

RNG SUPPLY AND TRANSPORTATION AGREEMENT

This RNG SUPPLY AND TRANSPORTATION AGREEMENT (the “**Agreement**”) is made and entered into this 19~~th~~ day of OCT, 2020, by and between RUDARPA North Country, LLC, a Delaware limited liability company (“**Supplier**”), and Liberty Utilities (EnergyNorth Natural Gas) Corp., a New Hampshire corporation (“**Purchaser**”), and, solely for purposes of Section 16.15 hereof, RUDARPA, INC., a Utah Corporation (the “**Parent**”).

RECITALS

WHEREAS, North Country Environmental Solutions, Inc. (“**North Country**”) owns and operates the North Country Landfill;

WHEREAS, Supplier has exclusive rights to the Landfill Gas generated at the North Country Landfill (the “**LFG Supply Agreement**”);

WHEREAS, Supplier has obtained a Site Lease from North Country upon which Supplier will construct a facility to collect, treat, and compress Landfill Gas generated at the North Country Landfill to produce pipeline ready renewable natural gas (the “**Production Facility**”);

WHEREAS, Purchaser desires to purchase all of the pipeline ready renewable natural gas (the “**RNG**”) generated at the Production Facility for use in Purchaser’s natural gas distribution system (the “**Purchaser System**”); and

WHEREAS, Supplier desires to sell to Purchaser all of the RNG generated at the Production Facility.

NOW, THEREFORE, in consideration of these mutual agreements, and other good and valuable consideration, receipt of which is hereby acknowledged, Supplier and Purchaser agree as follows:

ARTICLE 1 DEFINITIONS

Unless otherwise required by the context in which any defined term appears, the following terms shall have the meaning assigned to them in this Article 1, for all purposes including the Recitals:

“**Additional Rights**” has the meaning set forth in Section 2.9.

“**Affected Party**” has the meaning set forth in Section 8.1.

“**Affiliate**” means, with respect to any Person, any other Person directly or indirectly Controlled by, Controlling, or under common Control with such Person.

“**Agreement**” has the meaning set forth in the introductory paragraph to this Agreement.

“**Attestation Compliance**” has the meaning set forth in Section 3.2.

“Auditor” has the meaning set forth in Section 5.8(b).

“Authorized Attestation Firm” means Weaver and Tidwell, LLP, or such other qualified audit and attestation firm approved by the EPA and acceptable to both Supplier and Purchaser, to provide quality assurance services, RIN auditing services, and similar attestation services to U.S. renewable fuel purchasers agreed to by Purchaser in its sole discretion.

“Bankruptcy” means with respect to any Person (a) the commencement of a case or other proceeding, without the application or consent of such Person, in any court, seeking the liquidation, reorganization, debt arrangement, dissolution, winding up, or composition or readjustment of debts of such Person, or the appointment of a trustee, receiver, custodian, liquidator, assignee, sequestrator, or the like for such Person or all or substantially all of its assets, or any similar action with respect to such Person under any Law relating to bankruptcy, insolvency, reorganization, winding up, or composition or adjustment of debts, if such case or proceeding has continued undismissed, undischarged, unbonded, or unstayed and in effect for a period of one hundred twenty (120) consecutive days, or an order for relief in respect of such Person has been entered in an involuntary case under the federal bankruptcy Laws or other similar Laws (whether U.S. or foreign) now or hereafter in effect; (b) the commencement by such Person of a voluntary case or other proceeding under any applicable bankruptcy, insolvency, reorganization, debt arrangement, dissolution, or other similar Law now or hereafter in effect, or the consent by such Person to the appointment of or taking possession by a receiver, liquidator, assignee, trustee, custodian, or sequestrator (or other similar official) for such Person, or the general assignment by such Person of all or substantially all of its property for the benefit of creditors, or such Person shall fail to, or admit in writing its inability to, pay its debts generally as they become due, or such Person or its board of directors shall vote to implement any of the foregoing; (c) the commencement against the Person of any case, proceeding, or other action seeking issuance of a warrant of attachment, execution, or similar process against all or any substantial part of its assets, which results in the entry of an order for any such relief which shall not have been vacated, discharged, or stayed or bonded pending appeal within ninety (90) days from the entry thereof; or (d) the taking by the Person of any material action in furtherance of, or indicating its consent to, approval of or acquiescence in any of the acts set forth in clause (a), (b), or (c) above.

“Business Day” means a day of the year (other than any Saturday or Sunday) on which banks are not required or authorized to close in New York, New York.

“Collateral Agent” has the meaning set forth in the Senior Credit Facility.

“Confidential Information” means: (a) any confidential, non-public information, or materials of the disclosing party or its Affiliates provided by such party or any of its Representatives pursuant to this Agreement whether in tangible form or disclosed orally, and all notes, analyses, compilations, studies, interpretations, memoranda, reports, or other documents (regardless of the form thereof) prepared by the party receiving such information or materials (or such party’s Representatives) which contain, reflect, or are based upon, in whole or in part, any such information or materials; (b) the trade secrets of any party; and (c) all Technical Information, whether or not any such information is specifically identified as confidential. **“Confidential Information”** shall not include (y) information or materials that the receiving party can demonstrate (i) at the time of disclosure or thereafter is generally available to and known to the public or became generally available to and known to the public other than as the result of the act or omission attributable to the receiving party or any of its Representatives; (ii) is developed by the receiving party or any of its Representatives without reliance on any Confidential Information; or (iii) is or was

available to the receiving party or its Representatives on a non-confidential basis from a source other than the disclosing party or the Disclosing Party's Affiliates who, insofar as is known to the receiving party or its Representatives, after reasonable inquiry, is not prohibited from transmitting such information to the receiving party or its Representatives by a contractual, legal or fiduciary obligation to the Disclosing Party; or (z) information or materials disclosed by a party to such party's Affiliates or such party's or such party's Affiliates' Representatives.

"Consent" means any authorization, consent, approval, filing, waiver, exemption, or other action by or notice to any Person.

"Contract" means any contract, agreement, indenture, note, mortgage, deed, deed of trust, bond, loan, guarantee, instrument, lease, easement or right of way, commitment, or other arrangement, understanding, or agreement, whether written or oral.

"Contract Year" means each 365-day period (or 366-day period in a leap year) with the first Contract Year commencing upon the Service Commencement Date.

"Control" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a Person, whether through the ownership of securities, by Contract, or otherwise. The terms **"Controlled"** and **"Controlling"** have correlative meanings.

"CPI Adjustment" has the meaning set forth in Section 5.2.

"Daily Maximum" has the meaning set forth in Section 4.3.

"Delivery" has the meaning set forth in Section 3.9.

"Design Specifications" has the meaning set forth in Section 2.2.

"Designated Receipt Point(s)" means the designated receipt points for RNG on the Purchaser System as set forth on Exhibit A.

"DTH" means dekatherm.

"Effective Date" shall be the Effective Date of the Prior Agreement, which is May 31, 2018.

"Environmental Claims" has the meaning set forth in Section 11.1.

"Environmental Laws" means any applicable federal, state, county, municipal, or local Laws, statutes, rules, regulations, Orders, consent decrees, decrees, judgments, Permits, licenses, covenants, deed restrictions, ordinances, or other requirements or standards of any kind or nature, as now existing or hereafter in effect relating to: (i) pollution or the regulation or protection of health, safety, natural resources, or the environment, including, without limitation, those relating to releases, discharges, emissions, injections, leachings, or disposals of hazardous substances or hazardous materials into air, water, land, or groundwater, to the withdrawal or use of groundwater, or to the use, handling, treatment, removal, storage, disposal, processing, distribution, transport, or management of hazardous substances; or (ii) the construction, installation, maintenance, repair or operation of the Production Facility. "Environmental Laws" shall include, but shall not be limited to: the Clean Air Act; the federal Water Pollution Control Act; the Safe Drinking Water Act; the Toxic Substances Control Act; the

Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act of 1986; the Resource Conservation and Recovery Act, as amended by the Solid and Hazardous Waste Amendments of 1984; the Occupational Safety and Health Act; the Hazardous Materials Transportation Act; the Oil Pollution Act of 1990; and any similar federal, state, or local statutes and regulations, all as amended from time to time.

“EPA” means the U.S. Environmental Protection Agency or any successor agency.

“Expansion Rights Notice” has the meaning set forth in Section 2.9.

“Force Majeure Event” means acts, events, or circumstances beyond the reasonable control of the party claiming Force Majeure, including: (a) acts of God or the public enemy, civil unrest, criminal activity, restraints of the government (either federal, state or military), acts of terrorism, wars, riots, epidemics, or insurrections; (b) the elements (including storms, lightning, landslides, hurricanes, floods, earthquakes, tornados, freezing of equipment or lines of pipe, and threats of any of the foregoing); (c) fire, accidents, or breakdowns; (d) strikes, lockouts, and any other industrial, civil, or public disturbance; (e) failure of upstream or downstream transportation facilities to take or transport RNG; or (f) changes in Law implemented, adopted, or promulgated after the date hereof.

“Forum” has the meaning set forth in Section 16.3(b).

“Governmental Body” means any foreign, federal, state or local government, any governmental or regulatory body, any political subdivision, and any governmental, judicial, legislative, executive, administrative or regulatory authority, agency, commission, tribunal, or body.

“Indemnified Party” has the meaning set forth in Section 11.3(a).

“Indemnifying Party” has the meaning set forth in Section 11.3(a).

“Initial Term” has the meaning set forth in Section 14.1.

“Landfill Gas” or **“LFG”** means any and all gases resulting from the anaerobic decomposition of refuse material within the North Country Landfill consisting principally of methane, carbon dioxide, and traces of other constituent gases.

“Laws” means any and all applicable federal, state, county, municipal, and local laws (including common law), statutes, ordinances, rules, judgments, treaties, regulations, Permits, Orders, guidance document, or other requirement including, without limitation, any public policy, judgment, or Order of any Governmental Body and any and all applicable Environmental Laws.

“Legal Proceeding” means any judicial, administrative, or arbitral action, suit, litigation, investigation, legal proceeding (public or private), claim, demand, or any proceeding by or before a Governmental Body or any mediator or arbitrator.

“LFG Supply Agreement” has the meaning set forth in the Recitals to this Agreement.

“Losses” means all costs, liabilities, penalties, fines, forfeitures, demands, claims, causes of action, suits, judgments, penalties, Taxes, interest, and costs and their incidental expenses (including costs of

investigation, defense, settlement, and reasonable attorney's fees and expert's or consultants' fees and expenses).

"Management Representative" has the meaning set forth in Section 16.2.

"MASQ" has the meaning set forth in Section 4.1.

"Metering Equipment" has the meaning set forth in Section 4.4(b).

"Modified RNG Delivery Notice" has the meaning set forth in Section 3.5.

"Monthly Statements" has the meaning set forth in Section 5.3.

"NHPUC Approval" has the meaning set forth in Section 2.5.

"Non-Conforming RNG" has the meaning set forth in Section 3.6.

"Non-Defaulting Party" has the meaning set forth in Section 14.2(a).

"North Country" has the meaning set forth in the Recitals to this Agreement.

"North Country Landfill" means the landfill located at 581 Trudeau Road, Bethlehem, New Hampshire, as its boundaries and permits exist as of December 1, 2017, as set forth in the public records.

"O&M Agreement" means any Operating and Maintenance Management Services Agreement or similar agreement entered into by Supplier or any Affiliate in connection with the operation of the Production Facility.

"O&M Termination Right" has the meaning set forth in Section 2.11.

"Option Exercise Notice" has the meaning set forth in Section 2.10.

"Order" means any order, injunction, judgment, decree, ruling, writ, consent, agreement, assessment, or arbitration award.

"Parent" has the meaning set forth in the introductory paragraph to this Agreement.

