GLOBAL
NRG ADVISORY

**PREPARED FOR**
Marc Rider

# RESPONSE TO ULSTER COUNTY RESOURCE RECOVERY AGENCY RFP:

## SOLID WASTE DIVERSION AND ALTERNATIVES TO LANDFILLING AND COMBUSTIBLE INCINERATION

RFP 2025-01

**PREPARED BY**
Global NRG Renewables

**07/11/2025**

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# I. Executive Summary

Ulster County has demonstrated forward-thinking leadership in advancing sustainable waste management practices. In response to the County's RFP for an integrated organics recovery and processing solution, Global NRG Renewables, together with a strategically selected team, present a comprehensive, scalable, and proven approach that aligns with local environmental goals and regulatory requirements.

## Project Overview

Global NRG Renewables (Global NRG) is proud to lead a consortium of world-class partners to deliver a turnkey organics recovery and renewable energy project. Our solution maximizes material recovery, diverts organics from landfill, and produces clean, renewable energy through anaerobic digestion.

The proposed facility will be developed on an existing 120-acre county-owned site at 999 Flatbush Road in Kingston, NY. The design builds upon current infrastructure, reducing new construction costs and environmental disruption. The proposed system will utilize advanced mechanical, thermal, and biological technologies to efficiently process Ulster County's municipal solid waste (MSW). While the proposed system offers a range of benefits to Ulster County, this proposal highlights several key advantages that are particularly impactful and aligned with the County's goals.

## Benefits to Ulster County

The proposed solution offers multiple benefits to Ulster County, including a 60–70% reduction in landfill-bound waste that is drier and less odorous, along with the generation of renewable energy in the form of biogas or RNG. It reduces greenhouse gas emissions and other environmental impacts compared to traditional landfilling. Local processing will also cut down on long-haul trucking, easing road wear and lowering transportation-related emissions. Additionally, the project supports economic growth through local job creation and contributes to a more circular, sustainable economy.


**Figure 1: 3D Rendering of Proposed Ulster County Resource Recovery Agency**

This project represents a transformative opportunity for Ulster County to lead the state and region in sustainable waste-to-energy innovation. We are confident that, together with our expert partners, we can deliver a high-performance, community-aligned solution. A more in-depth overview of the proposed project can be found in the Technology Solutions section of this response.

We understand that delivering this project on schedule is critical to achieving the Agency's goals and serving the community effectively. With extensive experience in project management, permitting, and risk management, our team is committed to maintaining clear timelines, proactive communication, and thorough coordination to secure all necessary approvals and mitigate potential challenges — ensuring every phase is completed on time, within budget, and to the highest standard. Strategies in relation to these important deliverables are outlined in response to this RFP. In compliance with the RFP requirements, we as Global NRG Renewables have completed the required proposer forms as can be found in the appendices.

To demonstrate the impact of this approach, the following diversion summary outlines the expected material recovery and landfill reduction based on Ulster County's waste profile.

### Total Diversion Summary

| Stream | Approx. Diversion % |
|---|---|
| Organics to AD (via BIOMAK) | 90–96% |
| Soiled Paper/Cardboard | 90-95% |
| Aluminum Recovered | 90–95% |
| Ferrous Metals | 90-95% |
| Target Plastics | 90-95% |
| **Total Diversion** | **60–70%** |
| Residual Disposal | 30–40% |

### Key Partners and Roles

With decades of proven experience in the waste management and resource recovery sector, our team has successfully delivered sustainable solutions that maximize resource conservation and environmental protection. We bring extensive technical expertise, innovative solutions, and a robust track record of partnering with public agencies to develop modern facilities that meet evolving community needs. Details about these projects can be found in the References section of this document.

- **Global NRG will be the Project Developer** responsible for project development, financing, permitting, and overall program execution. With a track record of delivering renewable energy infrastructure, Global NRG will ensure project success from inception to operation.
- **ARCO/Murray will be responsible for the Engineering, Procurement, and Construction (EPC) of the project.** ARCO/Murray is a nationally recognized EPC contractor with sizable experience in designing and constructing complex energy and waste infrastructure. They will manage all site development, construction, and commissioning activities.

- **Van Dyk Recycling Solutions (Van Dyk) will lead the preprocessing portion of the project.** Van Dyk is an expert in Material Recycling Facilities and leverages decades of experience in mechanical separation. They will supply and integrate size reduction and sorting equipment. Their expertise ensures high-quality separation of the organic fraction from MSW and recyclables from mixed streams.

- **Econward Tech (Econward) will supply technology for the project.** Specifically, they will be the technology provider for the Thermal Hydrolysis Pretreatment system – BIOMAK - proposed for the project. This patented process efficiently extracts the organic fraction from MSW, reducing particle size and enhancing biodegradability to increase biogas yields in the downstream anerobic digestion and composting processes.

- **PlanET Biogas USA Inc. (PlanET) is also a technology provider for the project.** A global leader in biogas solutions, PlanET will provide an anaerobic digestion system, optimized to process pretreated organics into renewable energy and nutrient-rich digestate. Their modular technology is proven, robust, and adaptable to changing feedstock profiles.

This public-private partnership is expected to deliver long-term economic, environmental, and operational benefits to Ulster County. These include job creation, enhanced energy resilience, compliance with NYS DEC organic waste mandates, and leadership in sustainable waste management. Our financial model reflects a competitive cost-per-ton price with strong revenue opportunities from RNG sales and commodity recovery. Please see the adjacent submission for the “Ulster County Cost Proposal Response-Global NRG” on behalf of Global NRG Renewables.

We appreciate the opportunity to present this proposal and look forward to collaborating with UCRRA to advance a modern, community-focused solution that turns waste into value.

# II. Proposer Forms

All required proposer forms comprised of section C associated with this RFP have been completed in full and are included for review. These documents demonstrate our compliance with applicable procurement, contracting, and regulatory requirements as outlined in the RFP guidelines.

Please refer to **Appendix A-Required Proposal Forms** for the completed forms and supporting documentation.

### NY M/WBE Acknowledgement Statement

Global does not currently hold New York State Minority- and Women-Owned Business Enterprise (M/WBE) or other disadvantaged business certifications. However, we are deeply committed to advancing and leveraging those that hold these certifications.

We make every good faith effort to engage and collaborate with M/WBE-certified firms and other disadvantaged businesses on our projects. We actively prioritize partnerships with minority-, women-, and disadvantaged-owned business enterprises (MBE/DBE/WBE) throughout our supply chain and project teams to help foster an inclusive and representative industry.

We fully support the goals of New York State's M/WBE program and remain committed to demonstrating a consistent and meaningful good faith effort in contributing to these goals through our business practices and community engagement.

# III. Introduction

Global NRG Renewables is pleased to submit our proposal in response to RFP-2025-01 for Solid Waste Diversion and Alternatives to Landfilling and Combustible Incineration. We appreciate the opportunity to partner with the Ulster County Resource Recovery Agency to advance innovative, sustainable waste management solutions for your community.

This project represents a transformative opportunity for Ulster County to lead the state and region in sustainable waste-to-energy innovation. We are confident that, together with our expert partners, we can deliver a high-performance, community-aligned solution with objectives that benefit Ulster County's commitment to sustainability.

### Benefits to Ulster County

| | |
|---|---|
| **Landfill Diversion** | The remaining waste for disposal will be significantly drier, less odorous, and reduced by 60-70%. |
| **Renewable Energy Production** | Generates clean biogas for electricity or RNG, contributing to the County's energy independence |
| **Environmental Impact** | Reduces greenhouse gas emissions, leachate, and odor concerns compared to landfilling |
| **Reduced Truck Traffic and Road Impact** | Local processing of organic waste reduces long-haul trucking, which lowers transportation-related emissions, minimizes risk for vehicle-related incidents, decreases annual road maintenance costs |
| **Economic Development** | Creates local construction & operational jobs, while supporting a circular economy model. |

Our team brings together industry leaders with proven expertise in project development, engineering, technology, and materials recovery:

- **Global NRG Renewables** will serve as the project developer, leveraging our extensive experience in delivering complex renewable infrastructure projects on time and within budget.

- **ARCO/Murray** is our selected EPC (Engineering, Procurement, and Construction) partner, recognized for their excellence in executing large-scale environmental and energy projects with a focus on safety, quality, and operational efficiency.
- **Econward Tech** and **PlanET Biogas USA Inc.** will provide advanced technology solutions, including state-of-the-art waste pre-treatment and anaerobic digestion systems, ensuring maximum diversion from landfill and optimal resource recovery.
- **Van Dyk** joins as a key partner, bringing decades of expertise in designing, building, and operating high-performance material recycling facilities, which will be vital in achieving and exceeding the diversion targets outlined in the RFP.

Our proposal details a comprehensive approach that integrates these strengths to deliver a robust, scalable, and environmentally responsible solution. We are confident that our team's combined capabilities will not only meet but exceed the requirements and objectives set forth in UCRRA's RFP.

The solution being proposed maximizes material recovery, diverts organics from landfills, and produces clean, renewable energy through anaerobic digestion. The proposed system will utilize advanced mechanical, thermal, and biological technologies to efficiently process Ulster County's municipal solid waste (MSW) and source-separated organics.

Global NRG Renewables and its project partners are deeply committed to delivering a solution that not only advances Ulster County's environmental goals but also promotes long-term social responsibility. Our approach recognizes that sustainable infrastructure must serve people as well as the planet. This means prioritizing equity, transparency, and community benefit throughout every phase of project development and operations.

From workforce development to inclusive contracting practices, we are intentional about creating opportunities for residents. Our team will actively engage with certified M/WBE and DBE partners, support fair labor practices, and ensure safe, high-quality jobs are generated through construction and ongoing facility operations. In alignment with the County's values, we will also work with local educational institutions and workforce organizations to explore training pathways in renewable energy, waste management, and advanced manufacturing — creating a pipeline for future careers in the circular economy.

We are equally committed to being good neighbors. Our team will maintain open communication with surrounding communities and stakeholders, proactively addressing concerns related to site aesthetics, traffic, odors, and other potential impacts.

We fully support the Ulster County Resource Recovery Agency's mission to protect public health and the environment through sustainable materials management. Our team is committed to helping the Agency realize its vision of treating discarded materials as valuable resources by delivering an expanded, modern resource recovery center that prioritizes waste reduction, reuse, recycling, and composting. In developing this project, we will uphold the highest standards of environmental stewardship and operational efficiency, and we will integrate innovative technologies that align with the Agency's commitment to continuous improvement. Together, we aim to create a facility that not only meets but exceeds regulatory requirements, fosters community engagement and education, and supports the long-term financial and environmental sustainability of solid waste management in Ulster County.

Global NRG appreciates the County's consideration for our submission. We look forward to the opportunity to discuss our proposal further and to contribute to Ulster County Resource Recovery Agency's leadership in sustainable waste management.

# IV. Respondent Information

For the Ulster County Waste Diversion project, Global NRG will lead the project, overseeing a team of experts in their class that has been carefully assembled to form a proficient project team.

Global NRG's leadership will ensure seamless management and effective execution throughout the project lifecycle. For full company details and resumes of key personnel, please reference the Statement of Qualifications documents (SOQs) in the Appendices noted in-line below.

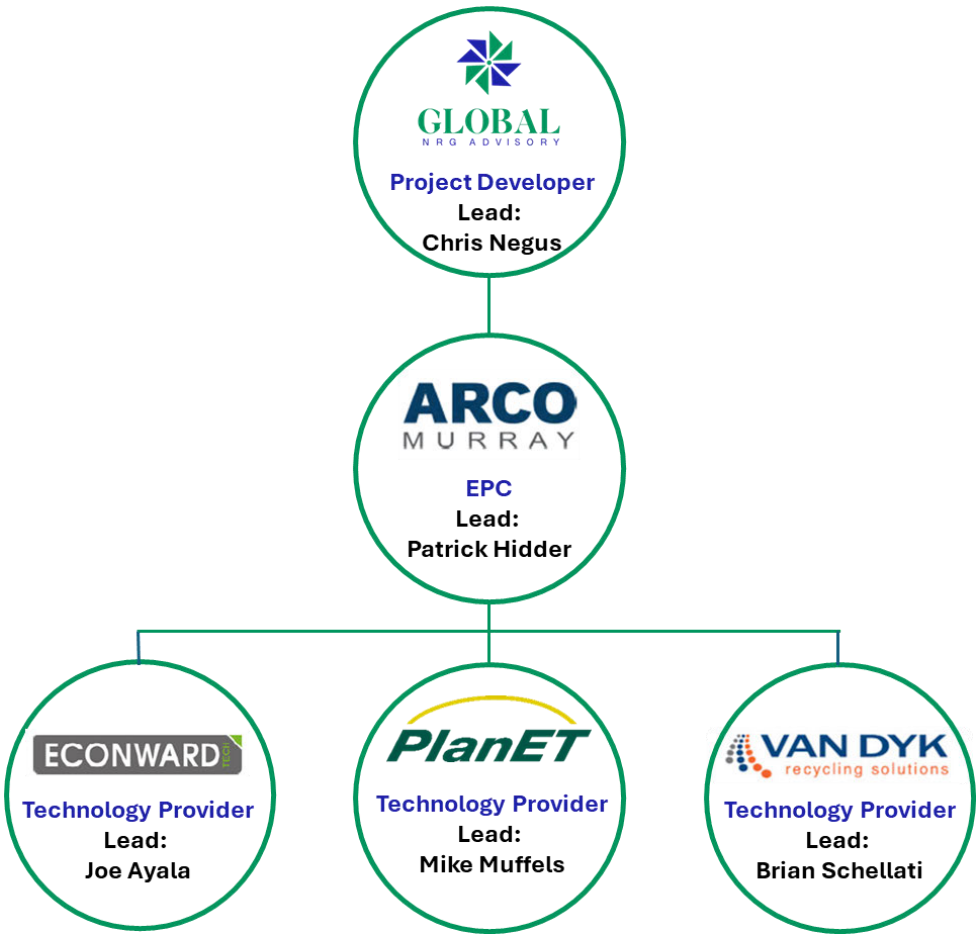



**Figure 2: Project Organizational Chart**

Global NRG Renewables is a distinguished project development firm specializing in sustainable infrastructure, focusing on waste-to-energy, organics recovery, and renewable fuel production. With a robust portfolio spanning from concept to execution, Global NRG excels in site development, technology integration, permitting, financing, and stakeholder coordination.

### Mission and Expertise

Founded by industry leaders Chris Negus and Andrew Rice, Global NRG is committed to promoting, developing, and financing high-quality renewable energy infrastructure projects worldwide. The company has over 40 years of collective banking and finance experience, with a track record of over $225M in successfully developed and financed anaerobic digestion projects across the UK and North America.

### Commitment to Sustainability

Global NRG prioritizes circular economy solutions, converting waste into valuable resources while significantly reducing environmental impact. The team's expertise spans a wide array of renewable energy technologies, collaborating closely with public and private partners to achieve diversion and climate goals. Dedicated to reliability, scalability, and community alignment, Global NRG delivers infrastructure that supports long-term sustainability.

### Project Leadership: Ulster County Waste Diversion

For the Ulster County Waste Diversion project, Global NRG will lead the initiative, overseeing a carefully assembled team of subcontractors to ensure proficient project management and seamless execution throughout the project lifecycle. Key qualifications include:

- **Technology-Agnostic Analysis:** Providing independent evaluations of traditional and emerging waste diversion technologies tailored to Ulster County's specific technical, environmental, and community criteria.

- **Stakeholder-Driven Process:** Employing inclusive engagement strategies to integrate community input, equity, and transparency into decision-making processes.
- **Resilient, Climate-Aligned Solutions:** Aligning strategies with Ulster County's objectives under the Climate Smart Communities program and the state's net-zero emissions pathway.

Global NRG Renewables is dedicated to delivering innovative solutions that meet the needs of Ulster County while advancing sustainability goals and benefiting local communities.

**Project Lead:** **Chris Negus, CEO**
**E-mail & Phone #:** chris@globalnrgadvisory.co.uk, +44.778.639.7975
**Address:** 228 Park Avenue S, New York, NY 10003

Mr. Negus is the CEO of Global NRG Advisory Limited/LLC and Global NRG Renewables and has 10+ years of experience leading commercial & sales operations, business development and contract negotiation, allowing him to drive business growth and success.

An analytical strategist: he is skilled in developing loan portfolios, translating an organization's objectives into actionable plans, spearheading P&L, delivering innovative and seamless solutions, and leading projects from initial concept to timely execution within budget.

Chris' approach to communication is collaborative as he focuses on building constructive relationships and improving processes to achieve excellence and scalability in all his endeavors.

You can find Chris Negus' CV in **Appendix B- Global NRG Advisory LLC Statement of Qualifications (SOQ).**

## Subcontractors/Partners:

ARCO/Murray, serving as the Engineering, Procurement, and Construction (EPC) partner, will deliver a fully integrated, turnkey facility designed to meet all performance and regulatory requirements. The company will manage full-scope design-build services, including site preparation, utility infrastructure, equipment installation, and facility construction.

In addition, they will oversee all procurement, scheduling, subcontractor coordination, and quality control throughout the construction phase. The team will also support permitting, ensure safety compliance, and lead system commissioning and startup.

With a proven track record in complex infrastructure delivery, ARCO/Murray provides single-point accountability to ensure successful, on-time project completion.

| | |
|---|---|
| **Project Lead:** | Patrick Hidder, Executive Vice President |
| **E-mail & Phone #:** | phidder@arcomurray.com +1.214.984.7017 |
| **Address:** | 3113 Woodcreek Dr. Downers Grove, IL 60515 |

Executive Vice President Patrick Hidder joined ARCO/Murray in 2010 and has provided operational leadership since 2015, when he helped start ARCO's Dallas office. He has been integral in building teams within new niches and has successfully managed and led over 200 projects across ARCO's major verticals, including tenant improvements, heavy processing, entertainment, industrial, self-storage, controlled environment agriculture, and waste-to-value.

Over the course of Patrick's career, he has overseen over $980 million worth of successful projects. As the Executive Vice President of the Green Infrastructure team, he has led his team in completing over $600 million worth of CEA and waste-to-value facilities.

You can find Patrick Hidder's CV in **Appendix C – ARCO/Murray Statement of Qualifications (SOQ)**.

ECONWARD is a global technology company with expertise in developing innovative, efficient, and sustainable solutions for the treatment, recycling, and recovery of municipal solid waste. With over a decade of experience in the energy sector, ECONWARD has invested more than €80 million, with a substantial portion dedicated to research, development, and innovation.

For the Ulster County project, ECONWARD will be supplying BIOMAK technology. One of BIOMAK's key competitive advantages: simple, effective, high-purity separation driven by the physics of the steam hydrolysis process itself. Thermal hydrolysis is not just a pre-treatment—it's an enabling technology that transforms complex waste streams into easily separable fractions, enabling highly automated recovery with minimal labor and without the creation of secondary microplastics due to the lack of aggressive physical processing. By capturing over 90% of organics from municipal solid waste and preparing them for energy recovery (i.e. anerobic and aerobic digestion), the BIOMAK system yields high diversion in enabling goals driven by the county.


| | |
|---|---|
| **Project Lead:** | **Joe Ayala, COO** |
| **E-mail & Phone #:** | j.ayala@econwardcom +1.346.277.8312 |
| **Address:** | 401 Wilshire Blvd Fl 12. Santa Monica, CA 90401 |


Mr. Ayala is dedicated to the commercialization of new technologies, specializing in taking pre-revenue companies and scaling them to achieve significant revenue milestones. He typically joins organizations when technology is at TRL 8 or higher. With nearly 30 years of experience in the circular economy, Joe is a seasoned leader and the Chief Operating Officer of ECONWARD.

As the head of the North American business, Joe oversees the market development, operations management, and technology commercialization of ECONWARD's thermal hydrolysis system, which transforms solid waste into pure, high-value feedstocks. Joe is passionate about decarbonizing and reducing the global carbon footprint and believes that ECONWARD's technology is one of the pivotal solutions for waste recycling.

You can find Joe Ayala's CV in **Appendix D – Econward Tech LLC Statement of Qualifications (SOQ).**

With over 400 employees, 870+ Anaerobic Digestion (AD) systems and 150+ AD to Renewable Natural Gas (RNG) plants built worldwide, the PlanET Biogas Group of Companies is one of the world leaders in biogas plant design, construction, and service. PlanET's expertise lies in designing and supplying proven, reliable technology tailored to specific needs for a wide variety of feedstock including food waste, food processing wastes, agricultural residuals, paper and paper sludge, ethanol stillage, sugar production by-products, cow & pig manure, chicken litter and slaughterhouse waste.

Beyond technology supply, PlanET offers comprehensive operational services and support including biological lab testing, operator training, customized preventative maintenance packages, tank cleanouts and desulfurization products to keep digesters running efficiently and reliably over the long term. PlanET continues to expand their local footprint along with the ability to process feedstocks that their technology will convert into Renewable Natural Gas and next generation biofuels.

As of July 2025, across the United States, they have 24 biogas plants in operation, employing 57 PlanET digesters and another 14 biogas plants with PlanET digesters under construction.

| | |
|---|---|
| **Project Lead:** | Mike Muffels, Program Director – Organics |
| **E-mail & Phone #:** | M.Muffels@planet-biogas.com, +1.905.658.5092 |
| **Address:** | 3370 Walden Avenue, Suite 120. Depew, NY 14043 |

An accomplished environmental engineer and program director with over 20 years of experience leading complex projects in organic waste processing, anaerobic digestion (AD), and renewable natural gas (RNG) in North America and internationally.

Mr. Muffels combines technical expertise with strategic leadership, having successfully directed high-profile infrastructure projects, developed standardized engineering processes, and managed multidisciplinary teams and stakeholder groups. He has also assisted other municipalities with the planning, design and implementation of their food waste diversion facilities and programs.

Currently serving as Program Director – Organics at PlanET, he spearheads market development and delivery optimization for food waste biogas projects across North America.

Known for his ability to integrate engineering precision with practical implementation, Mike consistently delivers results that maximize value, enhance environmental outcomes, and build resilient infrastructure for the circular economy, ensuring sustainable and efficient solutions for clients.

You can find Mike Muffels' CV in **Appendix E – PlanET Biogas USA Inc. Statement of Qualifications (SOQ).**

Van Dyk Recycling Solutions is North America's leading supplier of turnkey material recovery facilities (MRFs) and advanced mechanical sorting systems for municipal solid waste, recyclables, and organics. The company specializes in designing and integrating high-performance technologies that maximize resource recovery and minimize landfill disposal. With thousands of systems installed across the U.S. and Canada, Van Dyk is known for its reliability, innovation, and deep expertise in waste stream optimization. Their solutions incorporate advanced automation, including optical sorting and AI-driven controls, to ensure high capture rates and low contamination. Van Dyk supports clients from initial system design through installation, training, and long-term service.

For this project, Van Dyk will serve as the equipment supplier for the pre-processing system. Responsibilities include supplying and supporting the equipment used to extract bulk material from incoming feedstock, ensuring efficient and reliable material handling at the front end of the process.

**Project Lead:** Brian Schellati, Director of Business Development
**E-mail & Phone #:** Bschellati@vdrs.com , +1.203.967.1100
**Address:** 360 Dr. Martin Luther King Jr. Drive, Norwalk, CT 06854

Mr. Schellati is the Director of Business Development at Van Dyk Recycling Solutions focused on growing markets since 2010. Markets such as mixed waste processing, waste plastics, construction & demolition, compost refining, glass recycling, etc. He is currently involved in the MRF design for several MSW projects that utilize many different biological and thermal conversion technologies. With a focus in the power generation industry, Mr. Schellati has over 25 years' experience of successful business development for several industrial equipment suppliers.

He received an MBA and Bachelor of Science in Industrial Engineering from Lehigh University. Mr. Schellati was born, raised and still resides just outside New York City in Westchester County.

Mr. Schellati serves as the Director of Business Development at Van Dyk Recycling Solutions, focused on market expansion efforts since 2010. His expertise spans sectors including mixed waste processing, waste plastics, construction & demolition, compost refining, and glass recycling. Currently, he is instrumental in designing Material Recovery

Facilities (MRFs) for multiple Municipal Solid Waste (MSW) projects, integrating advanced biological and thermal conversion technologies.

With a robust background in the power generation industry, Brian brings over 25 years of proven success in business development with leading industrial equipment suppliers. He holds an MBA and a Bachelor of Science in Industrial Engineering from Lehigh University. Born, raised, and residing just outside New York City in Westchester County, he remains dedicated to driving sustainable solutions in recycling and waste management.

You can find Brian Schellati's CV in **Appendix F – Van Dyk Recycling Solutions Statement of Qualifications (SOQ).**

# V. Technology Solutions

The proposed solution integrates a series of proven and innovative technologies designed to optimize the processing of Ulster County's organic waste while maximizing environmental and economic benefits.

The project incorporates Van Dyk separation equipment to recover targeted recyclable materials—specifically plastics and aluminum—before and after organic separation. These systems use advanced mechanical and optical sorting technologies to capture high-value recyclables, further increasing landfill diversion, supporting circular material recovery, and generating potential revenue streams from secondary commodities.

At the core of the system is advanced thermal hydrolysis pre-treatment and separation technology, which efficiently extracts the organic fraction from municipal solid waste (MSW) and food waste streams. This process removes contaminants and non-organics, producing a clean, homogenized organic material ideal for downstream anaerobic digestion.

To ensure optimal performance of the anaerobic digestion system, a dilution and polishing system for the organic fraction is utilized. This system conditions the organic fraction by adjusting solids concentration, removing residual grit, plastics, and inert materials, and homogenizing the mixture to meet input specifications for the digester. The result is a high-quality, stable feedstock that maximizes biogas yield, protects mechanical integrity, and improves long-term system efficiency.

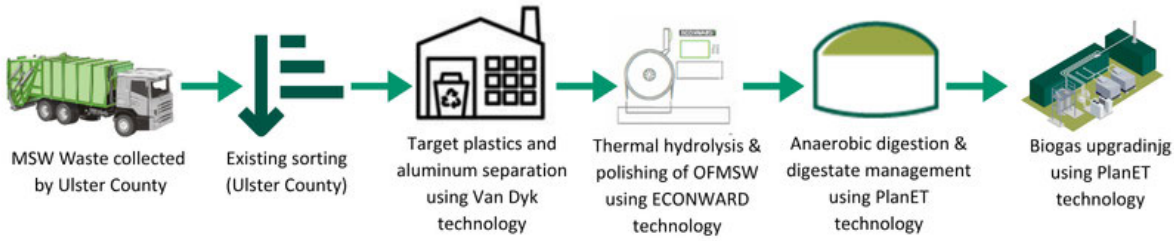
The anaerobic digestion system converts this organic material into biogas through a controlled biological process. The biogas will be upgraded to renewable natural gas (RNG) for pipeline injection, enabling flexible energy applications depending on market and infrastructure needs.

To support this, the proposal includes RNG upgrading and injection infrastructure, including gas purification, compression, odorization, metering, and interconnection systems to meet utility specifications and ensure compliance with pipeline standards.

Complementary systems include wastewater treatment components, designed to manage residual process liquids sustainably, and odor control systems to ensure minimal community impact.

Overall, the proposed technology package combines material recovery, renewable energy production, and environmental controls into a scalable, modular system tailored to Ulster County's waste profile and infrastructure.

At a high level our proposed solution can be broken down into the following areas or systems:




The descriptions of each technology solution and provider can be seen below.

### Technology Provider: Van Dyk Recycling Solutions

**Technology Overview:**
Van Dyk Recycling Solutions is North America's leading provider of turnkey material recovery and mechanical preprocessing systems for municipal solid waste (MSW), recyclables, and organics. With over 3,500 installations and decades of operational excellence, Van Dyk brings industry-leading innovation and reliability to the front end of integrated waste processing facilities.

**How It Works:**

**1. Material Reception:** Incoming municipal solid waste and source-separated organics are delivered to a Van Dyk-designed facility for sorting and preprocessing.

**2. Mechanical Separation:** Advanced sorting lines use a combination of shredders, screens, air classifiers, ballistic separators, magnets, eddy currents, and optical sorters to separate valuable recyclables, non-organics, and the organic fraction.

**3. Size Reduction & Conditioning:** Targeted equipment reduces organic waste to optimal particle sizes for downstream processing via thermal hydrolysis (Econward BIOMAK) and anaerobic digestion (PlanET).

**4. Quality Control & Purity:** Automated and manual quality assurance stations ensure that organics sent for further treatment are free from plastics, metals, and other contaminants.

**Key Advantages for Ulster County:**

- **High Efficiency Organic Recovery:** Van Dyk's systems achieve high capture rates of organics from mixed MSW while preserving material quality and minimizing cross-contamination.
- **Advanced Automation:** Proprietary technology including optical sorting and AI-driven controls allow for real-time material identification, sorting speed, and improved accuracy.
- **Proven Integration with Organics Processing:** Van Dyk systems are frequently paired with organics recovery and energy production technologies, creating a seamless feedstock stream for partners like Econward and PlanET.
- **Scalability & Modularity:** Facilities can be custom-designed to handle expected tonnage today while allowing for modular expansion as waste volumes or diversion goals increase.

**Environmental and Operational Benefits:**

- Increases landfill diversion by recovering valuable recyclables and maximizing organics capture.
- Reduces residual waste volumes through precise separation and targeted preprocessing.
- Lowers contamination rates in recovered organics, enhancing the efficiency of downstream biological processing.
- Supports circular economy principles by recovering high-quality secondary materials from the waste stream.

**Proven Track Record:**
Van Dyk has built some of the most sophisticated MRFs and organics preprocessing facilities in North America, including plants in Los Angeles, San Francisco, New York City, and Toronto. Their experience spans residential, commercial, and institutional waste streams, with a strong focus on system uptime, maintainability, and operator training.

## Technology Provider: Econward Tech LLC

**Technology Overview:**
BIOMAK is an advanced steam thermal hydrolysis system designed specifically for the pretreatment and separation of the organic fraction of municipal solid waste (OFMSW). Developed by Econward, BIOMAK integrates up to 58 psig of pressure and 305°F temperature processing with precise moisture and thermal control to transform heterogeneous municipal waste into a homogenized, biodegradable substrate optimized for anaerobic digestion and further resource recovery.

**How It Works:**

**1. Pre-Sorting & Size Reduction**
Municipal solid waste (MSW) undergoes initial mechanical preprocessing to remove materials larger than 300 mm, improving operational stability and ensuring optimal feedstock characteristics. This step is handled by a front-end system such as the Van Dyk line described above.

**2. Thermal Hydrolysis Process (THP)**
The screened MSW is fed into BIOMAK's autonomous thermal hydrolysis system, composed of four sequential low-pressure autoclaves [redacted]. Through saturated steam treatment and pressure cycling, the system breaks down complex organics by cleaving long molecular chains, significantly reducing particle size and enhancing biodegradability without the need for chemical additives or shredding.

[redacted]

- [redacted]
- [redacted]

**4. Dilution and Final Polishing**
The screened organic fraction is further processed in a three-stage polishing system:

- Dilution with process water to adjust viscosity and improve pumpability,
- Sedimentation to remove heavy residuals and dense particles (e.g., grit, sand, eggshells),
- Fiber separation to remove remaining fibrous packaging and reduce microplastic content.

The result is a clean, homogenous, pumpable slurry suitable for anaerobic digestion or ethanol production.

**5. Output Stream**
The final organic pulp is low in physical contaminants and high in volatile solids, delivering superior biogas yields and enabling the production of Class A-quality digestate. This makes it an ideal feedstock for anaerobic digestion with land-application-grade biosolids as a byproduct.

**Key Advantages for Ulster County:**

- **Maximized Organic Recovery:** BIOMAK extracts a significantly higher proportion of organics from mixed MSW—up to 96%—compared to conventional separation methods.
- [redacted]
- **Odor and Pathogen Control:** The closed-loop, high-heat process ensures sterilization of the feedstock, reducing odors and eliminating pathogens—an important consideration for community acceptance.
- **Gentle Treatment Protocol:** The waste is subject to steam in a semi-continuous batch process through a series of autoclaves, eliminating the need for harsh mechanical processing, preventing the creation of secondary microplastics.
- **Reduction of Digestate Volume:** Improved digestibility leads to reduced volume of post-digestion solids, lowering disposal costs and enhancing system efficiency.
- **Adaptability to Mixed Waste Streams:** BIOMAK is effective in processing unsorted or lightly sorted MSW, making it ideal for municipalities transitioning toward higher diversion goals.

**Environmental and Operational Benefits:**

- Supports landfill diversion targets by recovering organics from the residual MSW stream.
- Minimize greenhouse gas emissions compared to landfilling or uncontrolled decomposition.
- Modular design allows for integration with existing MRFs, anaerobic digestion, or composting facilities.
- Compatible with food waste, green waste, soiled paper/cardboard, and compostable plastics.

**Proven Track Record:**
Internationally, it has demonstrated reliability and high recovery rates in a full-scale operation in Spain since 2020. BIOMAK has also been successfully piloted in collaboration with U.S. partners, including a pilot plant in Idaho with Digester Doc.

## Technology Provider: PlanET Biogas USA Inc.

**Technology Overview:**

PlanET Biogas is a globally recognized leader in anaerobic digestion (AD) technology, offering modular and scalable systems designed to convert organic waste into renewable biogas. With over 870 biogas plants built worldwide, PlanET's proven approach is rooted in German engineering, high-performance digestion processes, and 25+ years of operational experience.

PlanET is responsible for supplying the anerobic digestion equipment, including:

- three fixed-roof digesters with central (roof-mounted) agitators for high-solids loading
- one digestate storage tank with an integrated biogas storage roof membrane
- digestate dewatering
- biogas conditioning and upgrading system to convert the biogas into RNG for injection into the local grid

**How It Works:**

**1. Pre-processing and Pre-feed:** Pretreated organic material, such as that produced by Econward's BIOMAK system, is received in dedicated tanks, ensuring optimized moisture content and particle size for digestion.

**2. Anaerobic Digestion:** In the tall, fixed roof digesters proposed for this project, methanogenic microorganisms break down organic materials, generating biogas (primarily methane and $CO_2$).

**3. Biogas Handling:** The biogas is cleaned and conditioned for use in combined heat and power (CHP) units, upgraded to renewable natural gas (RNG), or injected into local utility grids.

**4. Digestate Management:** The nutrient-rich residuals are separated and managed for agricultural use or/and further treatment, supporting a closed-loop sustainability cycle. Upon award, PlanET will collaborate with ARCO's team to develop a feedstock testing program that will fine-tune the design for the treatment of the liquid fraction of the digestate. The team has made informed assumptions and included allowances for this system based on previous experience. However, to optimize the

design to minimize energy and chemical consumption, a solid design basis using project specific data is essential.

**Key Advantages for Ulster County:**

- **Optimized for Diverse Feedstocks:** PlanET's systems are highly adaptable and engineered to handle a wide range of feedstocks, including food waste, OFMSW slurry, FOG, and agricultural waste—ensuring consistent performance despite variability.
- **High Biogas Yields:** Their proven multi-stage digestion approach and intelligent feedstock management tools maximize gas output, delivering superior energy conversion efficiency.
- **Modular and Scalable:** Four sizes of modular design allowing for easy customization and expansion for a variety of applications - making it ideal to align with both current and future waste volumes.
- **Proven Integration with Thermal Hydrolysis:** PlanET has demonstrated operational success with pretreatment systems like BIOMAK, which improve digestion kinetics and biogas productivity.
- **Smart Plant Management:** Advanced control systems and remote monitoring allow for real-time performance tracking, predictive maintenance, and automated optimization of biological conditions.

**Production of Valuable By-products:** The process of Anaerobic Digestion produces digestate – a nutrient rich fertilizer and soil amendment that can improve soil health and potentially add a revenue stream to operations.

**Environmental and Operational Benefits:**

- Convert waste into clean, dispatchable renewable energy or pipeline-grade RNG.
- Reduces greenhouse gas emissions by capturing methane that would otherwise be released through decomposition or landfilling.
- Supports nutrient recycling through digestate valorization, reducing reliance on synthetic fertilizers.
- Contributes energy resiliency and grid stability through CHP applications.
- Aligns with zero-waste strategies, renewable energy targets and community sustainability plans, making the county more resilient and environmentally responsible.

**Proven Track Record:**
PlanET has commissioned over 870 successful projects across Europe, North America, South America and Asia. In the U.S., they have supported agricultural, industrial, and municipal projects with best-in-class uptime, support services, and compliance with regulatory frameworks.

## Process Flow:

A schematic drawing of the proposed process flow can be found in **Appendix G-Ulster County Proposed Process Flow Diagram (PFD)**, illustrating the integrated system components and their operational sequence.

