

# Anaerobic Digestion Feasibility Study

## Surfside Wastewater Treatment Facility

Public Meeting

February 4, 2020

Nantucket High School Cafeteria



# Agenda

- Introduce CEC Organics-to-Energy Project Team
- MassCEC Assistance
- Goals
- Anaerobic Digestion Technology
- Anaerobic Digestion in Nantucket
- Schedule & Moving Forward



# CEC Project Team

- David Gray, Sewer Director, Nantucket
- Roberto Santamaria, Health Director, Nantucket
- Lauren Sinatra, Energy Coordinator, Nantucket
- Kent Nichols, Weston& Sampson
- Dan Sheahan, Weston & Sampson
- Gina Cortese, Weston & Sampson
- Representative from numerous Town Departments



# MassCEC Assistance



- State economic development agency
- Mission: grow the state's clean energy economy while helping to meet the MA's clean energy, climate and economic development goals
- 2019 Organics-to-Energy grant for Feasibility Study: \$60,000
- Public Outreach Support



# Project Goals

- Determine Feasibility of AD Based on:
  - Evaluation of Project Site, Vicinity, and Community Impacts
  - Environmental and Permitting Consideration
  - Feedstock Analysis
  - Treatment Capacity/ Headworks Analysis
  - System Output Analysis
  - Financial Evaluation
- Anaerobic Digester Conceptual Design