"Permits" means all applications, registrations, approvals, authorizations, consents, licenses, identification numbers, franchises, permits, certificates, variances, notices of intent, or exemptions.

"Person" means any individual, corporation, limited partnership, partnership, limited liability company, firm, joint venture, association, joint-stock company, trust, unincorporated organization, Governmental Body, or other entity.

"Production Byproducts" means all non-methane based beneficial end use products generated from the LFG collected by Supplier from the North Country Landfill and processed at the Production Facility. The parties agree that Production Byproducts does not include RNG.

"Production Facility" has the meaning set forth in the Recitals to this Agreement.

"Property Taxes" has the meaning set forth in Section 5.7.

“Protected Information” has the meaning set forth in Section 13.5.

“Prudent Industry Practices” means the practices, methods, and standards of professional care, skill, and diligence engaged in or approved by a significant portion of the renewable natural gas and LFG industries for facilities of similar size, type, and design, that in the exercise of reasonable judgment, in light of the facts known at the time, would have been expected to accomplish results consistent with Law, regulation, reliability, safety, environmental protection, applicable codes, and standards of economy, and expedition. Prudent Industry Practices are not intended to be defined as one optimal standard practice method or act to the exclusion of others, but rather refer to a range of actions generally accepted in the industry as reasonable under the circumstances.

“Purchase Price” has the meaning set forth in Section 5.1.

“Purchaser” has the meaning set forth in the introductory paragraph to this Agreement.

“Purchase Option” has the meaning set forth in Section 2.10.

“Purchase Option Termination Notice” has the meaning set forth in Section 2.10.

“Purchaser Metering Equipment” has the meaning set forth in Section 4.4(b).

“Purchaser ROFR” has the meaning set forth in Section 2.9.

“Purchaser System” has the meaning set forth in the Recitals to this Agreement.

“Purchase Terms” has the meaning set forth in Section 2.10.

“Renewal Term” has the meaning set forth in Section 14.1.

“Renewable Attributes” means any and all environmental attributes, credits, benefits, emissions reductions, offsets, and allowances, howsoever entitled, attributable to the Production Facility, its displacement of conventional energy generation, and, to the extent related to the purchase and sale of RNG contemplated here, the use of RNG as a bio-gas derived fuel replacement for fossil fuels. Renewable Attributes also include (i) any energy, capacity, reliability, or other power attributes from the Production Facility, (ii) production tax credits associated with the construction or operation of Production Facility or any other associated contract or right, and other financial incentives in the form of credits, reductions, or allowances associated with the Production Facility that are applicable to a state or federal income taxation obligation. Renewable Attributes include but are not limited to Low Carbon Fuel Credits (LCFS) in California, tax or other credits arising from the sequestration of or diversion of methane and carbon associated with the Production Facility, and the sale of greenhouse gas credits arising from regional or interstate compacts, and from national or world markets.

“Renewable Identification Number” or **“RIN”** means a number generated to represent a volume of renewable fuel as set forth in Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program, 75 Fed. Reg. 16484 (March 26, 2010) (codified at 40 C.F.R. §80.145 (2011); 40 C.F.R. §60.1426 (2012)).

“Representatives” means all officers, directors, members, managers, stockholders, trustees, employees, agents, consultants, advisors, attorneys, or other representatives of a Person.

“Required Permits” has the meaning set forth in Section 2.2.

“RNG” has the meaning set forth in the Recitals to this Agreement.

“RNG Delivery Notice” has the meaning set forth in Section 3.5.

“RNG Specifications” means the RNG specifications set forth on Exhibit B, as may be amended from time to time by the parties.

“ROFR Election Notice” has the meaning set forth in Section 2.9.

“Scheduled Interruptions” means an interruption resulting when all or a portion of the Production Facility, Purchaser Equipment, the Purchaser System, or any other equipment or systems owned or operated by Supplier or Purchaser necessary to the production, delivery, and/or acceptance of RNG is deliberately taken out of service at a selected time for purposes of maintenance, repair, or construction.

“Senior Credit Facility” means that certain Master Credit Agreement, dated the date hereof, among Supplier, the Senior Lender, the other Lenders party thereto, and the NY Green Bank, a division of the New York State Energy Research and Development Authority, as Administrative Agent and Collateral Agent.

“Senior Lender” means the New York Green Bank, a division of the New York State Energy Research and Development Authority, as a Lender under the Senior Credit Facility.

“Service Commencement Date” means the date of the first Delivery of RNG by Supplier from the Production Facility to a Designated Receipt Point.

“Shortfall Amount” has the meaning set forth in Section 4.2(a).

“Site Lease” has the meaning set forth in Section 2.1.

“Supplier” has the meaning set forth in the introductory paragraph to this Agreement.

“Supplier Metering Equipment” has the meaning set forth in Section 4.4(a).

“Supply Point” means the connection point for pick-up of RNG at the Production Facility set forth on Exhibit C.

“Surplus RNG” has the meaning set forth in Section 4.2(b).

“Taxes” means all U.S. federal, state, or local taxes, excluding any income taxes, but including sales, use, and transfer taxes, real and personal property taxes, transportation taxes, carbon taxes, levies or assessments, franchise fees, license fees, encumbrances, or charges applicable to this Agreement or any of the transactions contemplated hereunder.

“Technical Information” includes, but is not limited to, any and all product information and product plans, technical designs and specifications, software, algorithms, know-how, techniques, reports, methods, strategies, plans, documents, drawings, designs, tools, models, inventions, patent disclosures, production techniques, any and all information regarding either party’s facilities (whether acquired during facilities tours or otherwise by inspection). Technical Information also includes proprietary or confidential

information acquired during any facilities tours or otherwise by inspection and also includes any review, summary or analysis based on any Technical Information.

“**Term**” has the meaning set forth in Section 14.1.

“**Third Party**” means any Person that is not a party or an Affiliate of either party.

“**Transportation Services**” means the services provided by Supplier to arrange logistics for, and transportation of, the RNG generated at the Production Facility from the Supply Point to the Designated Receipt Points in accordance with the terms set forth in this Agreement.

“**Unscheduled Interruptions**” means an interruption resulting when all or a portion of the Production Facility, Purchaser Equipment, the Purchaser System, or any other equipment or systems owned or operated by Supplier or Purchaser necessary to the production, delivery, and/or acceptance of RNG is taken out of service at an unexpected time due to an outage caused by equipment failure, human error, or other unexpected condition.

ARTICLE 2 CONSTRUCTION AND OPERATION OF THE PRODUCTION FACILITY

2.1 Site Lease. Supplier shall maintain a leasehold interest in property located on the North Country Landfill from North Country (the “**Site Lease**”) upon which Supplier will construct and operate the Production Facility, which Site Lease is attached as Exhibit J hereto, not have a term that is less than the Term of this Agreement and shall include the right and/or option of Supplier to extend the leasehold interest. Supplier shall provide Purchaser with a copy of the proposed Site Lease for review and ratification. In the event Supplier fails to maintain a Site Lease on terms satisfactory to Purchaser, Purchaser shall have the right, in its sole discretion, to immediately terminate this Agreement upon written notice to Supplier.

2.2 Production Facility. Supplier shall be solely responsible and liable for (A) the design, development, permitting, construction, operation, maintenance, and repair of the Production Facility in accordance with all applicable Laws, any O&M Agreement, and Prudent Industry Practices in order to extract, capture, handle, process, store, compress, treat, and/or transport LFG from the North Country Landfill and transport and deliver RNG to Purchaser at the Designated Receipt Points, and (B) all costs and expenses associated with the design, development, construction, operation, maintenance, and repair of the Production Facility, including, without limitation, utilities expenses. Without limiting the foregoing, Supplier acknowledges and agrees that it shall be solely responsible and liable for: (A) designing and constructing the Production Facility in accordance with specifications mutually developed by the parties and acceptable to Purchaser in its discretion (the “**Design Specifications**”), which Design Specifications will comply with all applicable RNG Specifications; (B) obtaining and maintaining all local, state, and federal Permits necessary for the construction and operation of the Production Facility (the “**Required Permits**”); and (C) operating, maintaining, and repairing the Production Facility in accordance with Prudent Industry Practices and any O&M Agreement and in such a manner to satisfy and comply with all applicable Laws (including, without limitation all Environmental Laws) and the RNG Specifications. Supplier shall complete all repair, replacement, and maintenance work required for the Production Facility to continue to operate in accordance with Prudent Industry Practices, any O&M Agreement applicable Laws, and the RNG Specifications in a timely manner.

2.3 Purchaser Information Rights. During the Term of this Agreement, Supplier shall promptly provide Purchaser, or its designated representative, with copies of such information and documents relating to the design, construction, operation, maintenance, and repair of the Production Facility as requested by Purchaser from time to time. In addition, from time to time upon request of Purchaser, Supplier shall provide Purchaser with a list of then current equipment of each material component used at the Production Facility which list shall include a description of the equipment component, its model number, and the applicable equipment specifications.

2.4 Purchaser Support. Purchaser shall cooperate and exercise reasonable efforts to support and assist Supplier in the acquisition of the Required Permits and other authorizations necessary for the construction and commissioning of the Production Facility which support shall include participating in regulatory proceedings and providing non-Confidential Information concerning Purchaser's operations.

2.5 NHPUC Approval. Purchaser shall be responsible for obtaining approval from the New Hampshire Public Utilities Commission for the transactions contemplated under this Agreement, except for those provisions in Section 2.10 related to Purchaser's rights to purchase the Production Facility, which purchase would require separate NHPUC approval through a separate NHPUC docket ("**NHPUC Approval**"); *provided, however*, Supplier shall cooperate and exercise reasonable efforts to support and assist Purchaser in obtaining NHPUC Approval which support shall include participating in regulatory proceedings and providing non-Confidential Information concerning Supplier's operations. In the event that Purchaser is unable to obtain NHPUC Approval for either the purchase of the RNG, Purchaser shall have the right, in its sole discretion after consultation with Supplier and after determining that no other commercially viable options for the purchase of the RNG by Purchaser or one of its affiliates or customers exists, to immediately terminate this Agreement upon written notice to Supplier.

2.6 Supplier Credit Support. Within two (2) days of the Service Commencement Date, Supplier shall provide Purchaser with credit support for its obligations under this Agreement as set forth on Exhibit E. In the event Supplier fails to timely provide evidence of such credit support, Purchaser shall have the right to immediately terminate this Agreement upon written notice to Supplier. Supplier shall maintain such credit support obligations throughout the Term of this Agreement. Supplier will notify Purchaser in writing within five (5) Business Days of the details of any material adverse change in Supplier's business, properties, conditions (financial or otherwise), or results of operations. Any failure by Supplier to maintain such credit support obligations during the Term hereof represents a material breach of this Agreement.

2.7 Security. Supplier covenants to provide and take commercially reasonable measures to secure the Production Facility (both the physical infrastructure and the information technology systems and infrastructure) in accordance with Prudent Industry Practices and applicable Law.

2.8 No Liens. Supplier covenants that it shall not, directly or indirectly, cause, create, incur, assume, or suffer to exist any lien (including without limitation mechanics', labor, or materialman's lien), charge, or encumbrance on the Production Facility without providing written notice to Purchaser. Purchaser acknowledges a first priority security interest in all of Supplier's assets to be granted to the Collateral Agent under the Senior Credit Facility for the benefit of the Senior Lender and the other Lenders thereunder.

