

- Barstow Farm, Hadley
- Barway Farm, Deerfield
- CRMC Crapo Hill Landfill
- Jordan Farm, Rutland
- Pine Island Farm, Sheffield
- Rockwood Farm, Granville
- Stop & Shop Distribution Center
- Total Operational Food Waste Capacity
  - About 407,000 tons per year



## **Additional Capacity – Food Waste**

- Permitted – 118,000 tons per year
  - Crescent Farm – Haverhill
  - Jordan Heifer Farm - Spencer
  - Luther Belden Farm – Hatfield
- Permitting process – 91,000 tons per year
  - Shy Brothers Farm, Westport
  - Whittier Farm, Sutton
- Part of on-site waste water system
  - Ken's Foods
  - Garelick Farms, Lynn and Franklin



## Anaerobic Digestion

- Wastewater Treatment Facilities:
  - Massachusetts Water Resources Authority (MWRA) Deer Island WWTP
  - Greater Lawrence Sanitary District (GLSD)
  - MWRA Clinton WWTP
  - Pittsfield WWTP
  - Fairhaven WWTP
  - Rockland WWTP

# Anaerobic Digestion

- Projects in the Pipeline
  - Several projects have held pre-permit meetings with MassDEP
  - How many, if any, will move forward?
    - CRMC Crapo Hill LF Expansion
    - Quantum Biopower, Holyoke
    - Yarmouth
    - Others?

## Organics Management Capacity

- Depackaging capacity - Operating:
  - WMI Boston CORe/Save That Stuff, Inc.
  - EL Harvey
  - Parallel Products (liquids only)
  - RecycleWorks Inc.
  - Troiano Trucking
- Not yet operating
  - Rockwood Farm
  - Vanguard

# Clean Energy Results Program Contact

MassDEP:

John Fischer, [John.Fischer@mass.gov](mailto:John.Fischer@mass.gov), 617-292-5632

James Doucett, [James.Doucett@mass.gov](mailto:James.Doucett@mass.gov), 617.292.5868

Commercial Food Waste Website:

<https://www.mass.gov/guides/commercial-food-material-disposal-ban>

Clean Energy Results Program Website:

<http://www.mass.gov/eea/agencies/massdep/climate-energy/energy/>

Advancing renewable energy & energy efficiency in the Commonwealth

**CLEANENERGYRESULTS**

[www.mass.gov/dep/cerp](http://www.mass.gov/dep/cerp)



# Quantum Biopower

The Supreme Group is a group of companies first founded in 1980; the group is privately held and operates over synergistic industries. Over the past 35 years, the Group has transformed traditional waste streams into beneficially reusable products.



Regional leader in land clearing and ROW construction for the power and pipeline industry



Operator of 3 Volume Reduction Facilities producing over 350,000 cubic yards of mulch, soil, and compost



Integrator of advanced waste & recycling to energy systems. Owners of the Southington, CT digestion facility.



# Quantum Biopower – Southington, CT



## **Decontamination/De-packaging**

Pulp & emulsify food waste/contamination removal (8-12% solid)

## **Digestion/Biogas Creation**

2-stage digester, biogas collection sphere

## **Biogas Conditioning & Combined Heat and Power**

Drying & H<sub>2</sub>S removal & energy creation

## **Nutrient Recovery & Removal**

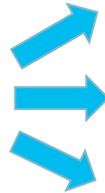
2-stage digester, biogas collection sphere

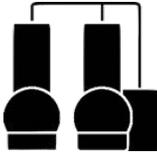
# Distributed Energy - VNM



→ **EVERSOURCE**

⚡ ~775 homes



-   
Public Works
-   
Police
-   
Fire
-   
Wastewater (x2)

*Quantum facility will generate 420,000 ft<sup>3</sup>/day of biogas equivalent to 5,080 tons/yr of CO<sub>2</sub> avoidance*

 572,000 Gallons

 1,073 Cars

# What's in store for CT?

1. Co-Digestion work product; co-authored by Quantum, Yale, NEBRA
  - Digestion of biosolids could make a significant contribution to CT's Comprehensive Materials Management Strategy 2024 goal for diversion from organics, as well as other goals.
  - Federal regulations exist to support biosolids' management that specifically regulate nutrient levels, heavy metals and pathogens.
  - All other states have sanctioned biosolids processing and end-use of biosolids products, including co-digestion with food and yard waste; CT can use a combination of federal and state-specific regulations for its biosolids regulatory framework and may consider examples from other states, particularly those located in the Northeast
2. Current Regulatory Environment
3. Capacity – decreasing statewide; MSW, Biosolids
4. Impact of Food Waste Diversion Mandate - 2020

# Questions & Discussion

## Rhode Island

- Report from CET
- Fall 2017
- 3 operating commercial scale food waste processing facilities: Earth Care Farm (compost) and My Blue Heaven Farm (animal feed)... & Blue Sphere...
- Landfill tip fees being increased as incentive
- See <https://wastedfood.cetonline.org/states/rhode-island/> (shown at right)



## RHODE ISLAND WASTED FOOD STAKEHOLDER ENGAGEMENT AND INITIAL FINDINGS

In 2017, the Center for EcoTechnology (CET) engaged stakeholders in Rhode Island's wasted food sector, in cooperation with Rhode Island Department of Environmental Management (RI DEM) and the Director of Food Strategy at the State of Rhode Island. With \$15,000 in support from United States Department of Agriculture (USDA), CET connected with over 50 industry members to build working relationships with them and to better understand the key drivers that are working well and those that would benefit from future marketplace development in Rhode Island.