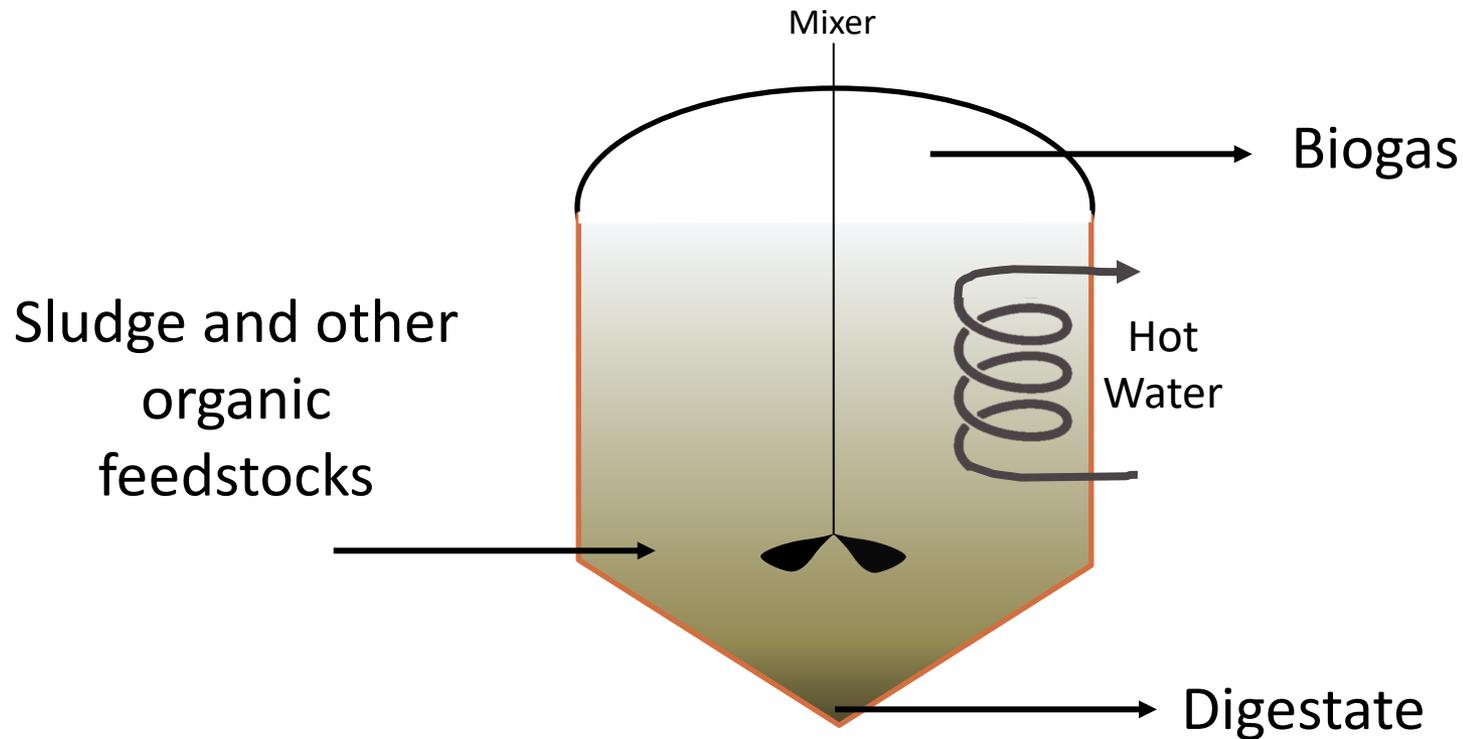


# Anaerobic Digestion Technology

- A collection of natural biologic processes.
- Microorganisms break down biodegradable material in the absence of oxygen.
- Process used in many industrial and domestic purposes to manage waste and/or to produce fuels.
- Digestate is produced by anaerobic digestion.



# Anaerobic Digestion Technology



# Anaerobic Digestion Technology



Boston, MA



# Anaerobic Digestion Technology



Nashua, NH



# Anaerobic Digestion Technology



Rockland, MA



# Anaerobic Digestion Technology



Exeter, ME



# Anaerobic Digestion Technology



Burlington, VT



# Anaerobic Digestion Technology



Montpelier, VT



# Anaerobic Digestion Technology

## Feedstocks (Input)

- WWTF Residuals (Sludge/Bio-solids)
- Fats, Oils, and Grease
- Source Separated Organics
- Brewery Waste
- Other Wastes – Septage and Landfill Leachate



# Anaerobic Digestion Technology

## Feedstocks (Input)

- WWTF Residuals (Sludge/Bio-solids)



# Anaerobic Digestion Technology

## Feedstocks (Input)

- Fats, Oils, and Grease



# Anaerobic Digestion Technology Feedstocks (Input)

- Source Separated Organics

## Massachusetts plans to ban commercial food waste in 2014

July 11, 2013  
By Catherine Kavanaugh

Tweet 65 ShareThis 613 Share 83 Print Email Reprints Comments

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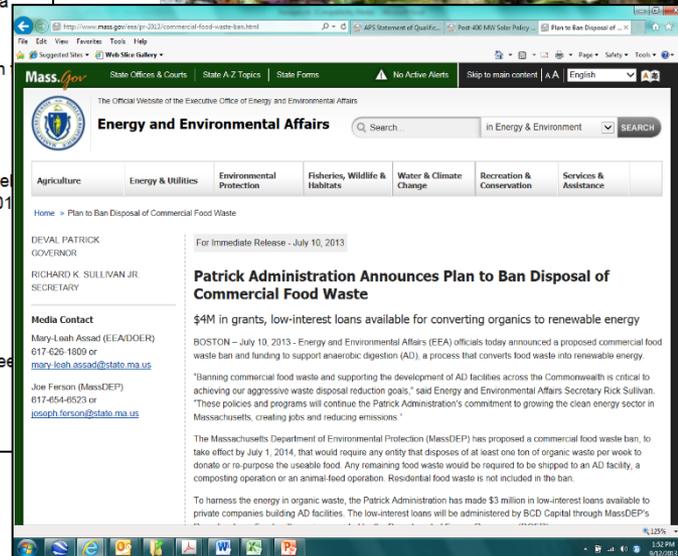
If you don't clean your plate at a Massachusetts restaurant, the scraps may not go to waste when a commercial food disposal ban goes into effect.

They will be turned into clean energy, officials with state's Energy and Environmental Affairs said.