## Total Diversion:

The proposed system for Ulster County is designed to achieve high diversion rates through organic recovery for renewable energy and inorganic recovery for material resale or return, with minimal residuals sent to landfill.

### Organics Recovery for Anaerobic Digestion

Mixed municipal solid waste (MSW) first undergoes preprocessing with Van Dyk equipment, where large, non-shreddable or inert materials (e.g., bulky waste, metals, and oversized debris) are screened out and directed to the onsite material recycling facility (MRF) or landfill. Bulk material is defined as MSW larger than 300mm in diameter. The remaining waste (in which is defined as treatable MSW) is then processed through the Econward BIOMAK thermal hydrolysis system, which separates and homogenizes the organic fraction — including food waste, soiled paper/cardboard, and yard waste — into a material optimized for anaerobic digestion via PlanET's high-performance anerobic digestion system.

This process is guaranteed to divert over 90% of organics from the incoming MSW, converting it into renewable natural gas (RNG) and digestate, significantly reducing methane emissions from landfilling and creating circular value.

### Inorganics Recovery from BIOMAK Rejects

Unlike conventional MRFs where recyclables are recovered upfront, this system recovers cleaner, higher-value inorganics as part of the rejects stream from the BIOMAK system as well. Materials such as plastics, metals, glass, and other non-biodegradable components

are physically separated under controlled, specific pressure and temperature conditions, and discharged with reduced contamination and improved marketability.

The proposed system is designed not only to recover the organic fraction for renewable energy production, but also to maximize the recovery of high-value non-organic materials. Through advanced separation technologies, the system is capable of diverting and recovering over 90% of aluminum, over 90% of target plastics, and over 90% of ferrous metals from the incoming MSW stream as defined.

These BIOMAK rejects are sorted and bailed as recoverable commodities and either:

- Sold into secondary recycling markets, or
- Return to Ulster County via existing county logistics (MRF), depending on material type and contractual preference.

### Landfilled Residuals

The non-recoverable bulk material screened during initial preprocessing (typically 20–25% of incoming tonnage) is directed to the landfill. This includes bulky items such as large, hard pieces of plastic, construction and demolition waste, and other inert or hazardous contaminants unsuitable for biological or material recovery. After organics separation and polishing, a small percentage of non-valuable contaminants are also directed to the landfill (typically around 10-20%).

### Total Diversion Summary

| Stream | Approx. Diversion % |
|---|---|
| Organics to AD (via BIOMAK) | 90–96% |
| Soiled Paper/Cardboard | 90-95% |
| Aluminum Recovered | 90–95% |
| Ferrous Metals | 90-95% |
| Target Plastics | 90-95% |
| **Total Diversion** | **60–70%** |
| Residual Disposal | 30–40% |

The diversion targets presented in this proposal are based on the waste characterization data provided by the Ulster County Resource Recovery Agency (UCRRA) and processing what is defined as treatable MSW. Using this localized data, we estimate that the proposed system will achieve a total diversion rate of approximately 65%. This includes the recovery of organics for renewable energy production and the capture of high-value recyclables such as metals and plastics. These projections are tailored specifically to Ulster County's waste profile and reflect the performance of the integrated technologies under typical operating conditions.

### Commitment to Continuous Improvement

Once in operation, the Team will work with Ulster County to continue to look for additional diversion opportunities to further reduce the residual tonnage requiring disposal. Data underpins good decision making. The Team will commit to completing 2 waste audits of the residual waste leaving the facility within 12 months of achieving steady-state operations; and once every second year thereafter. We will share and review this data with the County annually to collaboratively and continuously aim to improve diversion, maximizing the benefit of this asset to Ulster County.

### Conclusion

This configuration delivers a next-generation circular waste solution, where valuable organics and inorganics are recovered after thermal hydrolysis, minimizing contamination, maximizing resource value, and substantially reducing landfill dependency — in full alignment with Ulster County's sustainability and diversion goals.

# VI. Reference Facilities

As part of the response, we are pleased to present five reference projects from the lead respondent and key subcontractors that are similar in scope and complexity to the proposed project.

Collectively, the team has delivered numerous successful projects over the past 10 years, and these references demonstrate combined experience in delivering high-quality, integrated solutions on time and within budget. Together, we have a depth of expertise and a proven track record that directly aligns with the requirements of this RFP.

**Reference #1**

**Danny Husband, Manager Operations at Host Bioenergy**
**Phone:** [redacted]
**Email:** danny.husband@host-bioenergy.co.uk
**Address:** T[redacted]

### Associated Reference Facility: Blaise Biogas Limited

Global NRG was responsible for the funding of developers and operators within the Renewable Energy sector for Blaise Biogas Limited. This AD facility in Kent, UK processes organic waste like food waste from supermarkets and agricultural residuals to generate combined heat and power to the national grid. The facility was designed to process 70,000 tons of organic waste annually and currently processes about 45,000 tons of food waste using Anaerobic Digestion technology. The biogas is fed directly into the national grid and powers the plant itself as well as creating a fertilizer from the digestate. Complete Project Reference for Blaise Biogas Limited can be found in **Appendix B.**

**Reference #2** **Collin Walters, Project Manager**
**Phone:** [redacted]
**Email:** cwalters@arcomurray.com
**Address:** [redacted]

### Associated Reference Facility: PurposeEnergy

In 2024, ARCO/Murray completed PurposeEnergy's most recent Anaerobic Digestion project. Constructed in St. Albans, VT, the site converts both food waste from a co-located facility and local tipping waste streams into biogas that is utilized by an on-site cogeneration unit to export renewable electricity to the utility grid. The facility produces 1.1MW of continuous energy for the local power grid. ARCO/Murray successfully delivered the project on an accelerated schedule and tight budget through efficiently leveraging design partners, technology providers and internal innovation resources. Reference for PurposeEnergy can be found in Appendix C.

**Reference #3** **Jesus Pacheco, Director of Research and Development**
**Phone:** [redacted]
**Email:** j.pacheco@econward.com
**Address:** [redacted]

### Associated Reference Facility: Rivas Vaciamadrid

ECONWARD has an industrial-scale plant in Rivas Vaciamadrid outside of Madrid, Spain that processes OFMSW, SSO and MRF fines using the process of thermal hydrolysis. In operation since 2020, the site is capable of processing up to 65,000 metric tons per year. The end-product is a clean thermo hydrolyzed material with high organic content that can be used for Anaerobic Digestion or co-digestion with wastewater sludge. Complete Project Reference for Econward can be found in Appendix D.

**Reference #4** **Ed Mulder, Plant Manager**
**Phone:** [redacted]
**Email:** [redacted]
**Address:** 4437 8 Ave N, Lethbridge, AB T1H 6W5

### Associated Reference Facility: Lethbridge Biogas LP

PlanET was the technology provider and constructor for the Lethbridge Biogas facility - the largest AD to RNG plant in Western Canada with an annual RNG production capacity of 330,000 MMBTUs and the ability to process up to ~130,000 tons of organic waste feedstock. PlanET delivered the full project from conception. This included development, process and full equipment design, fabrication, onsite construction, service, and operations. PlanET was a 50% share Joint Venture (JV) partner within Lethbridge Biogas LP for 10 years (2013-2022) until the JV sold to Skyline Energy in the 2nd half of 2022. . Complete Project Reference for Lethbridge Biogas can be found in **Appendix E.**

**Reference #5** **Andrea Rodriguez, Director of Engineering at FCC**
**Phone:** [redacted]
**Email:** [redacted]
**Address:** 3195 Athens Ave, Lincoln, CA 95648

### Associated Reference Facility: FCC WPWMA MSW

Van Dyk Recycling Solutions recently completed (Q1 2025) a project called the FCC WPWMA MSW in Lincoln, CA. This project was completed with VDRS completing all the work besides the building and any civil work required. The technology for this facility - the VDRS MSW Separation system consists of dual processing equipment system with a capacity to process 50+ tons per hour of bagged and/or loose MSW waste. Complete Project Reference for FCC can be found in **Appendix F.**

# VII. Project Development

Outlined below is a high-level project development plan, detailing the key phases and milestones of implementation. For a comprehensive analysis, including technical, financial, and regulatory considerations, please refer to the full feasibility study provided in **Appendix H-Ulster County Feasibility Report.**

### Site Plan

Below is a map of the available site owned by the Ulster County Resource Recovery Agency (UCRRA), along with conceptual renderings illustrating how the site would appear with the proposed infrastructure in place. These visuals are intended to support understanding of site layout, spatial requirements, and integration with existing facilities.


**Figure 3: Map of Ulster County Site Plan as Provided by UCRRA**

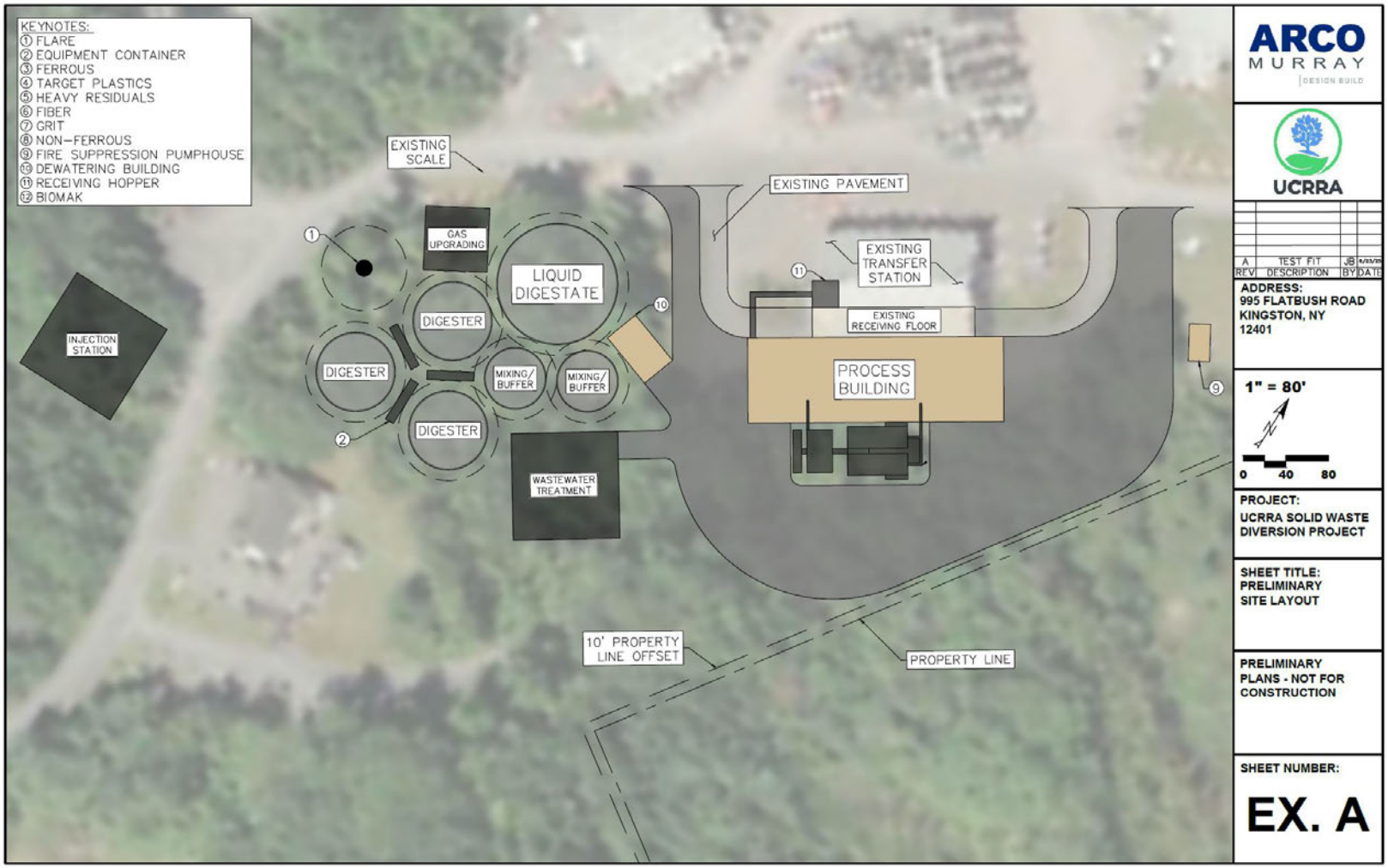



**Figure 4: Conceptual Rendering of Ulster Site Plan Layout Zoomed In**


**Figure 5: Conceptual Rendering of Ulster Site Plan Layout Zoomed Out**

## Location Summary

This proposal acknowledges and leverages the existing infrastructure currently available at the Ulster County site, maximizing its value and minimizing unnecessary disruption or capital expenditure. The integration of the proposed technologies and innovations will build upon this foundation, enhancing the site's functionality, efficiency, and environmental performance in alignment with the County's long-term sustainability goals.

## Site Details

| **Property Address:** | **999 Flatbush Road, Kingston, New York, 12401** |
|---|---|
| **Acreage** | • 120.5 AC Existing |
| **Primary Jurisdiction** | • Town of Ulster |
| **Current Zoning** | • Office Manufacturing (OM) |
| **Permitted Use** | • Use Variance likely required, pending discussion with Town of Ulster Zoning Board of Appeals |
| **Adjacent Uses** | • North: Office Manufacturing<br>• East: Residential<br>• South: Residential<br>• West: Office Manufacturing |
| **Existing Buildings** | • The existing UCRRA recycling center and transfer station exists, but no demolition of existing buildings will be required |
| **New Buildings** | • (6) Tanks of varying sizes<br>• (2) Buildings<br>• Gas Upgrading Skid<br>• Wastewater Treatment Skid<br>• RNG Gas Injection Station (completed by Central Hudson)<br>• Ancillary steel supporting structures, pavement, underground and above ground process lines. |
| **Site Utilities** | • Power<br>• Gas<br>• Water<br>• Sanitary Sewer<br>• Storm Sewer<br>• Gas |

## Existing Conditions

Due to the absence of detailed geotechnical, topographical, or subsurface information provided in the RFP documentation, it is assumed for the purposes of this proposal that the designated project site is suitable for construction and development of the proposed waste processing and renewable energy facility.

This assumption includes, but is not limited to:

- Adequate soil bearing capacity for building foundations and equipment loads
- Acceptable groundwater conditions with no extraordinary mitigation required
- No significant subsurface obstructions or contamination that would impede construction or operations
- Suitable grading, drainage, and access for vehicle and equipment movement

Should further site-specific data (e.g., geotechnical borings, hydrological studies, or environmental assessments) reveal conditions requiring material design changes or additional civil works, the project team will work collaboratively with Ulster County to assess potential impacts on scope, schedule, and budget.

| | |
|---|---|
| **Topo View (USGS)** | • Steep, nonuniform, changes in grade throughout the site.<br>• Property roughly 50’ change in elevation on site.<br>• Area of development relatively flat |
| **Parcel Map** | • No encumbrances noted in development area |
| **Zoning Map*** | • OM \| Office Manufacturing<br>• Use not permitted<br>• Use Variance likely required |
| **Wetlands Map*** | • Various Wetlands onsite<br>• Riverine expected to be constraint for southern limits of development<br>• *100’ Offset required* |
| **Floodplain Map** | • No floodplain or floodway on site |
| **FAA*** | • FAA Requests Filing<br>• Kingston Ulster Airport 0.5 miles from site |

| | |
|---|---|
| **Endangered Species*** | • Endangered species identified through NYSDEC EAF Mapper:<br>• Northern Long-Eared Bat<br>• Shortnose Sturgeon<br>• Atlantic Sturgeon |
| **Historical Significance*** | • Historical photos show no significant change on site dating back to 1995<br>• NYSDEC EAF Mapper identifies:<br>• Archeological Site<br>• Historical Site – Benjamin Ten Broeck Farmhouse |

**Indicates potential site constraint*

## Site Utilities

1. **Electric Service**
    - Provider: Central Hudson Gas and Electric
    - Required for facility operations, possible to utilize existing service depending on residual capacity.
    - Distribution Lines running parallel to Flatbush Road
    - Capacity TBD after submission of Data Form
2. **Gas Service**
    - Provider: Central Hudson Gas and Electric
    - Required for facility operations of space heating and boilers for steam and heat generation.
    - Low pressure distribution line running parallel to Flatbush Road
    - Capacity TBD after submission of Data Form
3. **Water Service**
    - Provider: Onsite private well anticipated
    - Required for domestic water on site (cleaning, drinking, handwashing and back to recycled system)
    - NYSDEC Well Requirements if Water Withdrawal Permit not required:
        - Well must be drilled by a contractor registered as a Water Well Contractor with NYSDEC
        - Water Well Contractor must notify NYSDEC prior to drilling and provide a Water Well completion report to NYSDEC and owner upon completion
        - Well Standards must adhere to specifications described in NYS DOH Drinking Water Regulations Appendix 5-B

- Anticipated Well Specifications
  - 250’ – 300’ Depth
  - 6” Diameter
  - 70’ Deep Casing

4. **Sewer Service**
   - Provider: Onsite private septic tank for human waste and surface water discharge for grey water
   - Required for Sanitary Discharge of human waste (toilets, sinks, etc.)
   - Septic Tank Requirements:
     - Sizing septic tanks to accommodate the required daily discharge may not be feasible
     - Town of Ulster Sewer Superintendent must deem undue hardship upon owner to install septic tanks
     - Health Department Inspections
     - Grey Water = Pre-treated process discharge liquid waste
     - Industrial Discharge Permit Required (see permitting section below)
     - Effluent Limits:
       - BPT, BCT, BAT, NSPS limitations under 40 CFR part 444: Waste Combustors
5. **RNG Utility/Injection**
   - Provider: Central Hudson Gas & Electric
   - Required for the sale back of RNG and injection into a high-pressure distribution line
   - Central Hudson Gas & Electric will be responsible for design, permitting, and construction of said facility
   - Minimum RNG quality requirements to be met before interconnect

## Required Due Diligence

As distributed within the RFP there was no provided pre-existing site due diligence including topographic, geotechnical or environmental information. In order to confirm site conditions, the following scopes of due diligence will be required. The cost of these services is included in the pricing and the work would be released as soon as possible.

| Scope | Timeline |
|---|---|
| Survey/ALTA | 10 – 16 Week Turnaround |
| Wetland Survey | 3 – 4 Week Turnaround |
| SEQR | 12 – 16 Week Turnaround |
| Geotech | 6 – 8 Week Turnaround |
| **Total Timeline** | **13-20 Weeks** |

## Zoning Standards

The following information is based off the Town of Ulster zoning regulations last updated August 7th, 2014, and based on the zoning designation OM | Office Manufacturing.

| | |
|---|---|
| **Zoning**<br>*(190-60)* | • OM \| Office Manufacturing<br>• Use Variance to be submitted to Zoning Board of Appeals<br>• Remaining zoning standards subject to change based on conditions of Zoning Board of Appeals' Use Variance |
| **Lot Width and Area**<br>*(190-69)* | • No Minimum Lot Width<br>• No Minimum Lot Area<br>• 10% Minimum Green Space Coverage<br>• 50% Max Building Lot Coverage |

| | |
|---|---|
| **Height and Setbacks**<br><br>*(190-69 & 18)* | • Front Setback – 40’<br>• Side Setback – 10’<br>• Rear Setback – 10’<br>• Parking Setback<br>  ○ Front – 10’<br>  ○ Side – 10’<br>  ○ Adjacent to residential district – 25’<br>• Maximum Allowable Height – 75’<br>  ○ Height measured from proposed finished grade to highest part of a flat roof. Height restrictions not applied to antennas/lightning rods<br>  ○ Econward system building height – 69’ (Height variance not anticipated) |
| **Parking**<br><br>*(190-27 & 28)* | • 1 space per 500 sf or 2 per employee, whichever is greater<br>  ○ The count can be reduced with an Off-Street Parking Study |
| **Signage**<br><br>*(190-33)* | • Maximum area of individual sign<br>  ○ Wall – 50 sf<br>  ○ Monument – 50 sf<br>  ○ Pole – 50 sf<br>  ○ Protecting – 12 sf<br>• Signs Exempt from Permit: signs required by law or governing agency, temporary signs, sign posting private property, or signs required by MUTCD or NYDOT |
| **Lighting**<br><br>*(190-27)* | • The artificial average maintained light level within the site shall not exceed two (2) footcandles for outdoor off-street parking areas and eight (8) footcandles elsewhere<br>• Additional shielding is required for lighting fixtures adjacent to residential properties |

## VIII. Project Schedule

Please see below for the full project schedule.

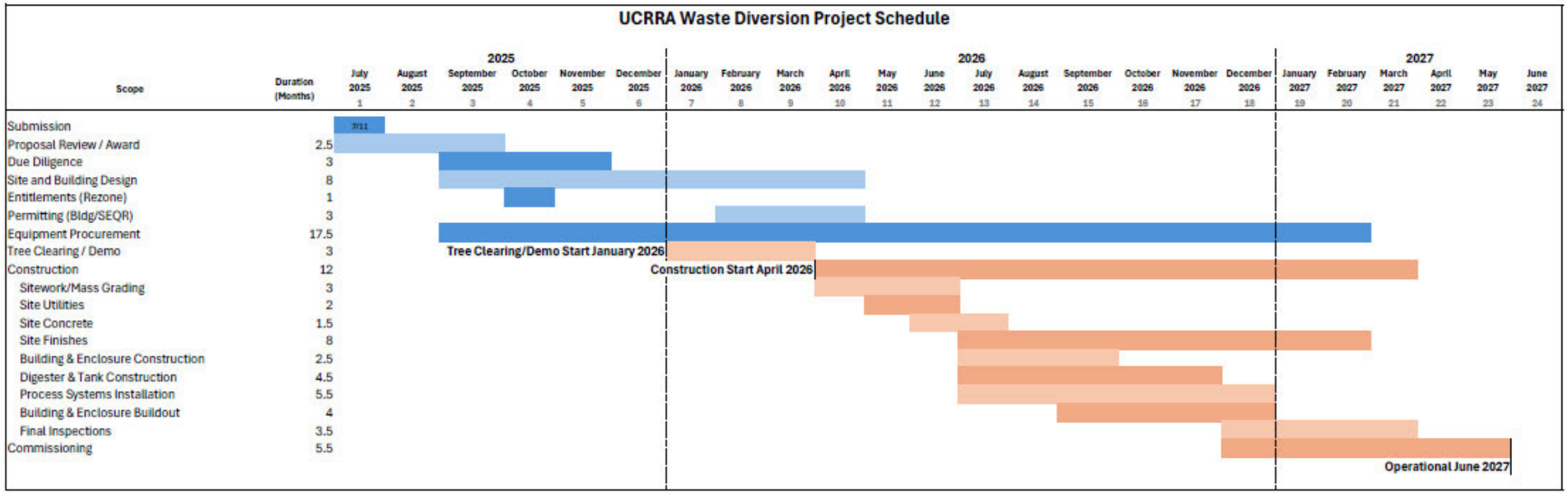
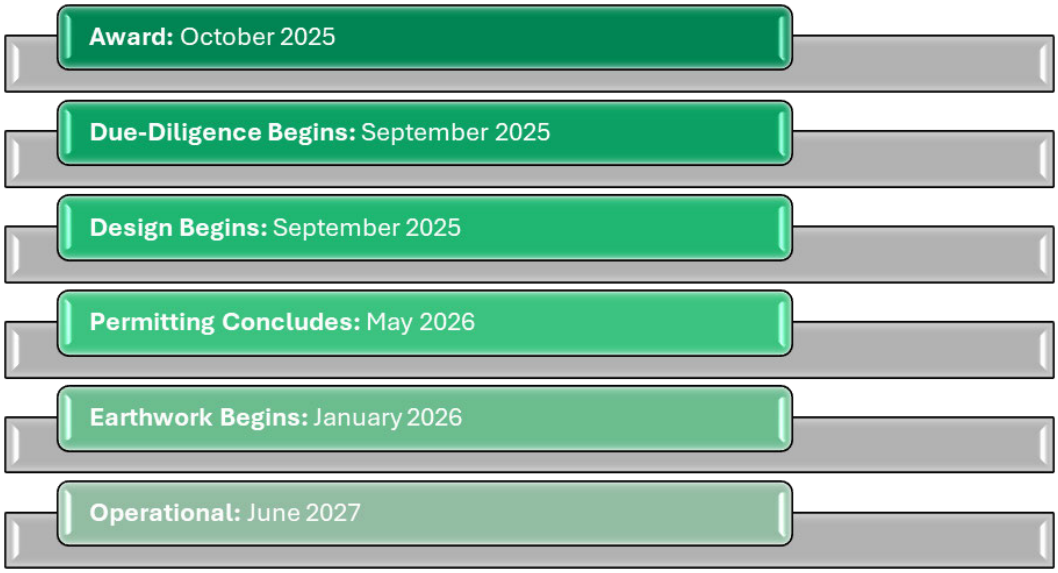



**Figure 6: Proposed Project Schedule**

## Milestones




## Schedule Methodology

We understand that time is one of the most valuable resources in any project. Once lost, it cannot be recovered, which is why ARCO/Murray emphasizes precise time management from start to finish. To ensure the project remains on schedule, the team utilizes the Critical Path Method (CPM) for effective scheduling and proactive timeline management.

At the onset, ARCO/Murray develops a comprehensive baseline schedule that covers the full scope of work. This schedule is meticulously planned using industry-standard software such as Microsoft Project and Primavera P6 to ensure accuracy, transparency, and efficiency.

Once the project kicks off, ARCO/Murray maintains and updates the schedule weekly to reflect real-time field conditions. These updates allow the team to track progress, address any challenges early, and ensure that the project stays on track, or in many cases, ahead of schedule. This proactive approach enables completion dates to be forecasted accurately by capturing actual events and anticipating potential impacts before they cause delays.

In addition to weekly internal updates, ARCO/Murray provides formal schedule updates monthly, or more frequently as required by contract terms. This ensures that all stakeholders have a clear understanding of project milestones and progress. With commitment to detailed scheduling and regular communication, ARCO/Murray drives projects toward successful, on-time completion.

# IX. Entitlements and Permitting

### Narrative

Due to the nature of ground up development, local, state, and federal approvals or permits will be required. Global NRG and ARCO/Murray's Development Service team will be responsible for and spearhead the coordination, applications and approval of each permit.

None of the listed permits are anticipated to hold up or negatively impact the project but are purely procedural requirements to make sure all local, state and federal codes and requirements are met, something that all ARCO/Murray projects achieve.

Below is a summary list of the expected permits with a more detailed explanation of each following. A complete Feasibility Study is provided within the Appendix, including all details attributed to permits and fee schedule.

### Summary of Entitlements & Permits

a. Variance Use Application | Town of Ulster
b. Site Plan Review | Town of Ulster
c. State Environmental Quality Review (SEQR) | Town of Ulster/ Ulster County
d. Building Permit | Town of Ulster
e. Wetland Clearance | Army Corps of Engineers, NYSDEC
f. Endangered & Threatened Animal Species | NYSDEC
g. Archeological/Historical No Effect Letter | NY State Historic Preservation
h. Water Withdrawal Permit | NYSDEC
i. Sewage Disposal System Permit | Ulster County
j. Alternative Heating Appliance Permit (Boilers) | Town of Ulster
k. Construction General Permit (SPDES) | NYSDEC
l. Industrial Discharge Permit (SPDES) | NYSDEC
m. Air Quality Permit | NYSDEC

## Permit Details

1. **Variance Application – Use | Town of Ulster**
    - Required for proposed land uses not adhering to uses permitted by right or special use permit in a parcel corresponding zoning
        - Current Use – Recycling Yard (Use Permitted under Special Use Permit)
        - Proposed Use – Industry, Heavy (Use not permitted by Right or Special Use, Variance Required)
    - Application must demonstrate to Zoning Board of Appeals that:
        - Cannot realize a reasonable return substantial as shown by competent financial evidence
        - Alleged hardship is unique and does not apply to substantial portion of district or neighborhood
        - Requested variance will not alter essential character of the neighborhood
        - Demonstrate that the hardship is not self-created
    - Review Time: ~1 month
    - Expectation: No issue, Requirements of Zoning Board of appeals and a variance on this site will be approved

2. **Site Plan Review** | *Town of Ulster*
    - Required for all proposed changes in land uses and to the proposed design, construction, and/or change of use of all structures in the Town of Ulster
    - Application and Map must be prepared by licensed design professional
    - Documents required for submission:
        - Topo survey, ALTA survey, landscape plan, photometric plan, site plan, preliminary utility plan, preliminary architectural plans
    - Planning Board meeting required
        - Submit application 10 days prior
        - Meetings held on the 2nd Tuesday of the month
    - Town Board meeting required
        - Must obtain a referral from Planning Board 10 days prior
        - Meetings held on the 1st and 3rd Thursday of the month
    - Pre-App Meeting with Planning Department and Building Inspector recommended
    - Must publish notice of hearing at least 5 days prior
    - Submitted and processed concurrently with SEQR
    - Review Time: ~3 months
    - Expectation: Approval, nothing unique about this step and have all partner involved to meet the requirements

3. **State Environmental Quality Review (SEQR) |** Town of Ulster, Ulster County, NYSDEC
    - Projects or physical activities, such as construction or other activities that may affect the environment by changing the use, appearance or condition of a site or structure require review under SEQRA
    - Documents Required for submission:
        - Environmental Assessment Form | Required for Type 1 Action
        - May result in positive or negative declaration
            - Positive Declaration –cause for environmental concern
            - Negative Declaration – no cause for environmental concern
    - Documents Required for Submission if EAF results in positive declaration:
        - Draft and Final Environmental Impact Statement
        - Lead Agency Statement of Findings
    - Review Time: 3 – 6 Months dependent on positive/negative declaration
    - Expectation: Development expected to fall below thresholds requiring any mitigation or additional steps
4. **Building Permit |** Town of Ulster
    - Required for structures with a floor area greater than 100 feet to be erected, moved, added to, or structurally altered in the Town of Ulster
    - Required for submission:
        - Construction drawings
        - Ancillary development information
        - Approval of Use Variance, SEQR, Site Plan Review
    - Review Time: ~3 months
    - Expectation: Approval, typical process for any ground up commercial or residential project
5. **Wetlands Clearance |** Army Corps of Engineers, NYSDEC
    - Wetland jurisdictional determination required to deem wetland Federal or State
        - 90-day review period
        - Permit not expected to be required | Wetlands likely not federal, likely not of unusual importance to the state, and potential impacts are below the state threshold triggering permit
    - Expectation: While Wetlands do appear to be located on the subject property, all care and thought is going into avoiding those wetlands so no extenuating permitting is required

6. **Endangered and Threatened Animal Species Incidental Take Permit |** NYSDEC
    - Required for proposed activities that likely result in the take of individuals of a listed animal or involve an adverse modification of occupied habitat
    - Northern Long-Eared Bat (Protected Animal) identified in EAF, may trigger permit/mitigation requirement
    - Expectation: Due to the presence of the Long-Eared Bat, it is expected that tree clearing can only happen between November-March (as anticipated within the construction schedule)
7. **Archeological/Historical No Effect Letter |** New York State Historic Preservation Office
    - Required for development of a parcel that contains archeological sites or deemed a historical location
        - NYSDEC EAF Mapper identified both
        - To be confirmed during SEQR
    - Required for submission:
        - Aerial Map with Site Plan overlaid
        - Narrative of project and potential impacts
    - Review Time: 30 days
    - Fee: NA
8. **Water Withdrawal Permit |** NYSDEC
    - Required for any water withdrawal system with the capacity to withdraw 100,000 gallons per day of surface water, groundwater, or a combination thereof
    - Expectation: Permit is likely not required. Water demand is not expected to exceed 20,000 gallons per day
9. **Sewage Disposal System Permit |** Ulster County
    - Required for sewage disposal system installation in Ulster County
    - Expectation: Due to no public sanitary system located nearby an onsite septic and leach field will be used for human waste. All industrial waste to be pretreated and either recycled within the system or surface water discharged
10. **Alternative Heating Appliance Permit |** Town of Ulster
    - Required for installation of boilers in the Town of Ulster
    - Review Time: ~1 month
    - Expectation: Approval, standard process for the installation of boilers. All proper safety requirements and code will be met to achieve approval

**11. Construction General Permit (SPDES) |** NYSDEC
- Required for projects disturbing one or more acres of land
- Documents Required for Submission:
  - SWPPP
  - Notice of Intent to NYSDEC
- Review Time: 60 Days

***12.*** **Industrial Discharge Permit (SPDES) |** NYSDEC
- Required for facilities that discharge wastewater into surface waters or ground waters of the state
  - Will be required for discharge of grey water.
- Effluent Limits:
  - BPT, BCT, BAT, NSPS limitations under 40 CFR part 444: Waste Combustors
  - See appendix for specific limitations
- Review Time: 135 days

**13. Air Quality Permit |** NYSDEC
- Title V Facility Air Permit
  - Required for major emission sources
    - Emissions must exceed thresholds detailed in 6 CRR-NY 201-6
  - Facilities must track and report emissions every year
- State Facility Permit
  - Required for large facilities
    - Emissions must exceed thresholds detailed in 6 CRR-NY 201-9.1
    - Emissions must not exceed thresholds detailed in 6 CRR-NY 201-6
- Air Facility Registration Air
  - Required for smaller facilities
    - Emissions must exceed thresholds detailed in 6 CRR-NY 201-4
    - Emissions must not exceed thresholds detailed in 6 CRR-NY 201-9
- Review Time: 6 months, pending confirmation

### Injection Station

The Central Hudson Renewable Natural Gas interconnect station and high-pressure pipeline will be designed and constructed by Central Hudson who have confirmed they are able to do this, and an available line is within reach of the site.

The permitting associated with their infrastructure will be tied into the Global NRG project as much as possible but Central Hudson may have to get some of their own permits. ARCO/Murray's Development Services team will assist their team in coordination, submitting and receiving these permits without incident or delay to the overall project.

The only additional permit that may be needed is a Highway Work Permit for Utility work from the NY State Department of Transportation. Due to the connection needing to cross NY Hwy-32 this permit is likely needed but is not expected to be a hindrance to the project.

# X. Environmental Compliance

## Compliance History

The project team, led by Global NRG Renewables as the prime developer, affirms that all participating entities and subcontractors proposed for this project possess strong records of regulatory compliance, operational integrity, and environmental stewardship.

- **Global NRG Renewables** has a consistent history of responsible project development, adhering to all applicable federal, state, and local environmental, safety, and permitting regulations throughout its project portfolio.
- **ARCO/Murray**, serving as the EPC contractor, is a nationally recognized firm with extensive experience delivering complex infrastructure and energy projects. ARCO/Murray has no known history of environmental violations or regulatory non-compliance and maintains rigorous safety and quality control standards.
- **Van Dyk Recycling Solutions**, the mechanical preprocessing and MRF technology provider, has successfully delivered hundreds of compliant systems across North America and is routinely engaged by municipalities and public authorities due to its reputation for operational excellence and regulatory conformance.
- **Econward**, the technology provider for thermal hydrolysis and organic fraction separation, has operated under strict environmental and industrial safety regulations in the European Union, with no known violations or compliance issues.
- **PlanET Biogas**, providing anaerobic digestion technology, has commissioned over 500 biogas plants globally, all of which are compliant with applicable environmental and energy regulations. Their systems are routinely permitted and operated under the strictest emissions, effluent, and safety requirements in the jurisdictions where they operate.

The entire project team is committed to full compliance with all local, state, and federal laws, including but not limited to:

- NYSDEC solid waste, air, and water permits
- OSHA and NYS labor standards
- NEC and NFPA codes for facility safety
- Applicable zoning, stormwater, and building regulations

Collectively, the team brings a proven track record of delivering environmentally sound, code-compliant, and community-focused waste and renewable energy infrastructure.

### Compliance with Laws, Permits, including Labor Laws and Affirmative Action Requirements

Global NRG Renewables, as the Proposer of this RFP, agree that in proposing, and if selected, providing services hereunder, the Proposers shall conform to all applicable federal and state laws, municipal ordinances and rules and regulations of all authorities having jurisdiction over the work. Section 2050-v of the Public Authorities Law of the State of New York, Article 15-A of the Executive Law of the State of New York and 9NYCRR Part 540, et. seq. which provides for affirmative action in connection with all contracts awarded by the Agency. The successful Proposer must specifically agree to comply with the above requirements.

# XI. Risk Management

## Overview

This document provides a summary of the key risks and mitigation strategies associated with the planning and execution of the UCRRA Solid Waste Diversion project. The purpose of this summary is to give project stakeholders a concise yet comprehensive understanding of the primary risk factors that could impact project success, as well as the measures in place to minimize those risks.