2.9 Landfill Gas Expansion ROFR. In the event Supplier acquires the right to additional LFG generated from the North Country Landfill beyond the rights owned by Supplier as of the Effective

Date resulting from the expansion of the North Country Landfill or any other reason (the “**Additional Rights**”), Supplier shall provide Purchaser with written notice of such additional rights (the “**Expansion Rights Notice**”). Purchaser shall have a right of first refusal with respect to any LFG or RNG generated in connection with such Additional Rights (the “**Purchaser ROFR**”). In the event Purchaser elects to exercise its Purchaser ROFR, Purchaser shall provide written notice of its election to Supplier within thirty (30) days from the date of the Expansion Rights Notice (the “**ROFR Election Notice**”). Upon receipt of the ROFR Election Notice, the parties shall negotiate in good faith the terms and conditions of Purchaser’s exercise of the Purchaser ROFR and either enter into a new agreement addressing such Additional Rights or amend this Agreement to incorporate such Additional Rights. Failure by the Purchaser to timely deliver a ROFR Election Notice required by this Section 2.9 shall be deemed an election by Purchaser to not acquire the Additional Rights; *provided, however*, the Purchaser ROFR shall continue to and shall apply to any future acquisition of Additional Rights.

2.10 Facility Purchase Option and Purchaser Right of First Refusal.

(a) Supplier shall not sell the Production Facility to any party prior to the completion of Contract Year 4. After the completion of Contract Year 4, Purchaser shall have the right and option to purchase the Production Facility from Supplier (the “**Purchase Option**”), and purchaser shall also have a right of first refusal with respect to any sale of the Production Facility (the “**Purchaser Right of First Refusal**”). The Purchase Option and Purchaser’s exercise of the Purchaser Right of First Refusal shall be subject to separate NHPUC Approval as described in Section 2.5 and to the terms of any financing contract executed by Supplier and a third party financing entity necessitated by Supplier’s requirement to provide initial “interim” or “bridge” financing for the construction, commissioning, and operation of the Production Facility.

(b) **Purchase Option.** In the event that Purchaser elects to exercise its Purchase Option under this Section 2.10, Purchaser shall provide written notice to Supplier (the “**Option Exercise Notice**”). Upon receipt of the Option Exercise Notice, the parties shall begin good faith negotiations of the terms and agreements governing the sale of the Production Facility (the “**Purchase Terms**”) which Purchase Terms shall include, without limitation, the following: (A) a purchase and sale agreement to be entered into by the parties to affect the transfer of the Production Facility which shall be in substantially the form attached as Exhibit F; (B) design and performance specifications for the Production Facility which shall be included in the Supplier representations and warranties set forth in the purchase and sale agreement; (C) that the conveyance of the Purchase Facility shall be free and clear of all liens and encumbrances; and (D) the purchase price for the Production Facility. In the event that the parties are unable to successfully negotiate the Purchase Terms within one hundred twenty (120) days of the date of the Option Exercise Notice, either party may give notice to the other party terminating negotiations (the “**Purchase Option Termination Notice**”). During the period of time that the parties are negotiating the Purchase Terms, each party shall continue to fulfill its respective obligations under this Agreement. Upon the delivery of the Purchase Option Termination Notice, (i) the parties shall cease negotiation of the Purchase Terms, (ii) this Agreement shall continue in full force and effect unless terminated in accordance with its terms, and (iii) the Purchase Option of Purchaser set forth in this Section 2.10 shall continue; *provided, however*, Purchaser shall not have a right to deliver an Option Exercise Notice to Supplier for a period of one hundred eighty (180) days from the date of the Purchase Option Termination Notice. In connection with the consummation of the sale and purchase of the Production Facility pursuant to Purchaser’s exercise of the Purchase Option, Purchaser shall have the right to terminate this Agreement upon thirty (30) days’ prior written notice to Supplier.

(c) Purchaser Right of First Refusal. In the event Supplier signs an agreement for the sale of the Production Facility to a third party, Supplier shall provide Purchaser with written notice of such agreement. In the event Purchaser elects to exercise its rights of first refusal under this Article 2.10, Purchaser shall provide written notice of its election to Supplier within thirty days from the date of receiving notice from Supplier. Upon receipt of Purchaser's notice, the parties shall negotiate in good faith the terms and conditions of Purchaser's exercise of the right of first refusal at the price contained in the third party's offer, and under terms and conditions substantially similar to the applicable terms and conditions contained in this Agreement. Failure by the Purchaser to timely notify Supplier of its desire to exercise the right of first refusal shall be deemed an election by Purchaser to not acquire the Production Facility. In the event that the parties are unable to successfully negotiate the purchase terms and conditions within one hundred twenty days of the date Purchase notified Supplier of its intent to exercise Purchaser's right of first refusal, either party may give notice to the other party terminating negotiations and Supplier shall have the right to sell to the third party. During the period of time that the parties are negotiating, each party shall continue to fulfill its respective obligations under this Agreement. If a Party terminates negotiations after 120 days, (i) the parties shall cease negotiation of the purchase terms, and (ii) this Agreement shall continue in full force and effect unless terminated in accordance with its terms. The provisions of this Section 2.10(c) shall not apply to a sale of the Production Facility conducted by or on behalf of the Collateral Agent for the benefit of the Senior Lender as part of the exercise of its rights with respect to the Production Facility, or the other assets of the Supplier, as a secured party under the Senior Credit Facility and the loan documents ancillary thereto.

(d) Consent of the Senior Lender. Purchaser acknowledges that the Supplier is prohibited under the terms of the Senior Credit Facility from transferring any of its assets, including the Production Facility. Accordingly, Purchaser acknowledges and agrees that Supplier shall not sell, and the Purchaser shall not purchase, the Production Facility without the prior written consent of the Senior Lender. Nothing in the Section 2.10 is intended to interfere with the security interest granted by Supplier to the Collateral Agent under the Senior Credit Facility for the benefit of the Senior Lender and the other Lenders thereunder, or with the exercise by such Collateral Agent of any of its rights with respect to the Production Facility, or the other assets of the Supplier, as a secured party under the Senior Credit Facility and the loan documents ancillary thereto.

2.11 Continuing O&M Services. If Purchaser exercises the Purchase Option and buys the Production Facility, Purchaser shall contract separately with the Parent for operation and maintenance services to the Production Facility consistent with the terms of this Agreement and all applicable industry standards.

2.12 [Reserved.]

ARTICLE 3 RNG PURCHASE AND SALE

3.1 Purchase and Sale. Beginning on the Service Commencement Date and subject to the terms and conditions set forth in this Agreement, Purchaser shall have the exclusive right and the obligation to purchase from Supplier, and Supplier shall sell and deliver exclusively to Purchaser, all RNG produced at the Production Facility. Supplier acknowledges and agrees that Purchaser shall have the exclusive right to purchase RNG generated by the Production Facility from LFG collected from the North Country Landfill. Notwithstanding the foregoing, Supplier acknowledges that Purchaser shall not have any obligation to

purchase RNG unless and until it obtains NHPUC Approval and Supplier has provided evidence of Attestation Compliance.

3.2 Attestation. Prior to the Service Commencement Date and on an annual basis thereafter or as otherwise agreed, Supplier shall engage an Authorized Attestation Firm to assess and audit the RNG generated by the Production Facility to be delivered to confirm that the RNG delivered hereunder will (a) meet the RNG Specifications, and (b) be acceptable to the EPA for RIN purposes (“**Attestation Compliance**”). In connection with each assessment and audit of the RNG generated by the Production Facility, Supplier shall provide Purchaser with written documentation from the Authorized Attestation Firm evidencing Attestation Compliance. To the extent that the RNG fails to achieve Attestation Compliance for RNG Specifications, Purchaser shall have no obligation to purchase or accept any RNG under this Agreement until Supplier can demonstrate Attestation Compliance with the RNG Specifications based on written verification of the Attestation Firm. Supplier shall be solely responsible for all costs associated with the services provided by the Authorized Attestation Firm pursuant to this Section 3.2.

3.3 Quality. All RNG delivered by Supplier pursuant to this Agreement shall conform in all respects to the RNG Specifications.

3.4 Testing of RNG. Supplier shall measure the quality of the RNG to be delivered to Purchaser at the Supply Point prior to the transportation and Delivery of the RNG to Purchaser under this Agreement. Purchaser shall have the right (but not the obligation) to inspect or test the quantity and quality of the RNG provided by Supplier at either the Supply Point or the Designated Receipt Points using testing equipment of Purchaser, but Purchaser’s exercise, or failure to exercise, such testing and inspection rights shall not relieve Supplier of its responsibility to deliver RNG meeting the RNG Specifications. Supplier agrees that upon the request of Purchaser, Purchaser shall have the right to establish, at Purchaser’s sole cost and expense, an internet connectivity link between the Supplier’s equipment at the Supply Point to Purchaser’s equipment located at or near each Designated Receipt Point to enable Purchaser to electronically monitor the equipment and the testing, transport, and delivery of the RNG. Supplier shall cooperate and exercise reasonable efforts to assist Purchaser with the installation of any such connectivity, monitoring, or other equipment.

3.5 Delivery. Supplier shall deliver RNG to the Designated Receipt Points as directed by Purchaser. Seller has no obligation to deliver RNG to receipt points that are not Designated Receipt Points. Purchaser shall deliver to Supplier a written notice specifying the quantity of RNG to be delivered to each Designated Receipt Point (each a “**RNG Delivery Notice**”). Each RNG Delivery Notice may also set forth a maximum number of DTHs that may be delivered to each Designated Receipt Point on a daily, monthly, or annual basis and such other delivery terms as Purchaser may deem reasonable so long as such quantities to be delivered from the Supply Points under each Delivery Notice are in the aggregate equal to or greater than the volume of RNG then being produced by the Production Facility that day. Supplier shall deliver RNG to each Designated Receipt Point in accordance with the terms of the applicable RNG Delivery Notice. From time to time Purchaser may terminate or modify one or more RNG Delivery Notices (each a “**Modified RNG Delivery Notice**”). Each Modified RNG Delivery Notice shall be effective two (2) business day after delivery to Supplier and upon such effective date, Supplier shall commence delivering RNG to each Designated Receipt Point in accordance with the applicable Modified RNG Deliver Notice(s). Supplier and Purchaser each acknowledge and agree that the delivery of RNG under this Agreement will require frequent communication and cooperation between the parties for proper scheduling and delivery of

RNG. The parties will communicate and work in good faith to coordinate RNG deliveries and receipts, including, without limitation, notification of Scheduled Interruptions and Unscheduled Interruptions in accordance with Sections 4.7 and 4.8, respectively, and any other shut-downs, curtailments, facility outages, or other scheduled or irregular events which do not constitute Force Majeure Events.

3.6 Non-Conforming RNG. Purchaser shall have no obligation to take Delivery of, or to purchase, RNG that does not meet the RNG Specifications, Table 1A of Exhibit B (“**Non-Conforming RNG**”). To the extent that any attempted Delivery of RNG contains Non-Conforming RNG, Purchaser shall have no obligation to accept and/or purchase, and may reject such Non-Conforming RNG. In the event Purchaser has already paid for such Non-Conforming RNG, it shall be entitled to a full refund of all amounts paid to Supplier for the Non-Conforming RNG. Supplier will be responsible for all costs associated with the replacement or disposal of any such Non-Conforming RNG, including any damages, fines, penalties, and costs incurred by Purchaser as a result of the Non-Conforming RNG, including, without limitation, any equipment repair or replacement and/or any delay in providing conforming RNG. Such costs may also include, without limitation, any costs reasonably incurred by Purchaser to store or transfer such Non-Conforming RNG. RNG that is rejected shall not be counted against the MASQ.

3.7 Notice to Purchaser of Non-Conforming RNG. Supplier shall immediately notify Purchaser if Supplier becomes aware that any RNG generated at the Production Facility and/or made available to Purchaser does not meet the RNG Specifications. Should any concern arise regarding the quality of the RNG generated by the Production Facility, the parties will consult and cooperate concerning the quality concerns; *provided, however*, that any cooperation or consultation by Purchaser will not prejudice the right of Purchaser to reject any Non-Conforming RNG or to take actions necessary for safety or health concerns, or to prevent damage to Purchaser System or other equipment or facilities due to off-specification RNG.