Energy and Environmental Affairs announced a proposed plan that would require any entity that disposes of at least 1 ton of organic waste per week to donate or repurpose the food starting July 1, 2014.

The ban will affect large restaurants, hospitals, universities, hotels and other big businesses and institutions.

The plan calls for food waste to be shipped to a facility that uses anaerobic digestion to convert food waste into a biogas that produces electricity and heat. Or, it can be taken to composting or animal-feed operations. However, state officials are sweetening the pot for the AD option. They are offering \$3 million in low-interest loans to private companies building AD facilities that harness the energy in organic waste.



**Energy and Environmental Affairs**

Home > Plan to Ban Disposal of Commercial Food Waste

**Patrick Administration Announces Plan to Ban Disposal of Commercial Food Waste**

For Immediate Release - July 10, 2013

**\$4M in grants, low-interest loans available for converting organics to renewable energy**

BOSTON – July 10, 2013 - Energy and Environmental Affairs (EEA) officials today announced a proposed commercial food waste ban and funding to support anaerobic digestion (AD), a process that converts food waste into renewable energy.

"Banning commercial food waste and supporting the development of AD facilities across the Commonwealth is critical to achieving our aggressive waste disposal reduction goals," said Energy and Environmental Affairs Secretary Rick Sullivan. "These policies and programs will continue the Patrick Administration's commitment to growing the clean energy sector in Massachusetts, creating jobs and reducing emissions."

The Massachusetts Department of Environmental Protection (MassDEP) has proposed a commercial food waste ban, to take effect by July 1, 2014, that would require any entity that disposes of at least one ton of organic waste per week to donate or re-purpose the useable food. Any remaining food waste would be required to be shipped to an AD facility, a composting operation or an animal-feed operation. Residential food waste is not included in the ban.

To harness the energy in organic waste, the Patrick Administration has made \$3 million in low-interest loans available to private companies building AD facilities. The low-interest loans will be administered by BCD Capital through MassDEP's