The following risks have been identified below along with a summary of expectations for associated impacts and the team's mitigation strategy to avoid and limit the possible risks.

- Community Feedback
- Wetland Impact
- Endangered and Threatened Species
- Operational Impact
- Geotechnical Considerations
- FAA/Local Airport Impacts
- Utility Interruptions
- Permit or Regulatory Challenges

This project has been designed not only for performance and environmental benefit, but also for resilience and reliability. Through built-in redundancies, proactive risk management, and a diversified supply and service strategy, the project team will ensure that Ulster County's waste diversion goals are met even under unexpected conditions.

## Community Feedback

**Risk:** The variance for the use permit does require a community meeting where residents have a right to comment on their support or dissent to the proposed amendment. However, negative community engagement is not foreseen.

**Impact**: If there is dissent from community members it could delay or derail the project**.**

**Mitigation**: One of the main public comments ARCO/Murray gets from their history in installing these systems is odor. There is not expected to be any additional odor in comparison to current conditions. Additional enclosures are being constructed to restrict odors where any open garbage or organics are being processed. From there, all process

tanks do have lids on them to control any odor leak. There are also secondary odor neutralization protocols (e.g., carbon scrubbing, atomizing mists) which will be activated immediately if an increase in odor is detected. If any other comments come up, the team is prepared to address these in a timely manner.

### Wetland Impact

**Risk:** Preliminary site screening indicates the potential presence of jurisdictional wetlands within or adjacent to the proposed project area. Any disturbance to these wetlands—whether direct or indirect—may trigger regulatory oversight by the New York State Department of Environmental Conservation (NYSDEC) and/or the U.S. Army Corps of Engineers.

**Impact**: Impacts on wetlands or their regulated buffers could result in extended permitting timelines, and/or mitigation fees, and/or mandatory wetland replacement, subject to NYSDEC discretion.

**Mitigation**: A wetland delineation study will be conducted at the onset of the project to determine if wetlands are onsite and their respective boundaries. Great care was taken to strategically lay out a site which would avoid impacts. If impacts are required, then the team will first look at modifying the layout. If that cannot be done without further impact, then the team will assemble a strategic permitting strategy. Costs for wetland delineation have been included in the proposal.

### Endangered and Threatened Species

**Risk:** The NYSDEC EAF Mapper has identified the potential presence of the long-eared northern bat within the project area, posing a seasonal constraint risk to site clearing activities.

**Impact**: If this species is identified in NYDEC's internal database and/or is observed onsite, tree removal may be restricted to the winter months—typically November through March—to avoid disturbance during the species' active season. This seasonal limitation could impact the project schedule, particularly if permitting or construction mobilization is delayed beyond the tree-clearing window.

**Mitigation**: Mitigation strategies include early coordination with the U.S. Fish and Wildlife Service and NYSDEC, timely habitat assessments by qualified ecologists, and prioritization of any required tree clearing during the permissible period to avoid conflicts with

endangered species protections. These assessments and coordination would be done at the onset of project release. The current schedule works within the clearing timeframe, but any delay in awarding the job or securing permits could impact the ability to hit that window. Costs for said assessments have been included in the project proposal.

*The NYSDEC EAF Mapper also indicates the potential presence of endangered shortnose sturgeons and Atlantic sturgeons within the broader project vicinity. These species are likely to be only present in water bodies flowing to the Hudson River. The UCRRA Solid Waste Diversion project does not pose any direct disturbance to these aquatic habitats. As a result, the likelihood of project-related impacts on these species is considered negligible.*

### Operational Impact

**Risk:** Variability in feedstock supply, equipment reliability, and the inherent safety concerns associated with anaerobic digestion systems.

**Impact**: Inconsistent feedstock availability may limit the facility's ability to achieve optimal energy production. Although a feedstock agreement is in place, obtaining the specified material during operations may still present a potential risk. Equipment reliability is another consideration.

**Mitigation:** Five big steps have been taken to cover these risks. The first is the consistency in data from UCRRA in their waste streams. Second, redundancy has been incorporated to maintain critical operations in the event of equipment downtime. The facility equipment has been proven and designed to meet the Local and Federal code requirements as it pertains to fire and life safety. Third, a spare parts inventory on-site will store critical spare parts (e.g., pumps, blowers, conveyors) to reduce any switchover time. Fourth, Preventive maintenance agreements with original equipment manufacturers (OEMs) ensure routine inspections and responsive technical support. Fifth, design includes digestate and pulp storage buffers to allow short-term system downtime without interrupting intake or causing upstream backup. The system is designed to accommodate a wide range of organic inputs (MSW organics, source-separated food waste, yard waste), allowing for rapid pivoting between sources. Long-term contracts and MOUs with multiple suppliers ensure tonnage flexibility; any temporary shortfall can be offset through regional commercial generators. BIOMAK and PlanET systems are both capable of handling variable waste characteristics and adjusting retention times or preprocessing parameters as needed.

## Geotechnical Considerations

**Risk:** The absence of a completed geotechnical report at this stage of planning is a significant risk. Relying on assumptions without subsurface confirmation introduces uncertainty into foundation design, excavation requirements, and overall constructability.

**Impact**: Unanticipated subsurface conditions—such as unknown bedrock, variable soil profiles, or the presence of groundwater—could lead to costly design modifications, construction delays, and increased material or shoring requirements.

**Mitigation**: To mitigate this risk, the project team shall prioritize early mobilization for a comprehensive geotechnical investigation to inform design decisions, refine cost estimates, and validate site assumptions before finalizing structural or civil engineering plans. Costs for a geotechnical investigation have been included in the proposal.

**Expert Input**: Through conversations with local geotechnical engineers, it is assumed that the site will contain shallow bedrock, which presents several potential risks to the project. These include increased excavation difficulty, the potential need for rock removal via blasting or heavy equipment, and associated impacts on schedule, cost, and noise/vibration levels. Shallow bedrock may also restrict the depth of utilities, limit subgrade preparation options, or require specialized foundation solutions such as rock anchors, mat foundations, or over-excavation with engineered fill. All can be dealt with but are unknown at the time of this submittal and lack of a geotechnical report.

## FAA / Local Airport Impacts

**Risk**: The proposed construction site lies close to 2000 feet away from Kingston Ulster Airport. This is located within the “public use” airport range, so filing the online FAA form 7460-1 will be required which includes the project type, project sponsor, project location, drawing details, and potential schedule.

**Impact**: Additional compliance will need to be met should the construction plans include building heights exceeding 200 feet above ground level. This also refers to potential non-permanent equipment including cranes or other lifts. 30 to 45 days after filing Form 7460-1, the FAA will respond with feedback: approved or non-approved with suggestions for adjustments.

**Mitigation**: An early filing of FAA Form 7460-1 will be conducted. Findings of this application anticipate no-issue but may require appropriate visual indicators adding limited costs to the project.

### Utility Interruptions

**Risk**: Not unlike any other commercial or even residential development. The operation will rely on the service of third-party utility services. These include power and gas from Central Hudson. While Central Hudson has a good reliability rating in the area utilities can go down or be shut off for a period of time, at no cause from the receiving party.

**Impact**: Consistency in heating, pumps and lighting is required for seamless operations.

**Mitigation**: If reliability becomes a concern, additional backup generator systems and propellant storage will be added to the project. In discussions with Central Hudson, the team feels confident these items are not needed day one of operations. A flare system is included to safely combust excess biogas during AD system downtime or interconnection delays.

### Permit or Regulatory Challenges

**Risk**: Not unlike other developments the approvals of entitlements and permits are in the hands of third parties, which sometimes only have their interests at hand. While ARCO/Murray has done conclusive research on anticipated permits, it is unknown if all approvals will be handed over easily.

**Impact**: Any delay of receipt of permitting could delay the scheduled date for operations to begin. Any failure to secure a permit could mean the project cannot proceed as intended.

**Mitigation**: The ARCO/Murray Development services team exists to prevent permit and entitlement hurdles. They have done conclusive research to determine which permits are necessary, their timelines, deliverables, and any scheduled meeting dates that must be adhered to. If any roadblocks are put up by authorities having jurisdiction, then the team will make sure to address those swiftly and in pursuit of a positive outcome. With many of the permits originating from the Town of Ulster, the team hopes they are in support of the proposed project at their facility and with the residents in mind.

GLOBAL
NRG ADVISORY

# APPENDICES

## ULSTER COUNTY RESOURCE RECOVERY AGENCY

# Appendices

# Appendix A

# Required Proposal Forms

GLOBAL
NRG ADVISORY

Global NRG Advisory LLC
228 Park Ave S
New York, NY 10003-1502
Andrew@globalnrgadvisory.co.uk

May 28 2025

RE: Letter of Authorisation to Submit RFP Response

To Whom It May Concern,

This letter serves as formal authorisation for Mr. Chris Negus to act on behalf of Global NRG Advisory LLC, a limited liability company organized and existing under the laws of Delaware, with its principal office located at 228 Park Ave S, New York, NY 10003-1502.

Mr. Negus is hereby authorised to prepare, sign, and submit the response to the Request for Proposals (RFP) issued by Ulster County in connection with Solid Waste Diversion and Alternatives to Landfilling/Combustible Incineration, and to undertake any and all communications or negotiations as may be required during the submission and evaluation process.

This authorisation is granted with full authority and effect as if taken directly by Global NRG Advisory LLC and remains in effect unless revoked in writing by an authorised officer of the company.

Should you have any questions or require further confirmation, please contact the undersigned at Andrew@globalnrgadvisory.co.uk.

Sincerely,

Andrew Rice
Chief Operating Officer
Global NRG Advisory LLC

Signature: [redacted]

Date: May 28 2025

## C. PROPOSAL AND PROPOSAL FORM

### C.1 Price Proposal

RFP No. 2025-01

To: Ulster County Resource Recovery Agency

Reference: SOLID WASTE DIVERSION AND ALTERNATIVES TO LANDFILLING AND COMBUSTIBLE INCINERATION

PROJECT NO. 2025-01

The Proposer, having examined the Proposal Documents, does hereby propose to furnish and complete the services described in the Proposal Documents, including Addenda issued thereto, in accordance with the prices hereinafter set forth. The Proposer, by virtue of this Proposal, acknowledges receipt of all Addenda.

### C.2 Acknowledgment of Addenda

Proposers must acknowledge receipt of addendum(s) as follows: The following addendum(s) have been received: Addendum No. 1 Addendum No. 2
Addendum No. 3 Addendum No. _____

(Proposer insert addendum(s) and numbers and initial)

The Proposer certifies that the addendum(s) above have been received and that changes covered by the addendum (s) have been taken into account in this proposal.

### C.3 Proposal Acceptance

The Proposer hereby agrees to hold the Proposal price without change for a period not to exceed ninety (90) days.

### C.4 Non-Discrimination And Affirmative Action

During the performance of this Agreement, the Proposer agrees to comply with Section 2050-v of the Public Authorities Law.

### C.5 Qualifications and Experience

The Proposer certifies that its qualifications and experience meet the minimum requirements set forth in Section B.4 of the Proposal Documents and provides herewith documentation or supplemental statements supporting such certification.

C.6 **Schedule**

The Proposer will provide a proposed timeline in its proposal. This will be scored as part of the evaluation process.

C.7 **Clarifications**

If the Proposal, including any supporting data submitted therewith, contains any deviations from, exceptions to, or stated interpretations of the Proposal Documents, all of the same shall be specifically identified on a single separate attachment to the Proposal. Unless so identified, no such deviations, exceptions or interpretations shall be deemed incorporated in or a part of such Proposal and shall not be binding on the Agency in the event of the Award of the Proposal to the successful Proposer. It is understood that in the event that any such deviations, exceptions or interpretations are, in the Agency's opinion, materially non-responsive to the requirements of the Request for Proposals, the entire Proposal will be rejected.

C.8 **Non-Collusion**

Attached please find an executed "Non-Collusive Proposer Certification" form.

C.6 **Schedule**

The Proposer will provide a proposed timeline in its proposal. This will be scored as part of the evaluation process.

C.7 **Clarifications**

If the Proposal, including any supporting data submitted therewith, contains any deviations from, exceptions to, or stated interpretations of the Proposal Documents, all of the same shall be specifically identified on a single separate attachment to the Proposal. Unless so identified, no such deviations, exceptions or interpretations shall be deemed incorporated in or a part of such Proposal and shall not be binding on the Agency in the event of the Award of the Proposal to the successful Proposer. It is understood that in the event that any such deviations, exceptions or interpretations are, in the Agency's opinion, materially non-responsive to the requirements of the Request for Proposals, the entire Proposal will be rejected.

C.8 **Non-Collusion**

Attached please find an executed "Non-Collusive Proposer Certification" form.

**Non-Collusive Proposal Certification**

Every Proposal hereafter made to the Agency or an official thereof, where a competitive Proposal is required by statute, rule or regulation, for Work or services performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the Proposer and affirmed by such Proposer as true under the penalties of perjury:

1.) (a) By submission of this Proposal, each Proposer and each person signing on behalf of any Proposer certifies, and in the case of a joint Proposal each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief:

(i) The prices in this Proposal have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices, with any other Proposer or with any competitor.

(ii) Unless otherwise required by law, the prices which have been quoted in this Proposal have not been knowingly disclosed by the Proposer and will not knowingly be disclosed by the Proposer prior to opening, directly or indirectly, to any other Proposer or to any competitor; and

(iii) No attempt has been made or will be made by the Proposer to induce any other person, partnership or corporation to submit or not to submit a Proposal for the purpose of restricting competition.

(b) A Proposal shall not be considered for award nor shall any award be made where (a) (1), (2) and (3) above have not been complied with; provided however, that if in any case the Proposer cannot make the foregoing certification, the Proposer shall so state and shall furnish with the Proposal a signed statement which sets forth in detail and the reasons therefore. Where (a) (1), (2) and (3) above have not been complied with, the Proposal shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the county, public department or agency to which the Proposal is made, or his designee determines that such disclosure was not made for the purpose of restricting competition. The fact that a Proposer (a) has published price lists, rates, or tariffs covering items being procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same prices being Proposal, does not constitute, without more, a disclosure within the meaning of subparagraph 1.(a).

2.) Any Proposal hereafter made to the Agency by a corporate Proposer for work or services performed or to be performed or goods sold or to be sold, where competitive Proposals are required by statute, rule or regulation, and where such Proposal contains the certification referred to in subdivision 1 of this section, shall be deemed to have been authorized by the board of directors of the Proposer and such authorization shall be deemed to include the

signing and submission of the Proposal and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.

Respectfully submitted,
Signature of Proposer: [redacted]

1. If an individual doing business as: _____

2. If a Partnership: _____ (Member of Firm)

_____ (Member of Firm)

3. If a Corporation: Global NRG Advisory LLC (Name of Corporation)

Chris Negus (Officer)

CEO [redacted] (Title)

ATTEST: [redacted] (Witness)

DATE: 05/27/25

Business Address:
228 Park Ave S
New York, NY 10003-1502

**Proposal Form**

SOLID WASTE DIVERSION AND ALTERNATIVES TO LANDFILLING AND COMBUSTIBLE INCINERATION

PROJECT NO. 2025-01

All pricing should be sent in a separate envelope than the rest of the proposal and should be labeled COST PROPOSAL.

All costs associated with the Scope of Work shall be included in the Cost Proposal and should be described in detail in order to avoid confusion after an award has been made.

The undersigned hereby designates below the office to which a notice of acceptance may be mailed, faxed, e-mailed or delivered:

Global NRG Advisory LLC

228 Park Ave S

New York, NY 10003-1502

Authorized Signature: [redacted] Dated 05/27/25

If a corporation, give the State of incorporation, using the

phrase "Corporation" organized under the laws of Delaware

If a partnership, give the names of partners, using also the

phrase "co-partners" trading and doing business under the firm

name and style of_____

If an individual using a trade name, give individual name,

using also the phrase "an individual" doing business under the

firm name and style of_____

# Appendix B

# Global NRG Advisory LLC Statement of Qualifications (SOQ)

# Statement of Qualifications

Global NRG Advisory

In response to: Ulster County Solid Waste Diversion and Alternatives to Landfilling/Combustible Incineration RFP

## Introduction

Global NRG Advisory is pleased to submit this Statement of Qualifications to support Ulster County in developing innovative, sustainable, and community-aligned strategies for solid waste diversion and alternatives to landfilling and incineration. Our multidisciplinary team brings deep experience in circular economy planning, zero-waste infrastructure development, environmental finance, and regulatory advisory. We are uniquely positioned to assist the Ulster County Resource Recovery Agency (UCRRA) and its stakeholders in crafting implementable solutions aligned with climate resilience, economic development, and environmental justice goals.

## Relevant Capabilities & Expertise

## Solid Waste Management Strategy

- Development of integrated solid waste management plans (ISWMPs)
- Evaluation of emerging technologies (anaerobic digestion, composting, gasification, mechanical-biological treatment, etc.)
- Organics diversion and source-separated collection strategies

## Circular Economy & Zero Waste Planning

- Waste prevention, reuse, and product stewardship policy frameworks
- Stakeholder engagement with municipalities, businesses, and residents

## Infrastructure and Financial Feasibility

- Technical and economic assessment of alternative waste facilities
- Public-private partnership (P3) models for waste infrastructure investment
- Capital cost estimation, siting analysis, and procurement support
- Funding strategy and grant identification (including NYSERDA, EPA, and IRA/BIL sources)

## Key Qualifications for the Ulster County RFP

- Technology-Agnostic Analysis: We provide independent evaluations of traditional and emerging waste diversion technologies based on Ulster County's specific technical, environmental, and community criteria.
- Stakeholder-Driven Process: We employ inclusive engagement strategies to ensure community input, equity, and transparency are built into decision-making.
- Resilient, Climate-Aligned Solutions: Our strategies align with Ulster County's goals under the Climate Smart Communities program and the State's net-zero emissions pathway

## Contact Information

Global NRG Advisory
228 Park Ave S
New York, NY 1003-1502]
www.globalnrgadvisory.co.uk www.globalnrgrenewables.com
Email: chris@globalnrgadvisory.co.uk
Phone: +44 7786 397975

# Blaise Biogas Project Overview, Kent UK

01

## Anaerobic Digestion Facility Details

Blaise Biogas Limited operates an anaerobic digestion facility in Kent that processes organic waste, converting it into valuable biogas through mesophilic digestion, supporting sustainable energy production.

02

## Feedstock and Biogas Usage

The plant processes organic materials like food waste from supermarkets and agricultural residues, utilizing the biogas produced on-site to generate combined heat and power, optimizing resource use efficiently.

03

## Environmental Benefits and Capacity

Designed to handle 70,000 tons of organic waste annually, the facility significantly lowers carbon emissions and reduces landfill reliance, demonstrating strong environmental stewardship.

04

## Planning and Grid Connection

Planning approval was granted by Kent County Council in 2019, enabling grid connection that allows electricity generated from biogas to be supplied directly to the National Grid.

05

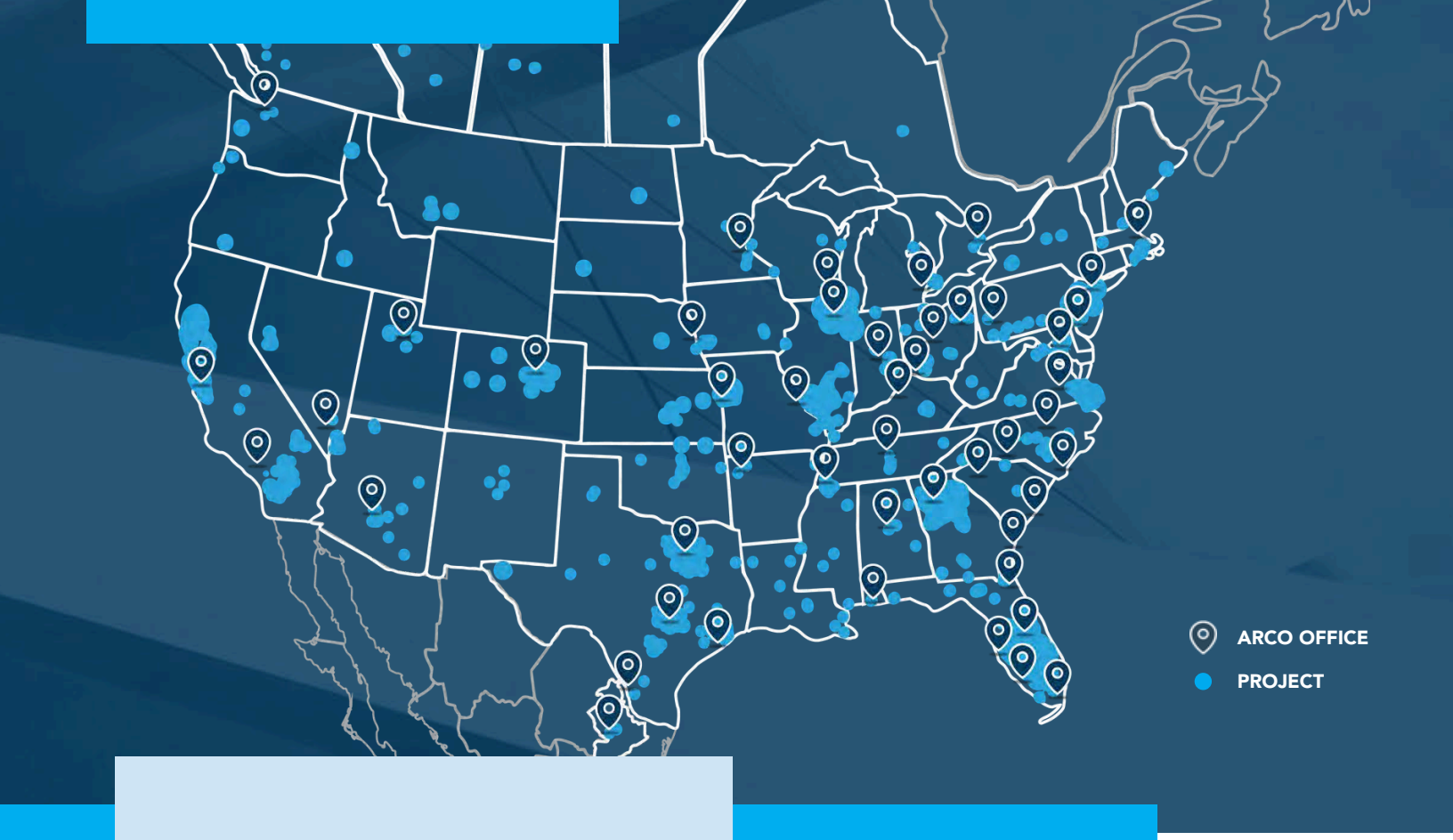
## Tech & Operational Highlights

The project employs mesophilic anaerobic digestion technology to efficiently convert waste into biogas, supporting on-site CHP generation and contributing to renewable energy goals with proven operational success.

# Appendix C

# ARCO/Murray Statement of Qualifications (SOQ)

# COMPANY PROFILE




# WE ARE ARCO/MURRAY

ARCO/Murray has 33+ years of experience delivering successful design-build projects. Having constructed 6,000+ projects in more than 48 states and Canada, we have developed a wealth of knowledge and industry-specific expertise to provide innovative design, creative solutions, and uncompromising quality. We attribute this success to the excellence of our team, our ability to fully comprehend project scope, and our steadfast dedication to safety, quality, value, and schedule certainty—delivering seamless solutions from concept through construction.

**33+**
Years of Experience

**#4**
Top U.S. Design-Builder (ENR 2024)

**48**
North American Offices

**75%**
Annual Revenue From Repeat Clients

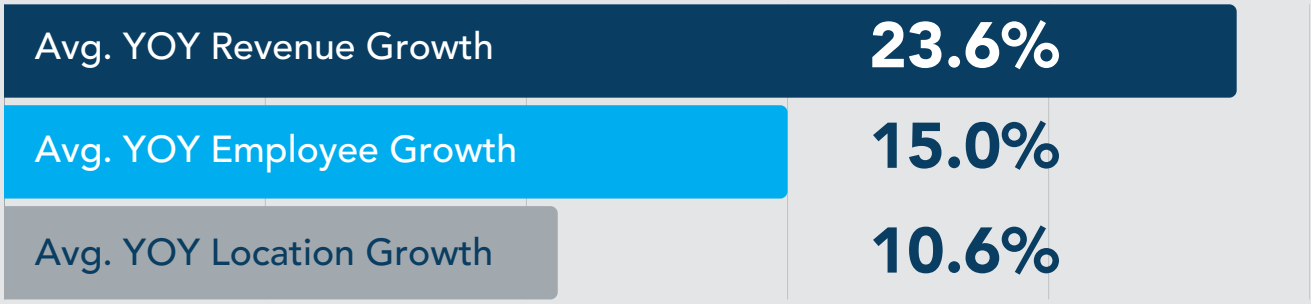
**$6.0B**
2024 Revenue

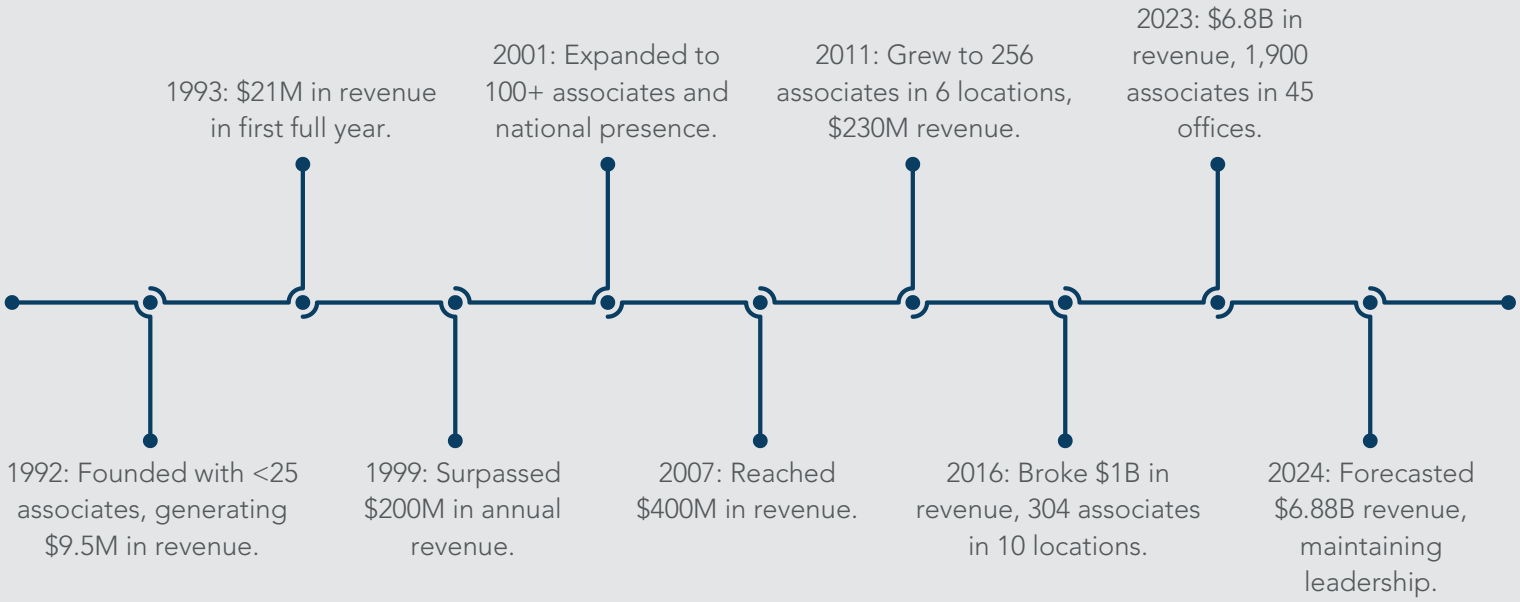
ARCO MURRAY

# HISTORY

Founded in 1992, ARCO/Murray ("ARCO") was built on the principle that the construction process should be as efficient and rewarding as the final product itself. Over the past 32+ years, we have grown from a regional construction firm into a national leader by consistently exceeding client expectations. This growth has been driven by our commitment to excellence and our focus on client satisfaction. By taking the time to understand each client's unique needs, we add value through proactive problem-solving, transparent communication, and a seamless integration of construction and design-build services. Our collaborative approach ensures that we meet the highest standards and deliver projects that align with our clients' vision from the start.

# ARCO GROWTH FROM 1992 INCEPTION



# SAFETY


ARCO SAFE
THE SAFE WAY THE ARCO WAY THE ONLY WAY

**ARCO'S CURRENT EMR RATING**
INDUSTRY AVERAGE 1.0

**.51**

"We are dedicated not only to making the construction process enjoyable and beneficial, but to ensuring safe and injury-free working environments for our associates, subcontractors and clients. Risk management and the health and safety of each associate is our highest priority."

***- Brad Dannegger, CEO***

# OUR SAFETY MISSION

ARCO/Murray is fully committed to a safe work environment. Our dedicated staff of 30+ safety professionals utilize the following systems to raise awareness, maintain accountability, and achieve one of the best safety records in the industry.

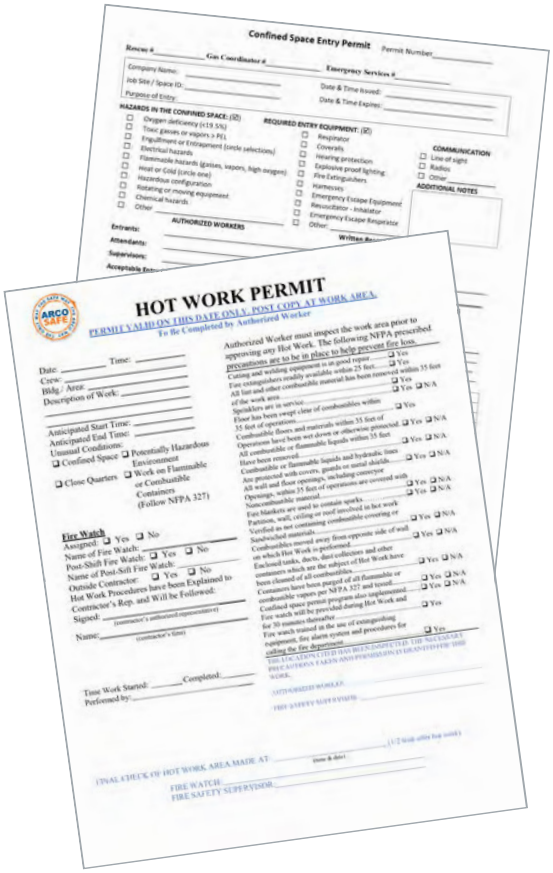
- Weekly Safety "Toolbox Talks" for all ARCO/Murray and subcontractor field personnel.
- Weekly Safety Inspections documented by the Superintendent using an 80-point checklist.
- Pre-job meetings held with key subcontractors to plan upcoming work safety.
- Educational videos for all new associates and subcontractors on the jobsite.
- Safety Handbook distributed to all associates and subcontractors.
- Project Managers and Superintendents trained in First Aid/CPR and OSHA Construction safety courses.
- ARCO Safe website to access up-to-date regulations and data.

ZURICH | TRAVELERS

# PROJECT-SPECIFIC SAFETY PROCEDURES

## HOW SAFETY WILL BE MANAGED ON THIS PROJECT

To ensure safety at every stage of the Renewable Natural Gas (RNG) Facility Development, ARCO will create a comprehensive, site-specific safety plan in collaboration with project leadership, facility personnel, and subcontractors. Each task and area will undergo a thorough hazard analysis to proactively identify and mitigate risks, with a particular focus on RNG-specific hazards, such as hot work and confined spaces. Our team will work closely with safety experts and utilize ARCO's established permitting protocols to address atmospheric risks associated with this work. By engaging ARCO Associates, subcontractors, and facility stakeholders in safety planning and execution, we foster a collaborative safety culture that prioritizes the well-being of everyone on site.


Confined Space Entry Permit

HOT WORK PERMIT


## CLIENT COMMUNICATION

ARCO will develop an overarching site-specific safety plan to identify risks and clearly communicate safety measures to all stakeholders. This document will be developed in collaboration with project teams and facility leadership. In addition, task-specific activity hazard analysis will be conducted to identify high-risk tasks that could impact employees or operations. Safety briefings and notices will be provided for distribution to all personnel, ensuring alignment before work begins. ARCO will also supplement these efforts with stand-downs of plant and construction workers when necessary to reinforce safety measures and ensure a proactive approach to risk management.

## SAFETY PRE-PLANNING

It is essential to ensure that all parties are aligned on safety expectations before work begins. All subcontractors receive ARCO's safety requirements in the bid instructions and contract documents. ARCO reviews subcontractors' safety programs, site-specific safety plans, SDS sheets, and other relevant information before mobilization. These safety requirements are also discussed in more detail during scope-specific preconstruction meetings.


## SITE SAFETY ORIENTATION

All workers entering an ARCO project site must attend a site safety orientation that covers the ARCO SAFE Orientation video, site hazards and logistics, emergency evacuation procedures, directions to the nearest medical facilities, and locations of first aid supplies. This orientation will emphasize site-specific operations and coordination plans to ensure all personnel understand safety protocols before work begins.

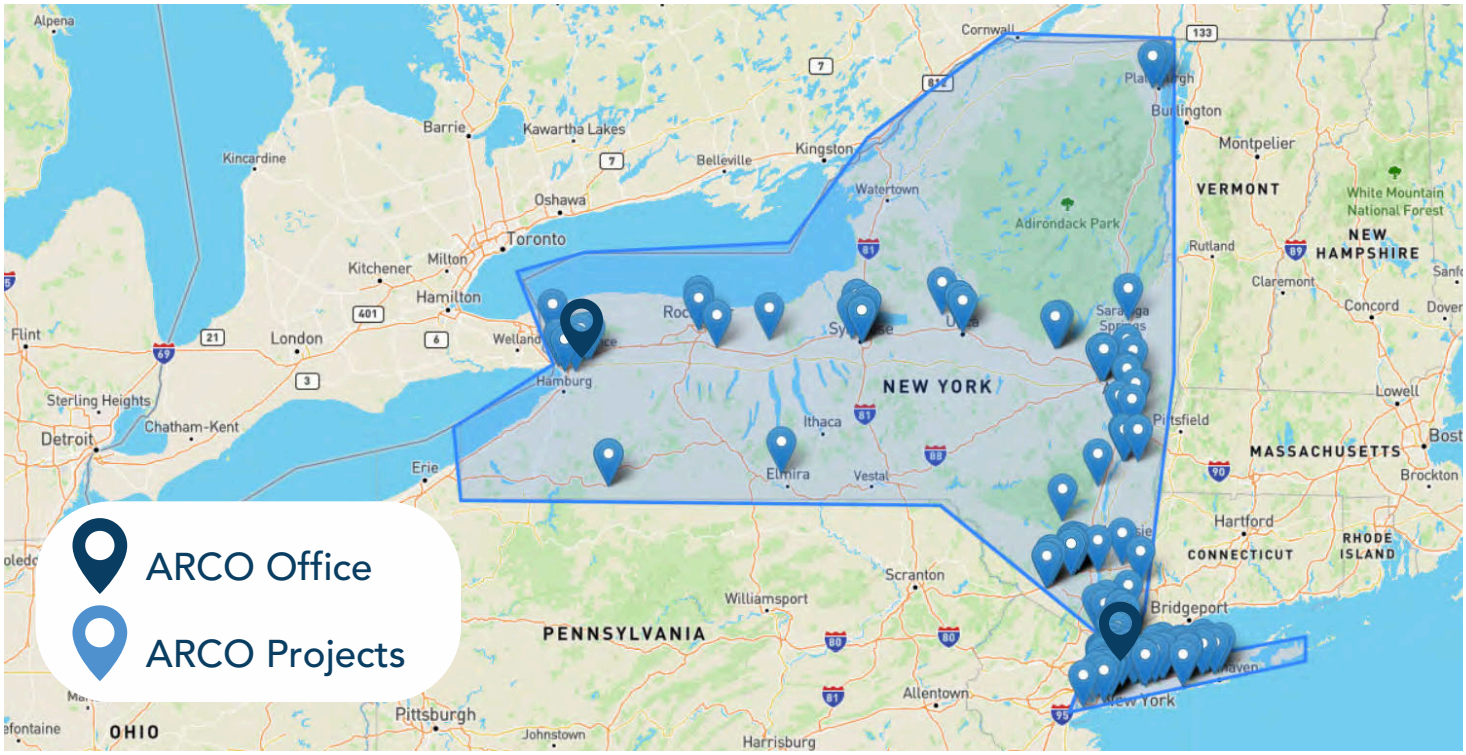

## PREQUALIFICATION & SAFETY PROGRAM COORDINATOR WITH SUBCONTRACTORS

Safety pre-planning includes implementing controls to minimize risks based on facility conditions and task-specific requirements. In addition to the site-wide safety plan, task-specific activity hazard analyses will be conducted for each phase of work in coordination with subcontractors and project personnel. This approach ensures that safety risks are proactively identified and mitigated for both construction crews and facility teams.