3.8 Transportation Services. Supplier shall be solely responsible for all Transportation Services necessary to transport the LFG from the North Country Landfill to the Production Facility, and to transport all RNG from the Supply Point to the Designated Receipt Points, and all costs and Taxes associated with such Transportation Services; *provided, however*, the method of transport for the RNG to the Designated Receipt Points shall be acceptable to Purchaser in its sole discretion. Supplier represents, warrants, and covenants that in the case of transport of RNG by truck, all truck drivers shall be Operator Qualified for (i) the transport of RNG, (ii) the connection and disconnection of compressed natural gas to a decompression trailer, and (iii) the connection and disconnection of a compressed natural gas trailer to a gas distribution system, each in accordance with the rules and regulations of the Department of Transportation prior to transporting any RNG to Purchaser. Supplier acknowledges and agrees that Supplier shall also be responsible for all Transportation Services necessary to transport Non-Conforming RNG from the Designated Receipt Points where such RNG was not accepted by Purchaser.

3.9 Title and Risk of Loss. Ownership, title, control, possession, liability, and risk of loss of any or all of the RNG shall pass from Supplier to Purchaser and “**Delivery**” shall be complete solely when (a) such RNG is (i) unloaded from the respective delivery vehicle at the Designated Receipt Point, (ii) accepted by Purchaser; and (iii) is free and clear of all liens, claims and encumbrances; and (b) Supplier has provided Purchaser with a bill of lading (or similar documentation) that sets forth both the quantity and quality of the RNG delivered and demonstrates, to Purchaser’s satisfaction, that the RNG meets the RNG Specifications and that the quantity and quality has been measured and tested by an Authorized Attestation

Firm. Supplier shall retain ownership, title, control possession, liability, and risk of loss of the RNG deliverable to Purchaser prior to Delivery of such RNG to Purchaser. Thereafter, Purchaser shall have ownership, title, control, possession, liability, and risk of loss after such Delivery; *provided, however*, if Purchaser is in possession of any Non-Conforming RNG, unless otherwise agreed to in writing by Purchaser, ownership, title, control, possession, liability, and risk of loss of such Non-Conforming RNG shall not pass to Purchaser upon Delivery but shall at all times remain with Supplier and Supplier shall be solely responsible for the handling, loading, transportation, and disposal of such Non-Conforming RNG following identification and segregation by Purchaser. Supplier shall bear all costs of any nature concerning the RNG before Delivery to each the Designated Receipt Point including all applicable Taxes payable by Supplier in accordance with Section 5.7.

3.10 Fulfillment by Shell.

(a) Purchaser agrees that Supplier may from time to time fulfill its obligations under Section 3.1(a) above by selling the RNG to Shell Energy North America (US), L.P or some other similarly qualified Third Party entity that is in the business of supplying natural gas and which qualified entity is acceptable to Purchaser in its reasonable discretion (each, a Third Party Fulfillment Company”). The Third Party Fulfillment Company shall purchase from Supplier and take title of the RNG and immediately sell the RNG to Purchaser in compliance with all the other terms and provisions of this Agreement. Each Third Party Fulfillment Company shall agree in a written contract (a “Third Party Agreement”) to assume and satisfy all the obligations of Supplier under this Agreement with respect to the sale and delivery (but not the production) of the RNG to Purchaser. Each Third Party Agreement shall provide that the performance by the Third Party Fulfillment Company shall not result in (i) the imposition on Purchaser of any costs or obligations in excess of those costs and obligations that would be imposed on Purchaser if Supplier were selling the RNG directly to Purchaser; or (ii) the diminution of any of Purchaser’s rights under this Agreement. Supplier shall deliver to Purchaser a fully executed copy of each Third Party Agreement not less than sixty (60) days prior to the date on which the Third Party Fulfillment Company shall begin performing its obligations thereunder. Purchaser acknowledges that delivery by Supplier to the Third Party Fulfillment Company of RNG in conformance with the volume and quality requirements set forth in this Agreement shall constitute complete fulfillment by Supplier of its obligations to deliver RNG to Purchaser hereunder.

(b) Any settlement of accounts or payments to be made by Purchaser as consideration for its purchase of the RNG while a Third Party Agreement is in effect will be made directly to or coordinated with the Third Party Fulfillment Company, and such payments made to or in settlement with the Third Party Fulfillment Company will satisfy all payment obligations of Purchaser for the purchase of RNG under this Agreement as fully as if such payments were made directly to Supplier.

(c) Supplier and Purchaser agree that once a Third Party Agreement with Supplier is effective, the Supplier shall look solely to the Third Party Fulfillment Company for payment for the RNG delivered by the Supplier. The specifics of such payment between the Third Party Fulfillment Company and Supplier shall be included in the Third Party Agreement.

(d) Upon the expiration or termination of any Third Party Agreement, Supplier may, at its option, enter into another Third Party Agreement or may sell the RNG directly to Purchaser in compliance with this Agreement.

ARTICLE 4 MINIMUM SUPPLY AMOUNTS

4.1 Minimum Supply Amount. Supplier shall deliver to Purchaser the following minimum annual supply quantities of RNG (the “**MASQ**”) to the Designated Receipt Points: (a) 490,000 DTHs per year for Contract Years 1 through 5; (b) 375,000 DTHs per year for Contract Years 6 through 10; and (c) 270,000 DTHs per year for Contract Years 11 through 17. In the event that Supplier provides a total supply of RNG during Contract Years 1 through 15 in excess of 6,000,000 DTHs, Purchaser shall waive the MASQ for Contract Years 16 and 17. If Supplier delivers volumes of RNG that exceed the applicable MASQ for one or more Contract Years, Supplier may apply all or part of that cumulative excess to meet the MASQ in one or more subsequent Contract Years. Under no circumstance may excess volumes delivered in one Contract Year satisfy the MASQ of a prior Contract Year. Supplier agrees that Non-Conforming RNG shall not be applied to the calculation of Supplier’s satisfaction of the MASQ.

4.2 MASQ Reconciliations. Purchaser shall have the right to conduct reconciliations of the MASQ to ensure that Supplier has provided the MASQ required under the terms of this Agreement on an annual basis after the end of each Contract Year. If any reconciliation reflects Supplier failed to provide the aggregate MASQ for the respective reconciliation period, then Supplier shall pay to Purchaser an amount equal to the shortfall as calculated pursuant to the formula set forth on Exhibit G (the “**Shortfall Amount**”). Purchaser shall deliver to Supplier an invoice for the Shortfall Amount and Supplier shall pay Purchaser the Shortfall Amount within thirty (30) days of receipt of such invoice. In the alternative, at Supplier’s discretion, Supplier may satisfy the Shortfall Amount by delivering RNG that meets the RNG Specifications from other RNG locations (the “**Replacement RNG**”), provided that combustion of the Replacement RNG is eligible for thermal renewable energy credits in New Hampshire.

4.3 Maximum Daily Quantity. The maximum daily amount of RNG that may be delivered by Supplier to all of the Designated Receipt Points shall not exceed 2,400 DTHs unless otherwise agreed to by Purchaser in writing (the “**Daily Maximum**”). Purchaser shall have no obligation to purchase any RNG in excess of the Daily Maximum.

4.4 Metering Equipment.

(a) Supplier shall, at no cost to Purchaser, install, operate, and maintain in working order, metering devices for the measurement of flow, quantity, and quality at the Supply Point of RNG to be delivered to Purchaser and any additional equipment deemed necessary by Supplier (the “**Supplier Metering Equipment**”).

(b) Purchaser shall, at no cost to Supplier, install, operate, and maintain in working order, metering devices for the measurement of flow, quantity, and quality at or near each of the Designated Receipt Points of RNG delivered to such Designated Receipt Point and any additional equipment deemed necessary by Purchaser, including decompression equipment (the “**Purchaser Metering Equipment**” and collectively with the Supplier Metering Equipment, the “**Metering Equipment**”). At the request of Purchaser, Supplier shall promptly provide Purchaser with the then current specifications for Supplier’s compressed natural gas trailers and any other information deemed necessary by Purchaser, in its reasonable discretion, to install, operate, and maintain the Purchaser Equipment.

4.5 Meter Tests. Each party shall, at its expense, keep its respective Metering Equipment accurate and in good repair and calibration, making such periodic tests as such party deems necessary, but at least twice each Contract Year. Each party shall give the other party reasonable advance notice of any such test so that the other party may have its Representative(s) present during the test of the respective Metering Equipment. Each party may request additional special tests and calibration of the other party's Metering Equipment no more than two (2) times each Contract Year. The expense of such special tests shall be borne by the party requesting special tests of the other party's Metering Equipment if such Metering Equipment is found to be inaccurate by less than three percent (3%). If, upon any test, the respective Metering Equipment is found to be inaccurate by three percent (3%) or more, the cost of special test shall be borne by the owner of the Metering Equipment and meter readings and invoices shall be corrected for a period extending back to the immediately preceding test or special test and calibration.

4.6 Meter Out of Service. If for any reason the Metering Equipment at the Supply Point or any Designated Receipt Point is out of service such that the amount of RNG delivered cannot be ascertained, the party responsible for such Metering Equipment shall notify the other party within twenty four (24) hours. During the period when the Metering Equipment is out of service, the parties shall utilize the other party's Metering Equipment, where appropriate, and if all Metering Equipment is out of service, the parties shall utilize the metering and measurement records from similar periods within the immediately preceding thirty (30) days.

4.7 Scheduled Interruptions. Supplier and Purchaser shall coordinate timing of any Scheduled Interruption of their respective systems, including, without limitation, the Production Facility and any Metering Equipment, in order to minimize overall project downtime. Notice of a Scheduled Interruption by either Supplier or Purchaser shall be given to the other party as soon as practicable and not less than three (3) days prior to occurrence of the Scheduled Interruption. Notice shall include the reason for and expected duration of the Scheduled Interruption.

4.8 Unscheduled Interruptions. In the event that an Unscheduled Interruption occurs on either the Supplier or Purchaser's system, notice of the Unscheduled Interruption including the cause and estimated duration of the Unscheduled Interruption shall be given to the other party as soon as practicable and not more than four (4) hours following the occurrence of the Unscheduled Interruption. Notice shall also be given to the other party as soon as the Unscheduled Interruption has been remedied and regular delivery of RNG can resume.

ARTICLE 5 PRICE AND INVOICING

5.1 Price. During the Term of this Agreement, the purchase price for RNG meeting the RNG Specifications delivered to the Designated Receipt Points shall be determined as follows (the "**Purchase Price**"):

- (a) If Purchaser does not exercise the Purchase Option,
 - (i) a fixed price of \$10.47 per DTH during Contract Year 1; and

(ii) a fixed price of \$10.70 per DTH subject to annual adjustments set forth in Section 5.2 below for Contract Year 2; and

(iii) a fixed price of \$11.53 per DTH subject to annual adjustments set forth in Section 5.2 below for Contract Year 3; and

(iv) a fixed price of \$12.43 per DTH subject to annual adjustments set forth in Section 5.2 below for Contract Years 4 through Year 17.

(b) If Purchaser exercises the Purchase Option, a fixed price of \$6.11 per DTH subject to annual adjustments set forth in Section 5.2 below for all or any part of the Contract Years following consummation of the sale and purchase of the Production Facility through the then remaining Term of the Agreement.

Supplier acknowledges and agrees that the Purchase Price is a fixed price which covers Purchaser's purchase of the RNG, all Transportation Services, and all Taxes associated with the ownership or operation of the Production Facility.