# Anaerobic Digestion Technology

## Feedstocks (Input)

- Brewery Waste



# Anaerobic Digestion Technology

## Feedstocks (Input)

- Other Wastes – Septage and Landfill Leachate



# Anaerobic Digestion Technology

## Energy Production (Output)



**Electricity**



**Heat**



# Anaerobic Digestion Technology

## Class A Biosolids (Output)



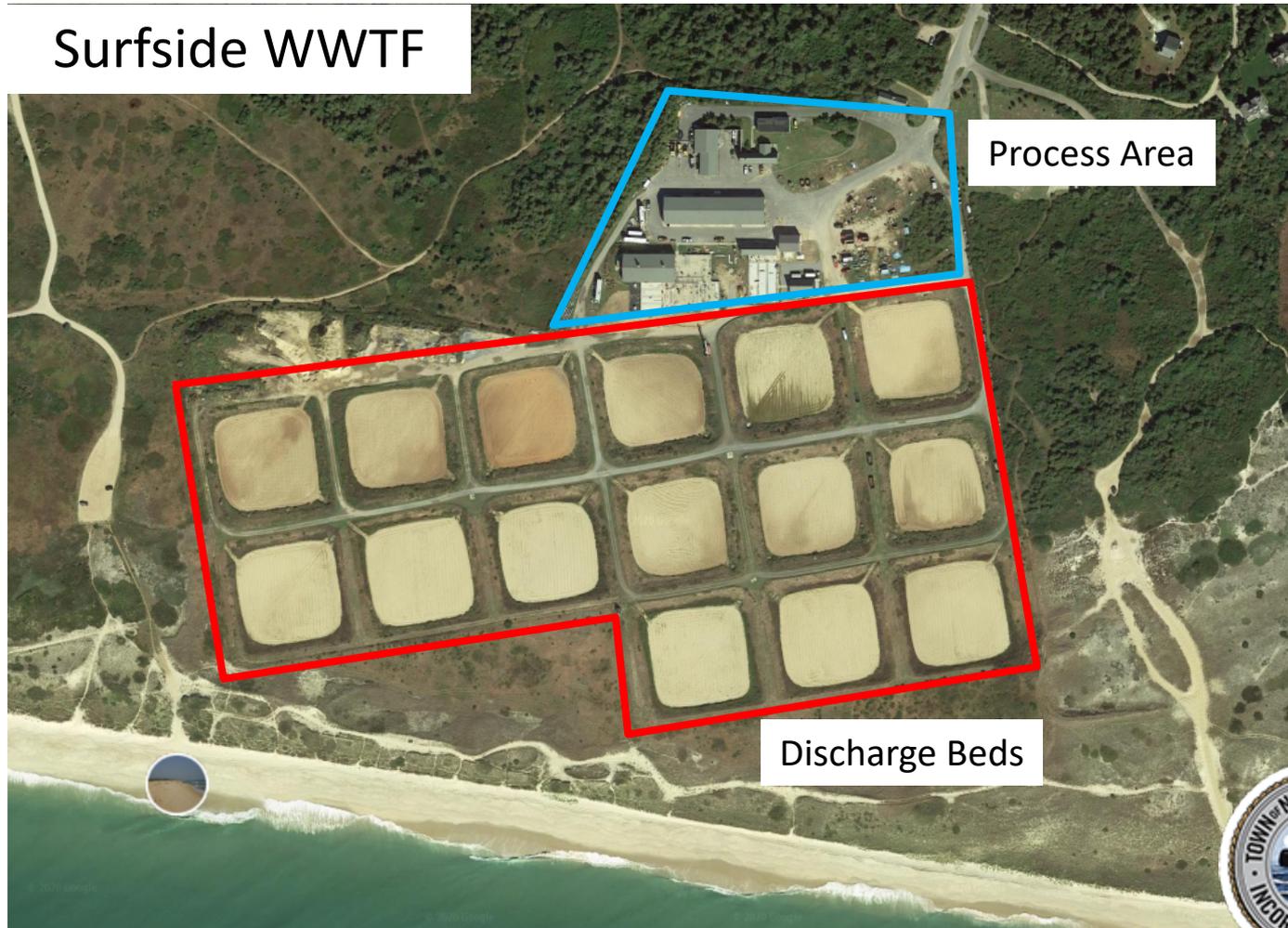
Enclosed areas for roll off containers



# Anaerobic Digestion in Nantucket

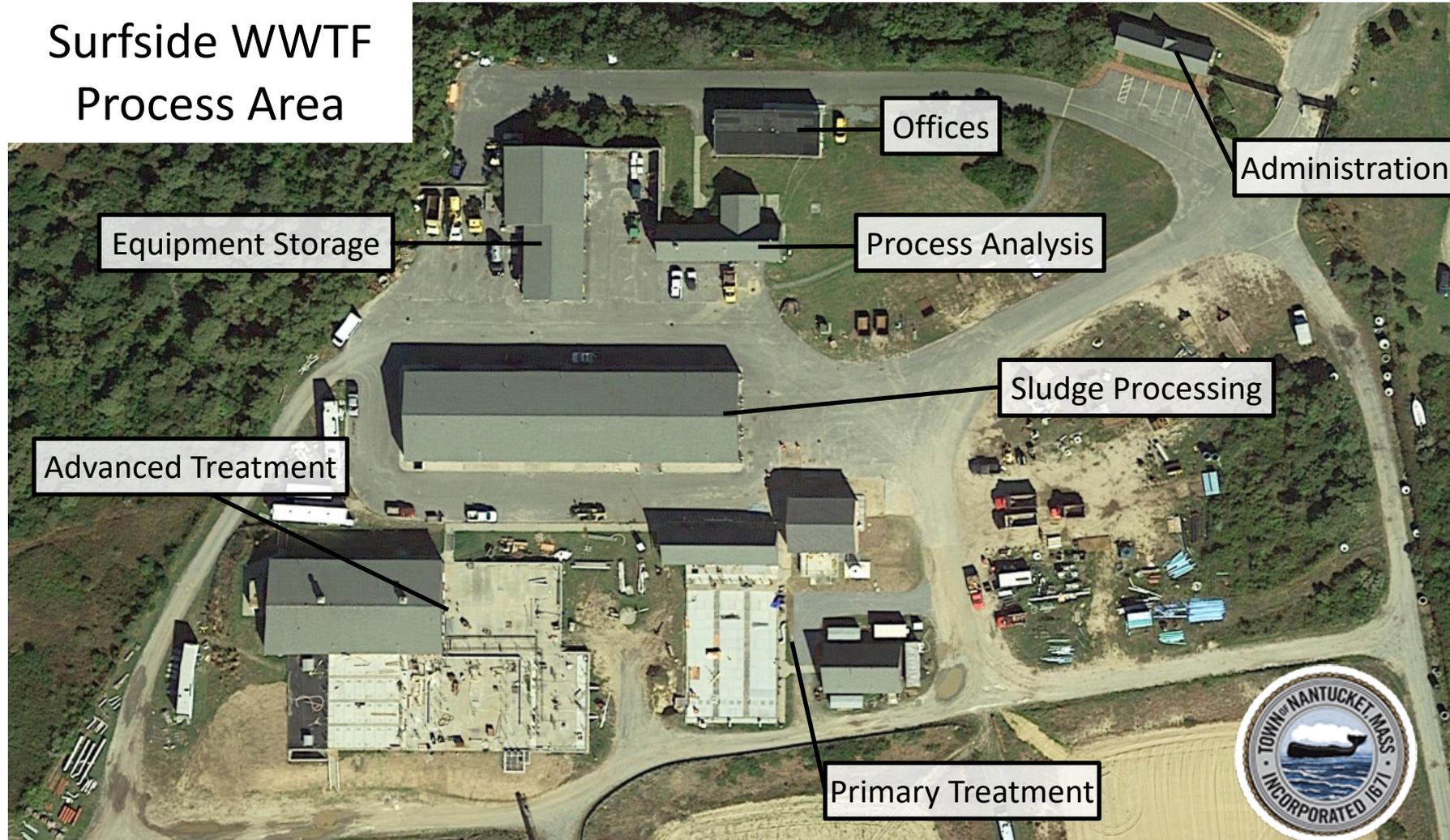


# Anaerobic Digestion in Nantucket



# Anaerobic Digestion in Nantucket

Surfside WWTF  
Process Area



# Anaerobic Digestion in Nantucket

- Possible Inputs
  - Surfside WWTF Sludge
  - Siasconset WWTF Sludge
  - FOG from restaurants, schools, other private kitchens, collection system
  - Source Separated Organics from restaurants, schools, hospital, Stop and Shop, other grocery markets, private kitchens
  - Cisco Brewery Waste
  - Other Wastes



# Anaerobic Digestion in Nantucket

- Anticipated Benefits
  - Generate clean, renewable energy
  - Heating/electricity cost savings at WWTF
  - Reduce volume of solids sent to composting/landfill
  - Improve quality of solids sent to composting/landfill
  - Possible strength reduction of wastes to WWTF



# Anaerobic Digestion in Nantucket

- Common Concerns
  - Increased Traffic
  - Odor Generation
  - Visual Impacts



# Schedule

- Initial Public Meeting: February 4, 2020
- Second Public Meeting: Early Summer 2020
- Draft Feasibility Study: July 30, 2020
- Final Feasibility Study: October 30, 2020



# Moving Forward

- Data Collection & Future Needs Analysis
- Conceptual Design & Model
- Environmental Analysis and Permitting Review
- Economic Analysis
- Public Comment
- Report





thank you

<https://www.nantucket-ma.gov/1616/Anaerobic-Digester-Feasibility-Study>