# RELEVANT EXPERIENCE

# SAMPLE NEW YORK EXPERIENCE

ARCO MURRAY | DESIGN BUILD




## INDUSTRIES SERVED

- Manufacturing
- Heavy Process Piping
- Controlled Environment Agriculture
- Industrial Warehouse & Distribution
- Tenant Solutions
- Sports & Entertainment

# WASTE-TO-VALUE SOLUTIONS

At ARCO/Murray, we help clients unlock the potential of waste streams by converting them into valuable resources such as Renewable Natural Gas (RNG) and other sustainable outputs. Our design-build methodology streamlines the entire process, ensuring cost efficiency, reduced complexity, and timely delivery. By applying advanced technology and sustainable practices, we enable clients to reduce environmental impact, meet regulatory requirements, and enhance operational efficiency. With a focus on aligning each project with long-term sustainability goals, ARCO/Murray offers tailored waste-to-value solutions that turn challenges into opportunities.

## WASTE-TO-VALUE PROJECTS

- Renewable Natural Gas Facility - Mason City, IA
- Renewable Natural Gas Facility - Saint Albans, VT
- Renewable Natural Gas Facility - Buffalo, NY
- Renewable Natural Gas Facility - Niagara, NY
- Renewable Natural Gas Facility - Casa Grande, AZ
- Renewable Natural Gas Facility - Minster, OH
- Renewable Natural Gas Facility - Milton, PA
- Renewable Natural Gas Facility - Peoria, IL
- Renewable Natural Gas Facility - New Brunswick, CA
- Biogas & Wastewater Treatment Plant - Denver, CO

ARCO MURRAY

# SAMPLE GREEN INFRASTRUCTURE PROJECT EXPERIENCE

#4
TOP 100
DESIGN-BUILD
FIRMS (ENR)

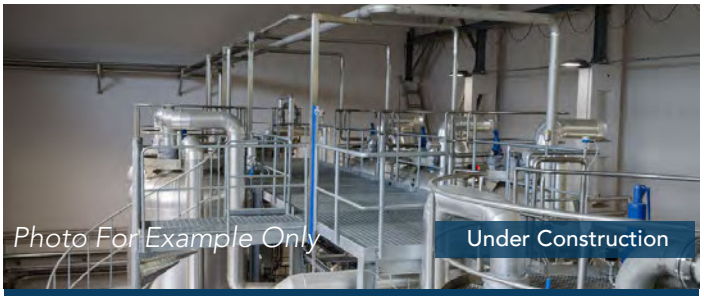

**New Energy Blue**
Ethanol Biomass Refinery
Mason City, IA


**Confidential Client**
Life Sciences Industrial Wastewater Facility & Pump Houses | Confidential Location

**PurposeEnergy**
Anaerobic Digestion Facility
St. Albans, VT


**Confidential Client**
Renewable Natural Gas (RNG) Facility
Casa Grande, AZ


**Confidential Client**
AD Plant Upgrade from Electrical Generation to RNG Pipeline Injection | Buffalo, NY




**Confidential Client**
AD Plant Upgrade from Electrical Generation to RNG Pipeline Injection | Niagara, NY

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CASE STUDY

# PurposeEnergy

**Product Type:** Food Waste Digestion

**Location:** Saint Albans, VT

**Scope:** Biogas converted to electrical power and exported to the utility grid

**Power Generation Capacity:** 1.1 MW

**Major Equipment & Capacity:**
- (3) Digesters – 1.9M gal total
- (2) EQ tanks – 144K gal total

**Feedstock:**
- 15K gal/day via pipeline from co-located facility
- 25K gal/day via tipping

## DOCUMENTATION

- Ensured full compliance with Inflation Reduction Act requirements to secure all eligible tax incentives
- Managed subcontractor compliance with apprenticeship programs
- Implemented wage determinations for prevailing wages
- Met domestic content standards
- Developed a custom payroll validation tool
- Delivered monthly updates on apprenticeship, domestic content, and wage compliance
- Submitted a detailed compliance report to third-party tax auditors
- Tax credit sale finalized without owner-provided insurance due to auditor confidence

## QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

- Implemented a rigorous QA/QC process for bolted tank construction—zero leaks on fill
- Created and followed an inspection protocol for each tank ring before raising to the next level
- Conducted verification surveys of all underground piping before concrete pours—no rework needed
- Used BIM modeling and clash detection to prevent piping conflicts in the buildings

## VALUE ENGINEERING

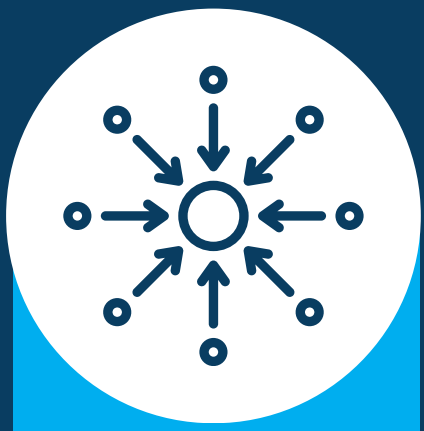
- Delivered constructability feedback and VE recommendations despite not owning the design
- Processed 400+ RFIs, enabling a 10-month build—8 months faster than a similar facility nearby
- VE Highlights:
  - Alternate pipe support bracket — saved $250K
  - Different coating for process vaults — saved $30K
  - Highway guardrail in place of bollards — saved $30K
  - Heat tracing solution to maintain schedule — saved $175K

# TECHNICAL EXPERTISE

# AN INTEGRATED DESIGN-BUILD APPROACH

## BUILT FOR SEAMLESS EXECUTION & SCALABLE GROWTH

Our design-build model, comparable to the EPC (Engineering, Procurement, and Construction) approach often referenced in the RNG, Waste-to-Value, and Renewable Energy sectors, ensures seamless execution from concept to commissioning. Through collaborative design and value engineering, we provide precise, scalable solutions that drive long-term efficiency and growth.



### Single-Source Accountability

- All phases, concept to commissioning
- Seamless handoffs, minimized risks
- On-time, on-budget delivery

### Collaborative, Scalable Design

- Early vendor involvement
- BIM for precision
- Scalable renewable systems

### Value-Engineered for Long-Term Efficiency

- Fewer change orders
- Replicable, efficient designs
- Built for sustainability

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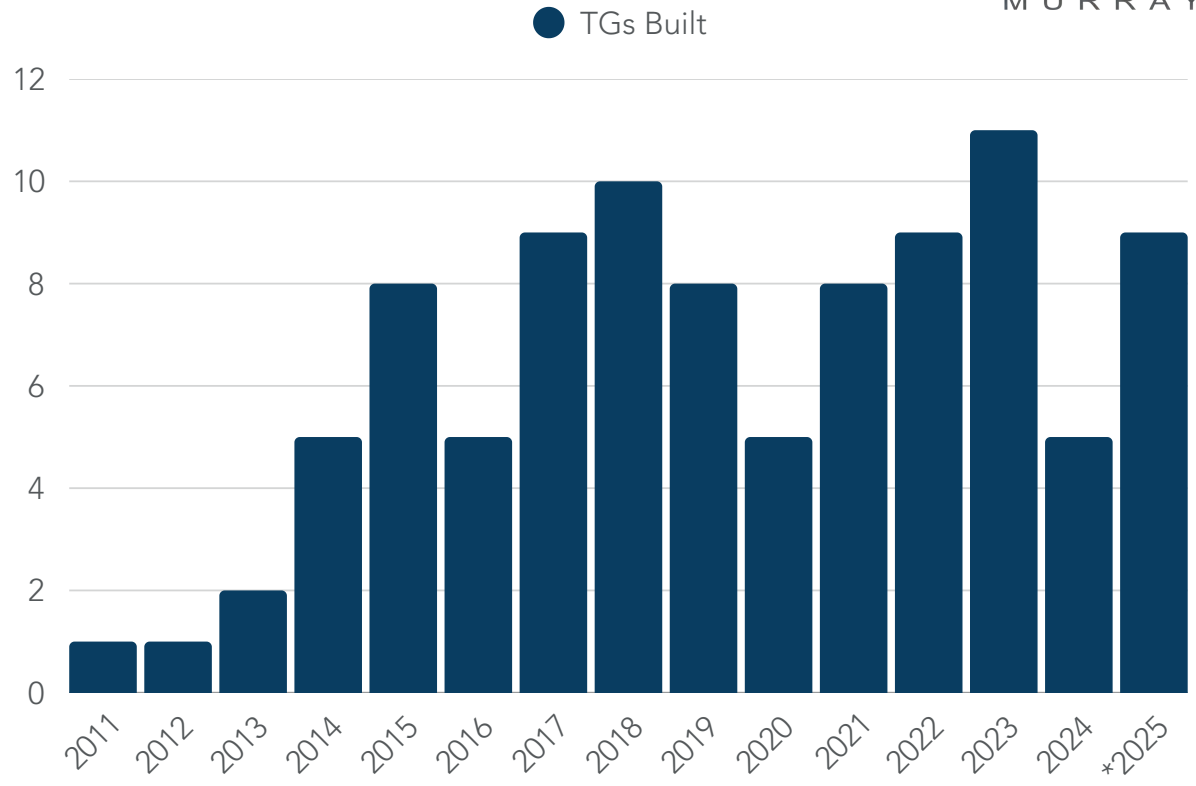
# PROVEN SCALING CAPABILITIES

We know how to scale efficiently. From prototypes to multi-site rollouts, our work with Topgolf shows how we drive consistent growth through local execution backed by centralized expertise.

TOPGOLF

ARCO MURRAY



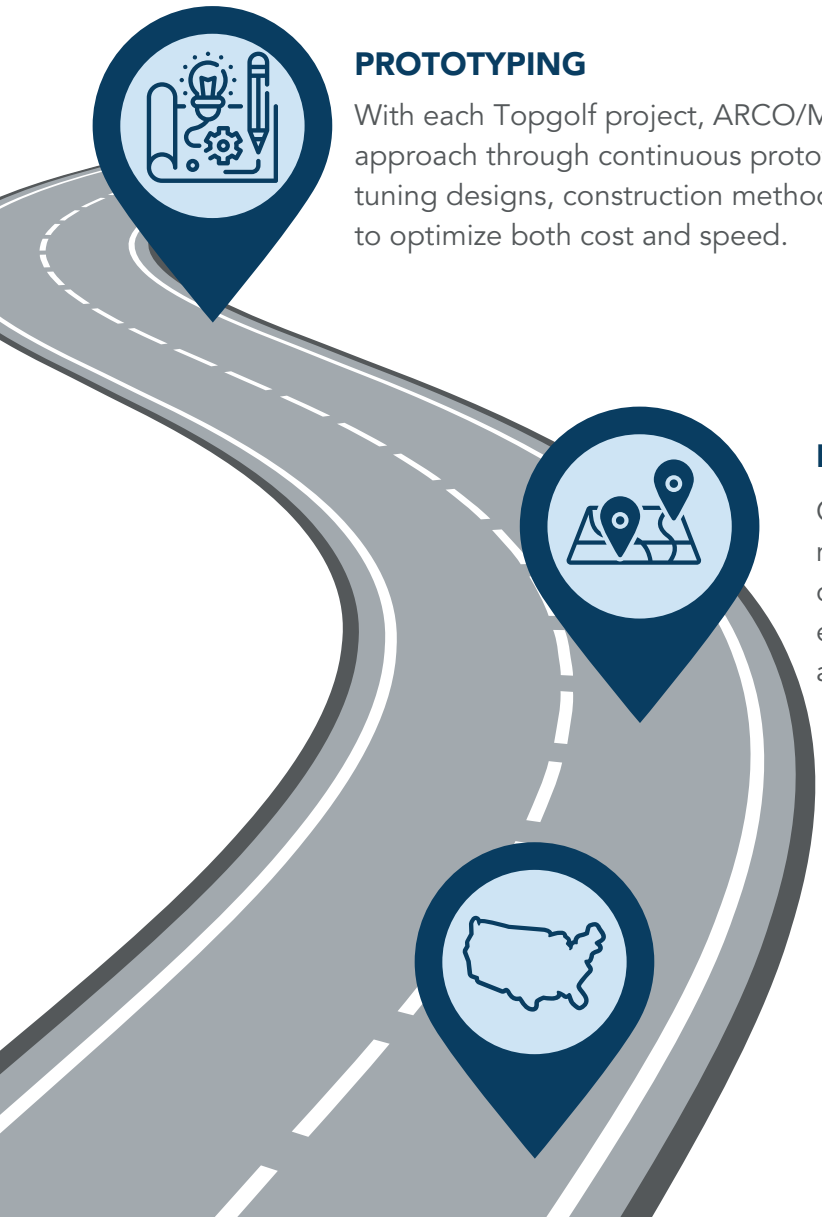

*Currently vetting potential sites for 2025 expansion

# PROTOTYPING AND SCALABILITY IN PROJECT DELIVERY

## THE ROAD TO EFFICIENCY: A TOPGOLF CASE STUDY

ARCO/Murray partnered with Topgolf to support their rapid national expansion, constructing nearly 100 facilities across the U.S. Through a prototyping approach, we refined and optimized each project, adapting to new markets and leveraging our extensive subcontractor network. This case study highlights our journey with Topgolf, showcasing how prototyping and scalability drive efficient, consistent results across diverse locations.

TOPGOLF × ARCO MURRAY



### PROTOTYPING

With each Topgolf project, ARCO/Murray refined our approach through continuous prototyping, fine-tuning designs, construction methods, and materials to optimize both cost and speed.

### MARKET UNDERSTANDING

Our team's in-depth knowledge of regional markets allowed us to adapt each facility to local conditions, codes, and customer expectations, ensuring consistency in quality and functionality across diverse locations.

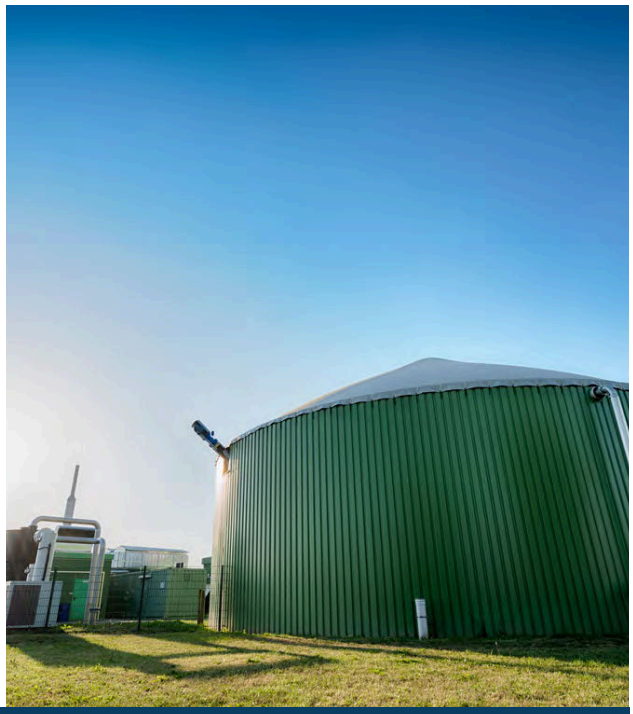
### NATIONAL SUBCONTRACTOR NETWORK

With a network of over 5,000 fully vetted subcontractors, ARCO/Murray secures top talent in every region, enabling efficient resource allocation, reducing lead times, and maintaining project continuity across the U.S.

# COMPREHENSIVE SUPPORT FROM START TO FINISH

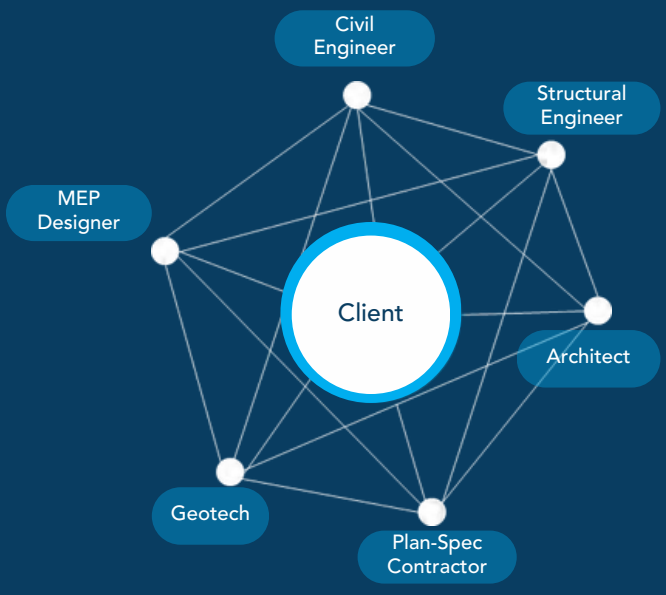
## EXPERT COORDINATION AT EVERY STAGE

We offer end-to-end project support, combining local expertise with specialized central teams. Every project benefits from dedicated leadership, ensuring clear communication and seamless execution across multiple sites. Our design-build/EPC model provides single-point accountability, allowing clients to transfer risk early and avoid costly change orders—ensuring every phase is managed smoothly from concept through commissioning.



**One contact, every step—projects built right.**

### TRADITIONAL PLAN-SPEC




### ARCO DESIGN-BUILD / EPC METHOD

Client

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- Preconstruction
- Geotech
- Civil Engineer
- Structural Engineer
- Architect
- Procurement
- Power Solutions
- Controls & Commissioning
- Water Management

# OFFSITE MANUFACTURING & ACCELERATED CONSTRUCTION

## MODULAR DESIGN & FOR MANUFACTURING (DFM):

- Offsite production aligns with on-site construction for faster delivery
- Designs optimized for repeatability and efficiency
- Reduces waste, onsite labor, and minimizes delays

## FACTORY ACCEPTANCE TESTING (FAT):

- All equipment is tested before delivery to avoid issues onsite
- Ensures systems meet specifications from the start
- Reduces commissioning risks with pre-tested components

## PARALLEL CONSTRUCTION FOR SPEED

- Simultaneous site preparation and module fabrication
- Speeds up project delivery with coordinated scheduling
- Improves efficiency with a centralized project team

# KEY CAPABILITIES

ARCO/Murray is uniquely positioned to deliver the Renewable Natural Gas (RNG) Facility Development project through our expertise in design-build services. Our integrated approach combines comprehensive project management with seamless coordination between design and construction, ensuring a streamlined process that meets project goals efficiently and effectively.

### STREAMLINED PROJECT DELIVERY

Our approach aligns construction with design intent, accelerating timelines and reducing costs.

### COST AND SCHEDULE CERTAINTY

Early stabilization of budgets and schedules ensures transparency and mitigates project risks.

### IN-HOUSE VALUE ENGINEERING

Close collaboration with trusted partners allows for a seamless transition from design to construction, optimizing project outcomes.

# OVERVIEW OF SERVICES

**Construction Management**
ARCO/Murray ensures all materials provided by subcontractors meet project specifications through a thorough submittal process. Every product is reviewed for compliance with approved plans and standards before installation begins.

**Design-Build Capabilities**
Through our trusted design partners, ARCO integrates design-build services early in the project lifecycle. This collaboration allows for constructability reviews, value engineering, and risk mitigation, ensuring that the project's goals are met while minimizing changes and delays.

**Engineering and Technical Expertise**
Our engineering and technical teams have extensive expertise in waste-to-value projects, including anaerobic digesters and advanced treatment systems. We navigate regulatory compliance and site-specific challenges to deliver innovative, sustainable solutions that maximize the value of waste streams.

**Project Management**
ARCO's dedicated project managers ensure seamless coordination across all phases of the project. Our managers' engineering backgrounds make them uniquely equipped to provide analytical oversight and detailed management, driving the project's success from start to finish.

# CONSTRUCTION MANAGEMENT

At ARCO/Murray, quality assurance is a critical component of our construction management approach. We ensure that all materials provided by subcontractors align with project specifications through a rigorous submittal and approval process.

## COMPREHENSIVE REVIEW

Each submittal undergoes a thorough review to confirm compliance with project specifications and regulatory requirements. This step verifies that materials meet the approved plans and standards before use on the project site.

## PRE-INSTALLATION VERIFICATION

Products are evaluated against design criteria to ensure they meet performance expectations. Any discrepancies are resolved proactively to maintain project efficiency and quality.

## SEAMLESS COORDINATION

We work closely with our subcontractors to provide guidance throughout the submittal process, ensuring all materials are in line with project expectations and ready for installation.

## ONGOING QUALITY ASSURANCE

ARCO/Murray's onsite team continues to monitor material usage and installation, verifying compliance with project requirements and maintaining high-quality standards through each phase of construction.

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> "ARCO provided multiple options for our project and some great cost saving opportunities. Their commitment went well beyond initial bidding and contract. Our weekly team meetings with all parties allowed for collaborative communication, plus budget and timeline review.
> Our relationship has been built on trust, superior performance and friendship. No surprise we're on our third project together."
>
> SAVILLEX

# VALUE ENGINEERING WITH DESIGN-BUILD

At ARCO/Murray, design-build and value engineering work seamlessly to ensure each project achieves the highest standards of functionality, quality, and cost-efficiency. For Renewable Natural Gas (RNG) Facility Development, our team engages trusted design and engineering partners early in the process to conduct detailed constructability reviews and feasibility analyses. By evaluating materials, construction methods, and value-driven alternatives, we identify opportunities to optimize both cost and performance.

Through proactive collaboration with project stakeholders, ARCO/Murray provides insights into material selection, streamlines construction methods, and offers innovative solutions that align with the project's budget and performance goals. This approach minimizes redesigns and delays, ensuring the final product meets project requirements while maintaining schedule and budget certainty. Our comprehensive design-build and value engineering capabilities make ARCO/Murray the ideal partner to deliver successful RNG projects that exceed expectations.

# PROJECT MANAGEMENT EXPERTISE

## PROACTIVE PLANNING & SCHEDULING

We develop comprehensive project schedules, aligning timelines with milestones and deliverables to ensure all activities are completed on time. Regular schedule updates and transparent communication keep all stakeholders informed and engaged.

## RESOURCE MANAGEMENT & COORDINATION

ARCO/Murray's project management team excels at efficiently allocating resources and coordinating across all project phases. We ensure the right people, materials, and equipment are in place at the right time, streamlining workflows and minimizing delays. By maintaining clear communication with all stakeholders, we optimize resource utilization and keep the project on track.

## RISK MITIGATION & QUALITY CONTROL

ARCO/Murray employs proactive risk mitigation strategies and rigorous quality control measures to ensure project success. By identifying potential risks early and implementing preventative solutions, we minimize disruptions and keep the project on schedule. Our thorough quality control process ensures that all materials and workmanship meet the highest standards, guaranteeing a durable and compliant final product.

## CLIENT COLLABORATION & REPORTING

We prioritize client involvement and transparency at every stage, providing regular updates and detailed progress reports. Our commitment to communication helps foster a collaborative environment, ensuring that the Town of Bennett's vision is realized with precision.

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# SEAMLESS COMMISSIONING PROCESS

Our commissioning process ensures smooth startups by integrating systems flawlessly and managing every step—so you can focus on performance, not problems.

**Smooth startups, every time.**

- Scope: MEP, Water, Controls, Fire Alarm
- MEP Drawing Reviews
- Controls Systems Design; Buyout
- Systems Integration
- Regular Pre-Commissioning Site Visits
- Manage Startup Process
- All Equipment Testing in Accordance with Controls Intent

# QA/QC

*Sample Pages From QA/QC checklist*


### MEASUREMENT FOR SUCCESS
Quality control is systematically integrated throughout the course of a project. It's ingrained in our jobsite culture and a key measurement for success.

### LEADERSHIP VALIDATION
ARCO's executive leadership team reviews work, both on and off-site, to validate that the project is running accordingly.

### DESIGN INPUT & REVIEW
ARCO/Murray thoroughly reviews drawing as they are being created, offering real-time input on constructability, cost and accuracy.

### PRECONSTRUCTION PLANNING
Our planning process ensures success by focusing on site logistics, detailed scheduling, trade coordination, and material and labor purchasing. Thorough submittal reviews guarantee that all materials meet project specifications, ensuring quality and minimizing delays before construction begins.

## CONSTRUCTION

### FIELD QC REPORT
Each component of the project is verified step-by-step among ARCO's internal team. The superintendent uses the report as a project roadmap with benchmarks.

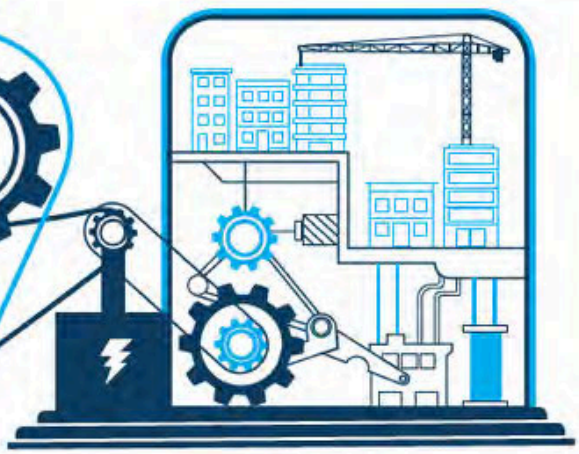
### QC ROUGH WALK-IN
Superintendent and project manager walk the jobsite with you to verify the scope of work and any changes. Information is keyed into a live form, accessible 24/7.

### PRE-PUNCH
Another walk through the jobsite to note any outstanding work and coordinate with applicable subs, saving time during the punchlist.

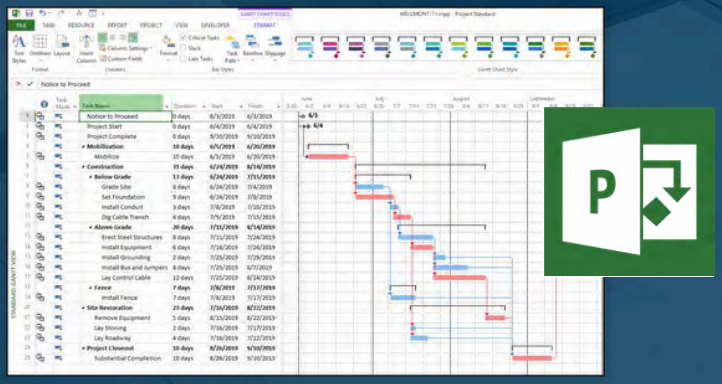
### STRUCTURED OPERATIONS TRAINING
An on-site training is conducted by ARCO and any applicable subs to review with you all operations in the facility, such as the mechanical, AV, generators...etc.

### WARRANTY WALKS & SERVICE
ARCO conducts 6 and 11-month warranty walks post-occupancy, providing ongoing client service and quality control.

### ONGOING ANALYSIS
Weekly project manager and superintendent meetings to address concerns and unique project focus points.



# SCHEDULE

# MAINTAINING PROJECT SCHEDULE

We understand that time is one of the most valuable resources in any project. Once lost, it cannot be recovered, which is why ARCO/Murray emphasizes precise time management from start to finish. To ensure the project remains on schedule, we utilize the Critical Path Method (CPM) for effective scheduling and proactive timeline management.

At the onset, ARCO/Murray develops a comprehensive baseline schedule that covers the full scope of work. This schedule is meticulously planned using industry-standard software such as Microsoft Project and Primavera P6 to ensure accuracy, transparency, and efficiency.

Once the project kicks off, we rigorously maintain and update the schedule weekly to reflect real-time field conditions. These updates allow us to track progress, address any challenges early, and ensure that the project stays on track, or in many cases, ahead of schedule. Our proactive approach enables us to forecast completion dates accurately by capturing actual events and anticipating potential impacts before they cause delays.

In addition to weekly internal updates, ARCO/Murray provides formal schedule updates monthly, or more frequently as required by contract terms. This ensures that all stakeholders have a clear understanding of project milestones and progress. With our commitment to detailed scheduling and regular communication, ARCO/Murray drives projects toward successful, on-time completion.

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# KEY DESIGN & TRADE PARTNERS


# TRUSTED PARTNERS

At ARCO/Murray, we're more than just a general contractor. We provide a full suite of services, including project management and collaboration with our trusted design partners for design-assist, water management, civil, mechanical, heavy process piping, power solutions, and more. This integrated approach allows us to deliver seamless execution and exceptional results from start to finish.

## BENEFITS

- Consistently optimized costs & design-build
- Faster design-build timelines
- Simultaneous efforts & harmonization
- Enhanced resource capabilities

ARCO MURRAY

# OUR PARTNERSHIP SERVICES OVERVIEW

## MECHANICAL PARTNER

- Prefabrication
- Process Piping
- HVAC
- Plumbing
- Equipment Rigging

## ENGINEERING PARTNER

- Civil Engineering
- Architecture & Design
- Structural Engineering
- MEP Engineering
- Process Engineering
- Electrical Engineering

## CONTROLS & COMMISSIONING

- Building Automation Systems
- MEP Review
- Controls Systems Design & Buyout
- Pre-Commissioning Site Visits
- Equipment Testing
- PLC / SCADA

## POWER SOLUTIONS PARTNER

- Electrical Engineering
- Solar EPC
- EV Charging
- Energy Storage EPC
- Electrical Gear & Lighting Procurement
- Power Infrastructure
- Energy Modeling
- Utility Coordination

## ARCHITECTURE PARTNER

- Architectural Design
- Interior Design
- Space Planning
- Structural Integration
- Conceptual Visualization
- Material Selection
- Furniture & Fixture Design
- Core Compliance Review
- Renovation & Restoration

## CONCRETE SOLUTIONS PARTNER

- Foundations
- Pits/Trenches
- Slab On Grade
- Slab On Metal Deck
- Tilt Walls
- Site Concrete

## WATER MANAGEMENT SOLUTIONS PARTNER

- ESG Compliance & Incentives
- Vision & Planning
- Liaison
- Feasibility Assessment
- Design-Assist
- Project Management
- Performance & Reporting Analysis

ARCO MURRAY

# 2OC | IN-HOUSE CONTROLS & COMMISSIONING

Our 2nd Order Controls team works collaboratively with designers, project managers, subcontractors, & equipment vendors to ensure every step in the control and commissioning process is completed.

Our process also guarantees your facility is fully functional per your requirements and that the building delivers performance and energy efficiencies as designed.

## WHAT WE DO

Our 2nd Order Controls team works collaboratively with designers, project managers, subcontractors, & equipment vendors to ensure every step in the control and commissioning process is completed.

Our process also guarantees your facility is fully functional per your requirements and that the building delivers performance and energy efficiencies as designed.


## OUR EXPERTISE

- HVAC
- Plumbing Systems
- Fertigation Equipment
- Electrical
- Building & Horticultural Controls
- Process Piping
- Lighting

## WHAT YOU GET

### EFFICIENT EQUIPMENT

Eliminate potential schedule delays initiated by equipment malfunctions

### METICULOUS VETTING

Peace of mind that all systems are rigorously vetted to operate as intended

### OPTIMAL COSTS

Optimize energy and maintenance costs and minimize warranty work

### BETTER PLANNING

Avoid unnecessary change orders by identifying scope gaps and other misses

# AMPS | POWER SOLUTIONS

AMPS is a trusted advisor and EPC to clients seeking to accomplish their sustainability goals. Our engineering expertise, in-house financial & energy analysis, and in-depth construction industry knowledge allow us to fit seamlessly into the design process and provide solutions for the most complex projects.

## COMPREHENSIVE SOLUTIONS

- Expertise Across Energy Types
- Experienced Across Various
- Industry Verticals
- Objective Design Approach

## TECH-ENABLED EXPERTS

- Exceptional Project Managers & Engineers
- Proprietary Automated Tools
- Detailed Models & Proposals

## SINGLE SOURCE SOLUTION

- Exceptional Planning & Design
- In-House Procurement Specialists
- Seamless Build Execution

## EXPERTISE ACROSS ENERGY TYPES

### SOLAR

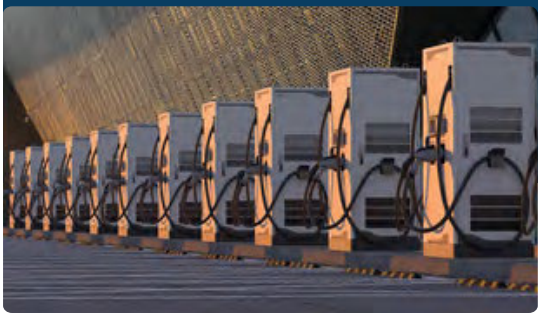
### POWER INFRASTRUCTURE & MICROGRIDS

### COMBINED HEAT & POWER (CHP)

### BATTERY

### ELECTRICAL DESIGN & PROCUREMENT

### EV CHARGING



# PROPOSED PROJECT TEAM

# PROJECT TEAM

ARCO MURRAY | DESIGN BUILD

## LEADERSHIP

**PATRICK HIDDER**
Executive
Vice President

## OPERATIONS TEAM

**NOLLIE BANACH**
Director of Municipal

**WILL CADY**
Quality Control
Manager

## PROJECT MANAGEMENT

**COLLIN WALTERS**
Project Manager

**KYLE HALL**
Project
Superintendent

**MARISA ARREDONDO**
Document Control
Manager

# Appendix D

# Econward Tech LLC Statement of Qualifications (SOQ)

# FIRM OVERVIEW

ECONWARD TECH

# CORPORATE PROFILE

**ECONWARD TECH** is a global technology company with expertise in developing innovative, efficient, and sustainable solutions for the treatment, recycling, and recovery of biowaste. The company operates from its offices and laboratory located in Madrid, Spain, as well as in Santa Monica, California, reflecting its commitment to addressing waste management challenges on a global scale.

ECONWARD is a forward-thinking company deeply committed to the principles of the circular economy. It aims to bridge the gap between the waste sector and the renewable energy sector, striving to create business models that deliver triple impact benefits encompassing social, environmental, and economic advantages.

Founded in 2009 and reinvigorated in 2018 through an acquisition by a seasoned investment group with over eight decades of experience in the energy sector, ECONWARD has invested more than €60 million, with a substantial portion dedicated to research, development, and innovation (R+D+i).

Since 2018, the company has significantly strengthened its management, technical, and scientific teams. It also ventured into the North American market through NOWON, LLC, established as a distributor of ECONWARD technology. During this period, the company has continuously refined its technology, achieving a highly efficient and optimized version while exploring various research avenues for harnessing the potential of biowaste in both energy and material forms.

ECONWARD boasts a team of highly qualified professionals and maintains an ongoing commitment to R+D+i, with patent development forming a core component of its operations. In 2020 alone, the company filed four new patents. As recognition of its outstanding research efforts, ECONWARD was honored in 2022 with the National Energy Award by the Spanish government, presented by the Ministry for the Ecological Transition and the Demographic Challenge (MITERD).

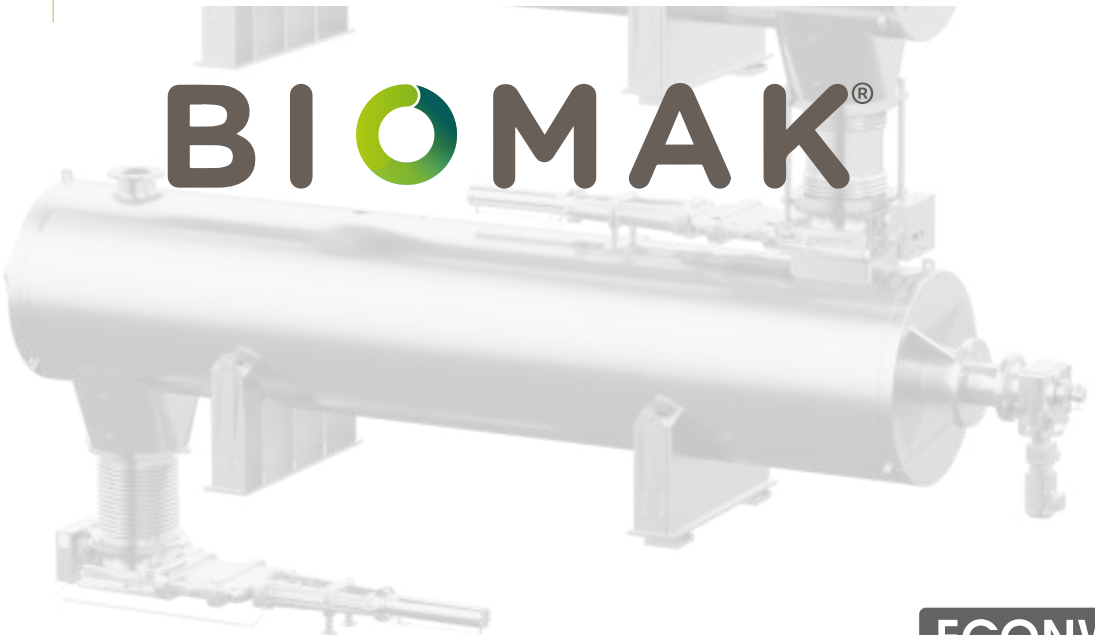
# BIOMAK®
# TECHNOLOGY

## A UNIQUE TREATMENT

ECONWARD's groundbreaking technology, trademarked as BIOMAK®, is globally patented and stands as a one-of-a-kind innovation. **BIOMAK®** involves a **thermal hydrolysis** treatment of municipal solid waste that contains a substantial organic component. This technology can continuously process up to **8 tons of waste per hour,** with treatment sequences lasting just 20 minutes each.

