GREEN TECHNOLOGY ACCELERATOR CENTER

CASE STUDY

Organic Waste Source Identification & Characterization for Anaerobic Digestion

North Country Biogas, LLC (NCB) supplies, manufactures and installs anaerobic digesters in the United States. They have developed a unique anaerobic digestion process, capable of utilizing up to 100% food waste as input and producing energy, vehicle fuel and class-A bio-solid products.

Challenge

By siting an anaerobic digester in or around Madrid NY, NCB would divert organics from the landfill, reducing methane emissions while also producing renewable energy. To ensure an adequate supply of digester feedstock, NCB requested that NYSP2I apply resources under its Green Technology Accelerator Center (GTAC) to assist in identifying, quantifying and characterizing the available organic waste within 100 miles of Madrid, NY.

Solution

NYSP2I identified and mapped the sources and users of organic waste within a 100-mile radius of Madrid, NY. The organic waste generation was estimated for all identified sources and confirmed for five (5) sites. Samples were collected from several facilities to further characterize the waste in terms of chemical oxygen demand (COD), % total solids (TS), % volatile solids (VS) and pH. The biomethane potential (BMP) was then calculated for the sample showing the highest strength.

The goal of this project was to assess the feasibility of commissioning an anaerobic digestion system in the St. Lawrence region by providing North Country Biogas with a comprehensive summary of the available organic waste including quantities, composition, biomethane potential and distance from Madrid, NY.

Results

- Based on the estimated organic waste available, an anaerobic digester utilizing primarily manure as feedstock may be feasible for the study area around Madrid, NY
- There were 198 sources of organic waste identified within the study area, producing an estimated 50,733 tons/week of organic waste
  - 50,060 tons/week of manure (estimate)
  - 673 tons/week of food waste (estimate)
- Over 99% of the total estimated organic waste was found to be generated by the twenty six (26) food processors and ninety six (96) concentrated animal feeding operations (CAFOs) identified
- North Country Biogas forecasts the creation of 6 new jobs over a 3 year period resulting from the installation of an anaerobic digester

Testimonial

"NYSP2I's GTAC program provided us the means to identify and quantify the organic waste streams in NYS which greatly assisted us in determining the viability and strategic location for an Anaerobic Digester in upstate New York. NYSP2I teamed with Clarkson University and RIT to apply their engineering services to summarize the quantity and methane generation potential of organic wastes, leading to our site selection. The successful implementation of our new Anaerobic Digester in the North Country is forecasted to add 6 new jobs in the region. We sincerely appreciate the combined efforts of RIT and Clarkson, working with the NYSP2I organization."

- Paul Toretta, North Country Biogas, LLC

CHALLENGE

- Identify, quantify and characterize the available organic waste within 100 miles of Madrid, NY

SOLUTION

- NYSP2I mapped & characterized the organic waste within a 100-mile radius of Madrid, NY

RESULTS

- NYSP2I concluded an anaerobic digester may be feasible for the study area around Madrid, NY, based on available feedstock
- North Country Biogas forecasts the creation of 6 new jobs over 3 years from the installation of an anaerobic digester

NYSP2I PARTNERS

R·I·T Rensselaer University at Buffalo The State University of New York Clarkson University

10 Regional Technology Development Centers

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For more information please contact us:

111 Lomb Memorial Drive, Bldg. 78
Rochester, NY 14623

Tel: 585-475-2512
Web: nysp2i.rit.edu
E-mail: nysp2i@rit.edu

R·I·T Golisano Institute for Sustainability
ROCHESTER INSTITUTE OF TECHNOLOGY