

Biosolids Project Update

February 2023



Project Review



Project Goals

- Reduce operational expenses associated with biosolids management
 - Net Cost of Composting: \$70 \$80 per wet ton of sludge after revenue from compost sales (2019 Figures, Updated Actual Spend 2022 is \$105.43 per Wet Ton)
 - Net Marginal Cost of Compost: \$26 \$32 per additional wet ton after revenue from compost sales
- Continue to produce a Class A Biosolid Product
- Potential Revenue Generation from RNG or Tipping Fees



Economic Evaluation

25-Year Present Cost – 5.87 to 10.56 MGD Design Basis





Economic Evaluation 25-Year Present Cost – 5.87 to 10.56 MGD Design Basis



What has changed since Initial Analysis?

- Significantly higher operating costs (Natural Gas and Electricity)
- Regionalization of Biosolids to UAJA from Bellefonte and Tyrone
- Interest from Centre County Refuse and Recycling Authority on Organics Diversion
- Value of Renewable Natural Gas in Market
- Revisions of Design and Discovery of Issues (Compost Building)
- Capital Cost Inflationary Costs due to Inflation and Material Availability

Overview of Project Improvements

 $\frac{\text{SECTION } \textbf{A} - \textbf{A}}{\text{SCALE: } 1/4" = 1'-0"}$

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	RETTEW Associates, Inc. 330 Innovation Blvd., Suite 104, State College, PA 16803 Phone (800) 738–8395 Email: rettew@rettew.com Website: www.rettew.com								Engineers • Planners • Surveyors • Landscape Architects Environmental Consultants		
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Imported Biosolids

- Bellefonte Borough WWTP
- Tyrone Borough WWTP
- Centre County Refuse and Recycling Authority (CCRRA) Organics
- Additional Food Waste Importation
- Renewable Natural Gas

- Imported Biosolids (No Revenue Included Original Project Evaluation)
 - Contacted three (3) local municipal WWTP for consideration of regionalization of biosolids disposal.
 - Presented Term Sheet with Key Contractual Arrangements for UAJA Receipt of Biosolids
 - ▶ 10 Year Agreement for Solids Disposal at UAJA by Municipality
 - 1.5% Inflationary Fee or Indexed Fee to Natural Gas (whichever higher)
 - Capital Contribution + \$25.00 per Wet Ton Tipping Fee (Option #1)
 - Early Termination Fee + \$36.00 per Wet Ton Tipping Fee (Option #2)
 - Borough of Tyrone and Bellefonte Borough Authority have formally accepted the Term Sheets and will work towards a Final Agreement.
 - Option #2 Revenue (Year 1) \$382,000/yr

Organic Waste Diversion

- Organics were portion of project since original evaluation. Small additional investment to receive pre-consumer packaged materials such as recalls, poor quality or discontinued products (ie. merchant waste)
- Opportunity has expanded with CCRRA interest to get stable, base rate customer for organics that benefits both Authorities and the Centre Region
- CCRRA looking to divert all organics received, not just Centre Region
- Diversion only of organic waste that comes to CCRRA doesn't impact other municipalities' current programs (ie. Borough program)
- Merchant waste would remain a portion of the program and would be noncompetitive with CCRRA and the Borough

CCRRA (No Revenue Included Original Project Evaluation)

- Developed a Term Sheet for review by CCCRA. Key Assumptions:
 - Availability of 125,000 Wt/Year of Mixed Solid Waste at CCCRA. Last Three-Year Peak was 120,000, Permitted Capacity of 750 Wt/day (~235,000 Wt/Year)
 - Based on organics fractionation study, availability of 13.3% of MSW as Organics and 4.1% as Yard Waste.
 - Assuming Organics Diversion 16,625 Wt/Yr to Authority (45 Wt/d)
 - Assuming Cost Savings Arrangement with CCRRA, potential Tipping Fees of \$465,500/yr and additional RNG revenue
 - Savings to CCRRA is approximately 42% (\$290,000/yr) based on 2021 Figures (Fuel and Disposal Cost Inflation are not considered)

RNG Trends

- Multiple offers have been tendered for the RNG from the Biosolids Project.
- These have been primarily revenue sharing agreements, with the Authority benefitting from elevated pricing.
- Final negotiations need final estimated RNG quantities, and some decisions will influence these (CCRRA) quantities
- Previous economics assumed a total of \$7/MMBTU for Environmental Attribute revenue on the RNG with the following characteristics:
 - D3 RIN (Biosolids)
 27,600 MMBTU/yr
 - ► D5 RIN (Food Waste) 42,000 MMBTU/yr
- Current Market Price for same fuel blend is \$26.93/MMBTU
- Anticipated Year 1 Revenue of \$1,008,000 for RNG sale (equating to \$14.48/MMBTU)

Daily RIN, LCFS & CFP Update

2/14/2023

D-Code		Averag	e Price		Closing Value				
	2020	2021	2022	2023	2020	2021	2022	2023	
D3	\$2.120	\$2.120	\$1.950	\$1.972	\$2.120	\$2.120	\$1.950	\$1.975	
D4	\$1.810	\$1.820	\$1.750	\$1.641	\$1.810	\$1.820	\$1.750	\$1.640	
D5	\$1.800	\$1.810	\$1.740	\$1.630	\$1.800	\$1.810	\$1.740	\$1.630	
D6	\$1.615	\$1.615	\$1.620	\$1.610	\$1.615	\$1.615	\$1.620	\$1.610	
		Averag	e Price		Closing Value				
California LCFS Credit	\$62.50				\$62.50				
Oregon CFP Credit		\$12	2.00		\$122.00				

Data provided in the EcoEngineers Daily RIN Price Update is intended for informational purposes only.