The process unfolds within an autoclave system where the waste is subjected to precise conditions of pressure, temperature, residence time, and mechanical agitation. This carefully controlled environment leads to the decomposition of even the most complex molecules, resulting in the thorough homogenization and sanitization of the entire organic fraction within municipal solid waste.

The significance of BIOMAK® lies in its ability to **capture the organic portion** of municipal waste that typically ends up in landfills. Instead of being wasted, this organic material can be converted into renewable energy. In terms of decarbonization, a single BIOMAK® module can reduce carbon emissions by a remarkable 10,000 tons annually. This reduction is equivalent to the environmental benefit of preserving 750 hectares of forest.




ECONWARD TECH

# BIOMAK®
# TECHNOLOGY

THE APPLICATIONS OF BIOMAK® ARE MAINLY THREE:

Biogas production:
The biomass resulting from the process carried out by BIOMAK® is the ideal substrate for its valorization in the form of biogas and biomethane through anaerobic digestion. In this way, it is possible to at least double the production of biogas compared to a conventional plant.

Co-digestion with sewage sludge:
Sanitized biomass acts as an additive that enhances the production of biogas in wastewater treatment plants (WWTP) allowing them to achieve energy self-consumption.

Green Chemistry:
(biorefinery): Given the physical and chemical characteristics of sanitized biomass, which give it great versatility, it is possible to develop new lines of research to obtain new products with high added value.

ECONWARD TECH

# NOWON SYSTEM

## A COMPREHENSIVE SOLUTION

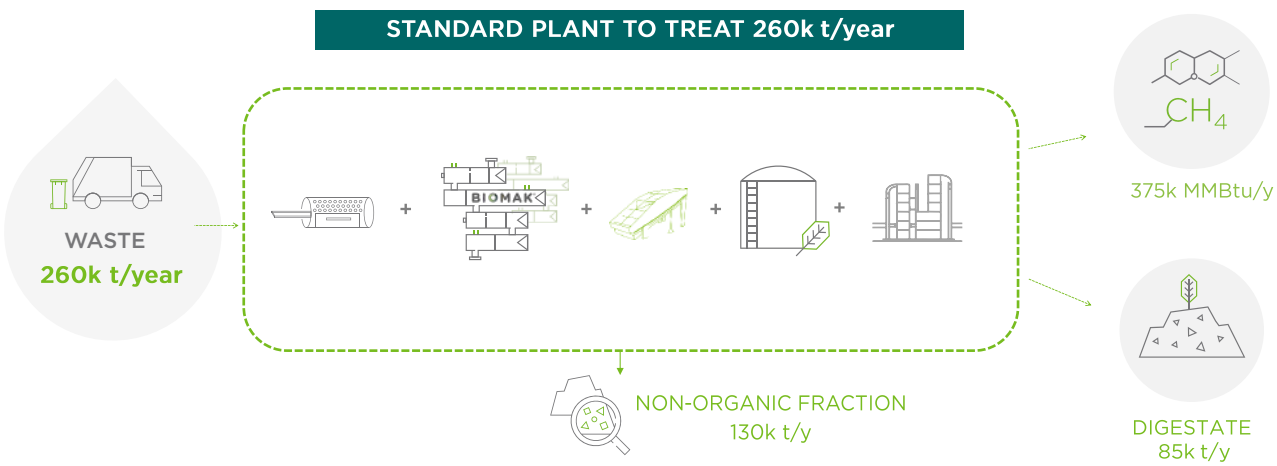
ECONWARD's innovative technology is designed to seamlessly integrate with municipal waste treatment plants, significantly enhancing their operational efficiency. This integration enables the recovery of nearly all the organic matter that enters the plant, effectively diverting it from landfills and facilitating its optimal reuse.

Through strategic partnerships with engineering firms, EPC (Engineering, Procurement, and Construction) specialists, industry technologists, and financial institutions, the ECONWARD group offers its clients a comprehensive solution. Known as the **NOWON system**, this solution encompasses the design, construction, operation, and maintenance of complete waste management facilities. The NOWON system features a cutting-edge waste plant equipped with ECONWARD's technology as a central and indispensable component.

The NOWON system represents an unprecedented advance over conventional waste treatment plants, since it allows the recovery of organic matter, but also most of the materials that are currently reaching the landfill, and allow their recycling or recovery.

For a NOWON system of 260,000 tons/year, the results are as follows:

# NOWON SYSTEM




## THE NOWON SYSTEM CONSISTS OF:

- A pre-treatment to ensure adequate particle size for entry into BIOMAK®.
- The BIOMAK®, heart of the NOWON system that performs thermal hydrolysis, optimizing the recovery of organic matter and the subsequent production of biogas.
- Mechanical aftertreatment of separation of improper, to obtain a substrate of between 95% and 98% in organic matter.
- Anaerobic digestion. Thanks to the above thermal hydrolysis, the treatment capacity of a NOWON system type plant is superior to that of a standard plant, since the TRH required for optimal biogas production is reduced (from 25 days on average to 18 days).
- Upgrading system, to inject the biomethane produced into the gas network.

# REFERENCES

## Madrid, Spain

RIVAS VACIAMADRID (MADRID, SPAIN).

**ECONWARD** ihas an industrial-scale plant in Rivas Vaciamadrid with a capacity of up to **65,000 tons per year,** operating since 2020.

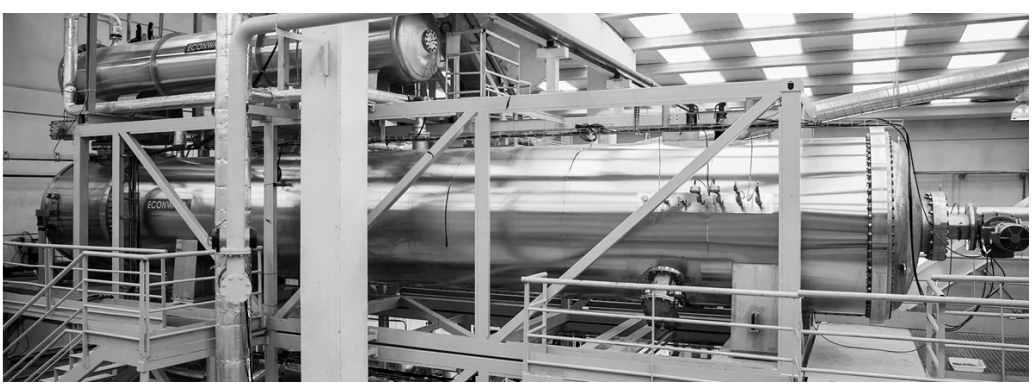
In this plant, different types of waste are processed: organic fraction of municipal solid waste (OFMSW), selective collection of biowaste (SSO) and rejections of treatment plants with high organic matter content (TMBs).

The plant is integrated with a subsequent mechanical separation of improper. It is a vibratory screen that allows an effective separation by different particle sizes of the hydrolyzed biomass. This separation efficiency is optimized with the gross biomass that comes from BIOMAK®.

The product of this plant is a clean thermohydrolyzed biomass, with high organic content, which is used for different projects on an industrial scale:

- ANAEROBIC DIGESTION
  which increases the specific production of biogas and increases its quality by methane concentration. Likewise, a high quality digestate is obtained, which allows its agronomic application.

- CO-DIGESTION WITH SLUDGE
  from wastewater treatment plants (WWTP), which allows increasing biogas production yields. ECONWARD develops this project together with the multinational company SACYR




**ECONWARD TECH, SLU**
C/ Alcalá 21, 10º Dcha.
28014 – Madrid
Spain
+34 911 441 324
info@econward.com

**ECONWARD TECH, LLC**
401 Wilshire Blvd. 12th Floor
Santa Monica,
CA 90401
+1 844 669 6610
info@econward.com


**www.econward.com**

# Appendix E

# PlanET Biogas USA Inc. Statement of Qualifications (SOQ)

# Statement of Qualifications

**Prepared By:**
PlanET Biogas USA Inc.
3370 Walden Avenue, Suite 120
Depew, NY 14043
877-266-0994
Contact-usa@planet-biogas.com

**Ulster County RFP**

**Project 2513**

**Rev 0**

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# Figures



# Appendix

# 1. Introduction

PlanET Biogas USA Inc. (PlanET) is pleased to provide a Statement of Qualifications for the Ulster County Resource Recovery Agency in response to the Solid Waste Diversion and Alternatives to Landfilling and Combustible Incineration RFP 2025-01 issued on April 11, 2025.

This package will provide a detailed overview of the qualifications, experience and capabilities of PlanET and demonstrate our ability to provide tried and proven technology for UIster County. By leveraging our expertise in the biogas industry, we are committed to delivering actionable insights and recommendations that will pave the way for a streamlined and efficient project.

# 2. About PlanET

## I. Corporate Overview

With over 400 employees, 870+ Anaerobic Digestion (AD) systems and 150+ AD to Renewable Natural Gas (RNG) plants built worldwide, the PlanET Biogas Group of companies is one of the world leaders in biogas plant design, construction, and service. This company was founded in 1998 and recently celebrated 25 years in business.


Since its inception, our global company has been at the forefront of designing and installing patented technology aimed at highly efficient biogas yields with minimal operating costs. PlanET's modular design approach allows for a wide array of feeding options and provides our clients with the tools needed to adapt to an ever-changing feedstock environment.

PlanET Biogas Group is headquartered in Germany with additional offices in the United States, Canada, France, Italy, and Brazil.

**PlanET Locations Worldwide**

| | | | |
|---|---|---|---|
| Niagara Region, ON, CAN | Buffalo, NY, USA | Lucerne, CO, USA | Gescher, Germany |
| Vreden, Germany | Hochmoor, Germany | Liffre, France | Florianopolis, Brazil |

In 2022 PlanET Biogas Group opened its new headquarters in Gescher, Germany. This state-of-the-art carbon neutral facility showcases our commitment to sustainability by integrating a renewable energy concept that combines an RNG-fueled CHP, geothermal technology, and solar power.

The new office focuses on meeting our energy needs and reducing peak loads. We efficiently generate green electricity and heat with RNG while minimizing our carbon footprint.

Our geothermal system provides heating and cooling, and solar panels contribute clean energy. Additionally, we have installed 18 charging stations to support our electric vehicles fleet.

The energy concept our German headquarters is based off of can be found below:

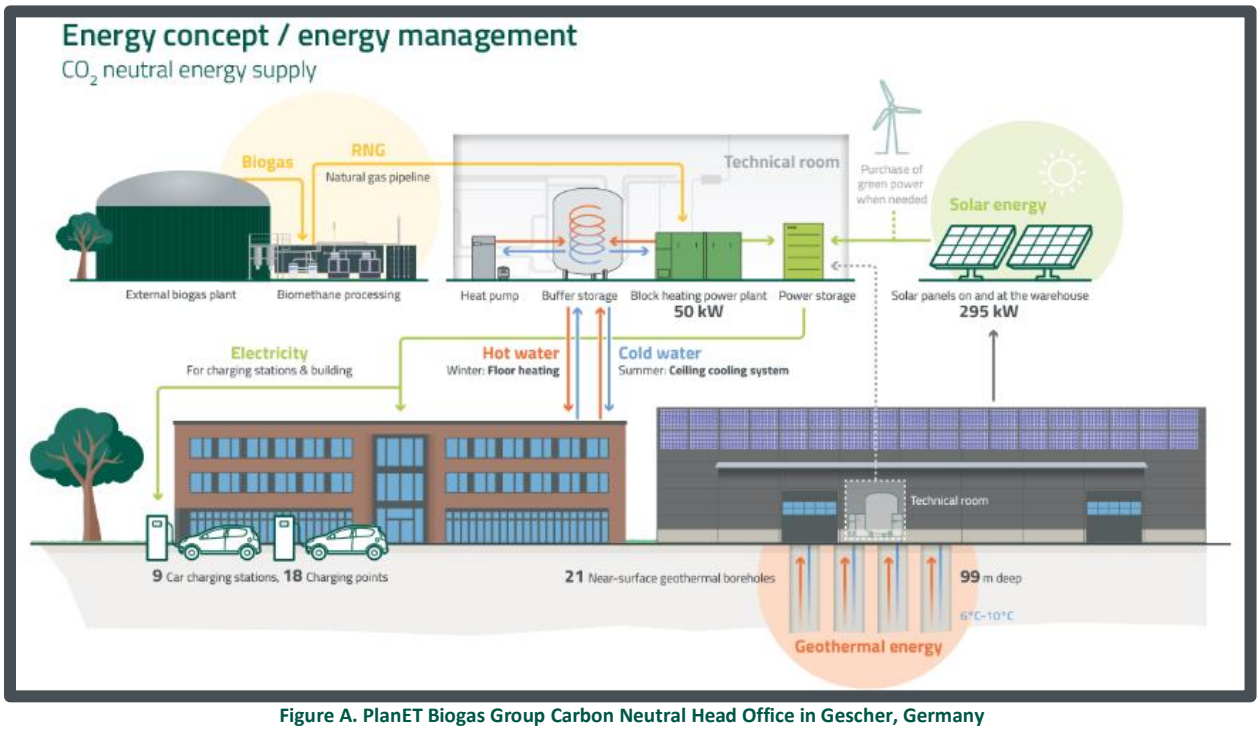



**Figure A. PlanET Biogas Group Carbon Neutral Head Office in Gescher, Germany**

## II. PlanET Culture & Values

A strong company culture is the cornerstone of every thriving organization. It fosters an environment where employees feel valued, engaged, and motivated to contribute their best. At PlanET we believe culture begins with each individual in our company as our employees are our most valuable assets. We foster and encourage a strong sense of teamwork, layered with mutual respect. This is cultivated by our three core values:

*Climate Protection*

We are committed to addressing the urgent global challenge of climate change to help minimize the impact of global warming on future generations. We believe new technology emergence and adoption is part of the solution to the hardest problem we have ever faced. Through our technology we want to help our clients and the world reduce $CH_4$ & $CO_2$ emissions.

*Respect*

Respect is a foundational value that guides our actions at PlanET. We listen carefully to our clients' requirements, collaborate on tailored solutions, and maintain open communication throughout projects to end up with better solutions than ever before.

*Value Addition*

What we do provides solutions that generate economic benefits through efficient waste management, nutrient recovery and biogas utilization. By consistently delivering superior value, we strive to build lasting relationships, foster trust and contribute positively to the prosperity of our customers, employees and communities.

## III. PlanET North America

PlanET is a pioneer in the North American agriculture and organics anerobic digestion, biogas utilization and RNG sectors with experience in a diverse array of digester feedstocks including manure, agricultural residuals, food and organic wastes, deadstock and slaughterhouse wastes & ethanol stillage among others.

Servicing North America since 2006 in Canada as PlanET Biogas Solutions (PBS) and established in 2013 in the US as PlanET Biogas USA (PBU), PlanET is an AD, Biogas Utilization and RNG technology solutions provider. The two companies are subsidiaries of PlanET Biogas Group. PBU has offices and service shops in Colorado & New York state, while PBS is based in Ontario. Collectively, our team of over 55 professionals based in the United States and Canada are dedicated to serving the North American market.

Across North America, thirty-seven (37) biogas facilities operate with PlanET anaerobic digesters, twenty-eight (28) of which are AD to RNG plants. These facilities are geographically spread across ten (10) states (AZ, CO, ID, KS, MI, NV, NY, SD, TX & WI). North of the border in Canada, PlanET has thirteen (13) operating biogas plants across four (4) provinces (AB, BC, NS & ON). PlanET celebrated a major milestone at the end of 2024, having successfully delivered over sixty (60) ADs to clients in the USA in just three (3) years. As of January 2025, another twenty-three (23) PlanET digesters are under construction. These projects span across nine (9) states (CO, GA, IA, ID, KS, MI, NE, NY, & TX) and one (1) province (ON).

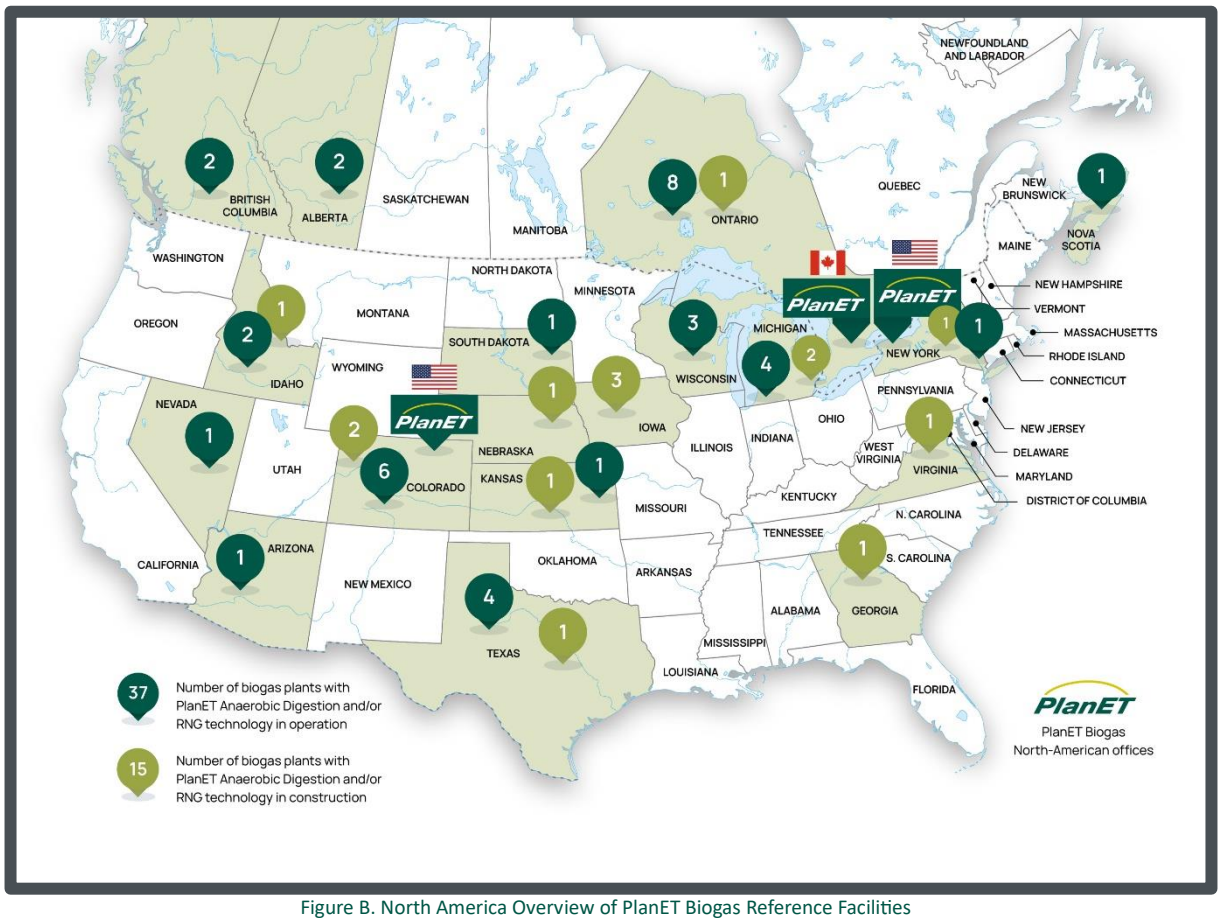



Figure B. North America Overview of PlanET Biogas Reference Facilities

PlanET's expertise and experience in the US, North America, and globally enables us to address the unique challenges and requirements of both manure and organics projects, providing standardized and custom technology along with project delivery solutions to meet the both the client and project needs.

Our comprehensive solutions include process design, detailed engineering, and best-in-class anaerobic digestion and RNG technology. We can design and supply front-end preprocessing to RNG pipeline injection, as well as integration of third-party technologies such as $CO_2$ liquefaction and digestate nutrient recovery. Additionally, we provide onsite technical support, biological services, and commissioning assistance to ensure project success.

## IV. Services

PlanET's service offerings to its North American clients include the following:

- Preliminary technical and economic feasibility studies, permitting support, detailed engineering design and general project development
- Equipment design, procurement, and fabrication
- Construction field services and commissioning
- Biological services, where PlanET's microbiology team works with operators to understand their biogas system by providing feedback on the operating plant and conducting analysis on substrate and digestate samples
- Technical services to ensure optimal performance of the client's biogas plants, including comprehensive service for RNG and CHP utilization

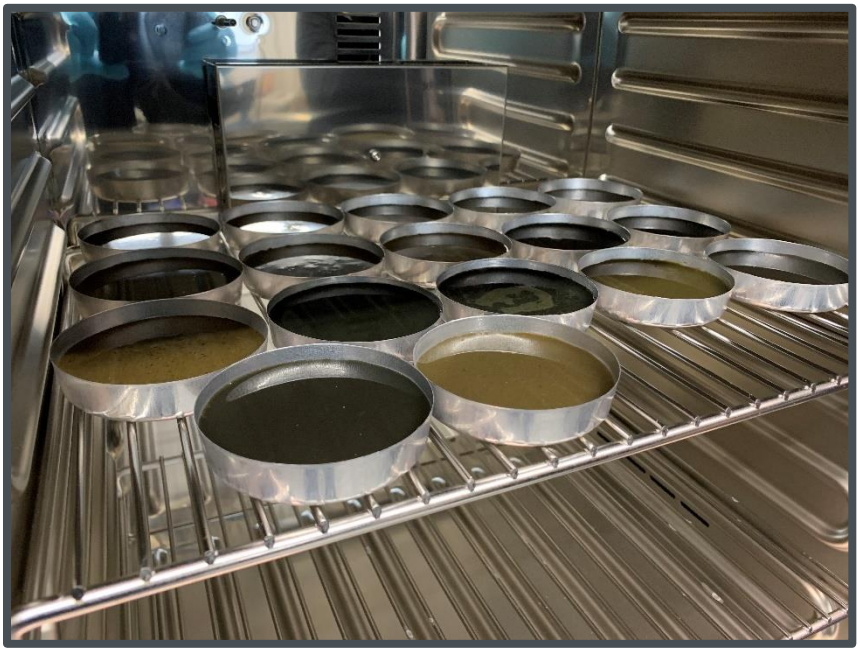
PlanET's internal US-based staff are involved in project and field engineering, construction support, operations support, and HR functions. Additional support, when needed on a project-by-project basis, is available based on resource planning and expertise from our Canadian and Germany offices.

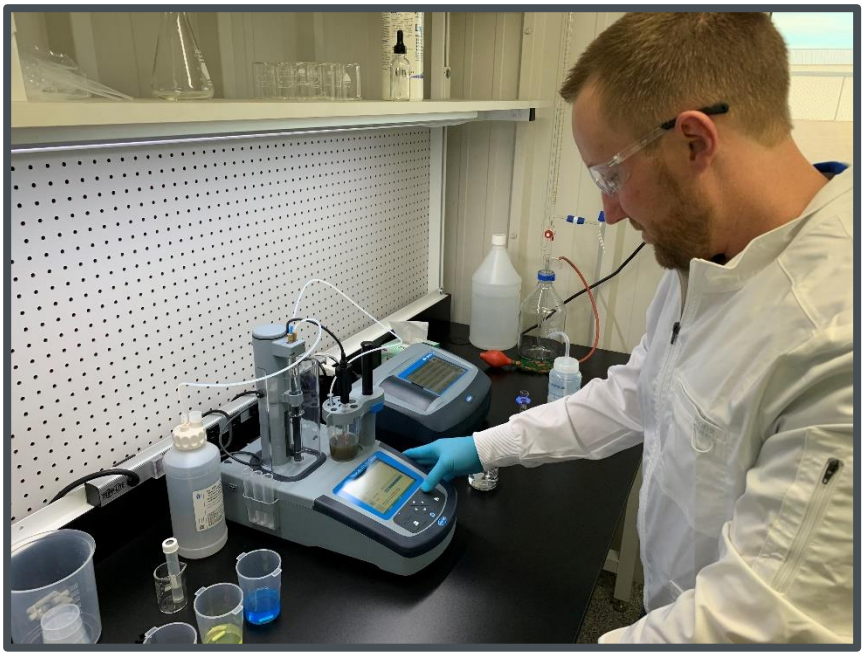
Recently, PlanET expanded in North America with a new biological testing lab. The facility is designed for high-accuracy monitoring of key digester health parameters and allows digester operators to focus their time on important operational tasks while receiving key insights on digester feeding effectiveness and biological health. These insights provide substantial value for the interests of optimizing biogas production and keeping digesters healthy along with helping biogas plants avoid costly upsets and the long-term accumulation of inert material.

The testing lab offers a variety of testing options which include sample analysis at our PlanET Biological Service Laboratory in Colorado, site-specific testing of key health parameters, periodic testing profiles of trace elements and volatile fatty acids, and as-needed testing of acid-insoluble ash for the monitoring of sand, silt and other insoluble material contamination.

## Advantages of using PlanET Biological Service:

- Quality Testing and Attention to Detail
- Ability to expand operational insights
- Quick Turnaround of Results
- Peace of Mind for your Digester's health
- 25 years of experience
- Experience across a wide range of digester sizes and substrate types
- Testing the right parameters at the right frequency
- Comprehensive knowledge of the entire AD process
- Continuous Monitoring and Actionable Data
- Option to receive all the materials you need to get your sample from the digester to the lab





## 3. Advantages of PlanET Biogas

PlanET North America is a leader in providing both standard and customized solutions for our client's biogas needs and we specialize in tailored approaches to address challenging feedstocks.

With a robust engineering and technical services team in North America, we are well equipped to handle our clients' needs. When you couple this with the cutting-edge European technology we provide, PlanET can offer strong knowledge and insights for achieving success in the biogas industry.

This expertise has earned us a reputation as a trusted and reliable partner. We understand that trust is the foundation of any successful collaboration so here's why you can trust us to deliver outstanding results:

- ✓ **Responsive Support** – our local presence in North America, with offices in Colorado, New York State and Ontario, enables us to respond promptly and work diligently to resolve any issues
- ✓ **Proven Expertise** – with over 25+ years of global experience in the biogas industry, our team of over 55 skilled professionals in North America bring a wealth of knowledge and expertise to each project (over 350+ employees worldwide)
- ✓ **Research & Development** – we are committed to R&D to ensure our technology incorporates the latest findings and offers state-of-the-art solutions that maximize efficiency and sustainability
- ✓ **Transparency & Integrity** – our team believes in clear and honest communication. From project timelines to pricing, we ensure you're fully informed every step of the way
- ✓ **Satisfaction Guarantee** – we stand behind our work with performance guarantees and a warranty that shows our commitment to delivering results that meet your expectations
- ✓ **Client Satisfaction** – we have helped many businesses achieve their goals and have many client success stories that highlight our commitment to excellence

Overall, clients choose PlanET North America for their proven expertise, sector-focused approach, commitment to innovation, and localized support, all of which contribute to delivering sustainable and efficient biogas solutions.

## 4. Key Personnel

PlanET's ability to deliver exceptional results is due to our team of dedicated professionals. With a wealth of experience and expertise across diverse fields, our key personnel bring leadership, technical proficiency, and strategic insight into every project, ensuring execution with precision in the hope of exceeding expectations.

The key personnel we have devoted to this project are as follows:

**Mike Muffels**
Program Director - Organics
Mobile 905-658-5092
Email M.Muffels@planet-biogas.com

**Ben Constable, P.Eng.**
Director of Project Management
Mobile 905-658-7303
Email B.Constable@planet-biogas.com

**CVs can be found in Appendix A** of this SOQ.

## 5. Reference Facilities

To demonstrate our expertise and track record, we present two reference facilities that showcase our capabilities and successful project implementations in the Biogas and Food Waste industries.

These reference facilities serve as tangible examples of our commitment to excellence, innovation, and client satisfaction.

Each facility represents a unique solution tailored to client specific needs, highlighting our ability to deliver quality results. Each reference will provide valuable insights into our approach, methodologies, and the impact our solutions deliver.

Project References are provided on the following pages for Dicklands Biogas and Lethbridge.

In addition, we invite you to view our references brochure for PlanET AD to RNG Projects here.

PlanET_References_US-CAN_Brochure_2025_WEB.pdf

## A. Project Reference Lethbridge Biogas


PROJECT SPOTLIGHT

# The largest AD to RNG plant in Western Canada

The Lethbridge Alberta PlanET STATERON P-Series RNG plant is a groundbreaking achievement in RNG production construction through uncertain times. Since its commissioning in 2021, this exceptional facility has demonstrated unparalleled operational reliability, surpassing industry standards and delivering exceptional performance. Utilizing the advanced Pressure Swing Adsorption (PSA) technology, it effectively transforms raw biogas into high-quality RNG, seamlessly integrated into the ATCO Energy's provincial natural gas grid.

With an impressive capacity of 1190 scfm (1920 $Nm^3/h$), the Lethbridge PlanET STATERON PSA plant sets new benchmarks. Praised for its remarkable efficiency and reliability, this plant ensures a steady supply of RNG with high turndown ratios.

Notably, the Lethbridge PlanET STATERON PSA plant represents a triumph of resilience amid challenging times. Despite the backdrop of the global COVID-19 pandemic, the design and equipment supply agreement was signed in early 2020, and the PlanET STATERON RNG P-SERIES upgrader commenced operations in the summer of 2021. This accomplishment exemplifies our dedication to delivering cutting-edge solutions even in the face of adversity.


This remarkable biogas facility in Lethbridge has pioneered the path for biogas development in Canada. Boasting a processing capacity of 100,000 tonnes per year, it proudly stands as the largest biogas plant in Western Canada.

| | |
|---|---|
| **Commissioned** | AD & CHP plant - 2013 |
| | STATERON P-Series - 2021 |
| **Digester(s)** | 3 Digesters<br>(1.04 Mgal / 3927 m³ each) |
| **CHP Output** | 2.85 MWe |
| **RNG Upgrader Technology** | Pressure Swing Adsorption (PSA) |
| **Biogas Upgrading Capacity** | 1190 scfm / 1920 Nm³/h |
| **RNG Production Capacity** | ~ 330,000 MMBTU/yr<br>~ 350,000 GJ/yr |

**AD Feedstock**
Cow, hog & poultry manure, slaughterhouse wastes, food waste, fats, oils and greases (FOG), whey and potato residuals

## B. DICKLANDS FARMS


PROJECT SPOTLIGHT

# PlanET STATERON M-Series in British Columbia

FortisBC Energy Inc. (FortisBC), a regulated utility, took a significant step towards increasing the supply of Renewable Natural Gas (RNG) within its system with the help of PlanET. By partnering with the Dicklands Farms project, located in Chilliwack, British Columbia, FortisBC will be injecting RNG into its gas distribution network. This innovative project utilizes PlanET AD technology and the PlanET STATERON M-Series to produce RNG from agricultural and food waste.

Through the process of anaerobic digestion (AD), food and agricultural waste undergoes decomposition and generates biogas. PlanET AD technology plays a crucial role in this process, facilitating efficient anaerobic digestion and in-tank desulfurization.

The biogas produced from the AD process is then upgraded into RNG using the PlanET STATERON M-Series packaged 3-Stage Membrane system. This advanced biogas upgrading technology cleans the biogas by removing impurities like carbon dioxide, hydrogen sulfide and moisture. The result is high-quality RNG that meets the necessary standards for injection into the FortisBC natural gas grid.

The Dicklands Farms project takes a very innovative approach using a three goal strategy.

1. Responsibly manage local organic food waste, agricultural waste and manure
2. Reduce methane emissions from waste
3. Produce low-carbon energy (RNG)

This comprehensive approach helps to reduce methane emissions from agricultural waste, transforms it into a valuable low-carbon energy source and also produces organic pellet fertilizer and clean water.

At peak production, the Dicklands Farms project is projected to generate enough RNG to meet the annual gas needs of approximately 2,000 homes in British Columbia. This significant output of low-carbon RNG contributes to FortisBC's commitment to sustainability, reducing greenhouse gas emissions, and promoting a cleaner energy system.

Through the collaboration between FortisBC, Dicklands Farms, and PlanET Biogas, anaerobic digestion and biogas upgrading technologies are paving the way for a more sustainable energy future in British Columbia. By combining agricultural and food waste with innovative


technologies, this project serves as a model for reducing waste, lowering emissions, and providing renewable energy solutions.

| | |
|---|---|
| **Commissioned** | STATERON M-Series-2023 |
| **Digester(s)** | 2 Digesters<br>(1.49 Mgal / 5654 m³ each) |
| **RNG Upgrader Technology** | 3-stage membrane |
| **Biogas Upgrading Capacity** | 780 scfm / 1260 Nm³/h |
| **RNG Production Capacity** | ~ 210,000 MMBTU/yr<br>~ 220,000 GJ/yr |

**AD Feedstock**
Dairy & chicken manure along with packaged food waste

## 6. PlanET Equipment and Technology

PlanET's technology platform centers around core digestion and biogas upgrading technologies. Our technology has been pushing the boundaries of gas production in the field of anaerobic digestion since its inception. PlanET designs, supplies, constructs, services and operates PlanET mesophilic second generation Continuously Stirred Tanks Reactor (CSTR) digesters which offer best-in-class gas volumes combined with high and reliable gas quality.

To provide biogas generation guarantees and to save on design engineering, PlanET relies on a set of pre-established digester designs as long as it meets the needs of the client and the project. While this is the primary and preferred method of designing biogas plants, it is not the only means to do so. For certain feedstock types and certain industries, PlanET will design custom digesters for specific applications. PlanET is flexible on the digestion technology deployed for specific solutions.

Beyond digesters, PlanET integrates equipment and systems from various partners to be able to provide a fully integrated organics processing facility from feedstock receiving to pre-treatment through to biogas upgrading and digestate management. This ensures PlanET is not limited from working with owner-specified vendors outside of digestion technology. Our team works with owners to find appropriate technologies and options for sourcing the technology in a few ways: under PlanET's umbrella (where there are process integration advantages to doing so), through an EPC, or through the owner directly.

Our technology can be categorized into four main technology lines:

1. **Preprocessing and Pre-feed** – Pre-tanks, pre-mix, dry feeders and depackaging
2. **Digesters** – continuously stirred tank reactor (CSTR) wet mesophilic anaerobic digesters
3. **Digestate Management** – solid/liquid separation (e.g. screw presses, centrifuge), digestate thickening, drying, nutrient recovery.
4. **Biogas Utilization** - RNG upgraders (3 stage membrane & PSA technology), combined heat and power (CHP) gensets & $CO_2$ liquefaction **(not included in this proposal).** For this project, the raw biogas is to be conditioned for direct combustion in a boiler.