5.2 CPI Adjustment. The Purchase Price shall be adjusted annually, with the first adjustment commencing on the first day of Contract Year 5, which adjustment shall be based on fluctuations in the Consumer Price Index, using the All Urban Consumers (water, sewer and trash collection services) as published by U.S. Department of Labor. If the manner in which this CPI is determined is substantially revised, or this CPI becomes unavailable, the parties agree to cooperate in selecting an alternative and comparable index. The parties agree that no annual adjustment to the Purchase Price pursuant to this Article 5.2 shall exceed two percent (2%) for any Contract Year.

5.3 Monthly Statements. Commencing with the first month in which Purchaser accepts Delivery of RNG, Supplier shall provide to Purchaser an invoice statement within fifteen (15) days of the end of each month, which statement shall set forth (i) the number of DTHs of RNG accepted by Purchaser in the prior month, (ii) the number of DTHs of Non-Conforming RNG (if any) in the prior month, and (iii) the calculation of the aggregate Purchase Price for such month (the "**Monthly Statements**"). The parties shall provide for the exchange of all relevant data reasonably necessary in connection with preparing each Monthly Statement, including information necessary to calculate the aggregate quantities of RNG delivered by Supplier, quantities of Non-Conforming RNG, and information relating to any events of Force Majeure Event.

5.4 Payment. Purchaser shall pay the amount of each Monthly Statement, other than any amount that is subject to a good faith dispute, within thirty (30) days but no later than forty-five (45) days after the date of such Monthly Statement. Any adjustments necessary to reconcile the resolution of a disputed amount with the amount actually paid shall be paid within fifteen (15) days following resolution of the disputed amount. For any amounts over which there is no dispute that have not been paid within the forty-five day period outlined above, a 1.5% penalty for late payment will automatically be added to any outstanding balance.

5.5 Payment Method. All payments under this Agreement shall be made in United States dollars by wire transfer in immediately available funds by deposit to the bank account designated in writing by the party receiving the payment. Any wire transfer charges shall be for the account of the party making

the payment. If a party elects to change the bank or account to which payments are to be made, that party shall notify the other party before the effective date of such change.

5.6 Disputes. Purchaser may withhold payment of all or any portion of any amount reflected as owing by Purchaser in any Monthly Statement or any other statement or invoice received from Supplier to the extent that Purchaser disputes payment of such amount or such portion thereof in good faith. As to any Monthly Statement Purchaser may withhold payment as to any disputed amount, including to account for any credit Purchaser believes it is owed with respect to the purchase, sale, or Delivery of RNG, or the failure of delivery. In the event of such a dispute, Purchaser shall promptly notify Supplier, stating its reason for disputing such amount and, to the extent available, providing reasonable supporting documentation.

5.7 Taxes and Other Costs. Supplier shall be responsible for and shall pay all Taxes and other similar costs, fees, charges, and expenses that may be imposed with respect to the construction, operation, and maintenance of the Production Facility, the generation, sale, and transport of RNG, or the transactions under this Agreement arising prior to Delivery at the Designated Receipt Point except to the extent any such Taxes or other similar costs, fees, charges, and expenses are, by applicable Law, required to be paid directly by Purchaser, in which event such Taxes shall be paid by Purchaser and reimbursed by Supplier, and Supplier shall indemnify, defend, and hold Purchaser harmless from any liability against such Taxes or other similar costs, fees, charges, and expenses. Except as otherwise set forth in this Agreement, including without limitation Section 3.9 with respect to Non-Conforming RNG, Purchaser shall be responsible for and shall pay all Taxes and other similar costs, fees, charges, and expenses that may be imposed with respect to the RNG after Delivery to the Designated Receipt Point. Supplier acknowledges and agrees that the obligations of Supplier in this Agreement to pay Taxes expressly includes all obligations to pay any federal, state, or local personal property taxes and real property taxes associated with the construction, operation, and maintenance of the Production Facility, the Site Lease and the performance of Supplier's obligation under this Agreement (the "**Property Taxes**"). Supplier further acknowledges and agrees that in the event Purchaser exercises its Purchase Option pursuant to Section 2.10 and the parties consummate the sale and purchase of the Production Facility, Supplier shall continue to be responsible for all such Property Taxes.

5.8 Books and Records; Right to Review and Right to Audit.

(a) Supplier shall prepare and maintain complete and accurate books, records, and accounts as may be reasonably required to confirm Supplier has met its obligations to provide RNG and has charged Purchaser accurately for such RNG consistent with the terms of this Agreement. Supplier shall make all such books, records, and accounts readily available to Purchaser and its Representatives at such reasonable times as Purchaser may from time to time request for inspection, copying, and extracting; *provided, however*, such inspection, copying, and extracting shall be at Purchaser's sole expense. All books, accounts, and records shall be kept in accordance with generally accepted accounting principles, consistently applied. Supplier shall retain the books, records, and accounts with respect to any Contract Year during the Term of this Agreement for at least five (5) years after the end of such Contract Year for possible inspection, copying, extracting, and/or audit by Purchaser.

(b) Purchaser shall have the right at reasonable times and upon reasonable advance notice to have an independent auditor (the "**Auditor**") examine the applicable books, records, and accounts of Supplier to verify Supplier's compliance with the terms and conditions of this Agreement. Purchaser may perform an audit only twice each twelve (12) month period. The

Auditor must enter into a confidentiality agreement with Purchaser with terms at least as protective as the terms under this Agreement. The results of such audit shall indicate only whether, and to what extent, Supplier has met or failed to comply with the terms and conditions of this Agreement and shall be the Confidential Information of both parties. Any such audit shall be conducted during the normal business hours of Supplier in such a manner as not to interfere with the normal business activities of Supplier. Purchaser shall pay all fees, costs, and expenses associated with the audit; *provided, however*, if the Auditor reports a disparity in the fees charged to Purchaser for the period in question greater than ten percent (10%), Supplier shall be liable for the fees, costs, and expenses of the respective audit.

ARTICLE 6

ENVIRONMENTAL ATTRIBUTES AND BYPRODUCTS

6.1 Renewable Attributes. Purchaser shall own all the Renewable Attributes associated with the RNG as it relates to the laws and regulations of the State of New Hampshire. All Renewable Attributes arising from the laws and regulations outside of New Hampshire shall be retained by the Supplier, unless Supplier's use of Renewable Attributes interferes with or diminishes the value of the Renewable Attributes to Purchaser in New Hampshire. In the case of a conflict, Purchaser's right to own the Renewable Attributes in New Hampshire shall prevail.

6.2 RINS. Specifically, Supplier shall retain the right to claim all RINs associated with the use of the RNG generated at the Production Facility as a transportation fuel. Purchaser agrees that in connection with the qualification and sale of RINs, Purchaser shall buy and sell an equivalent volume of fossil natural gas to specific purchasers identified by Supplier; *provided, however*, that Supplier understands and agrees that Purchaser's obligations are subject to, and expressly conditioned on, each purchase and sale of fossil natural gas being on a break even basis for Purchaser and at market rates or less. The parties understand and agree that the fossil natural gas purchased and sold pursuant to this Section 6.2 shall be available to the respective purchaser on the Tennessee 6 Pipeline.

6.3 Byproducts. Supplier shall retain all rights to any Production Byproducts and all Renewable Attributes associated with the production, sale, or use of the Production Byproducts including, without limitation, the sale of carbon, carbon dioxide, and nitrogen, and the ability to claim emission or other credits relating to these byproducts of the LFG stream. Supplier represents, warrants, and covenants to Purchaser that the collection, processing, commercialization, sale, or other actions relating to such Production Byproducts shall in no event have any adverse effect on the quantity or the quality of the RNG produced at the Production Facility. Supplier acknowledges and agrees that any future investment in the Production Facility required to produce and commercialize such Production Byproducts shall be the sole responsibility of Supplier.

ARTICLE 7 REPRESENTATIONS AND WARRANTIES

7.1 Right to LFG. Supplier represents, warrants, and covenants that it has full and unqualified title and/or authority to collect LFG from the North Country Landfill sufficient to satisfy the MASQ and to sell all RNG to be delivered to Purchaser hereunder.

7.2 Express Warranty Against Liens. Supplier represents, warrants, and covenants that title to all RNG provided hereunder will be good and marketable, free and clear of all liens, security interests, other encumbrances, or adverse claims of any kind.

7.3 RNG Specifications. Supplier represents, warrants and covenants to Purchaser that the RNG provided hereunder will meet the RNG Specifications.

7.4 Production Facility Operation. Supplier represents, warrants, and covenants to Purchaser that it shall construct, operate, maintain, and repair the Production Facility in accordance with Prudent Industry Practices, any O&M Agreement, and all applicable Laws, including without limitation all Environmental Laws. Seller further represents, warrants, and covenants to maintain in full force and effect all Permits required to operate the Production Facility and to deliver RNG to Purchaser hereunder.

7.5 No Security Interests. Supplier represents, warrants, and covenants that it shall not directly or indirectly (A) cause, create, incur, grant, assume, or suffer to exist any lien or security interest in the Production Facility or Site Lease to secure financing, or (B) use the Production Facility or Site Lease as collateral for any operations of Supplier or its Affiliates, in each case other than the security interests granted by Supplier to the Collateral Agent under the Senior Credit Facility for the benefit of the Senior Lender and the other Lender thereunder.

7.6 Mutual Warranties. Each party represents and warrants to the other party that:

(a) such party has the full power and authority to execute, deliver, and perform this Agreement and to carry out the transactions contemplated hereby;

(b) the execution and delivery of this Agreement by such party and the carrying out by such party of the transactions contemplated have been duly authorized by all requisite corporate (or, if applicable, partnership or limited liability company) action, and this Agreement has been duly executed and delivered by such party and constitutes the legal, valid, and binding obligation of such party, enforceable against it in accordance with its terms, subject, as to enforceability of remedies, to limitations imposed by bankruptcy, insolvency, reorganization, moratorium, or other similar Laws relating to or affecting the enforcement of creditors' rights generally and to general principles of equity;

(c) excluding the NHPUC Approval and Required Permits and other authorizations that may still be required to construct and operate the Production Facility, no authorization, Consent or Order of, notice to or registration, qualification, declaration, or filing with any Governmental Body is required for the execution delivery and performance by such party of this Agreement or the carrying out by such party of the transactions contemplated; and

(d) none of the execution, delivery, and performance by such party of this Agreement,

the compliance with its terms and provisions, and the carrying out of the contemplated transactions, conflicts or will conflict with or result in a breach or violation of any of the terms, conditions, or provisions of any Law, Governmental Body rule or regulation, or the charter documents (or partnership or limited liability company operating agreement, if applicable), as amended through the Effective Date or by-laws, as amended through the Effective Date, of such party or any applicable Order or by which it or any of its properties is bound, or any loan agreement, indenture, mortgage, bond, note, resolution, Contract, or other agreement or instrument to which such party is a party or by which it or any of its properties is bound, or constitutes or will constitute a default thereunder, or will result in the imposition of any lien upon any of its properties.

7.7 Disclaimer of any Other Warranties. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH HEREIN, THE PARTIES MAKE NO, AND EXPRESSLY DISCLAIM ANY, REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, AT LAW OR IN EQUITY.

ARTICLE 8 FORCE MAJEURE

8.1 Force Majeure in General. The obligations of the party subject to a Force Majeure Event (“Affected Party”) pursuant to the Agreement (other than any obligation to pay money) may be suspended by such Affected Party without liability during the continuance of such Force Majeure Event as set forth in this Article 8, *provided that* the suspension shall be of no greater scope and of no longer duration than is reasonably attributable to the Force Majeure Event.

8.2 Force Majeure Notification. If the Affected Party wishes to invoke the provisions of Article 8, then the Affected Party shall give notice to the other party of such Force Majeure Event as soon as reasonably practicable after becoming aware of such Force Majeure Event. Each such notice shall specify and describe the particulars of the Force Majeure Event and the steps taken to mitigate and overcome the effects of such Force Majeure Event.