Sensitivity Analysis

Baseline Scenario Assumptions and Outcome

- Biosolids Tipping Fees from Bellefonte and Tyrone consistent with initial offers totaling \$382,000/yr and increasing at minimum of 1.5% per year.
- Food Waste Tipping Fees from CCRRA and others consistent with initial offers totaling \$465,000/yr and increasing at minimum of 1.5% per year.
- RNG Sales from Biosolids and Food Waste Derived Gas at approximately 50% of market value equating to \$1,008,000/yr and increasing at minimum of 0.5% per year.
- Avoided Operations Costs of 65% of Actual (negating labor cost) on Biosolids Destroyed through Anaerobic Digestion Process equating to \$600,000 and increasing at 2.5% per year
- New Totalized Operations Costs equating to current Costs plus Natural Gas for Sludge Drying (ie. no labor reductions or savings)
- ▶ Total Capital Cost of \$52mm for the Project financed at blended rate of 3.2%
- Investment Tax Credit of 40% of Allocated Project Value (90% of Total Capital Cost) and derated to 25% for Tax Free Bond Financing
- Net Project Savings of \$20,258,000 over 25 years inclusive of Capital Cost Debt Service

RNG Revenue Decline Scenario and Analysis

- Biosolids Tipping Fees from Bellefonte and Tyrone consistent with initial offers totaling \$382,000/yr and increasing at minimum of 1.5% per year.
- Food Waste Tipping Fees from CCRRA and others consistent with initial offers totaling \$465,000/yr and increasing at minimum of 1.5% per year.
- RNG Sales from Biosolids and Food Waste Derived Gas at approximately 10% of market value (\$2.70/MMBTU) equating to \$200,000/yr and increasing at minimum of 0.5% per year. Effectively natural gas commodity offsetting
- Avoided Operations Costs of 65% of Actual (negating labor cost) on Biosolids Destroyed through Anaerobic Digestion Process equating to \$600,000 and increasing at 2.5% per year
- New Totalized Operations Costs equating to current Costs plus Natural Gas for Sludge Drying (ie. no labor reductions or savings)
- ▶ Total Capital Cost of \$52mm for the Project financed at blended rate of 3.2%
- Investment Tax Credit of 40% of Allocated Project Value (90% of Total Capital Cost) and derated to 25% for Tax Free Bond Financing
- Project Breaks Even (+\$170,000) over 25 years inclusive of Capital Cost Debt Service

Higher Capital Cost Scenario and Outcome

- Biosolids Tipping Fees from Bellefonte and Tyrone consistent with initial offers totaling \$382,000/yr and increasing at minimum of 1.5% per year.
- Food Waste Tipping Fees from CCRRA and others consistent with initial offers totaling \$465,000/yr and increasing at minimum of 1.5% per year.
- RNG Sales from Biosolids and Food Waste Derived Gas at approximately 50% of market value equating to \$1,008,000/yr and increasing at minimum of 0.5% per year.
- Avoided Operations Costs of 65% of Actual (negating labor cost) on Biosolids Destroyed through Anaerobic Digestion Process equating to \$600,000 and increasing at 2.5% per year
- New Totalized Operations Costs equating to current Costs plus Natural Gas for Sludge Drying (ie. no labor reductions or savings)
- **•** Total Capital Cost of \$68.3mm for the Project financed at blended rate of 3.2%
- Investment Tax Credit of 40% of Allocated Project Value (90% of Total Capital Cost) and derated to 25% for Tax Free Bond Financing
- Project Breaks Even (+\$500) over 25 years inclusive of Capital Cost Debt Service

ITC Value Modification Scenario and Outcome

- Biosolids Tipping Fees from Bellefonte and Tyrone consistent with initial offers totaling \$382,000/yr and increasing at minimum of 1.5% per year.
- Food Waste Tipping Fees from CCRRA and others consistent with initial offers totaling \$465,000/yr and increasing at minimum of 1.5% per year.
- RNG Sales from Biosolids and Food Waste Derived Gas at approximately 50% of market value equating to \$1,008,000/yr and increasing at minimum of 0.5% per year.
- Avoided Operations Costs of 65% of Actual (negating labor cost) on Biosolids Destroyed through Anaerobic Digestion Process equating to \$600,000 and increasing at 2.5% per year
- New Totalized Operations Costs equating to current Costs plus Natural Gas for Sludge Drying (ie. no labor reductions or savings)
- ▶ Total Capital Cost of \$52mm for the Project financed at blended rate of 3.2%
- **Elimination of Investment Tax Credit**
- Net Project Savings of \$8,558,000 over 25 years inclusive of Capital Cost Debt Service

Ozone Project Update