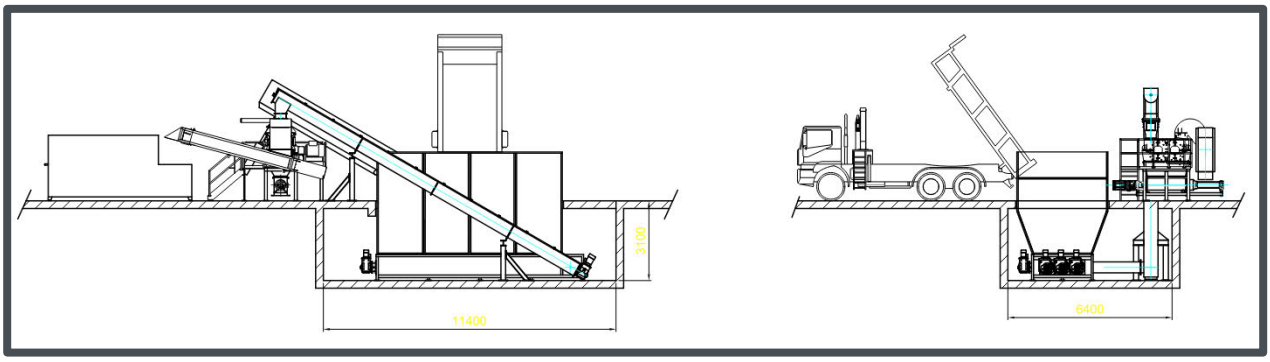
## I. Preprocessing & Pre-feed

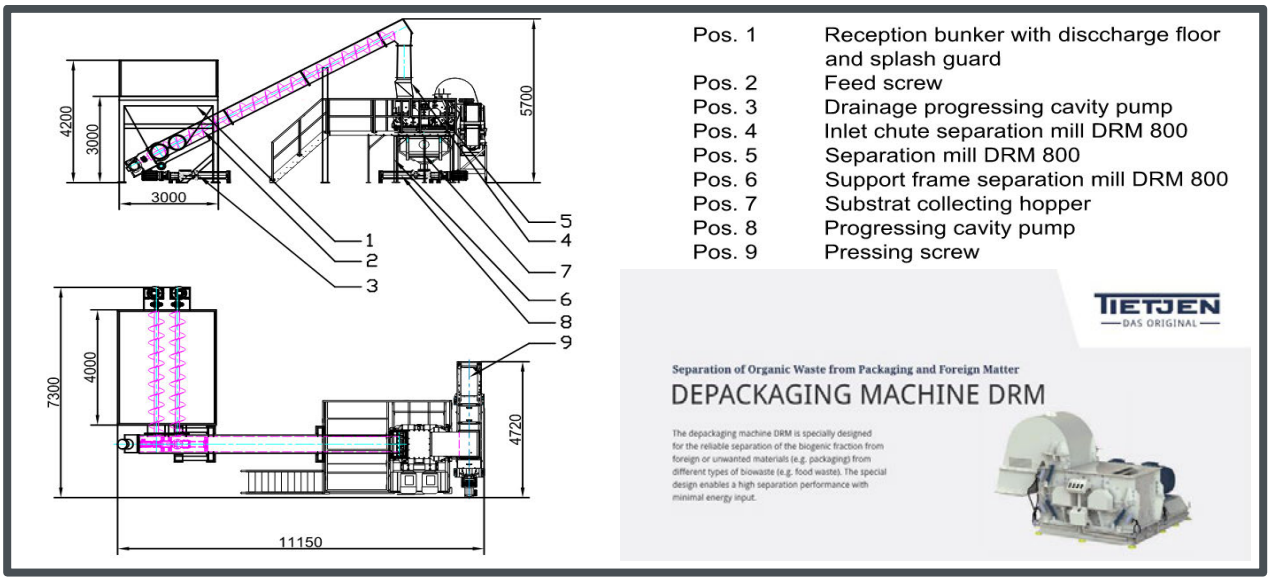
Depackaging System with Grit Removal: PlanET works with a number of suppliers for food waste depackaging and grit removal equipment, including but not limited to:

- Tietjen – Depackaging Machine DRM
- Mavitec Green Energy – Paddle Depacker 2.0
- Smicon (technology selected for our Dicklands Biogas project in Chilliwack, BC)

Selection is project-specific based on the specific food waste types and sources; as well as the ultimate digestate off-take quality requirements.

Below is a typical configuration, based on a Tietjen DRM design in this case, of how a depackaging system can be configured. What is not shown below is a grit removal step. This would be added downstream of the depackaging system.



PlanET Vario Dry Feeder (internal): PlanET's Vario Dry Feeder introduces solid substrates into the digester. It plays a crucial role in supplying the digester with a consistent and controlled feedstock to optimize the biogas production process while requiring minimal energy. The feeder is distinguished by its modularity and patented conveyor rails that ensure even discharge of the material so it can be sized to suit the application.

**Figure A. PlanET Vario Dry Feeder in North America**

Vogelsang Solid Matter Feeder PreMix (external): PreMix combines four steps within a compact, space-saving unit. The universal feeder system is a combination of the progressive cavity pump with the RotaCut RCX cutter. Optionally the solid matter feeder can be equipped with the Debris Removal System (DRS) and Debris Lift Unit (DLU). The biomass is introduced into the side of the system through any feed screw. At the same time, liquid (recirculated material, liquid manure) is added. In a single step, the

PreMix turns this into a homogeneous organic suspension and pumps it into the digester. As the biomass is mashed into a homogeneous suspension which can be pumped, multiple digesters can be fed via a pipe network with one PreMix, and additional containers can easily be connected at a later time.

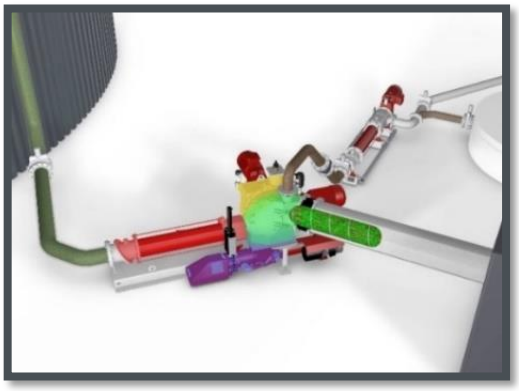


**Figure B. Pre-mix**

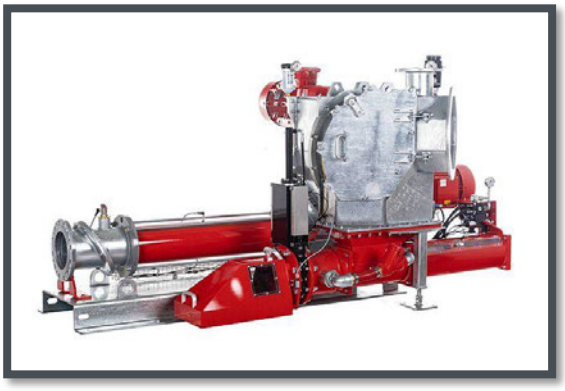


**Figure C. Pre-mix**

## II. Digesters

As previously noted, PlanET CSTR Digesters are operational at over 870 biogas sites globally, including 33 operating sites in North America, and are reliable with a proven design based on 25+ years in the industry. The digesters can be designed and offered using stainless steel or concrete as well as epoxy coated steel. Our innovative systems have successfully integrated the widest array of feedstock delivery systems on the market. They provide best in class biogas quality and production combined with the lowest parasitic load, establishing PlanET as one of the most efficient and renowned technology providers in North America. It is our goal to ensure all designs are tailored to meet the needs of the operators while at the same time using standardized PlanET Digester configurations and designs to increase scalability, compress project timelines and reduce CAPEX.

### Fixed Roof Digester

For a thin stillage AD project, a fixed roof "tall" digester with center roof-mounted mixer is a more common design. This is the digester type most commonly employed in K&F designs. While the digester types described below in more detail are more commonly used in PlanET projects, we are also starting to employ this design in our projects. The photo here is from a PlanET project currently under construction in Europe.

The design of the digester does not impact the efficiency of the digestion process nor the process guarantee. Mixing designs are confirmed with CFD analysis for each project based on the project specific in-feed slurry characteristics.

## PlanET Stainless Steel Digesters

Stainless Steel anaerobic digesters play a crucial role in the anaerobic digestion process by providing an environment for microorganisms to break down organic materials and produce biogas. They are also essential for sustainable waste management, nutrient recovery and renewable energy production. They are the leading technology of choice employed at numerous dairy manure projects in North America.

PlanET's steel digesters are constructed using high-quality duplex stainless steel. They consist of a cylindrical tank with a dome-shaped roof. The tank is equipped with mixing and heating systems to maintain optimal conditions for the anaerobic digestion process. Duplex Stainless Steel CSTR digesters are known for their durability, corrosion resistance, and relatively fast construction. With an operational lifespan of over 20 years, they are suitable for large-scale operations, can handle co-digestion processes and are adaptable to various feedstocks. PlanET has four modular stainless steel design options to ensure our digester designs can be scaled to meet the requirements of these projects.

They are as follows:

1. 111.5' (34m) Ø x 29.5' (9m) H Gross Volume: 2.2 M Gal (8300 m3)
2. 111.5' (34m) Ø x 24.5' (7.5m) H Gross Volume: 1.8 M Gal (6920 m3)
3. 98.5' (30m) Ø x 29.5' (9m) H Gross Volume: 1.7 M Gal (6360 m3)
4. 98.5' (30m) Ø x 24.5' (7.5m) H Gross Volume: 1.4 M Gal (5300 m3)

There are many advantages of PlanET Stainless Steel Digesters but the most notable are:

- Robust and durable material to withstand harsh environmental conditions & corrosive substrates
- Long-lasting and reliable with high structural strength
- Four sizes of modular design allowing for easy customization and expansion for a variety of applications
- Consistent and efficient biogas production and storage
- Cost effective and relatively easy to maintain

## PlanET Concrete Digesters

Concrete anaerobic digesters play the same role in the anaerobic digestion process as steel digesters. Our PlanET concrete CSTR digesters are built using reinforced concrete. Also similar to steel CSTR digesters, they feature a cylindrical shape with a conical or dome-shaped roof. Concrete digesters offer excellent insulation and are well-suited for large-scale biogas projects. They are known for their longevity and robustness, making them a preferred choice for long-term biogas operations. The average concrete digester has an operational lifespan of 20+ years.

Concrete digesters offer several advantages due to their design features. One notable advantage is their flexibility in sizing, allowing for customization based on the amount of manure or other substrates available. These digesters can also be partially buried, effectively reducing their overall height and visual impact. These digesters allow for the versatile placement of mixers, which can be mounted either internally or externally based on preference and efficiency considerations. Like steel digesters, they are suitable for various feedstocks, from manure and agricultural residues to food waste and can handle both mono-digestion and co-digestion processes.

Both steel and concrete CSTR digesters play a crucial role in the anaerobic digestion process by providing an environment for microorganisms to break down organic materials and produce biogas. The choice between steel and concrete depends on factors such as project scale, budget, feedstock characteristics, and local construction pricing and practices.

### PlanET FLEXSTORE® XL Flexible Roof Membrane

In contrast to conventional air-supported roofs, the redesigned PlanET Flexstore roof uses a particularly durable PVC weather protection outer foil that is 33% thicker than many competitor roof membranes. This means that the PlanET roof design can withstand high winds and severe weather conditions. In addition, the inner PE gas storage foil is particularly durable and impermeable to odors.

- *Dome Roof Design*: The dome roof design increases gas storage capacity by 20% compared to conical gas storage membranes and it increases the roof's aerodynamic profile which improves the membrane's performance in extreme wind conditions.
- *Grey Color Foil:* The grey color roof cover reduces foil surface temperatures during the summer which reduces biogas expansion within the storage membrane and thus maintains a higher gas storage capacity.
- *Advantages of Gas Storage:* Ensures continuous flow of biogas to RNG upgraders allowing for lower electrical consumption as the compressor VFD's can be run at optimal levels. It also allows for temporary storage of biogas in the event of a grid shut in or RNG Upgrader downtime which prevents unnecessary flaring of biogas.
- *Airtight Roof:* As part of the system commissioning, the roof system is pressurized to ensure there are no gas leaks in the system which will eliminate odor emissions from the digesters. In ground tanks with concrete lids are prone to leaking after initial clean-out, releasing hazardous methane and $H_2S$ gases.

### PlanET eco ® Cover

A desulphurizing net called the PlanET eco® Cover combines a range of properties to achieve optimal gas quality of the biogas plant.

The desulphurization of the biogas is carried out by a biocatalytic process using oxygen injection. The large surface area offers an optimal living space for the bacteria to desulphurize the biogas in the headspace of the PlanET digesters.

### Tank Mixing

Mixers are crucial components in anaerobic digesters that play a vital role in maintaining optimal conditions for the anaerobic digestion process. Proper mixing helps distribute nutrients, maintain temperature uniformity, prevents stratification, and enhances the overall efficiency of the digestion process. PlanET's diverse range of mixing solutions helps create tailor-made solutions that are efficient and purpose driven for a variety of substrates with varying total solids percentages. We offer both internal and external mixer options and PlanET's team of experts will work with you to find the best solution for your project.

PlanET offers two kinds of Internal Submersible Mixers. These mixers are installed directly inside the digester and can be mounted on the digester floor. Our **PlanET eco® prop**, (aka Banana Mixer) is a low speed, high torque mixer positioned within the tank that is excellent at generating mixing currents for increased mixer performance and assists in the reduction of settling. **Our PlanET eco® mix** is a column mixer that can be adjusted to mix at different heights while in operation and is located near the internal tank wall. It effectively eliminates floating layers in the digester while ensuring proper mixing.

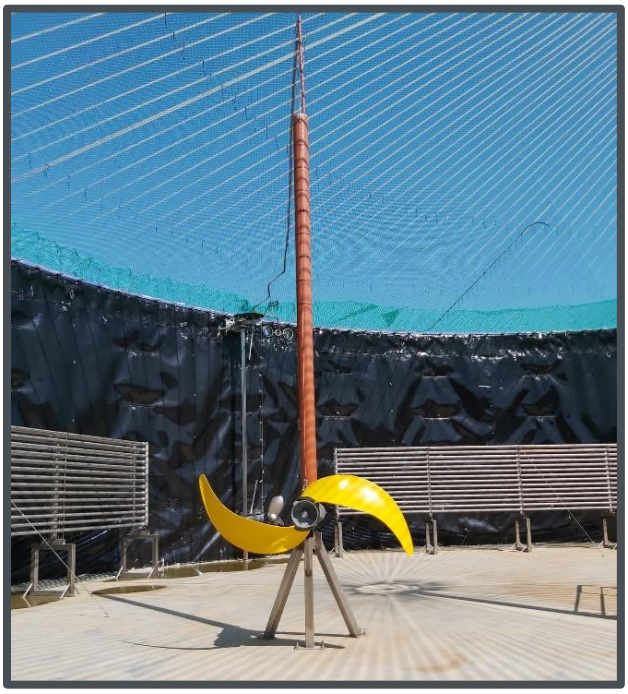


Figure H. PlanET eco® prop (banana mixer)

Figure I. PlanET eco® mix

The **PlanET eco® powermix** is our external mounted shaft mixer option. External mixers are positioned outside the digester to agitate the contents through the walls of the digester. This external placement further facilitates effective maintenance procedures reducing digester downtime.

Figure J. PlanET eco® powermix

### In-Tank Stainless Steel Heating

Due to the highly automated nature of the PlanET control system, heat can be transferred into the digester by means of stainless-steel heating loops or heating racks which are directly immersed into the digestate. This heat transfer method provides more efficient heating than radiant in-wall heating and when combined with complete mixing of the tank, yields the most effective heat transfer mechanism. Minimizing heat transfer losses will ensure uniform heat distribution in the digester which will increase biogas yields while reducing plant OPEX.

Maintaining the appropriate temperature is essential for optimizing the activity of anaerobic microorganisms responsible for the breakdown of organic matter and the production of biogas promoting enhanced digestion and better quality of digestate even in colder climates or during seasonal temperature fluctuations.

Figure K. PlanET Heating Loops

**PlanET Heating Loops** are circular heating pipes mounted either on a support or on the tank wall (if the tank is concrete). The heating loops maintain the digester's contents at the optimal temperature for these microorganisms to efficiently perform their digestion functions. They are a lower CAPEX option for digesters in warmer regions.

**PlanET Heating Racks** are made of stainless steel and are installed inside the digester to hold and support heating pipes. These racks help position the heating elements optimally for efficient heat distribution within the digester contents and are prefabricated as "plug and play" to improve construction timelines and overall costs. Our patented design provides optimal heat transfer while minimizing flow resistance making them ideal for larger digesters.

Figure L. PlanET Heating Racks

### PlanET's Technical Container

PlanET has a plug-and-play module specifically for manure and food waste-based substrate applications that combines a pumping manifold, thermal distribution and plant controls into one singular 40' x 8' container. This prefabricated unit is set in place on site and can be quickly commissioned to reduce labor hours on site.

At the heart of the PlanET compact manifold is a rotary lobe pump which allows for material transfer to/from the digesters as well as transfer of material between the tanks. Material movement is automated via two in-line flow meters which can be adjusted remotely to minimize operator interface.

The bank of heat distribution piping takes incoming hot water from the heat source/boiler and automatically provides heat to the digester as required via a series of three-way mixing valves. This arrangement ensures efficient temperature control with no operator adjustments required.

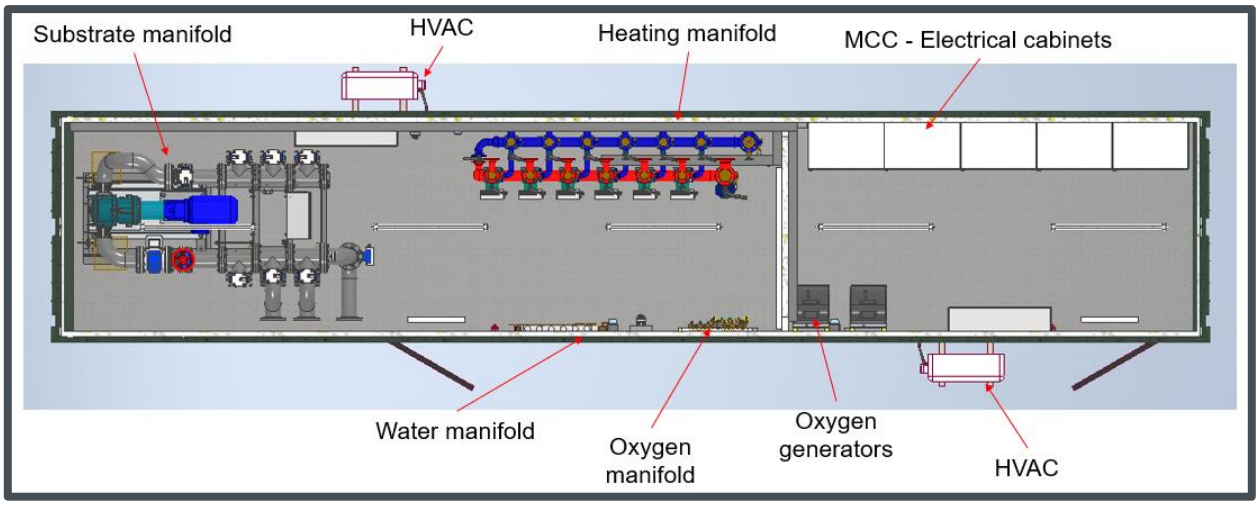



Figure M. PlanET Technical Container Schematic

### Control System

The heart of PlanET's anaerobic digestion system is the technical container, which houses PlanET's prefabricated electrical and control cabinets. These cabinets contain all electrical components required to run the digester including motor control centers (MCCs), Variable Frequency Drives (VFDs), breakers and control units. The technical container is used to power the PlanET controlled equipment and monitors all the sensors and measuring devices in the AD system.

PlanET typically utilizes a Siemens Programmable Logic Controller (PLC) to automate the daily operation of the plant and to monitor the health of system components. **For this project we understand that an Allen Bradley / Rockwell platform is preferred.** This PLC also provides basic control of auxiliary equipment, such as feed pumps, boilers, and the flare and can communicate with other brands of PLC to ensure seamless system integration. The operator can adjust all required settings via a touch display installed within the cabinet and can dial in remotely from anywhere in the world to monitor operations and to troubleshoot.

All process data is collected and stored within the PLC data storage. This system shows trendlines based on historic data to help the operator identify issues and to optimize plant performance. A standardized warning and failure messaging system alerts the operator to changes in performance. The PLC will send alerts to the operator and an optional auto dialer will call the operator to provide critical alerts.

**Figure N. PlanET Supplied HMI**

## Additional Advantages of CSTR Digester Technology

The are several main advantages of CSTR Digesters:

a. Active Mixing vs Passive Mixing
b. Increased Gas Storage
c. Ease of Digester Access for Maintenance
d. In-tank desulphurization

### Active Mixing

Active mixing in a CSTR digester will provide uniform pH and temperature across the entire vessel which will result in an optimal environment for the methanogenic bacteria to produce biogas. This will provide a much larger active volume in the tank which is continuously producing biogas.

### Increased Gas Storage

The domed shape on top of the CSTR digesters allows for several hours of gas storage which ensures continuous flow of biogas to the RNG upgraders. With a continuous and stable flow of gas, the RNG upgrader can run at its optimal efficiency curves which will ensure consistent high quality RNG with lower electrical consumption as the compressor VFD's can be run at optimal levels. The gas storage can also allow for temporary storage of biogas in the event of a grid shut in and prevents unnecessary flaring of good biogas.

PlanET also utilizes a system where rejected RNG can be flashed back into the gas storage dome to be processed again by the upgrader. The gas storage volume allows time for recirculation without having to burn any of the partially upgraded RNG.

### Ease of Digester Access for Maintenance

All digesters need to be routinely cleaned out and inspected as part of ongoing maintenance. The PlanET roof system allows for easy access for any maintenance. PlanET routinely removes roof membranes within a few hours and can reinstall a full roof within one day.

The membrane roofs can be rolled back and lifted with a crane if complete entry into the tank is needed, or if only partial access is needed, the roof can be folded in half to allow for access to particular equipment without fully removing the roof.

### In-tank Desulphurization

As explained above, the PlanET eco ® cover provides a surface to propagate aerobic bacteria that can reduce the H2S levels of the biogas leaving the tanks. The level of oxygen which is pumped into the system is controlled by a downstream gas analyzer to ensure the $O_2$ levels are always below the grid thresholds. Typically, this in-tank desulphurization system will lower the $H_2S$ levels by 1,500 ppm with no increase in associated OPEX. This yields significant savings in carbon media or other $H_2S$ reducing costs.

## III. Digestate Management

PlanET has integrated numerous digestate management technologies in projects globally, including thickening, dewatering, drying, pelletizing, acid scrubbing, condensing, filtering through membranes and reverse osmosis. The lowest cost option is typically storage and land application of the whole digestate, but local nutrient regulations and agricultural practices dictate if this is economically feasible or not.

Alternatively, several PlanET projects incorporate digestate thickening (through our Retictor system) or dewatering (using external partner technology). For example, at the Dicklands Biogas project, land application of digestate was not feasible, so PlanET helped the owner to incorporate a digestate pelletizer plant that discharges clean effluent to the environment. This plant incorporates dewatering, drying, mechanical vapor recompression, pelletizing and reverse osmosis technologies which PlanET helped to source for the project.

For the digestate screening, we typically would use a screen press in a food waste application. The final selection will, again, depend on the specifics of the food waste types and the packaging and contamination expected to be delivered with the material.

Dewatering equipment selection is project specific and dependent on downstream process and digestate off-take requirements. For example, use of non-biodegradable or non-digestible polymers with a centrifuge is not an option if the digestate will be recirculated back into the process and digested again. The required solids capture efficiency typically drives the equipment selection.

Another consideration is odor. High speed centrifuges produce a dewatered solid that has a higher odor potential than options that operate at lower speeds and disturb or break apart the remaining volatile solids less.

### IV. Biogas Utilization

## C. Technology Overview – PlanET STATERON PSA

STATERON PSA upgrading plants are reliable and efficient systems designed to purify biogas composed of 50% to 70% $CH_4$ and other contaminants, thereby producing a product gas (RNG/Biomethane) in natural gas quality, which can be injected into the natural gas grid or compressed to CNG. The PSA process used in the system is a physical process widely applied in the gas industry to purify different gas streams for a variety of industrial applications. The system is self-regulating, fully automated, and can adapt to varying inlet gas quality or volume flow, producing constant biomethane qualities demanded for grid injection.

The PSA system uses a completely dry gas phase process and is not sensitive to the performance of the activated carbon filters upstream of the upgrading unit, which can be an issue in other upgrading systems. Micro components, impurities like $H_2S$, VOCs, oily mist from biogas compressors present in the biogas, and peaks of other harmful molecules resulting from upset operation in the fermenters, which are not removed in the activated carbon filters, are captured in a special guard bed integrated in the PSA adsorber. Due to this guard bed, they cannot move into the main adsorber or filter material and deteriorate the surface, reducing the performance of the upgrading unit and causing the replacement of the material. In addition, the PSA guard beds are regenerated together with the main PSA adsorbers within each regeneration cycle.

The modular constructed STATERON PSA system uses a low-pressure operation of only ~3 bar(g), individually sized rotary vane machines for biogas compression and vacuum regeneration, and the selection of high-quality components to reduce energy consumption to a minimum. Energy consumption lower than 0.18 kWh/Nm³ is achieved, resulting in the most efficient upgrading process in the market. The system has a guaranteed uptime of > 97%, which is coupled with low parasitic energy consumption.

The PSA upgrading process is based on the principle that different components have a different adsorption potential than others. In this case, $CO_2$ is adsorbed in a molecular sieve, while $CH_4$ is concentrated. The upgrading process is explained in two simple process steps: Adsorption and Desorption. The STATERON PSA system automatically synchronizes adsorption/desorption of different vessels to grant the production of a steady and continuous biomethane quality, even at varying inlet gas quality or volume flow. The only adjustable parameter is the cycle length.

In summary, the STATERON PSA upgrading plant is a reliable, efficient, and highly automated system that produces a steady and continuous RNG/biomethane quality, even at varying inlet gas quality or volume flow. The PSA process used in the system is highly flexible and requires low energy consumption, resulting in the most efficient upgrading process in the market. Additionally, the system uses a completely dry gas phase process, has a lifetime of the molecular sieve media of > 15 years, and is not sensitive to the performance of the activated carbon filters upstream of the upgrading unit.

## D. STATERON PSA Advantages Summary:

- Lowest energy consumption of all treatment processes
- Simple process control and high availability (reference plants with 99% availability)
- Fully automatic start-up and turndown function
- Methane content in the product gas can be adjusted to meet gas grid specifications
- No pressure surges in the adsorbers: No dust formation
- Adsorbent lifetime >15 years
- Designed and built with weather protection
- No chemical and biological risks
- No waste water
- Modular design and shop fabrication for reduced onsite installation
- Local construction and commission support services, as well as ongoing operation and maintenance (O&M) support across North America

## E. Process Description

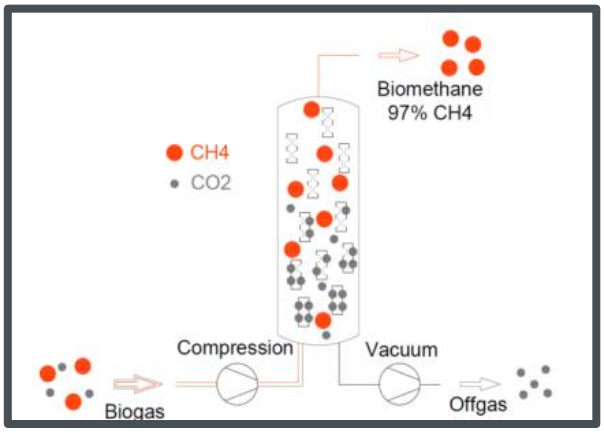
### a. Renewable Natural Gas (RNG)/Biomethane production

The STATERON PSA upgrading plant was designed to purify biogas composed of 50% to 70% $CH_4$, rest $CO_2$. The $CO_2$ content together with other contaminants is separated from the main raw biogas stream, thereby producing a product gas (RNG/Biomethane) in natural gas quality. The produced Biomethane can be injected into the natural gas grid or compressed to CNG. $CH_4$ concentration can be set, up to 99%. The $CO_2$ flow can be used directly or liquefied for transportation.

PSA separation is a physical process widely applied in the gas industry to purify different gas streams for a variety of industrial applications. The simplicity and especially the flexibility of this process, to automatically adapt to changing inlet gas conditions, makes the PSA process the choice of thousands of operators worldwide. The highest real on-stream times (> 97% uptime) coupled with lowest energy consumption (< 0.18 kWh/$Nm^3$) grant the best plant performance among Biogas upgrading technologies.

The purification of $CH_4$ occurs based on the principle that different components have a different adsorption potential than others. In this case, $CO_2$ is adsorbed in a molecular sieve, while $CH_4$ is concentrated. The upgrading process is explained in two simple process steps:

1. **Adsorption:** The desulfurized and dried biogas is injected into the adsorption vessel, filled with a carbon molecular sieve (CMS). The $CO_2$ molecules (higher adsorption potential) are adsorbed to the CMS while the $CH_4$ molecules (lower adsorption potential) pass right through the sieve, thus being concentrated in the product gas flow. The purified $CH_4$ is interchangeable with natural gas and can be used for different applications.
2. **Desorption:** Once the CMS is saturated with $CO_2$ molecules, the product gas flow is interrupted and pressure in the vessel is released/vacuum applied. At lower pressures/vacuum the $CO_2$ is desorbed from the CMS, resulting in a tail gas flow composed of highly concentrated $CO_2$. Once the CMS is completely regenerated, the system is ready for a new adsorption cycle. $CO_2$ gas is completely dry and can be directly used or liquefied for different $CO_2$ applications downstream.




The STATERON PSA system automatically synchronizes adsorption/desorption of different vessels to grant the production of a steady and continuous biomethane quality, even at varying inlet gas quality or volume flow. The only adjustable parameter is the cycle length. The system is self-regulating and completely automatized.

### b. Reliability & Efficiency – Advantages of the STATERON PSA

Industrial plant design: The plant design results from decades of experience in the industrial gas cleaning industry. The smart process control system, coupled with a high-quality standard of mechanical components reduces operational risks and increases on-stream times to > 97% in running plants.

The STATERON PSA system is completely automatized and self-regulating. Different than many other gas streams, biogas qualities vary constantly, demanding an adaptive upgrading system to generate constant Biomethane qualities demanded for grid injection. Volumetric flow and $CH_4$ concentration alike will define the ideal adsorption/desorption timing. The STATERON PSA continuously adjusts its process parameters to inlet gas conditions. That grants constant and steady outlet gas quality and a huge turn down control 35 – 100%.

Low pressure operation of the STATERON PSA of only ~3 bar(g), individually sized rotary vane machines for biogas compression and vacuum regeneration and the selection of high-quality components reduce energy consumption to a minimum. Energy consumption lower than 0.18 kWh/Nm³ are achieved thus resulting in the most efficient upgrading process in the market.

The STATERON PSA is a completely dry gas phase process. There is no other media flow except gas, no contact of gas with water, chemicals or other liquid media.

Unlike other upgrading systems and due to a special guard bed, the STATERON PSA system is less sensitive to the performance of the activated carbon filters. Micro containments, resulting from upset digester operations that break through the activated carbon filters, are captured in the guard bed integrated in the PSA Adsorber. These micro containments include Hydrogen Sulfide, VOCs, oil mist and other harmful molecules in the biogas. They cannot move into the main adsorber or filter material and deteriorate the surface, which enhances the performance of the upgrading unit and increases the adsorbent life of the PSA molecular sieve media. In addition, the PSA guard beds are regenerated together with the main PSA adsorbers within each regeneration cycle.

The PSA is the only gas purification process that is regenerating itself. The PSA does not require any external regeneration media like strip air or steam, and it is not regenerated at all like membrane systems. This results in an exceptionally long lifetime of the adsorbent material of > 15 years and reduces the life cycle costs to a minimum.

The PSA is a completely dry phase process. There is no risk of biological processes like fouling, algae formation, or even corrosion of pumps, compressors and valves. High durability increases lifetime and reduces life cycle costs.

The containerized construction reduces the plant footprint. There are no washing or stripping columns to be assembled on site on special foundations and exposed to adverse weather conditions. The equipment is pre-assembled in a manufacturing facility, improving quality control, reducing on-site expenses and time to commissioning.

## F. Design Basis, Mass Balance & Consumption Data

### A. Applicable Codes, Standards & Specifications

PlanET has considered the following codes in the development and costing of this Budgetary Proposal:

- ANSI/ CSA B149.6-15 – “Code for digester gas, landfill gas, and biogas generation and utilization”
- National Fuel Gas Code (NFPA) 54
- All RNG Pressure Piping shall comply with ASME B31.3
- Institute of Electrical and Electronics Engineers (IEEE)
- Local Electrical and Building Codes
- National Fire Protection Association (NFPA) 85
- Underwriters Laboratories (UL)
- ASME Boiler Codes
- NEMA enclosures

### B. General Design Factors

No seismic zone stated as per email correspondence.

Designed with weather protection for ambient temperature site conditions for New York State.

PlanET has an operating STATERON PSA System at the Skyline Skymark Facility in Lethbridge. Alberta. PlanET has supplied a similar STATERON P-Series PSA System for outdoor installation in the Virginia in 2024.

### C. Design Basis: Input Raw Biogas to BUP

To be confirmed.

### D. Design Basis: Pipeline Gas Quality Specifications

To be provided.

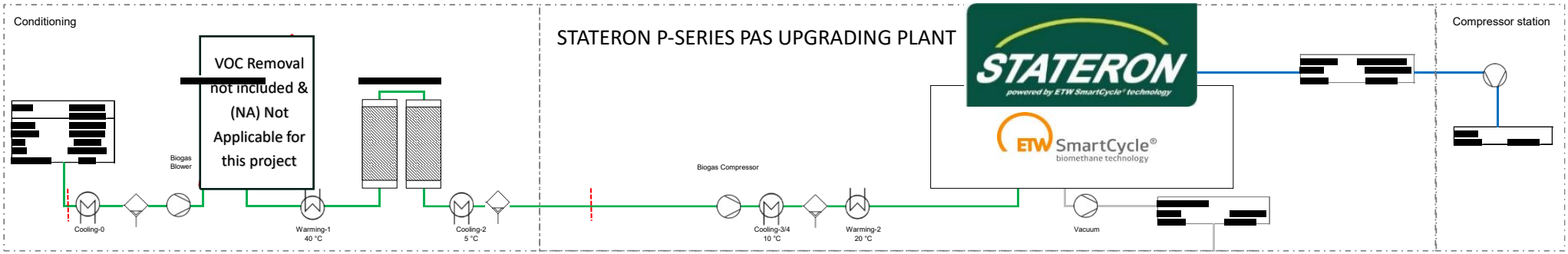
**Design basis – example nominal value conditions @ 2500 Nm3/h.**

Please note that all figures and values are not including the HP Sales/Product Gas Compressor as this information is being confirmed and finalized with our compressor subcontractor.

### E. Process Flow Diagram of BUP Plant

See the following page

# Process Flow Diagram of BUP Plant



## G. PlanET STATERON PSA BUP – Example Scope of Supply – 2500 m3/hr

### A. Biogas Pre-Conditioning

**Gas cooling – 0 before biogas blowers**

Gas/water heat exchanger designed as a tube bundle heat exchanger with connection to a cold-water set. Water vapour is condensed out by cooling the biogas.

| | |
|---|---|
| **Brand** | Enkotherm |
| **Material** | 1.4571 |
| **Operating pressure** | [redacted] |

### B. Gas heating-1 before activated carbon filter

Gas/water heat exchanger designed as a tube bundle heat exchanger with connection to a cold water set. Heating the biogas prevents the formation of condensate in the activated carbon filters.

| | |
|---|---|
| **Brand** | Enkotherm |
| **Material** | 1.4571 |
| **Gas temperature after heating** | [redacted] |

### C. Activated carbon filter H2S

Not anticipated to be required for the project; provided for reference.

Activated carbon filter system for hydrogen sulfide removal filled with doped activated carbon (AC). For the complete loading two activated carbon filters are connected in series. First activated carbon filling is not included.

| | |
|---|---|
| **Type** | PLANET AKF 10000 |
| **Volume** | 2x 10000 Ltr. |
| **Activated carbon** | AdFiS Dopetac sulfo 100 |

Guide value service life of activated carbon for **H2S** 500 **ppm** 70 Days (per filter)

A crane track above the activated carbon filters is included in the offer.

Thermal insulation of the activated carbon filter made of 50 mm mineral wool with aluminium-zinc sheet metal jacket **not included**.

## D. Gas cooling - 2

Gas/water heat exchanger designed as a tube bundle heat exchanger with connection to a cold water set. By cooling the biogas, water vapour is condensed out and the volume is increased.

## E. Raw gas cooling

| | |
|---|---|
| **Brand** | Enkotherm |
| **Material** | 1.4571 |
| **Gas temperature after gas cooler** | [redacted] |

The raw gas cooling system includes the required condensate collection and drainage system, completely piped in stainless steel, installed in a freeze-proof manner up to the demarcation point.

## F. PlanET STATERON PSA - Gas processing module

**Raw biogas storage and condensate exchange**

Buffer for raw gas to harmonise the gas quality and suction of the downstream gas compressor.

| | |
|---|---|
| **Material** | 1.4571 |
| **Operation** pressure | [redacted] |

Thermal insulation made of 50 mm mineral wool with aluminium-zinc sheet metal jacket.