8.3 Force Majeure Process. The Affected Party shall, by reason of any Force Majeure Event in respect of which it has claimed relief:

(a) Use commercially reasonable efforts to mitigate the effects of such Force Majeure Event and to remedy any inability to perform its obligations under the Agreement due to such Force Majeure Event as promptly as reasonably practicable; *provided that* it shall (i) not be obliged to take any steps that would not be in accordance with applicable Laws or that would be beyond its control, and (ii) not be required to settle any strikes or other labor disputes.

(b) Provide reports to the other party, as reasonably requested by the other party, regarding the progress in overcoming the resulting delay in its performance due to the Force Majeure Event and setting forth its best, good faith estimate concerning when it shall be able to resume the performance of its obligations under this Agreement.

8.4 Reduction of Amounts. Any amounts of RNG that Purchaser is obligated to purchase or that Supplier is obligated to sell under this Agreement shall be reduced during the period of suspension of performance by the Affected Party due to the Force Majeure Event by the amount of RNG that is unable to be delivered, received, produced, or processed as a result of such suspension.

8.5 Resumption of Performance. When the Affected Party is able to resume performing the obligations under this Agreement that were suspended as a result of the Force Majeure Event, then the Affected Party shall promptly give the other party written notice to that effect and the period of suspension of performance relating to such Force Majeure Event shall be deemed to have ended.

8.6 Termination. If the suspension of performance due to a Force Majeure Event lasts for more than three (3) months or reduces the total DTHs of RNG sold by Supplier to Purchaser under this Agreement by seventy five percent (75%), then, upon thirty (30) days prior written notice to the Affected Party, the other party may terminate this Agreement.

ARTICLE 9 ASSIGNMENT

This Agreement shall be binding upon and inure to the benefit of the parties and, except as provided in this Article 9, their respective successors and assigns. No assignment of this Agreement nor of any its rights or obligations may be made by any party (by operation of Law, change in control, or otherwise) without the prior written consent of all other parties, which may be withheld in each such party's sole and absolute discretion, and any attempted assignment without such consent shall be void *ab initio* and of no legal effect; *provided, however*, that this Agreement and any or all of its rights or obligations may be assigned by Purchaser to any of its Affiliates. Upon any such permitted assignment under this Article 9, references in this Agreement to such assigning party shall also apply to any such assignee unless the context otherwise requires.

ARTICLE 10 INDEPENDENT CONTRACTOR STATUS

With respect to the services to be provided under this Agreement, it is mutually understood and agreed that Supplier is being engaged as, and that at all times the relationship of Supplier to Purchaser shall be that of, an independent contractor under this Agreement, and in no event shall any principal, partner, employee, agent, contractor, or subcontractor of Supplier be considered an employee, leased employee, agent, servant, or anything other than an independent contractor of Purchaser. The parties are independent of one another and nothing in this Agreement shall be construed to create a partnership, joint venture, or any such other relationship between the parties. Any provision of this Agreement that may appear to give Purchaser a measure of control over the details of the services provided shall be deemed to mean that Supplier shall follow the general desires of Purchaser, but Supplier shall have sole authoritative control over the details of performing such services in a manner consistent with the terms of this Agreement. Likewise, Supplier will be solely responsible for compliance with all Laws with respect to its provision of services and any personnel utilized by Supplier relating to its services, including all Laws pertaining to the payment of wages, compensation, employee benefits, hours of employment, and withholding taxes.

ARTICLE 11 INDEMNITY AND LIMITATIONS OF LIABILITY

11.1 Supplier's Indemnity. Supplier agrees to defend, indemnify, and hold harmless Purchaser, its Affiliates and their Representatives, contractors and subcontractors, successors, and

assigns from and against any and all Losses which are directly or indirectly caused by (i) any wrongful act or omission of Supplier and/or its Representatives, contractors, or subcontractors associated with or arising from Supplier's performance or nonperformance of its obligations under this Agreement or any other agreement between the parties, (ii) any wrongful act or omission of Supplier, its Representatives, contractors, or subcontractors associated with or arising from the ownership or operation of Production Facility, (iii) any breach of any representation and warranty made by Supplier in this Agreement; (iv) any breach of any Applicable Laws, and (v) any and all Environmental Claims brought relating to the RNG, the Production Facility, the Site Lease, or the North Country Landfill, except to the extent such Environmental Claim results directly from the gross negligence or willful misconduct of Purchaser. As used here, "**Environmental Claims**" means all claims, demands, suits, causes of action, or injuries to Persons or property damage arising out of a violation of Environmental Laws.

11.2 Purchaser's Indemnity. Purchaser agrees to defend, indemnify, and hold harmless Supplier, its Representatives, contractors, subcontractors, successors, and assigns from and against any and all Losses which are directly or indirectly caused solely by (i) any wrongful act or omission of Purchaser, its Representatives, contractors, or subcontractors associated with or arising from Purchaser's performance or nonperformance of its obligations under this Agreement or any other agreement between the parties, (ii) any breach of any representation or warranty made by Purchaser in this Agreement, (iii) any breach of any applicable Laws, and (iv) any and all Environmental Claims resulting from the gross negligence or willful misconduct of Purchaser, its officers, directors, employees, agents, Representatives, contractors, or subcontractors.

11.3 Notice of Claim.

(a) The party seeking indemnification (the "**Indemnified Party**") shall give prompt written notice to the party from which it seeks indemnification (the "**Indemnifying Party**") of any matter for which the Indemnifying Party may become liable under this Article 11. The notice shall contain full details of the matter in order to provide the Indemnifying Party with sufficient information to assess its potential liability and to undertake defense of a claim under this Article 11.

(b) If any Legal Proceedings shall be instituted or any claim or demand shall be asserted by any Third Party in respect of which indemnification may be sought by any Indemnified Party under this Article 11, such Indemnified Party shall, within twenty (20) days of the actual receipt of Legal Proceedings by a responsible officer, cause written notice of such legal proceedings or the assertion of such claim or demand to be forwarded to the Indemnifying Party, specifying the nature of such legal proceedings, claim, or demand and the amount or the estimated amount to the extent then feasible, which estimate shall not be binding upon the Indemnified Party, in its effort to collect the final amount arising out of such legal proceedings, claim, or demand; *provided, that* the failure of an Indemnified Party to give timely notice shall not affect its rights to indemnification under this Article 11 except to the extent that the Indemnifying Party has been actually damaged by such failure.

11.4 Conduct of Claim. The Indemnifying Party shall have the right, at its option and at its own expense, to be represented by counsel of its choice and to participate in, or take control of, the defense, negotiation, and/or settlement of any proceeding, claim, or demand that relates to any amounts indemnifiable or potentially indemnifiable under this Article 11; *provided, that* the Indemnified Party may

participate in any such proceeding with counsel of its choice if (i) the Indemnifying Party chooses counsel not reasonably acceptable to Indemnified Party, (ii) the Indemnifying Party does not pursue with reasonable diligence such defense, negotiation, or settlement, or (iii) in the reasonable opinion of such Indemnified Party and its counsel, such action, suit, or proceeding involves the potential imposition of criminal liability upon such Indemnified Party or a conflict of interest between such Indemnified Party and the Indemnifying Party; *provided further that*, in the case of clause (i), such participation shall be at such Indemnified Party's own expense and, in the case of clauses (ii) and (iii), such participation shall be at the Indemnifying Party's expense. The Indemnified Party shall have a right to notice of any settlement, and the Indemnifying Party shall not execute or otherwise agree to any consent decree that (x) provides for other than monetary payment without the Indemnified Party's prior written consent, which consent shall not be unreasonably withheld, delayed, or conditioned, or (y) does not include as an unconditional term the giving of a release from all liability with respect to such claim by each claimant or plaintiff to each Indemnified Party that is or may be subject to the Third Party claim, without the Indemnified Party's prior written consent, which consent shall not be unreasonably withheld, delayed, or conditioned. Notwithstanding the foregoing, the Indemnified Party shall have the right to pay or settle any such claim at such Indemnified Party's own expense; *provided, that* in such event it shall waive any right to indemnity by the Indemnifying Party. If the Indemnifying Party elects not to defend or settle such Legal Proceeding, claim, or demand, and the Indemnified Party defends, settles, or otherwise deals with any such Legal Proceeding, claim, or demand directly, the Indemnified Party shall provide fifteen (15) Days advance written notice of any property settlement to the Indemnifying Party and shall act reasonably and in accordance with the Indemnified Party's good faith business judgment. The Indemnifying Party and the Indemnified Party shall cooperate fully with each other in connection with the defense, negotiation, or settlement of any such legal proceeding, claim, or demand.

11.5 Payment of Claim. After final judgment or award shall have been rendered by a court, arbitration board, or administrative agency of competent jurisdiction and the expiration of the time in which to appeal, or a settlement shall have been consummated, or the Indemnified Party and the Indemnifying Party shall have arrived at a mutually binding agreement with respect to each separate matter indemnified by the Indemnifying Party, the Indemnified Party shall forward to the Indemnifying Party notice of any sums due and owing by the Indemnifying Party with respect to such matter, and the Indemnifying Party shall pay all of the sums so owing to the Indemnified Party by cash in immediately available funds within twenty (20) days after the date of such notice.

11.6 Access to Information. If any claim is made by a Third Party against an Indemnified Party, the Indemnified Party shall use commercially reasonable efforts to make available to the Indemnifying Party those partners, shareholders, members, officers, and employees whose assistance, testimony, or presence is necessary to assist the Indemnifying Party in evaluating and defending such claims; *provided, that* any such access shall be conducted in such a manner as not to interfere unreasonably with the operations of the business of the Indemnified Party, and any reasonable and related out-of-pocket expenses incurred by any Indemnified Party shall be included in such Indemnified Party's Losses.

11.7 Disclaimer of Consequential Damages. IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR ANY INDIRECT, CONSEQUENTIAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES AND NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY OF ANY KIND, UNDER ANY CONTRACT, NEGLIGENCE, STRICT

LIABILITY, OR OTHER THEORY, ARISING OUT OF OR RELATING IN ANY WAY TO THIS AGREEMENT.

11.8 Limitation of Liability. EACH PARTY'S AGGREGATE LIABILITY ARISING OUT OF OR RELATING IN ANY WAY TO THIS AGREEMENT UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR OTHER THEORY, SHALL NOT EXCEED AMOUNTS PAID BY THE COMPANY UNDER THIS AGREEMENT. THE LIMITATION OF LIABILITY IN THE FOREGOING SENTENCE SHALL NOT APPLY TO, AND SHALL BE IN ADDITION TO, ANY AMOUNTS PAYABLE UNDER THIS AGREEMENT.

11.9 Exclusions from Limitations on Damages and Liability. NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THIS AGREEMENT, THE LIMITATIONS OF LIABILITY IN SECTION 11.7 AND SECTION 11.8 SHALL NOT APPLY TO (A) CLAIMS RELATING TO A BREACH OF THE PARTY'S CONFIDENTIALITY OBLIGATIONS, OR (B) ANY SUCH DAMAGES PAID OR PAYABLE BY IN CONNECTION WITH A CLAIM FOR WHICH INDEMNIFICATION IS DUE UNDER ARTICLE 11 OR ELSEWHERE IN THIS AGREEMENT.

ARTICLE 12 INSURANCE

12.1 Insurance Requirements. During the Term of this Agreement, Supplier shall maintain the minimum insurance coverage(s), either by one or more policies, including in combination with an excess liability policy, as set forth on Exhibit H and in accordance with the additional general provisions set forth on Exhibit H. To the extent that Supplier employs, utilizes, or contracts with subcontractors and/or independent contractors to perform services relating to this Agreement, Supplier shall require such subcontractors and/or independent contractors to comply with the same insurance requirements as set forth in this Article 12.