The Food System is a priority for the state and wasted food is one of the five integrated focus areas of the Governor's Food Strategy. There is a clear baseline of activity and growing interest in creative solutions to address wasted food which will support the overall food system. CET has identified key areas of existing success, challenges to overcome, and opportunities to make a significant impact.

CET connected  
with over 50  
industry members  
to build working  
relationships.

### FOOD RECOVERY AND WASTE PREVENTION

#### HIGHLIGHTS OF EXISTING SUCCESSES

- Phood LLC is working with the state of Rhode Island to offer their services to more universities in the state.
- Organizations such as Rhode Island Food Bank and We Share Hope continue to support businesses interested in donating their surplus food.
- MEANS is collaborating with the Rhode to End Hunger program to implement food safety training on their database.
- The General Assembly's Food Waste Commission was created to study wasted food in Rhode Island and make recommendations for next steps to incentivize and reduce barriers to food recovery and donations.

# Rhode Island: Blue Sphere



JOHNSTON, RHODE ISLAND



**Energy Output Size: 3.2.MW**

- Technology: Anaerobic Digester
- Current Status: Producing Electricity
- Energy Production Start: Q4 2016
- Feedstock: Organic Waste

**Output Production**

- Electricity
- Soil Amendment

**nationalgrid**



# Rhode Island: Bucklin Point



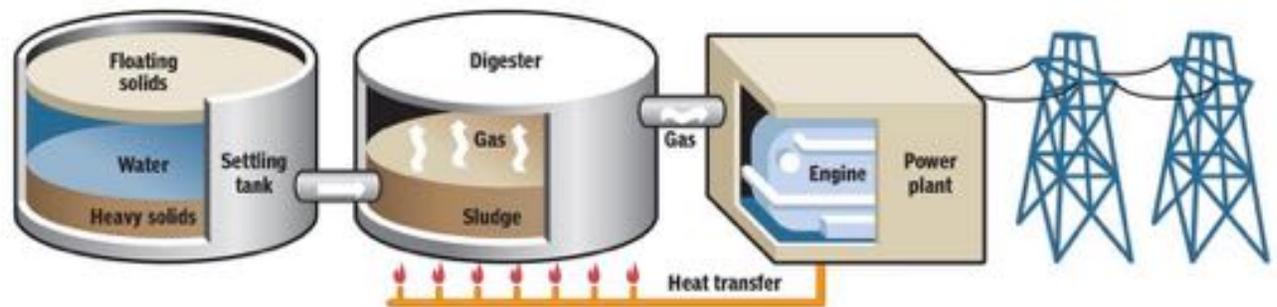
**Providence Journal, January 25, 2018**  
<http://www.providencejournal.com/news/20180125/ri-green-energy-power-of-sludge>

**NEBRA, Fall 2017**  
<https://www.nebiosolids.org/bucklin-point-green-energy/>



## Waste not

- 1** Wastewater enters the settling tank. Most solids sink to the bottom but some float. The sludge, a mixture of organic matter and bacteria, is then pumped out or skimmed off and sent to the digester.
- 2** Inside the air tight, oxygen-free digester, the sludge is heated up to accelerate a natural process that breaks it down. This process, known as anaerobic digestion, produces biogas, which consists mainly of methane and carbon dioxide.
- 3** The methane fuels an engine that produces electricity for the treatment plant, and the heat from that engine is transferred back to the digester.
- 4** The power plant produces an equivalent amount of power used by 767 typical Rhode Island households and an equivalent amount of heat used by 233 households.



SOURCE: Narragansett Bay Commission

THE PROVIDENCE JOURNAL / TOM MURPHY

## Maine

- Exeter Agri-Energy.... See NEDR #9  
<https://www.nebiosolids.org/ne-digestion-roundtable>
- LAWPCA
- Village Green Ventures → Genesis

## New Hampshire

WRRF digesters:

- Franklin
- Hanover
- Nashua

What else?

## Vermont

### WRRF digesters:

- Essex Junction
- So. Burlington
- Brattleboro
- Springfield
- Windsor
- St. Johnsbury
- Rutland
- Barre
- Montpelier
- St. Albans

Farm ones too – see NEDR #5

Thank you for  
joining NEDR #11.

**Next NEDR:**  
Friday, January 4, 2019,  
Noon Eastern.

**More at:**  
[https://  
www.nebiosolids.org/ne-  
digestion-roundtable](https://www.nebiosolids.org/ne-digestion-roundtable)

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**First Friday each Quarter:**

12:00 - 1:00 pm. Have lunch. Digest.

January 5, 2018: Gentlemen and -  
Women, Start Your Engines!

April 6: Where the Feedstocks Go

July 13 (2nd Friday!): How Food  
Scraps & Other Organics Work in  
Municipal Digesters: An Update on  
Co-Digestion Research (Professor Matt  
Higgins, Bucknell Univ.)

October 5: ADvancements Around  
the Region - Roundtable

**Northeast Digestion Roundtable 2018**

Quarterly webinars to share technical operations experiences &  
advance best practices regarding anaerobic digestion in this region.