**Cooling system**

**i) Free cooling system**

Central air cooled system to supply the items:

- Biogas cooling 0 (before blower)
- Biogas cooling 3 (after RKR screw type compressor)
- Oil cooler for screw type compressor
- Oil cooler for vacuum pumps

| | |
|---|---|
| Brand | Güntner |
| Air inlet temperature design | [redacted] |

**ii) Air cooled chiller system**

Production of cold water to supply the items:

- Biogas cooling 2 (after activated carbon filter)
- Biogas cooling 4 (after screw type compressor)

**Chiller specs**:

| | |
|---|---|
| **Brand / Type** | MTA / TAE (operating when ambient air temperatures > 25°C) |
| **Protection type** | IP 54 |
| **Refrigerant** | R410A |
| **Connection** | 3 x 480 V / 60 Hz |
| **Cold water outlet / inlet** | 3 / 8 °C |
| **Sound pressure** | [redacted] |

The Biogas cooling includes the required condensate shaft and drainage system, complete cased in stainless steel and a non-freezing system.

**Screw type compressor**

Non-contact, wear-free, dry and oil free screw compressor unit to generate the necessary adsorption pressure.

| | |
|---|---|
| **Brand** | Aerzener Maschinenfabrik GmbH |
| **Type** | C 27Z / C18Z as option |
| **Number** | 1 / 2 as option |
| **Connection** | 480 V – 60 Hz |
| **Protection** type | IP 55 |
| **Efficiency** class | IE3 |
| **Lubrication** | Bearings lubricated by oil injection but no oil/gas contact |

**Description:**
- with rotor profile 4+6 developed for the design case and adapted internal compression ratio 4 for low energy consumption,
- Gearbox i_11/12, water-cooled stage,
- Torsion-resistant welded base beam. Base support on elastic machine feet for structure-borne noise insulation,
- Drive coupling with coupling guard,
- Intake silencer with connection flange,
- Axial expansion joint (pressure side), flange according to DIN, incl. tie rod,
- Axial expansion joint (suction side), flange to DIN,

**Gas cooling 3/4 and heating 2 after the screw type compressor**

Active gas cooling with cold water replacement and gas heat exchanger for the condensation of water in the product gas.

**Cooling technology**

| | |
|---|---|
| **Brand** | Enkotherm |
| **Material** | 1.4571 |
| **Max. operating pressure** | [redacted] |
| [redacted] | [redacted] |

**Gas heating**

| | |
|---|---|
| **Brand** | Enkotherm |
| **Material** | 1.4571 |
| **Max operating pressure** | [redacted] |
| [redacted] | [redacted] |

**Gas-processing module with STATERON P-Series**

Methane enrichment system using the vacuum pressure swing absorption (VPSA) process.

In the PSA process, biogas (approx. 50-70% CH4, 30-50% CO2) flows through an adsorbent (Molecular sieve) at elevated pressure. The smaller molecules (mostly CO2) penetrate the pores and are adsorbed while the larger CH4 molecule passes right through the sieve, thus resulting in a pure Biomethane gas that can directly substitute natural gas in any application or compressed to CNG for vehicle fuel. Once the molecular sieve is saturated, it is regenerated by vacuum and the resulting off-gas eliminated, treated or used for CO2 applications. PSA is a self-regenerating system.

| | |
|---|---|
| **Brand** | STATERON |
| **Type** | ETW SmartCycle® PSA |
| **Control range** | 30 - 100% (raw gas), automatic load adjustment |
| **Adsorbent lifetime** | > 15 years (Guaranteed) |
| **Code** | ASME |

**Vacuum pumps**

Rotary vane vacuum pump for vacuum generation / regeneration of the absorbent beds


| | |
|---|---|
| **Brand** | Dr.-Ing. K. Busch GmbH |
| **Type** | RA 1600 B |
| **Nominal suction volume (per vacuum pump)** | 1600 |
| **Number** | 6 |
| **Type of cooling** | Water flow |
| **Cooling medium** | Water-Glycol |
| **Connection** | 3 x 600 V / 60 Hz |
| **Lubrication** | Oil injection |

**Biomethane compressor suction drum**

Suction drum for the downstream HP Biomethane compressor/grid injection plant.

| | |
|---|---|
| **Material** | Steel |
| **MOP (Maximum operation pressure)** | [redacted] |

**Instrument compressed air supply**

Screw compressor station to provide the required oil-free process compressed air.

| | |
|---|---|
| **Make** | Kaeser |
| **Type** | t.b.d. |
| **Quantity** | 2 |
| **Motor power** | t.b.d. |
| **Protection class** | IP54 |
| **Outlet pressure during operation** | [redacted] |

Complete with adsorption dryer, dew point transmitter and compressed air reservoir.

The supply of an optional O2 PSA is not provided in this configuration. Corresponding expansion options are offered separately.

Gas analysis system raw biogas + biomethane + Off gas

Process gas analysis system for the measurement of raw biogas, biomethane & Off gas.

**Brand** Awite

**Type** Awiflex Flex+ or equal

Analysis cabinet, sample gas cooler, condensate pump, sample gas pump, switch-over tap for sample gas, sample gas filter, solenoid valve, water protection filter, deflagration protection, display, and control unit.

| System / Measuring | Position | Sensor | Measurement |
|---|---|---|---|
| 1 / 1 | Raw gas before ACF 1 | H2S 0 – 2500ppm | Discontinuous |
| 1 / 2 | Raw gas after ACF 1 | H2S 0 - 2500ppm | Discontinuous |
| 1 / 3 | Raw gas between ACF 2 and AKF 3 | H2S 0 - 20ppm | Discontinuous |
| 1 / 4 | Raw gas after ACF 3 | H2S 0 - 20ppm | Discontinuous |
| 1 / 5 | Raw gas after ACF 3 | CH4, CO2, O2 | Continuous |
| 1 / 6 | Biomethane after suction drum | CH4, CO2, O2 | Continuous |
| 1 / 7 | Off Gas | CH4, CO2 | Continuous |

**Flow meter biogas**

Brand: Endress + Hauser
Type: Proline Prosonic Flow B 200
Housing: GT20 two chambers, Aluminium

**Flow meter Biomethane**

Biomethane Coriolis flow meter.

Brand: Endress + Hauser
Type: Proline Promass 84F
Housing: Kompakt IP67 NEMA4X, Aluminium
Output Values: kg/h or m³/h (no Nm³/h)
Pressure: 4.5 bara

**System control**

**Basic functions:**

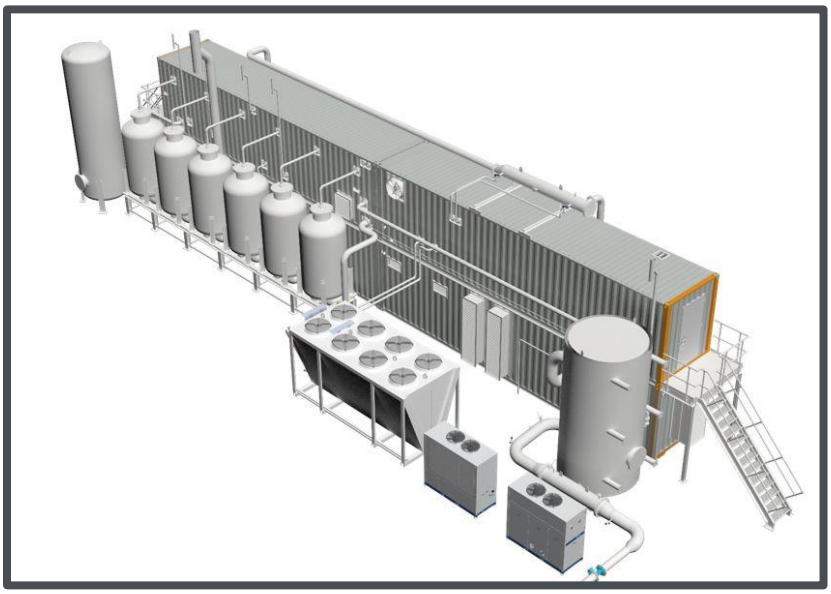
- Automatic programme sequence for starting and stopping the BGAA system
- Superordinate control for monitoring and regulating all assemblies
- PLC Siemens S7-1500
- TÜV-tested safety chain with quick-stop button and connection option for all safety-related encoders
- Control and monitoring of the cooling circuits and room ventilation
- Parameterizable messages for recording system-specific messages
- Electronic operating diary for recording operating, warning and fault messages with date and time for detailed observation of operation
- Electronic operating hours counter

**Industrial PC** for operation, process visualisation, data archiving and remote control of the system consisting of:

- 19" touch panel
- DSL modem for remote diagnosis, remote monitoring and remote control of the system
- Windows operating system
- Messages: Collective malfunction as email and SMS, collective warning as email and SMS, any recipient can be selected
- Commands: Remote acknowledgement of faults, selection and deselection, power control, change of parameters, maintenance switch for suppression of messages
- Visualisation: Plant flow diagram with display of current operating values, states and counter values, 32 trends
- Language: English

**Container plant**

Main dimensions of container system 4x 40’



**Design of the technical container:**

The bottom containers will be delivered without doors and cuttings in order not loose the full stack load CSC approval. Doors will be delivered loose and have to be installed locally on site. Cuttings have to be done on site as well.

The top containers are planned to deliver with the necessary cuttings for the piping and with CSC recertification.

Container floor: The floor is constructed of bulb plate.

Insulation construction: Individual sound insulation cassettes made of galvanised perforated sheet with an insulation of 50 mm high-density mineral wool with fleece lamination as trickle protection, non-combustible according to DIN 4102 A2. The insulation is designed for a sound pressure level of 65 dB(A) at 10m.

Painting: The container is primed and painted with colour RAL 7042.

Quality of the paint: C4

Further equipment of the container:

- Interior lighting with switches on each main door
- "NOT STOP" button on the main door of the engine room
- Gas warning system 2-stage
- 2x fire extinguisher 6 kg
- Outdoor lamp with the following colours: blue: gas, red: fire, yellow: general warning, green: ok
- signal horn inside
-Fire/smoke detector in every Container

## H. Documentation

**Operating manual**

- R+I scheme
- Machine layout plan
- Safety data sheets
- Ex zone plan
-Interface plan of delivery and performance limits for process engineering and electrical engineering
- Load data for the calculation of the foundations to be provided by the customer
- Circuit diagrams for low-voltage, automation, and safety technology
- Data point list for communication of the biogas plant and feed-in plant
- Declaration of conformity for the entire system

*Digital in pdf format.*

*Language: English*

## I. Interfaces

**Mechanical interfaces**

- Gas inlet: inlet flange on the Biogas cooling-0/gas wash dryer
- Biomethane gas outlet: flange in the Biomethane compressor suction drum
- BMA condensate discharge connection (unpressurised, open & oil-free) to the raw gas storage tank
- Emergency venting: transfer flange on the valve container
- Oxygen PPE: threaded connection on the container
- LCO2: Transfer flange at filling station
- LCO2: Transfer flange boil-off gas after drying and cleaning
- Connection condensate discharge LCO2 (unpressurised, open & oil-free) to the LCO2 compressor + LCO2 drying & cleaning

**Electrical interfaces**

- Own demand: power at the input terminals of the PSA Containers
- LCO2 auxiliary power: Power supply at the input terminals of the switchgear.
- Data exchange: Profibus interface DP or Ethernet, emergency messages via potential free contacts or 4-20mA signal

**Insulation**

Insulation made of 50 mm Armaflex (inside containers) or mineral wool with aluminium-zinc sheet metal jacket of following components marked with “X” included in PlanET scope of supply

☒ gas piping inside PlanET technical containers (wherever necessary due to condensation)

☐ gas piping between PlanET skids and technical container

☐ activated carbon filter

☐ cross piping for activated carbon filters

☒ raw gas buffer tank

☐ gas piping between PlanET technical containers and adsorber vessels (only necessary with ambient temperatures < -20°C)

☐ Adsorber vessels (only necessary with ambient temperatures < -20°C)

☐ gas piping between adsorber vessels and product gas buffer tank (only necessary with ambient temperatures < -20°C)

☐ product gas buffer tank

☐ cooling water pipes (only necessary with heat recovery through heat pump)

☐ CO2 piping of CO2 liquefaction plant

**Provided by customer/not included in PlanET scope of supply:**

- Labour costs on site for installation, supervision, or commissioning
- Cuttings and installation of doors for the bottom containers
- Gas piping between PlanET skids and containers (Piping for PSA vessels pre-assembled in PlanET scope of supply, lead-lag gas piping between ACF 2&3 pre-assembled in PlanET scope of supply)
- load cables, wiring between PlanET skids & PlanET container on site
- Connection of the load cables between consumers & PlanET switchboard/VFD
- Water piping for heating and cooling (glycol circuits) outside of the container
- Insulation outside of PlanET container (only raw gas buffer tank included)
- Trace heating outside of PlanET container (trace heating of raw gas buffer tank condensate discharge included)
- Foundations in close consultation with PlanET
- Civil engineering work in close consultation with PlanET
- Insulation of piping and vessels outside of containers
- Accessibility of the site for heavy vehicles
- Provision of the required gas quantity and quality for the commissioning
- Condensate connection
- DSL telephone connection for remote monitoring
- Construction power in close consultation with PlanET
- Permits

## J. Comments, Clarifications, Reservations & Qualifications

The following comments, reservations, clarifications, and qualifications are to be read with and form part of this Budgetary Quotation

a) This Proposal presumes that the minimum distance separations as regulated by appropriate local authorities have been observed in the typical site plan drawing.

b) PlanET has considered the following codes in the development and costing of this Proposal:

- ANSI/CSA B149.6-20: Code for digester gas, landfill gas, biogas generation & utilization
- Vessel registration: AMSE Boiler & Pressure Vessel Code, Section VIII & Section XIII; ASME certified,
- Pressure pipe: AMSE B31.3 – Process Piping; ASME certified
- Electrical Codes; UL, IEE

c) Excluded Work includes:

- Any Project Approvals & Permitting Work
- Any and all work pertaining to all utility interconnection design, engineering, construction, and commissioning.
- Any and all work pertaining to electrical grid interconnection service including but not limited to a new transformer, metering, foundation, bollards, high voltage cabling, trenching, installation and backfilling.

- Any and all work pertaining to Lightning protection for site including PlanET supplied equipment.
- Individual Power Supply Metering Systems
- A RNG Grid-Entry Unit including but not limited to, odorization, certified gas quality and energy content measurement, biomethane backflow option to the digester or flare including pressure reduction train and any gate keeper and interconnection to the biogas upgrading plant.
- Supply and installation of the digester System (under separate proposal).
- Cuttings and installation of doors for the bottom BUP containers
- Interconnecting Gas piping between PlanET BUP skids and containers (Piping for PSA vessels pre-assembled in PlanET scope of supply, lead-lag gas piping between PlanET ACF 2&3 pre-assembled in PlanET scope of supply)
- Connection of the load cables, wiring between PlanET client & BUP switchboard/VFD
- Water piping for heating and cooling (glycol circuits) outside of the BUP containers
- Insulation outside of BUP containers (only raw gas buffer tank included)
- Trace heating outside of BUP containers (trace heating of raw gas buffer tank condensate discharge included)
- load cables, wiring between PlanET BUP skids & BUP container on site.
- Supply and installation of Biogas or dual fuel Flares.
- Regenerative thermal oxidation to treat the off-gas stream, if needed
- Any operator shop/office, stations or washroom facilities.
- All site construction and site fabrication activities include but not limited to the following:
  - All earthworks, civil work, piles & foundations, site grading, drainage, blasting, breaking, excavating, removing or disposing of any rock which may be encountered during site construction.
  - The removal or containment of any Hazardous Substances at the Project Site,
  - The cutting, clearing, removal or disposal of any brush or trees and the demolition, removal and disposal of any structures, which may interfere with the undertaking and completion of any portion of the Work.
  - Design and/or construction of any access roads to or laneways.
  - City water supply and distribution system.
  - Revisions to existing fire detection and /or fire suppression system.
  - Any perimeter fencing of any kind.
  - Any construction and inspection fees which may occur.
  - All equipment, material, and supplies to undertake and complete all work not specifically mentioned within this proposal.
- Balance of Plant supply and installation
- Any onsite Erection & Installation
- All equipment, material, and supplies to undertake and complete all work not specifically mentioned within this proposal.

d) Any changes to governing laws, standards, regulations and/or codes that become effective after the date of this proposal have not been considered in this Proposal.

## K. Customer / Client's Construction Related Responsibilities

a. The Customer will provide PlanET and its employees, agents, vendors and sub-contractors unrestricted access to the Project Site at all times and without prior notice as reasonably necessary for the purposes contemplated by this Agreement.
b. Upon the arrival of the service personnel of PlanET or its authorized representatives at the Project Site, the Customer shall ensure that the Work can be performed immediately and completed without delay. In order to enable PlanET to perform the Work, all necessary preparatory work of a technical and non-technical nature must be completed. The Customer shall provide, at its expense, all necessary assistance to PlanET to facilitate the effective performance of the Work throughout the term of this Agreement. Such assistance shall include, without limitation:
c. Supporting the project by appointing an authorized representative or contact person to deal with the inquiries of PlanET and participate in any scheduled meetings or conference calls;
d. Advising PlanET of any known risks, but without any independent inquiry, dangers or hazards which may result in damage to, or loss of, property, or personal injury or death;
e. The Customer is responsible for ensuring that any tools, equipment and materials at the Project Site supplied by PlanET are stored in a secure, dry and safe location and are not handled in any manner whatsoever, other than in accordance with PlanET's instructions and by anyone other than PlanET and its subcontractors. PlanET is not responsible for materials which are stolen from the Project Site and any costs or delays associated with same.
f. Any and all utility usage charges including hydro, natural gas, propane, and water required for the completion of the Work at the Project Site shall be borne by the Customer.
g. Any construction and inspection fees required for the completion of the Work at the Project Site shall be borne by the Customer.
h. Provide and install all necessary field piping, insulation, wiring, cable tray, tray and pipe supports for all system related auxiliaries which are not specifically mentioned in this document.
i. Supply and install all covers, platforms, ladders, steps, railings or similar which are not specifically mentioned in this document.
j. The Customer shall provide:
k. One (1) DSL internet line with static IP for the Biogas Upgrading Plant; and
l. The Customer acknowledges that PlanET cannot undertake the commissioning of the control system until the Customer's high-speed internet and telephone lines to the PlanET Control Panel and to the Biogas Upgrading Plant Control Panel are operational. It is the responsibility of the Customer to ensure operational capability of these internet and telephone lines.
m. The Customer shall provide a qualified Biogas Upgrading Plant Operator to oversee the Biogas Upgrading Plant once Substantial Completion has been reached.
n. All excluded work
o. If the Customer fails to carry out any of its responsibilities under this Agreement and such failure affects the ability of PlanET to proceed with the Work in accordance with Industry Standards, PlanET may, in its sole and absolute discretion, suspend the Work by providing written notice to the Customer, or charge the Customer for lost time and expenses incurred as a result of the Customer's failure.

## References for ETW SmartCycle® technology

| Ort / Place | Kunde / Customer | Rohgaskapazität / Feed gas capacity Nm³/h | Baujahr / Year |
|---|---|---|---|
| Surbourg, France | SAS METHA2S | 700 | 2022 |
| Bouy-sur-Orvin, France | Biogaz de l'Orvin | 970 | 2022 |
| Taranto, Italy | Pantar SRL | 4000 | 2022 |
| Stammheim, Germany | Stadtentwässerungsbetriebe Köln | 800 | 2022 |
| Montbazens, France | Prometer | 1200 | 2022 |
| Ebersheim France | SAS Mattenergies, France | 490 | 2022 |
| Westhouse, France | SAS BIOMETHANE DU PIEMONT | 440 | 2021 |
| Lethbridge, Canada | PlanET Biogas Solution Inc, Canada | 1920 | 2020 |
| Lorentzen, France | SAS Methamad, France | 400 | 2020 |
| Bitburg, Germany | Biogas Bitburg GmbH | 1800 | 2019 |
| Arcis-sur-Aube, France | Biogaz d'Arcis | 870 | 2018 |
| Scherwiller, France | Sas Méthaniseur des Deux Vallées | 350 | 2017 |
| Platten, Germany | NatürlichEnergie EMH GmbH | 1400 | 2016 |
| Nonnendorf, Germany | Biogas Produktion Nonnendorf GmbH & Co KG | 1400 | 2015 |
| Seelow, Germany | Biogas Produktion Seelow GmbH | 1400 | 2014 |
| Laupheim, Germany | Erdgas Südwest GmbH | 600 | 2011 |

## STATERON RNG Upgrader Brochure

PlanET_StateronRNG_Brochure_2025_WEB.pdf

If there are any other questions, please feel free to contact us. We look forward to discussing next steps at your convenience. Thank you.

870+ biogas plants and 150+ AD to RNG plants in operation globally.

PlanET Biogas USA Inc.
3370 Walden Ave, Suite 120,
Depew, NY, 14043
United States

PlanET Biogas USA Inc.
33247 Highway 85,
Lucerne, CO, 80646
United States

PlanET Biogas Solutions Inc.
157 Cushman Rd.,
St. Catharines, ON, L2M 6T4
Canada

www.planet-biogas.com

# Appendix A

## Curriculum Vitae's (CVs)

# Appendix F

# Van Dyk Recycling Solutions Statement of Qualifications (SOQ)

# Qualifications and Experience

## Van Dyk Recycling Solutions' numbers:

| | |
|---|---|
| 50 | Factory Trained Mechanics |
| 40 | Million dollars in spare parts ready to be shipped same day or next day air |
| 24/7/365 | Free telephone support, 24 hours per day, 7 days per week, 365 days per year (24/7/365) |
| 98% | Of problems solved over the phone for free |
| 100% | Local support, local service, own personnel (no dealers) |
| 365 | Days per year that parts can be shipped from our North American Parts Distribution Center |

Van Dyk Recycling Solutions (VDRS) and our European partners Bollegraaf (who supplies our balers and complete systems), Lubo (who supplies our screens), TOMRA (who supplies our sensor based sorters), and Wal-Air (who supplies our density separators) have been leading the industry in design and manufacturing of residential and commercial single stream, paper, plastics, e-waste, municipal solid waste, and engineered fuel systems for over three decades.

No other provider can claim this kind of experience. And it is only through this experience that we have learned the best way to process the type of waste material you will be handling. More importantly, we have learned the best way to design and build systems that maximize the return on our customer's investment. Our company does not strive to provide the cheapest solution, but instead concentrates on the best overall solution for our customers and the solution that best returns their investment.

VDRS has been in business in North America for over 40 years. We have never failed to deliver the system purchased and have always met or exceeded our customers' expectations. VDRS has more repeat customers than any other systems designer/supplier in the industry and has been the preferred vendor for the world's largest recyclers.

With over 2,400 installations in North America, we ensure that our customers are kept up and running with 50 service technicians employed directly by VDRS and located throughout North America.

VDRS also offers each customer the option of a Preventive Maintenance Inspection program specifically designed for their system and equipment to insure proper upkeep and maximum uptime.

We employ over 100 people nationwide and just renovated a 288,000 square foot headquarters facility in Norwalk, CT. It houses our spare parts warehouse with $40 million worth of spare parts, which we ship to all of our customers in the US, Canada, and Mexico. It also incorporates a high-tech test center to serve all of our North American customers, where we will test the separation of different materials all related to recycling. This test center incorporates four TOMRA sensor based sorting units (near-infrared (NIR), laser, x-ray, and precise metal detection), an elliptical 2D/3D separator and fine screens all set up in separate loops for the ability to perform multiple tests at the same time.

Our west coast operations are supported by our Torrance, CA sales & service office where 5 fulltime service technicians operate. The office serves as the west coast service and parts outlet for our entire installed base in the western US.

## Why is this important to you?

You are choosing a long term solutions provider to lead you into the future of Mixed Waste processing. Your provider's product support/parts and service capabilities are very important. You will find that no supplier has the parts, service, and training support of Van Dyk Recycling Solutions.

We will train your people extensively on the system for safety, operation and maintenance. While each plant usually has its own mechanic/maintenance staff, we will never be far away:

- We have over $40 million dollars in spare parts that can be shipped same day for courier or overnight delivery.
- We provide telephone support 24 hours per day, 7 days per week, 365 days per year (24/7/365).
- History has proven that we can solve 98% of problems over the phone.
- We provide Preventive Maintenance Inspection programs where we visit your plant on a scheduled basis to check out the system against a long list of checkpoints.
- We can log into your system for remote trouble shooting.

## Project Manager/Installation Crew

Van Dyk Recycling Solutions has dedicated project managers stationed throughout the United States and Canada. One of them will be the liaison between your team and our factory engineering group. He will coordinate shipments and update the project timeline, etc. You will also have a Senior Van Dyk technician on site during the complete installation–from initial unloading, through start up and training. He will be the onsite project coordinator, a leader in overseeing the mechanical installation, coordinator with onsite vendors and sub-contractors, and he will be responsible for the electrical installation of the system. He will attend required project briefings and meetings and see that all other Van Dyk personnel and sub-contractors will adhere to any and all safety guidelines.

## Commissioning

Our onsite technician conducts dry-run testing upon completion of programming, etc. All belts will be tracked and all equipment will be tested, etc. This is followed by initial system testing with material. At that time, our mechanical installers will seal up any minimal spill points.

## Start-up and Training

Our senior technician will stay onsite during commissioning; however, a start-up specialist will arrive and help through the training on the system. During the start-up, two weeks of extensive onsite operational, maintenance, and safety training will be conducted. This will be both on-site and in-classroom training on the operation, safety, and maintenance of the system. Our technician and start-up specialist will remain on site until the personnel have a full comfort level with the system and any and all follow up items are completed. We will stay onsite as long as *you* feel necessary.

## Coordination of other Sub-Contractors

Our team will be as flexible as possible. During the installation there needs to be a large amount of coordination between you, the customer, possible building subcontractors, and our installation

crew. We will need finished/cured concrete surfaces to place equipment. We require our own separate cranes/lifting equipment for the project.

### Quality Control

All equipment is tested before it leaves the factory. It is assembled at the factory and then disassembled again. During installation, quality is tested again, and after completion we do a dry run and then test run with material.

### Avoiding Delays, Staying in Budget

We work with Microsoft Project and are proud that all of our projects have come in on schedule, without delay. We pride ourselves on not working with change orders (within reason, of course).

### Construction Quality

Support starts when the factory builds your product. Superior engineering and quality control assure an advanced product that can stand the test of time and will provide consistent performance and high uptime with minimal spillage and other operational issues. Specific products for specific applications are part of that, such as specially constructed conveyors to deal with the harsh and abrasive nature of Mixed Waste, galvanized and stainless steel conveyors for a wet environment (if applicable), conveyors with large openings for bottle caps release, double sealed, acid proof bearings, return flow collection chutes, etc.

The Bollegraaf and Lubo factories employ a total of 48 engineers that at the design phase assure that the right type of product, material and design is used, while at the detailed construction phase make sure that all components fit perfectly together. A total of nine engineers at the Bollegraaf and Lubo factories are “Check-Engineers” that perform a quality check on other engineers’ work, thus ensuring mistake free designs.

All engineers work in AutoDesk Inventor 3D and an ERP program (Axapta) is used for detailed routing and logistics. All software is subjected to a rigorous test using simulation software, thus already establishing an initial performance of your plant in the factory.

All major components of a plant, such as balers and TOMRAs, are assembled in the factory and are dry-run during a performance test. All electrical is already pre-wired at the factory and only needs to be reconnected during the installation. After passing a quality control program with extensive checklist items, components are then disassembled into 40ft sections for transportation. When your plant is assembled at your site, VDRS does not use welding to connect sections, but rather, components are bolted together.

Additional engineers at the R&D department invent new products on a steady basis (Bollegraaf owns more than a dozen patents) and constantly create new and better products to improve your plant’s performance. Bollegraaf owns the largest welding robot in Europe, an automated cutting-and-drilling “street,” and the factory is overall state-of-the-art, clean and organized.

TOMRA employs approximately 100 engineers. Since recycling is only a small part of TOMRA's total portfolio, the wealth of knowledge created in other fields such as mining, metals, and food processing is shared and used in the design of TOMRA units for the recycling field. TOMRA has a total of 12,500 units installed worldwide, more than all other competitors ***combined***. Constant R&D assure the latest software and superior purity and recovery rates.

Van Dyk Recycling Solutions is a true turn-key supplier in the recycling industry. We design, manufacture, install and service **all** of the equipment we provide. Not only are we one source for balers, conveyors, screens, trommels, sensor based sorters, and more, but we also perform our own electrical installation as well as our own mechanical installation as opposed to subbing out to subcontractors.

All of the above assures that a properly designed and expertly installed product with consistent quality ends up in your plant.

The VDRS support team during specific phases of the project after installation:

| Dry - Commissioning | Wet - Commissioning | Start-up | Plant Operation |
|---|---|---|---|
| • 1 Project manager<br>• 1 Electrical specialist<br>• 1 Install. supervisor<br>• 1 TOMRA specialist<br>• 3 Install. specialists | • 1 Project manager<br>• 1 Electrical specialist<br>• 1 Install. supervisor<br>• 1 TOMRA optimizer<br>• 1 Start-up specialist<br>• 1 Install specialist | • 1 Project manager<br>• 1 Electrical specialist<br>• 1 Install. supervisor<br>• 1 TOMRA specialist<br>• 1 TOMRA optimizer<br>• 1 Customer trainer<br>• 1 Start-up specialist | • 1 Project manager<br>• 1 Electrical specialist<br>• 1 TOMRA specialist<br>• 1 Customer trainer<br>• 2 On call |
| VDRS Team Members: 7 | VDRS Team Members: 6 | VDRS Team Members: 7 | VDRS Team Members: 7 |

VDRS stays on site until customer is comfortable.

## Warranty terms and conditions

All equipment is covered under a "no questions asked" warranty. As you will conclude from contacting our existing client base, we provide a superb product line and deliver what we promise. All system installations are performed by company engineers, and our preventive maintenance and service is provided by a well-trained after-sales staff.

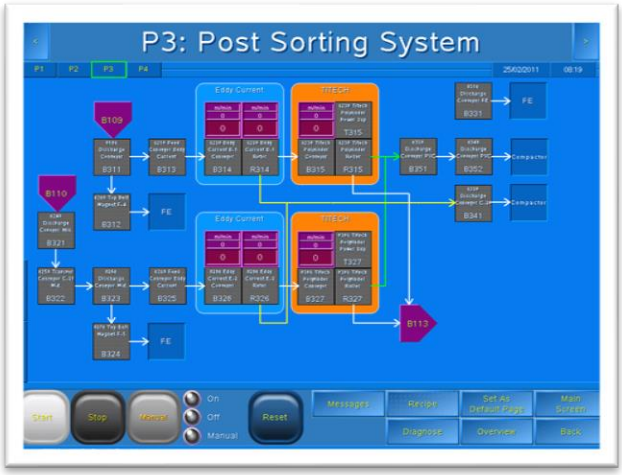
## TOMRA and plant optimization program

As the leader in supplying automated container processing as part of a mixed waste processing plant, VDRS realizes that optimal functioning of the TOMRA units is critical for the performance and profits of the plant. We have implemented an optimization program in which a TOMRA factory trained engineer comes over twice a year and performs a TOMRA optimization. This includes:

- Routine checkups such as: calibration, check of air valves, pressure test, software update.
- Detailed review and report of the current sorting performance of your TOMRA sorting units.
- Readjustment and fine tuning of the TOMRA sorting units to your sorting needs.

## Preventive Maintenance Programs

Like performing regular health checks on your body, or bringing your car in for regular oil service, the performance of a plant benefits from a systematic approach to maintenance. To assure continued maximum performance of the system, VDRS provides a variety of preventive maintenance programs. VDRS technicians perform specific and detailed inspections and, if necessary, repair work on every aspect of the system at specific intervals throughout the year. VDRS' highly experienced factory trained personnel will use an extensive checklist to verify that the plant is operating to its original specifications and prevent problems before they occur.




## Remote User Interface

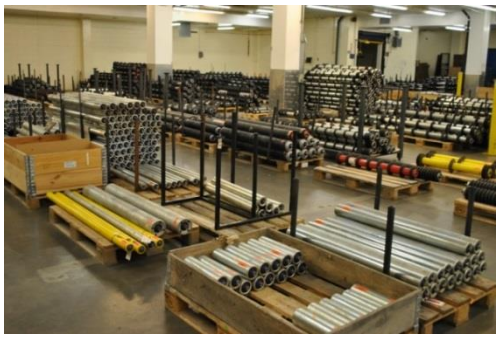
VDRS offers a sophisticated computerized communication interface package as part of BIOS (Bollegraaf Information & Operating System), with SCADA (Supervisory Control and Data Acquisition). This allows you to have your system tied directly into VDRS' headquarters, whereby VDRS can provide remote system diagnostics, trouble shooting, and correction procedures. Essentially, it puts a VDRS factory trained engineer in front of your plant's equipment at any given time.

From a distance, VDRS can check on your equipment, 24 hours per day, 7 days per week, 365 day per year and see if your system still operates to its specifications. We can catch problems before they cause you downtime and help you optimize your operation. We can see all inputs and outputs and the status of your equipment at any time in the process.

## Parts Inventory Support

VDRS realizes the importance of stocking enough inventory to assure your plant has any possible needed parts to the maximum extent possible. For that reason:

- VDRS keeps $40 million of spare parts at its North American Parts Distribution Center
- Parts can be shipped via courier same day service as well as via overnight courier services.
- The VDRS North American Parts Distribution Center is open for emergency parts shipment 7 days per week, 365 days per year. If a part is needed on a Saturday, Sunday or a holiday, rest assured that VDRS will be able to ship any parts from its extensive inventory.
- VDRS' inventory is larger than its annual parts sales. This is highly unusual and shows the commitment of VDRS to ensure that all parts are available and in stock for immediate delivery.
- **The following link will provide a virtual tour of our warehouse and new shipping process: http://vdrs.com/warehouse/**



***Get a quote. Order parts. Track your order.***

Van Dyk has unrolled an exciting new online parts ordering system for its customers called VAN DYK Direct. The subsite allows Van Dyk customers to conveniently browse an online catalog for parts, get quotes, place orders, and track shipments. Customers can search through all parts in Van Dyk's extensive warehouse (over 15,000 skus) by keyword or category. Each sku displays multiple, high quality pictures of the part and its specifications so you can be sure you are ordering what you need. With a few clicks you can place an order or generate a quote within minutes. Orders and quotes will be saved indefinitely for easy reference.

Companies with multiple locations will be able to monitor activity across all of their facilities. See what's ordered at each plant, place multiple orders, and track shipments to any location. The system also allows customers to manage their billing. See all invoices and credits, open or paid, and keep track of payment methods.

This tool allows our clients to order parts quickly without contacting our service department, which in turn allows our service technicians to dedicate more time to equipment maintenance and troubleshooting.
Visit our website for more information or go to https://shopvandykdirect.com to sign up today.

## VDRS Unique Selling Points (USPs)

There are several USPs that make VDRS the right partner for you:

- The worldwide experiences of our companies have afforded us a wealth of experience in sorting Mixed Waste. We are now in our third generation of mixed waste to fuel systems. Our customers can achieve higher recovery rates and cleaner products than any of our competition. All this is achieved at high throughputs with low maintenance.
- VDRS has an extensive service department with 50 factory-trained VDRS employees all working under our direction and support.
- VDRS has telephone support 24 hours per day, 7 days per week, 365 days per year. We solve 98% of problems over the phone.
- Service comes first at VDRS. At our North American Parts Distribution Center we have 40 million dollars in parts that can be shipped same day or next day, any day of the year (including Saturdays, Sundays and holidays). Our stock value exceeds our annual sales in parts, which is highly unusual, but emphasizes our goal to have all parts in stock to make sure that we can help you when you need us.
- We do not hold on to parts orders. All inventory parts ordered on a specific day will be shipped that day if ordered by 5pm EST. This allows for the lowest shipping cost to you while still assuring a quick delivery of your parts to your plant.
- All of VDRS' technicians are OSHA 10 and WHMIS certified.
- We have a proven track record in the USA and hold a very solid reputation for our business ethics, product quality, dependability and service commitment.
- We understand local building codes and construction laws, union and permit requirements, Seismic, electric, UBS, NEC, emission issues, etc. for all the equipment we supply.
- We are the only company that truly provides one-stop shopping: Bollegraaf balers, conveyors, TOMRA sensor based sorters, size reducers, screens, trommels, air drum separators, ellipticals, dust control, odor control, fire detection/suppression, drying, AI analyzing, food depackaging, etc. are all in our exclusive portfolio. On top of that we do our own electrical installation and our own mechanical installation (we do not sub that out).
- While we have the most extensive portfolio out there, we are completely willing to use products that are not in our portfolio, and in fact have done so in several plants. Our goal is not to steer you toward only the products we make. Instead, we look for the best solution for the application. If the best solution is something we make, that is great, but if not, we are still committed to buying the right product to make your plant as successful as it can be.
- We are privately owned and have no debt whatsoever. All equipment, trucks and buildings are fully owned.

