BTS BioEnergy
Global Leaders in Anaerobic Digestion

Maryland Department of the Environment  SB 171 Discussion December 3, 2018
• 200 + modular biogas plants in Europe, the UK and Japan rated energy capacity 250 kW to 3 mW +
• “Owned & Operated” or “Build to Suit”
• Organic Feed stocks: food waste (pre- or post-consumer), manure, fats, grease, and oil, DAF waste and other bio-degradable by-products
• Guaranteed energy performance: Refine biogas into bio-methane, grid injection, use by fleet, CHP, and thermal.
Food Waste for Anaerobic Digestion

Wide range of food waste accepted:

• Fruits and vegetables
• Meats and dairy
• Cooked foods
• Fats, greases, and oils
• Packaged food

Industries Served:

• Food processing and distribution
• Foodservice / Hospitality
• Agriculture
• Public institutions
• Municipalities
• Academic Institutions
Our Products

Renewable Energy
• Renewable Natural Gas
• Direct to Grid / Fleet Vehicle
• Electricity - Power Purchase Agreements
• Surplus Thermal Energy - Refrigeration

Class A Soil Amendment
• Liquid
• Dewatered
• Dried, Granulated
• Pelletized
• N and / or P stripped
Why the United States ... Maryland

• No more incineration - - no more landfills
• Focus on GHG reduction: trucks off the road, land fill gas use, even “nimby” compost challenges
• Sustainability as a public/private focus
• The move to “Zero Waste”
• Lots of promises, little “proven” Innovation
I’ll go this way –
You go some other way

• Permitting: where go and how to proceed
• The County Vs. State requirements
• Lack of definition
• “I’ve heard that before” syndrome
• Landfills as a financial asset
(5) identify the infrastructure needs

(6) identify means to encourage investment and provide economic incentives to expand capacity

(10) subject to the approval of the affected local governments, recommend a pilot program for the region in which Elkridge and Jessup are located to prioritize infrastructure development and food waste recovery from large food waste generators.
HB 171: Tasks 5 and 6
Infrastructure Challenges

In plain English:

• Identify infrastructure challenges related to organic diversion that are unique to geographic regions of the State, and

• Identify means of encouraging investment in new infrastructure.

Main revenue challenges to the organics diversion industry:

- Securing enough feedstock with an appropriate tipping fee,
- Developing markets for finished products at appropriate prices.
Tasks 5 and 6: Infrastructure Challenges

When entrepreneurs in the organics diversion industry solve these challenges, financing for real estate and capital expenses follow.

Our Suggestions:

1) Provide funding incentives for counties to implement programs to collect and transfer organics to a nearby processing facility.

2) Require state and county-operated organics diversion and processing operations to insure tipping fees and sale of finished product, are aligned to the market rate.
Tasks 10: A Recommended Pilot

In plain English: Right time, Right Place

BTS BioEnergy at the Maryland Food Center Authority
Urban industrial campus of food processors and distributors
100,000 TPY, primarily food waste
3 mW power
Schedule to open 4th Quarter, 2019
Why the United States ... Maryland

Concentrations of digestible waste & demand for renewable energy

Our history, experience, and technology

A customized solution that reduces wastes disposal costs and carbon footprint
A Global Leader in Anaerobic Digestion

How It Works:
The BTS Process
Feedstock Receipt and Pre-treatment
Primary Fermentation

Pre-tank and/or hydrolysis tank with sand removal system

sand X

Fermenter

service BOX

METAN control

METAN load

Technical Module
Our Proprietary Control System

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Post Fermentation

Post fermenter

Technical Module

Boiler

Upgrading

METAN<sub>control</sub>

METAN<sub>load</sub>

METAN<sub>py</sub>

bio METAN<sub>m</sub>
Upgrading and Digestate Refinement