12.2 General Provisions. All deductibles in the Supplier insurance policies shall be at Supplier's sole risk. Supplier agrees to provide Purchaser with immediate notification of the receipt of any notice of cancellation or intended cancellation of any of its required insurance. The insurance carriers providing the coverage required by this Article 12 shall be rated at least A- VIII by A.M. Best.

12.3 Insurance Review. On the fifth anniversary of Service Commencement Date and every five (5) years thereafter during the Term of this Agreement, the parties shall review the insurance coverage requirements set forth in this Article 12 and, to the extent commercially available to them, and shall increase the same to bear the same relation to landfill gas-to-energy industry standards applicable to similarly sized facilities in similar locations as they bear on the date of this Agreement.

12.4 Disclaimer. Notwithstanding the foregoing, the existence of the above insurance or coverage(s) shall not limit the liability of Supplier under this Agreement.

ARTICLE 13 CONFIDENTIALITY

13.1 Confidentiality. Neither party nor any of their respective Representatives shall in any manner make Confidential Information of the other party available to any Third Party, except for disclosures to such Representatives (i) who have a "need to know" in order to facilitate such party's

performance under this Agreement, (ii) who are informed of the confidential nature of such Confidential Information furnished to or prepared by it, and (iii) who are directed to treat such Confidential Information confidentially and subject to the same obligations as are applicable to the party receiving such Confidential Information in respect of such Confidential Information and to act in accordance with the other provisions of this Article 13.

13.2 Use of Confidential Information. Each party and its Representatives shall use Confidential Information of the other party only (i) to, and solely to the extent necessary to, facilitate such party's performance under this Agreement, and (ii) for such other purposes, if any, as the other party may expressly authorize in writing.

13.3 Standard of Care. Each party and its Representatives shall take all measures reasonably necessary to protect the confidentiality of the Confidential Information of the other party, including taking such precautions as such party or its Representative, as the case may be, takes to protect its own confidential information.

13.4 Notice of Breach. Each party shall promptly notify the other party if it becomes aware of any unauthorized use or disclosure of any Confidential Information of the other party, and, at the other party's request, shall take all such action as may be reasonably necessary and legally permissible to terminate or remedy any unauthorized use or disclosure that results from any act or omission of such party or any of its Representatives. Each party agrees to be fully responsible for any breach by any of its Representatives of the provisions of this Agreement expressly applicable to such Representatives, and the other party shall be entitled to enforce such applicable provisions of this Agreement against such Representatives as if such Representatives were parties.

13.5 Protected Information. If a party or any of its Representatives are requested or required to disclose any Confidential Information of the other party (the "**Protected Information**") pursuant to any Legal Proceeding, any oral or written request issued by any Governmental Body, or by Law, such party shall, to the extent permitted by Law, provide the other party with prompt written notice of any such request or requirement so that such other party may seek an appropriate protective order or other appropriate remedy or waive compliance with the applicable provisions of this Agreement. If, in the absence of a protective order or other remedy or the receipt of a waiver by such other party, the party or any of its Representatives is nonetheless legally compelled to make such disclosure to any Governmental Body or else stand liable for contempt or suffer other censure or penalty, such party or its Representatives, as the case may be, may, without liability, disclose to such Governmental Body only that portion of the Protected Information which such party or any of its Representatives is, as advised by counsel, legally required to disclose, *provided that* such party shall exercise (at the expense of the disclosing party) good faith efforts to preserve the confidentiality of the Protected Information, including by, if legally permitted, cooperating with the disclosing party to obtain an appropriate protective order or other reliable assurance that confidential treatment will be accorded the Protected Information by such Governmental Body.

13.6 Attorney-Client Privileged Information. If a party's Confidential Information subject to a claim of attorney-client privilege, work product doctrine, or any other ground on which production of such information should not be made, is nevertheless inadvertently produced by such party (or any of its Representatives) to the other party (or any of its Representatives), such production shall in no way prejudice or otherwise constitute a waiver of, or estoppel as to, any claim of privilege, work product, or other ground for withholding production to which the disclosing party would otherwise be entitled. The receiving party

(or any of its Representatives) shall, at the request and expense of the disclosing party, claim or assert (or cooperate in the claim or assertion of) privilege in respect of such Confidential Information.

ARTICLE 14 TERM, DEFAULT AND REMEDIES

14.1 Term. Subject to the other provisions contained herein, this Agreement shall become effective on the Effective Date and shall continue in effect for a period of seventeen (17) years beginning on the Service Commencement Date (the “**Initial Term**”) unless sooner terminated as provided in this Article 14 or elsewhere in this Agreement. Purchaser has the right to extend the term of this Agreement for an additional ten (10) years beyond the Initial Term (the “**Renewal Term**” and together with the Initial Term, the “**Term**”) upon delivery to Supplier of written notice exercising such right no later than twelve (12) months prior to expiration of the Initial Term.

14.2 Events of Default. Each of the following shall constitute an “**Event of Default**” in respect of a party (the “**Defaulting Party**”) under this Agreement:

(a) the failure by the Defaulting Party to pay when due any payment owed, which failure continues unremedied for a period of ten (10) days following notice from the other party (the “**Non-Defaulting Party**”);

(b) the failure by Supplier to provide RNG from the Production Facility for a continuous 14 day period (the “**RNG Non-Delivery Period**”), unless:

(i) such a period is necessary for a planned or scheduled upgrade to the Production Facility, and Supplier provides Purchaser with at least 14 days’ notice of the upcoming interruption;

or

(ii) the failure is the result of any unforeseeable plant shutdown or interruption of gas supply from the landfill; and such failure is not cured by Supplier providing Purchaser within five (5) days after the end of such RNG Non-Delivery Period, RNG (or other natural gas from any temporary source meeting contract specifications) in a total quantity equal to the RNG provided to Purchaser in compliance with minimum quantity delivery requirements of the contract or greater quantities as agreed to at the beginning of the interruption period.

(c) the failure by Supplier to provide operation and maintenance services to the Production Facility consistent with the terms of this Agreement and all applicable industry standards;

(d) the representations and warranties of a party (the Defaulting Party) shall cease to be true and accurate in any material respect at any time during the Term of this Agreement;

(e) the failure by the Defaulting Party to perform any other material obligations or covenants, which failure continues unremedied for a period of thirty (30) days following notice from the Non-Defaulting Party; *provided, however*, if such failure is not capable of being cured within such thirty (30) day period, no Event of Default shall be deemed to have occurred if the Defaulting Party commences curative action within such thirty (30) day period and proceeds

diligently and in good faith thereafter to cure such violation or failure until completion; *provided, further, that* in no event shall such failure continue for more than ninety (90) days despite the Defaulting Party's good faith attempts to cure such failure; and

- (f) the occurrence of a Bankruptcy with respect to such party.

14.3 Remedies. Upon the occurrence, and during the continuation of, an Event of Default, the Non-Defaulting Party may, in its sole discretion, do any one or more of the following:

- (a) suspend its performance under this Agreement;
- (b) terminate this Agreement whereby any and all obligations of the Defaulting Party under this Agreement or any other agreement between or among the parties, including payments or deliveries due, will, at the option of the Non-Defaulting Party, become immediately due and payable or deliverable, as applicable; and
- (c) [reserved.]

In addition, the Non-Defaulting Party shall be entitled to recover from the Defaulting Party all reasonable court costs, attorneys' fees, and expenses incurred by the Non-Defaulting Party in connection with the Defaulting Party's Event of Default, including interest on past due amounts at the Interest Rate. Except where specifically noted in this Agreement, any right or remedy specified in this Agreement shall be in addition to, and not exclusive of, any other right or remedy of the Non-Defaulting Party under Contract, law or equity.

14.4 [Reserved.]

14.5 Survival. The provisions of Articles 6, 9, 10, 11, 13 and 14 and Sections 5.8, 7.7, 16.1, 16.3, 16.4, 16.5, 16.6 16.7, 16.11 and 16.12 hereof shall survive termination or expiration of this Agreement.

ARTICLE 15 EXOGENOUS EVENTS

15.1 Either party may seek to renegotiate the affected terms of this Agreement after the occurrence of an Exogenous Event, as defined and described below, if the total financial impact (positive or negative) of such event exceeds \$100,000 (Exogenous Events Rate Adjustment Threshold).

15.2 "State Initiated Change" shall mean any externally imposed changes in state or local law or regulatory mandates or changes in other precedents governing income, revenue, sales, or property or any new or amended regional, state or locally imposed fees (but excluding the effects of routine annual changes in municipal, county, and state property tax rates and revaluations), which impose new obligations, duties, or undertakings, or remove existing obligations, duties, or undertakings, and which individually decrease or increase a party's costs or revenue.

15.3 "Federally Initiated Change" shall mean any externally imposed changes in the federal tax rates, laws, regulations, or precedents governing income, revenue, or sales taxes or any changes in federally imposed fees, or any externally imposed changes in the federal laws, regulations, or precedents

governing RIN credits, which changes impose new obligations, duties, or undertakings, or remove existing obligations, duties, or undertakings, and which individually decrease or increase a party's costs or revenue.

15.4 The party seeking to renegotiate the affected terms of this Agreement in light of an Exogenous Event shall:

(a) Notify the other party in writing identifying the particular State Initiated Change or Federally Initiated Change that caused the increase or decrease in costs or revenues in excess of the Exogenous Events Rate Adjustment Threshold;

(b) Provide specific and sufficient detail supporting each change, the Exogenous Event associated with each change, and how the change exceeds the Exogenous Events Rate Adjustment Threshold; and

(c) Propose amendments to the Agreement to address the Exogenous Event.

The parties shall then negotiate in good faith to fairly allocate the increase or decrease in the party's costs or revenue caused by the Exogenous Event.

ARTICLE 16

GENERAL PROVISIONS

16.1 Notices. All Consents, requests, agreements, or other communications under this Agreement must be in writing to be effective and shall take effect (or shall be deemed to have been given or delivered, as the case may be): (a) on the Business Day sent, when delivered by hand, or by e-mail or facsimile transmission, during the normal business hours of the recipient (*provided that* if such facsimile or email is delivered after 5:00 p.m. Eastern time or on a day other than a Business Day, then on the next following Business Day), and (b) on the Business Day following the Business Day of sending, if delivered by an internationally recognized overnight courier, in each case, to such party at its address (or number) set forth below or such other address (or number) as the party may specify by notice.

If to Supplier:

Rudarpa North County, LLC

808 East South Temple

Salt Lake City, Utah, 84108

Attn: Jon Lear

E-mail: rbymt@aol.com

If to Purchaser:

Liberty Utilities (EnergyNorth Natural Gas) Corp.
15 Buttrick Road
Londonderry, NH 03053
Attn: William S. Clark

E-mail: William.Clark@LibertyUtilities.com

with a copy to (which shall not constitute notice):

Liberty Utilities (EnergyNorth Natural Gas) Corp.
116 N. Main Street
Concord, NH 03301
Attn: Legal Department

E-mail: Michael.Sheehan@LibertyUtilities.com

16.2 Dispute Resolution. Supplier and Purchaser shall first attempt in good faith to resolve any dispute arising out of or in connection with this Agreement or its performance (including the existence and validity of this Agreement) promptly by negotiation between executives who have authority to settle the controversy and who are at a higher level of management than the Persons with direct responsibility for the administration of this Agreement (a “**Management Representative**”). Within seven (7) Business Days after determining to invoke dispute resolution, the party invoking it shall provide the other party with a written notice of the dispute, a proposed means for resolving the same, and the support for such position. The second party shall respond with the same types of information within seven (7) Business Days of receiving the first party’s notice. Thereafter, the Management Representatives of each party shall meet to discuss the matter and attempt in good faith to reach a negotiated resolution of the dispute. If the parties have not agreed upon a resolution of the dispute within twenty (20) Business Days after the date of the original notice provided under this Section 16.2, or such other time period as the parties may agree in writing to allow for discussions, then either party may pursue its rights and remedies under this Agreement and/or under Law. Notwithstanding any provision to the contrary in this Section 16.2, nothing limits the parties from immediately seeking injunctive relief or specific performance with respect to a breach of Article 13 (Confidentiality).