### Pieter Eenkema van Dijk, President

Pieter Eenkema van Dijk grew up in the Netherlands where he received a Masters degree in Economics at Groningen University in the Netherlands and an MBA from Insead Business School at Fontainebleau in France.

In 1984, he founded Van Dyk Baler Corp. in North America and is the company's current president. Van Dyk Baler Corp. has the exclusive distribution rights in the United States and Canada for Bollegraaf Recycling Machinery. Bollegraaf Recycling Machinery, based in the Netherlands, has been in the recycling business for more than 70 years producing balers, shredders and sorting systems.

He also runs a second company, Lubo USA, the exclusive distributor for Lubo Screening and Recycling Systems and preferred North American supplier of TOMRA GmbH Sensor Based Sorting. Lubo is also located in the Netherlands and TOMRA GmbH is a Norwegian company with R&D development located in Germany.

With Mr. Eenkema van Dijk as the President, Lubo USA has become a leader in the recycling equipment industry for construction & demolition installations, Starscreen® installations, and sensor based sorting. TOMRA GmbH is the world leader in the field of near infrared optical sorting, metal detection, and X-ray technology.

### Erik Eenkema van Dijk, Executive Vice President

Mr. Erik H. Eenkema van Dijk has a Master's degree in Economics, a general contractor license, and over 30 years of experience in the recycling industry in the overall management of the fields of sales, operations and service. Mr. Eenkema van Dijk has been a speaker in multiple recycling forums as well as a writer of industry articles on single stream and other recycling trends. Under his leadership Van Dyk Recycling Solutions has become the leading supplier of efficient, cost-effective, labor saving recycling systems for municipalities and private recyclers that produce the highest quality end products with a superior recovery rate.

### Mark Neitzey, Director of Sales

Mark Neitzey graduated from Texas A&M University in 1993 with a Bachelor of Science degree in Engineering Technology/Industrial Distribution. From 1994-2002, he was a Regional Sales Manager for KOBELCO Construction Machinery. He then moved on to Van Dyk Recycling Solutions as Southwest Regional Sales Manager and was named Van Dyk's National Sales Director in April of 2014.

Mark has been involved in over 100 recycling equipment projects in the last 13 years, including: simple roll cutting and baling sites, large baling systems, wood waste screening, C&D sorting systems, automated MSW/fuel systems, commercial sorting systems, PET/Plastics sorting systems, various single stream sorting systems and system retrofits. Mark lives in Houston, TX and travels throughout North America, gaining a broad perspective on the industry and its current trends.

### Brian Schellati, Director of Business Development

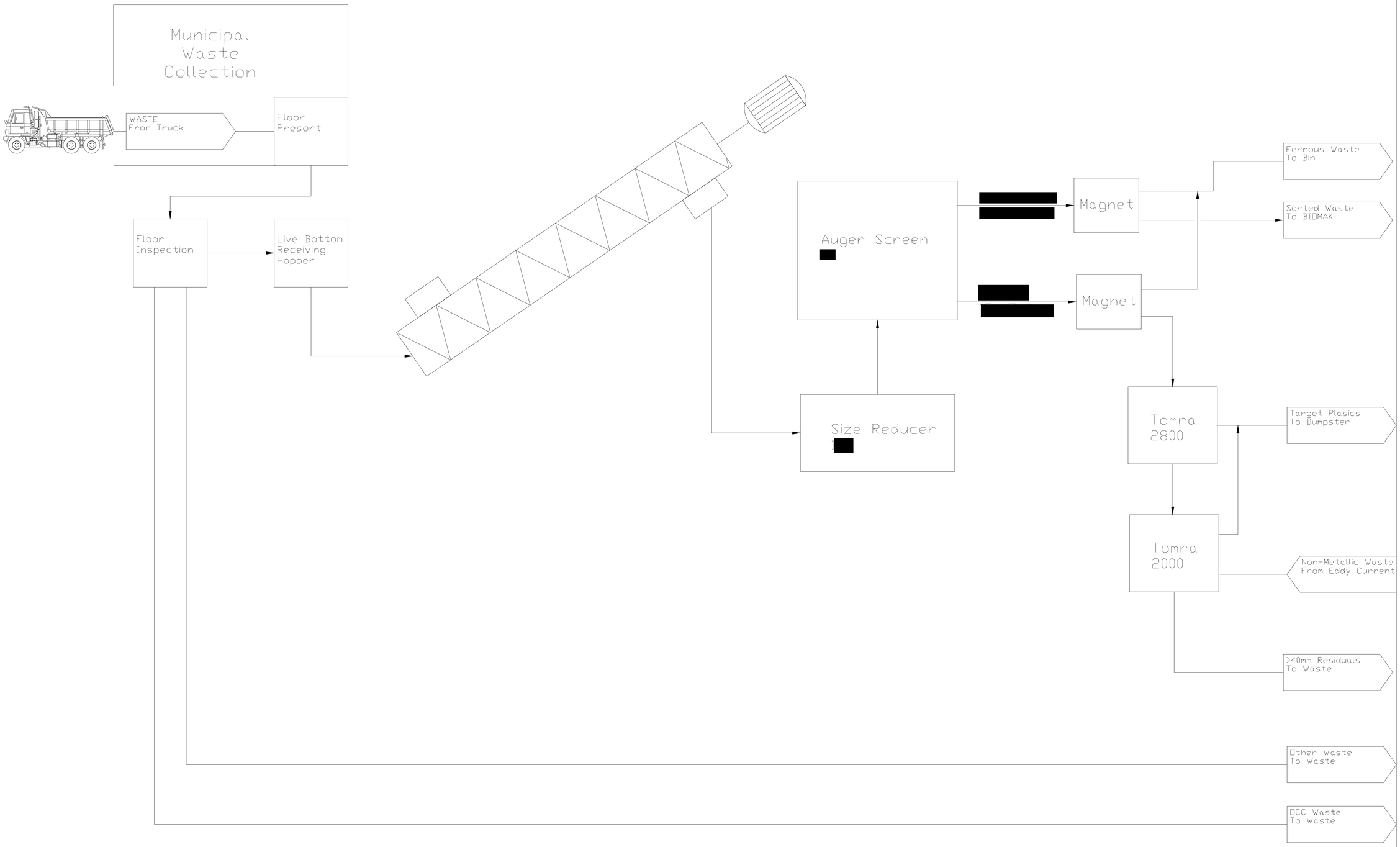
Brian joined Van Dyk in 2010 with a specific focus on growing new markets, such as mixed waste (MSW) processing, waste to fuels, glass recycling, waste plastic / chemical recycling, C&D and compost clean up. With a focus in the power generation industry, Mr. Schellati has over 15 years of experience in successful business development and sales for several industrial equipment suppliers. He received an MBA and Bachelor of Science in Industrial Process Engineering from Lehigh University. Mr. Schellati was born, raised and still resides just outside New York City in Westchester County.

# Relevant Projects

| Reference Project | |
|---|---|
| **Name reference project:** | FCC WPWMA MSW |
| **Value:** | $58M |
| **Location and type of project:** | Lincoln, CA |
| **Contracting entity/employer:** | WPWMA |
| **Contractor:** | FCC / VDRS |
| **Description project (max. 500 words)** | **This VDRS MSW Separation System will be comprised of dual processing equipment systems (lines). Each of the lines will have the capacity to process 50+ tons per hour of bagged and/or loose MSW waste. The lines may be operated in tandem, or as separate processes. A separate compost refining process will also be supplied.** |
| **Areas of expertise:** | MSW |
| **Percentage of participation of company in the project:** | 100% besides the building and other civil work. |
| **Performance period:** | 2024 |
| **Date of completion:** | Q1 2025 |
| **Name and title of Key personnel participated in the performance** | Josh Robbins, VDRS Startup/Training |
| **Contracting entity's/employer's reference and contact details:** | FCC – Andrea Rodriguez – 832-792-8778 |

# Appendix G

# Ulster County Proposed Process Flow Diagram (PFD)

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Downers Grove, IL 60515

UCRRA

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Ulster County Resource Recovery Agency
Waste Diversion

ADDRESS:
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Kingston, NY 12401

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ISSUE DATE:

REVISIONS:

SCALE
:

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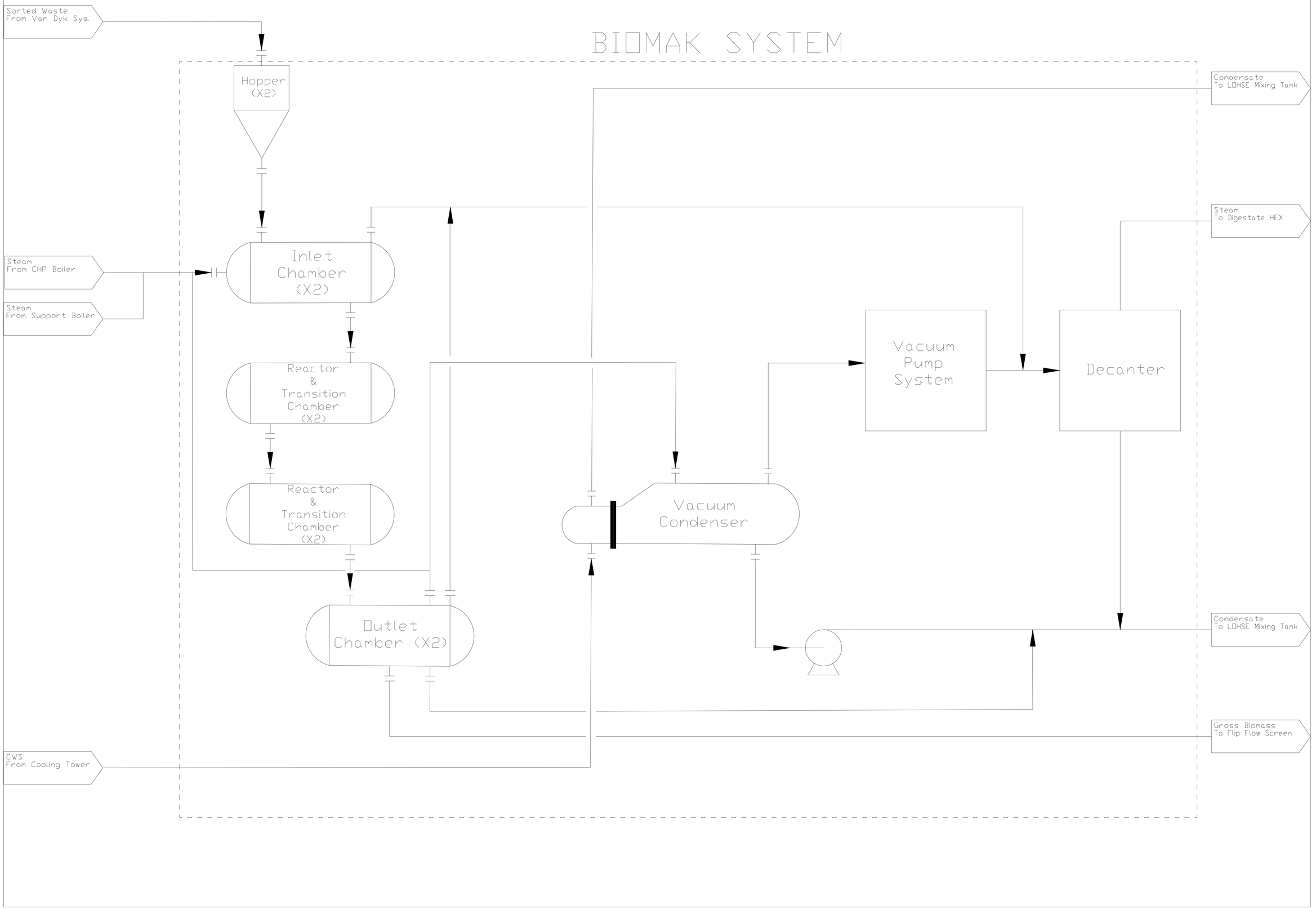
SHEET
TITLE:
**Van Dyk System**

SHEET
NUMBER:

1 of 9

# BIOMAK SYSTEM

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**BIOMAK System**

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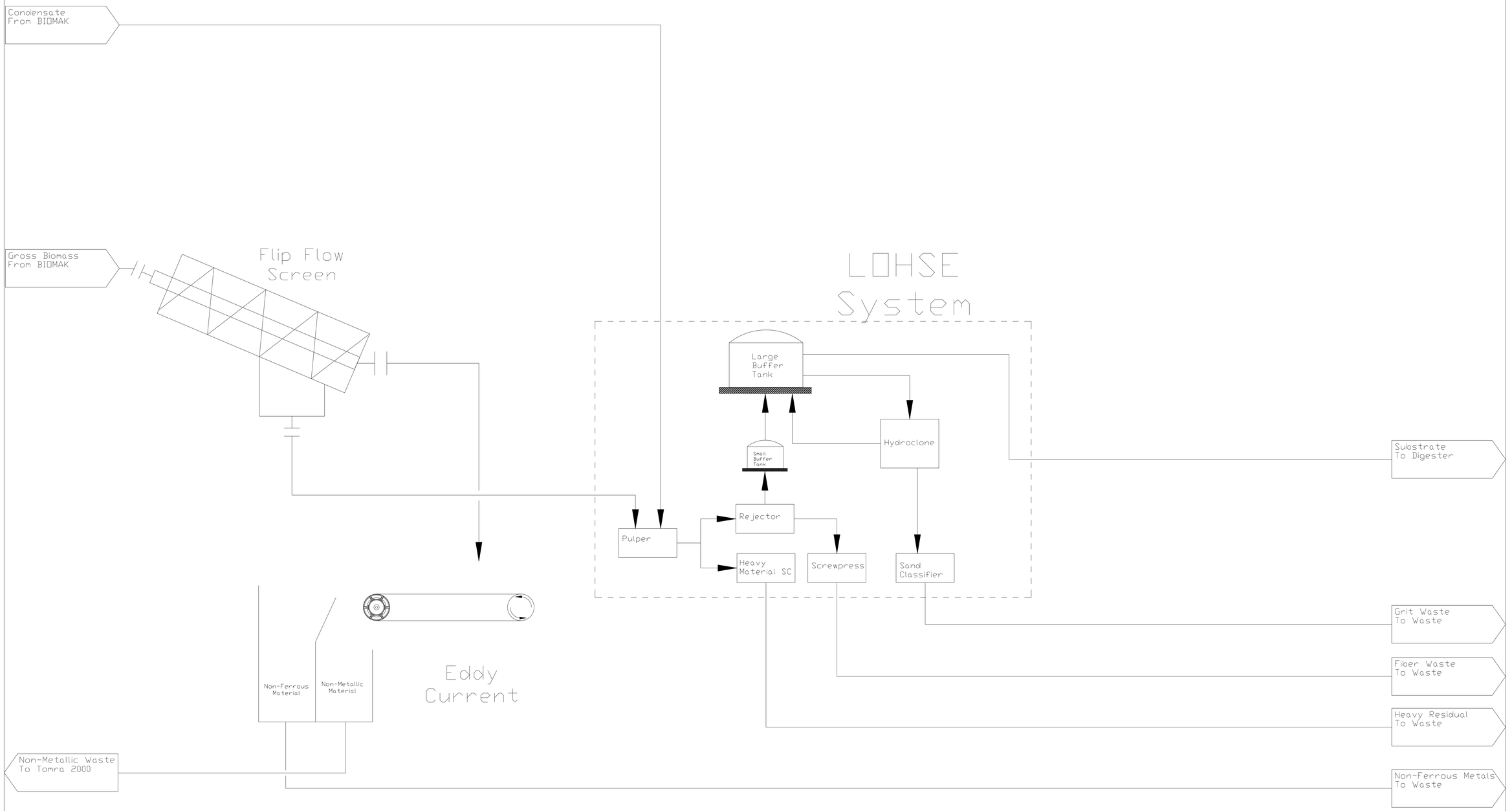
2 of 9

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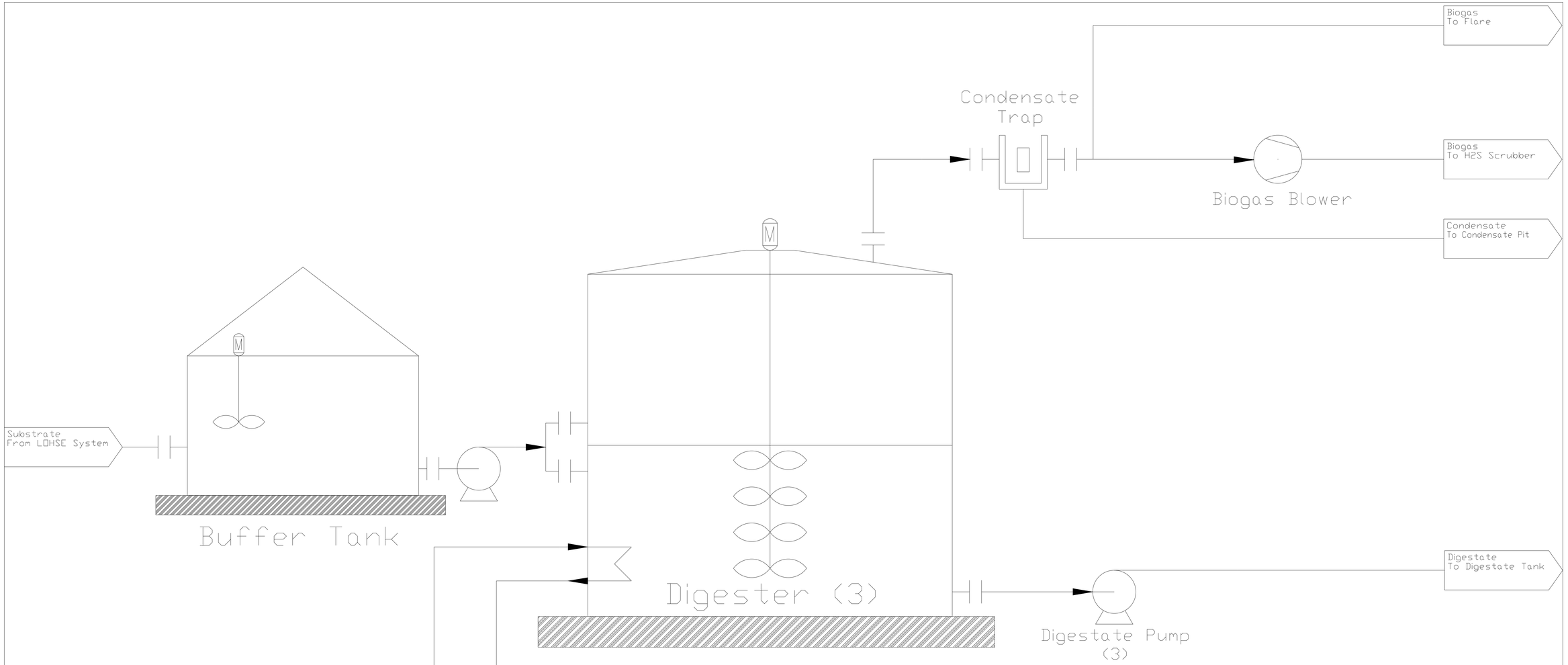
SHEET
TITLE:
**LOHSE System**

SHEET
NUMBER:
3 of 9

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SHEET TITLE: **Feed Processing and Digester**

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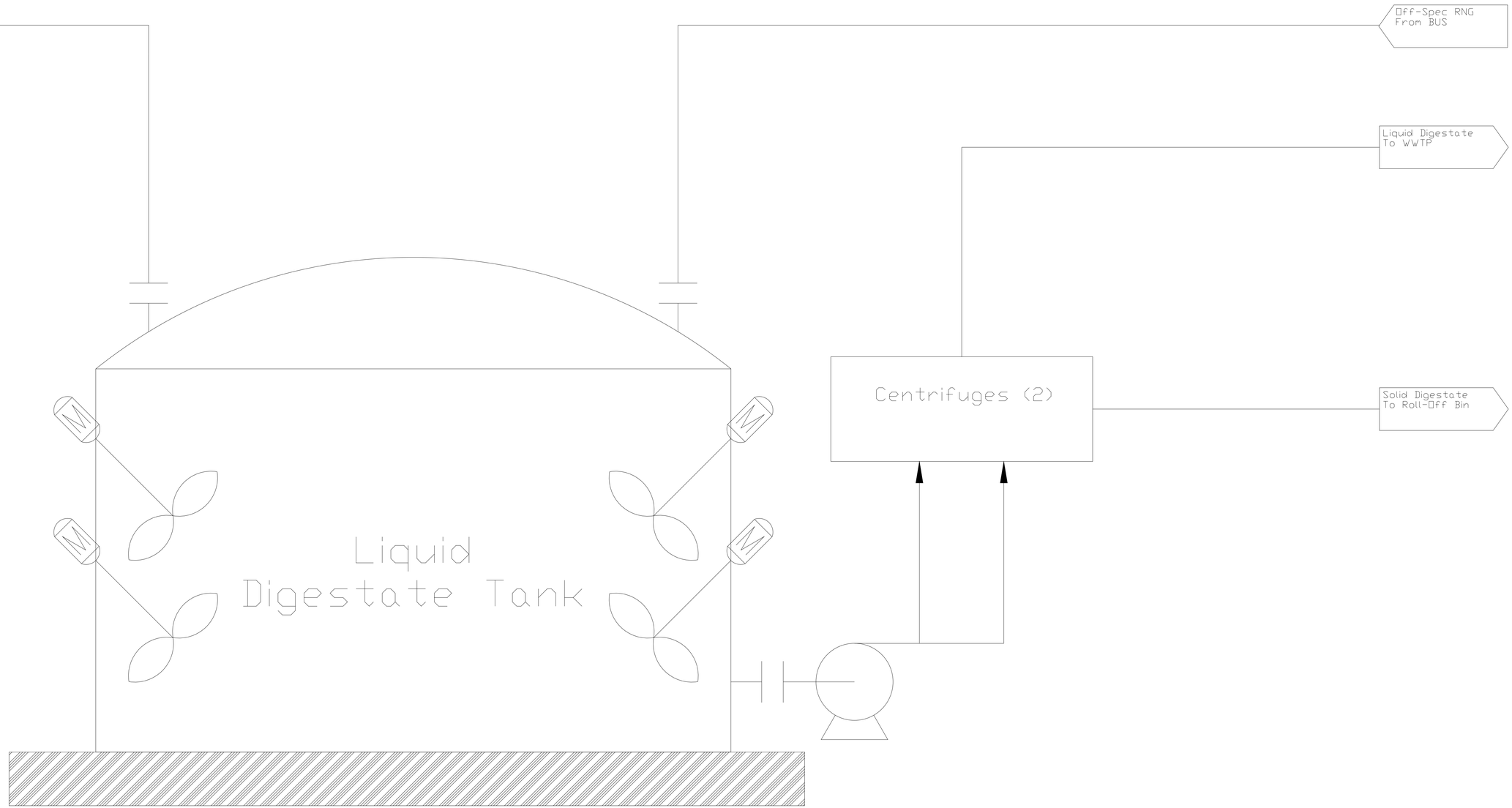
4 of 9

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SHEET
TITLE:
**Digestate Processing**

SHEET
NUMBER:

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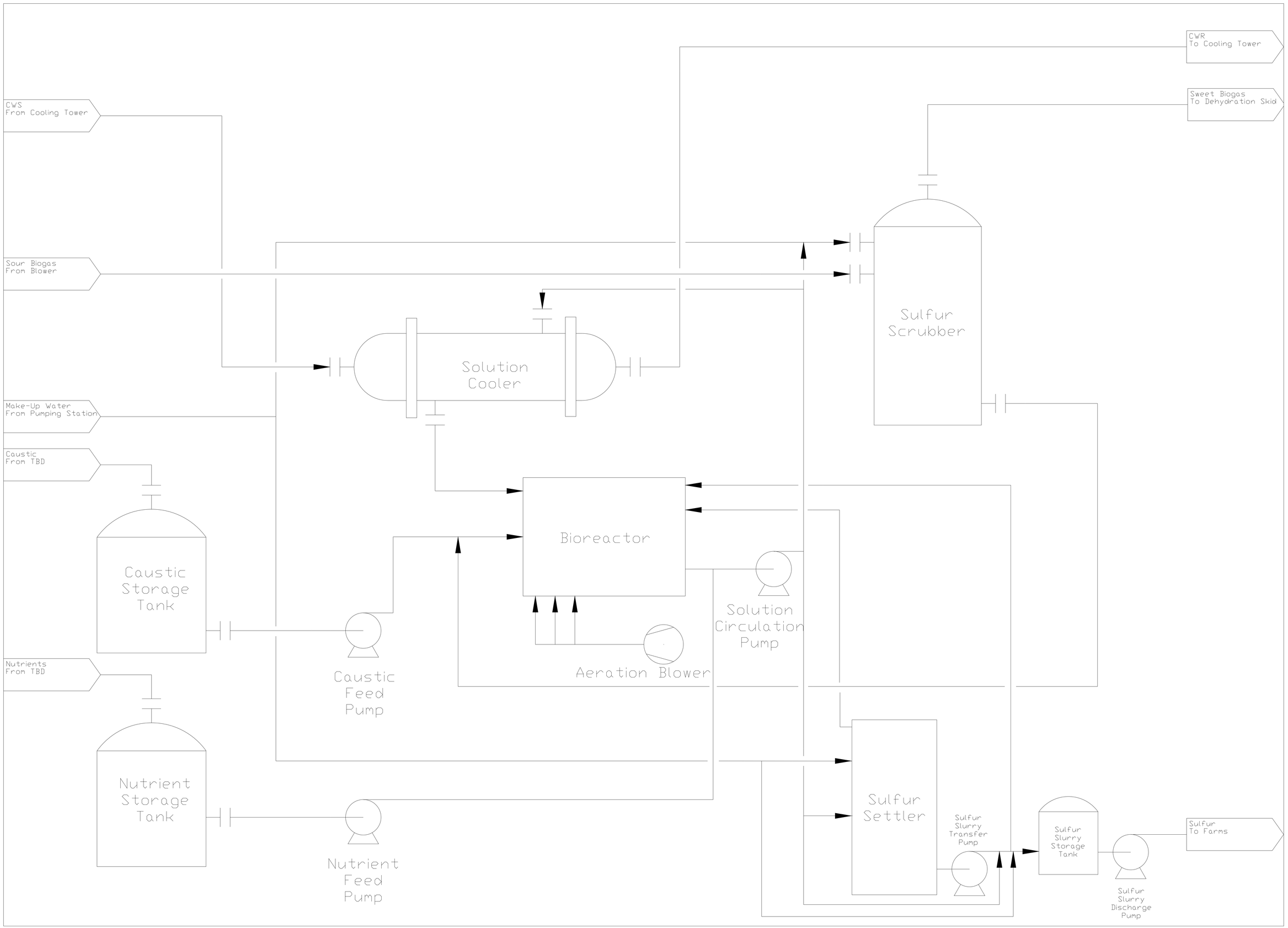


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**H2S Removal**

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NUMBER:

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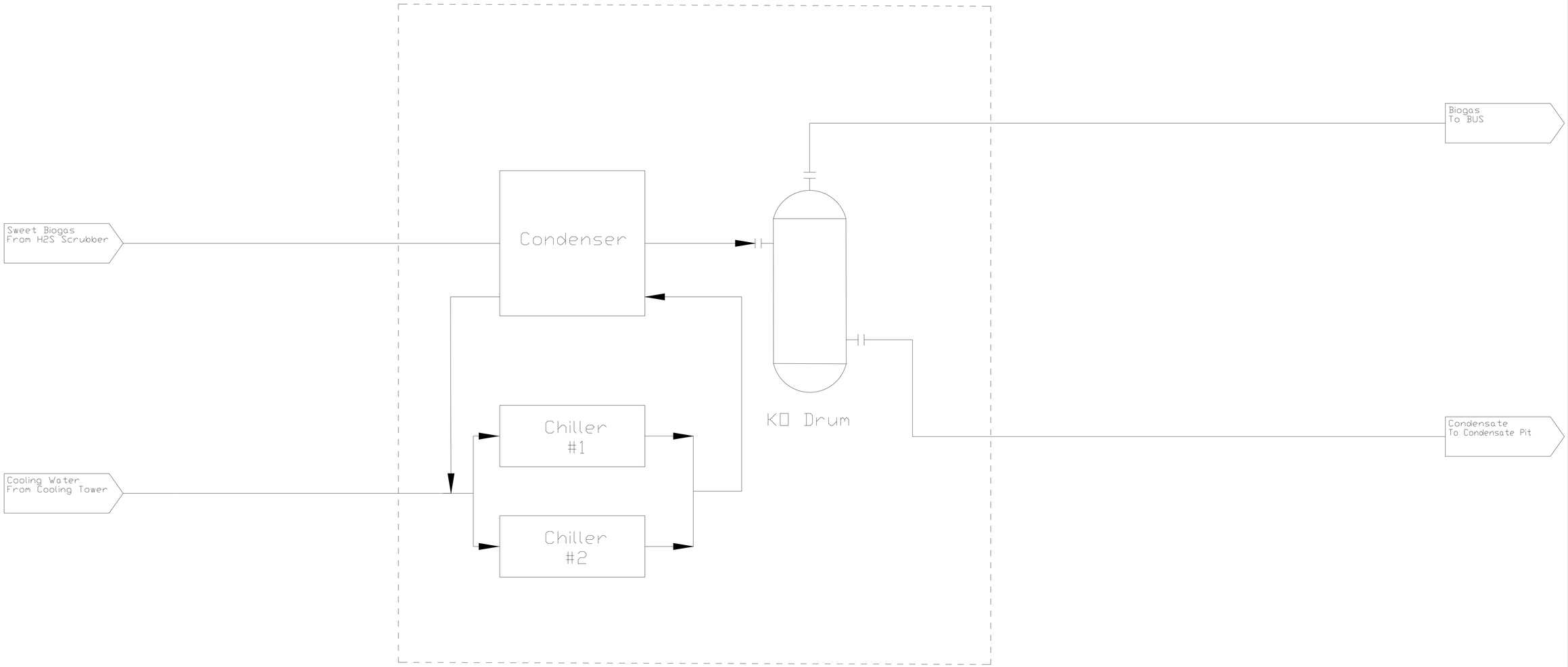


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SHEET
TITLE:

**Dehydration Skid**

SHEET
NUMBER:

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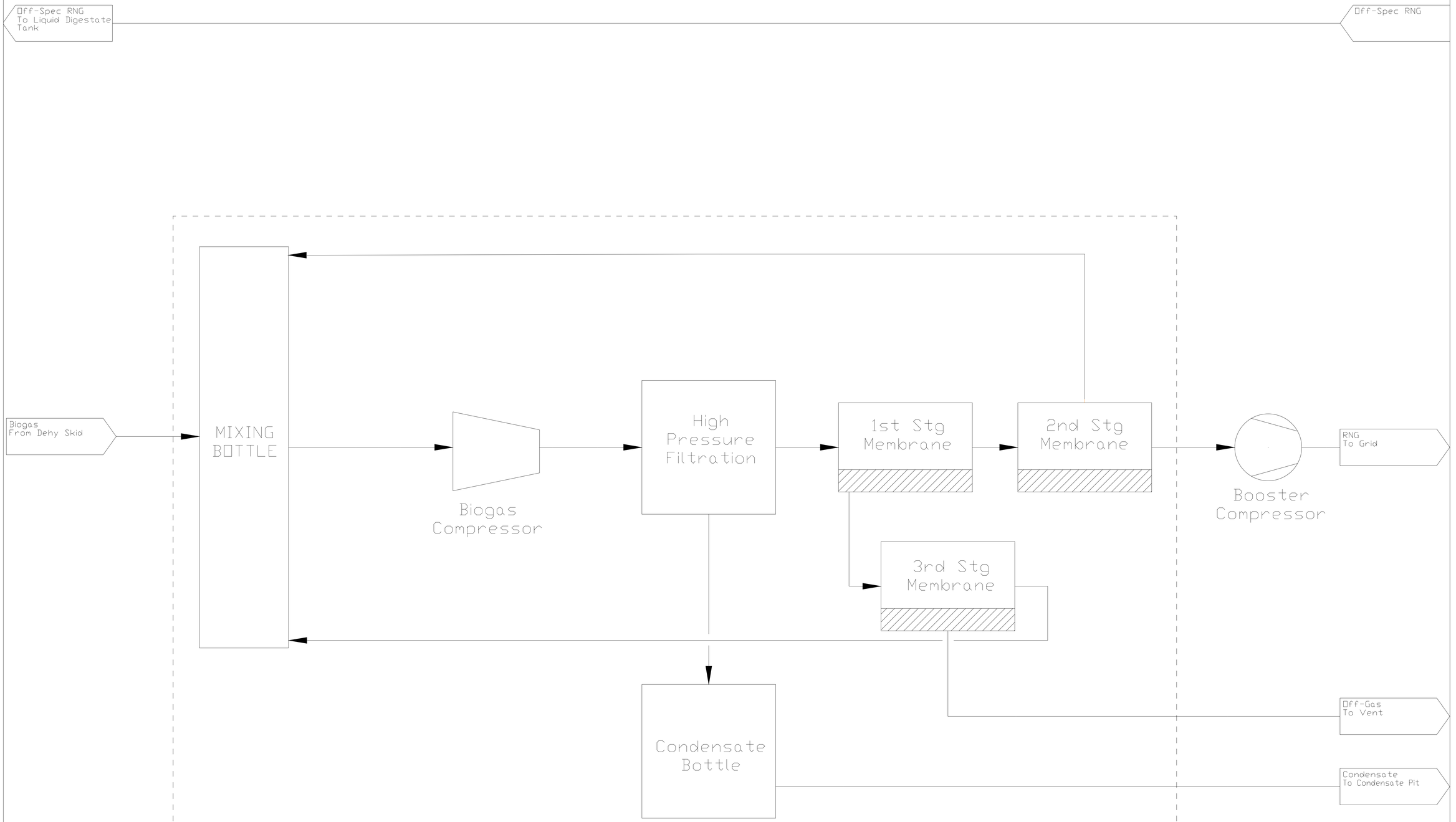


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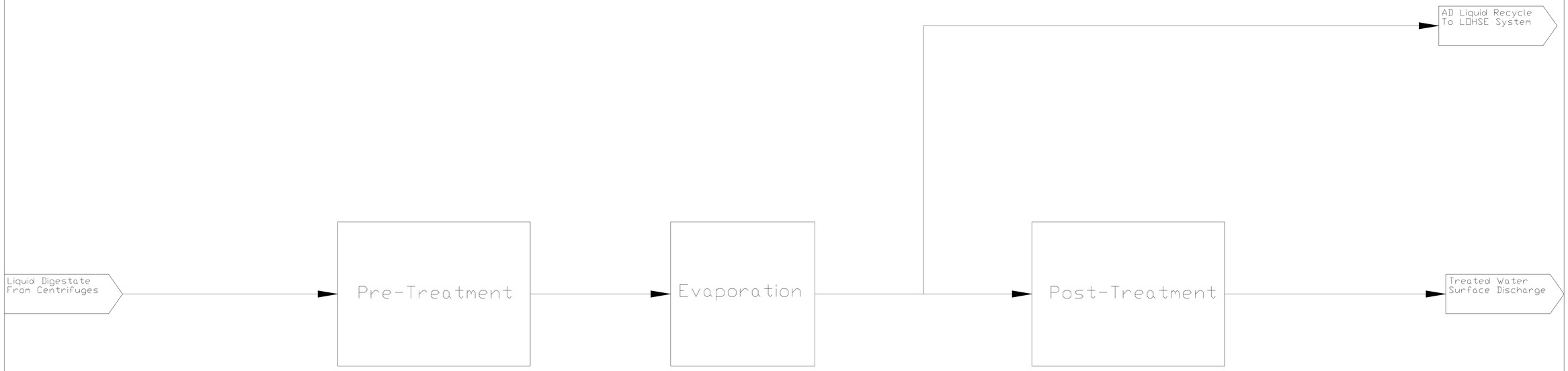
SHEET TITLE: **Biogas Upgrading System**

SHEET NUMBER:

8 of 9

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TITLE:

**WWTP**

SHEET
NUMBER:

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