16.3 Governing Law; Submission to Jurisdiction; Waiver of Jury Trial.

(a) THIS AGREEMENT SHALL BE GOVERNED BY, AND SHALL BE CONSTRUED AND ENFORCED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO ANY OF ITS LAW REGARDING CONFLICTS OF LAW THAT WOULD CALL FOR THE APPLICATION OF THE SUBSTANTIVE LAWS OF ANY JURISDICTION OTHER THAN THE STATE OF NEW YORK.

(b) EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY SUBMITS, FOR ITSELF AND ITS PROPERTY, TO THE EXCLUSIVE JURISDICTION OF THE COURTS OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY AND OF THE UNITED STATES DISTRICT COURT SITTING IN NEW YORK COUNTY, AND ANY APPELLATE COURT FROM ANY THEREOF, IN ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT OR FOR

RECOGNITION OR ENFORCEMENT OF ANY JUDGMENT, AND EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY AGREES THAT ALL CLAIMS IN RESPECT OF ANY SUCH ACTION OR PROCEEDING MAY BE HEARD AND DETERMINED IN SUCH NEW YORK STATE COURT OR, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, IN SUCH FEDERAL COURT. EACH OF THE PARTIES HERETO AGREES THAT A FINAL JUDGMENT IN ANY SUCH ACTION OR PROCEEDING SHALL BE CONCLUSIVE AND MAY BE ENFORCED IN OTHER JURISDICTIONS BY SUIT ON THE JUDGMENT OR IN ANY OTHER MANNER PROVIDED BY LAW. EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY OBJECTION WHICH IT MAY NOW OR HEREAFTER HAVE TO THE LAYING OF VENUE OF ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT IN ANY COURT REFERRED TO IN THIS SECTION 16.3(b). EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE DEFENSE OF AN INCONVENIENT FORUM TO THE MAINTENANCE OF SUCH ACTION OR PROCEEDING IN ANY SUCH COURT.

(c) To the extent that either party has or may acquire any immunity from jurisdiction of any court or from any legal process (whether through service or notice, attachment prior to judgment, attachment in aid of execution, execution, or otherwise) with respect to itself or its property, each such party irrevocably (i) waives such immunity in respect of its obligations with respect to this Agreement, and (ii) submits to the personal jurisdiction of each court described in Section 16.3(b).

(d) THE PARTIES AGREE THAT THEY IRREVOCABLY WAIVE THE RIGHT TO TRIAL BY JURY IN ALL DISPUTES BETWEEN THE PARTIES ARISING OUT OF OR RELATED TO THIS AGREEMENT OR THE CONTEMPLATED TRANSACTIONS.

16.4 Entire Agreement; Amendment. This Agreement (including the schedules and exhibits) contains the entire agreement between the parties with respect to the contemplated transactions, supersedes all prior Contracts and negotiations, if any, and this Agreement (including the schedules and exhibits) may not be amended, supplemented, or discharged except by the written consent of each party.

16.5 Specific Performance. If a party to this Agreement breaches or threatens to breach any provision of this Agreement, the non-breaching party shall have the right to have such provision specifically enforced by the appropriate state court or federal district court in New Hampshire, it being acknowledged and agreed that any such breach or threatened breach shall cause irreparable injury to the non-breaching party and that money damages will not provide adequate remedy, which right shall be in addition to, and not in lieu of, any other rights and remedies available to a non-breaching party under this Agreement, at Law or in equity, all of which shall be independent of the other and severally enforceable, except to the extent such rights and remedies are limited, excluded or disclaimed by this Agreement.

16.6 Waiver. The terms and provisions of this Agreement may be waived, or consent for the departure from its terms and provisions may be granted, only by a written document executed by the party granting such waiver or giving such consent. No such waiver or consent shall be deemed to be or shall constitute a waiver or consent with respect to any other terms or provisions of this Agreement, whether or not similar. Each such waiver or consent shall be effective only in the specific instance and for the specific

purpose for which it was given or granted, and shall not constitute a continuing waiver or consent. No failure or delay by a party to exercise any right, power or remedy under this Agreement, and no course of dealing between the parties, shall operate as a waiver of any such right, power, or remedy of the party. No single or partial exercise by a party of any right, power, or remedy under this Agreement, nor any abandonment or discontinuance of steps to enforce any such right, power, or remedy, shall preclude such party from any other or further exercise thereof or the exercise of any other right, power, or remedy under this Agreement. The election of any remedy by a party shall not constitute a waiver of the right of such party to pursue other available remedies. No notice to or demand on a party not expressly required under this Agreement shall entitle the party receiving the notice or demand to any other or further notice or demand in similar or other circumstances or constitute a waiver of the rights of the party giving the notice or demand to any other or further action in any circumstances without the notice or demand.

16.7 Publicity and Corporate Identity. Supplier shall not use the name, trade name, trademarks, service marks owned by Purchaser, or logos of Purchaser in any publicity releases, news releases, annual reports, product packaging, signage, stationary, print literature, advertising, or websites without securing the prior written approval of Purchaser. The parties shall not, without prior written consent of the other party, represent directly or indirectly that any product or service offered by the party has been approved or endorsed by the other party.

16.8 Counterparts. This Agreement may be executed in counterparts, both of which shall be deemed an original, but all of which together shall constitute one and the same instrument. A signature delivered by facsimile or other similar electronic transmission (including email) shall be considered an original signature. Any Person may rely on a copy or reproduction of this Agreement, and an original shall be made available upon a reasonable request.

16.9 Further Assurances. From time to time, at the reasonable request of either party and without further consideration, the other party shall execute and deliver such additional documents and take all such further action as may be necessary or appropriate to consummate and make effective, in the most expeditious manner practicable, the transactions contemplated by this Agreement or to carry out the terms of this Agreement.

16.10 Severability. Each provision of this Agreement shall be considered severable, and if for any reason any provision of this Agreement is determined to be illegal, invalid, or unenforceable or contrary to any existing or future Law, the illegality, invalidity, or unenforceability shall not impair the operation of or affect those portions of this Agreement that are valid. In lieu of each such illegal, invalid, or unenforceable provision, there shall be added automatically as a part of this Agreement a provision as similar in terms to such illegal, invalid, or unenforceable provisions as may be possible and be legal, valid, and enforceable.

16.11 No Third-Party Beneficiaries. Except as expressly set forth in Article 11 (Indemnity), which are intended to be enforceable by the Persons respectively referenced there, nothing contained in this Agreement shall create or be deemed to create any rights or benefits in any Third Parties.

16.12 Interpretation. The parties acknowledge and agree that: (a) each party and its counsel has reviewed, or has had the opportunity to review, the terms and provisions of this Agreement; (b) any rule of construction to the effect that any ambiguities are resolved against the drafting party shall not be used to interpret this Agreement; and (c) the terms and provisions of this Agreement shall be construed fairly as to

both parties and not in favor of or against either party, regardless of which party was generally responsible for the preparation of this Agreement. The words “include,” “includes” and “including” in this Agreement mean “include/includes/including without limitation” and its correlative usages. The use of “or” is not intended to be exclusive unless expressly indicated otherwise. The use of “good faith” is not intended to require the party subject to such efforts to pay any amount of money or incur any economic detriment. Unless expressly indicated otherwise, (i) the word “day” means a calendar day and not a Business Day and (ii) the word “month” means a calendar month. When either party may take any permissive action, including the granting of a Consent, the exercise of any voting right, the waiver of any provision of this Agreement or otherwise, whether to take such action is in its sole and absolute discretion. The use of the masculine, feminine, or neuter gender or the singular or plural form of words shall not limit any provisions of this Agreement. A statement that an item is listed, disclosed, or described means that it is correctly listed, disclosed, or described, and a statement that a copy of an item has been delivered means a true and correct copy of the item has been delivered. When calculating the period of time before which, within which, or following which any act is to be done or step taken pursuant to this Agreement, the date that is the reference date in calculating such period shall be excluded. If the last day of such period is a non-Business Day, the period in question shall end on the next succeeding Business Day.

16.13 Headings and Captions. The headings and captions of the various articles and sections of this Agreement are for convenience of reference only and shall in no way modify or affect the meaning or construction of any of the terms or provisions of this Agreement.

16.14 Expenses. Except as otherwise specifically set forth in this Agreement, each party shall pay its respective fees and expenses (including the fees of any attorneys, accountants, appraisers, or others engaged by the party) in connection with the preparation or enforcement of, or of any requests for Consents under, this Agreement, including any amendments or waivers to this Agreement.

16.15 Termination of Agreement. The Parent, the Supplier and the Purchaser hereby agree that the certain Second Amended RNG Supply and Transportation Agreement, dated August 30, 2019 between Parent and Purchaser is hereby terminated and of no further force or effect.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the undersigned have executed or caused to be executed and sealed on their behalf this RNG Supply and Transportation Agreement on the date first above written.

RUDARPA North Country, LLC., a Delaware limited liability company

By: Jon M Lear
Name: Jon M Lear
Title: MANAGER

**LIBERTY UTILITIES (ENERGYNORTH
NATURAL GAS) CORP.**, a New Hampshire corporation

Susan
By: Fleck Digitally signed by
Susan Fleck
Date: 2020.10.20
11:33:18 -04'00'
Name: Susan L. Fleck
Title: President

RUDARPA, INC., a Utah corporation, solely for purposes of Section 16.15 of this Agreement.

By: Jon M Lear
Name: Jon M Lear
Title: PRESIDENT

EXHIBIT A
Designated Receipt Points

There will be a total of three Designated Receipt Points as identified below:

1. 10 Broken Bridge Rd. Concord, NH 03301.
2. 43 Production Ave. Keene, NH 03431.
3. 384-386 Plainfield Rd, West Lebanon, NH 03784.

Liberty shall have the option to choose an alternate Designated Receipt Point within the EnergyNorth franchise areas provided that Designated Receipt Point is equal to or shorter distance than the Designated Receipts Points listed above.

Liberty shall have the option to choose an alternate Designated Receipt Point at a distance greater than the Designated Receipt Points listed above for a mutually agreed upon Delivery Adder.

EXHIBIT B
RNG Specifications

Renewable Natural Gas (RNG) Pipeline Gas Quality Specifications

Purpose

This document outlines gas quality specifications for the composition of renewable natural gas (RNG) for injection into the Liberty Utilities gas distribution system. These specifications ensure that RNG to be injected into the system is within expected operating parameters and interchangeable with natural gas.

This document is intended to be used as a guide for evaluating RNG business opportunities or contracting new RNG supply.

Scope

This document covers the pipeline gas quality specifications for RNG for injection into the Liberty Utilities gas distribution system, without respect to biogas sources. It does not include procedures or standards for designing, constructing or operating biogas or biomethane facilities.

Specifications

RNG composition must meet the specifications outlined in Table 1. The values shown in Table 1 represent maximum levels, unless a range of values is indicated. Minimum and maximum pressures will be set for each RNG facility on a case-by-case basis.

In summary, in order to be injected into the Liberty Utilities gas distribution system, RNG must:

- Not contain any contaminants, particles, or other impurities at a concentration that are known as a threat to the integrity of the system, human health, or the environment.
- Have an energy content no lower than 970 btu/scf and no higher than 1110 btu/scf.
- Have a Wobbe Index during normal operation no lower than 1270 and no higher than 1400 btu/scf.
- Not contain more than 2% by volume of carbon dioxide.
- Not contain more than 0.1% - 0.4% by volume of oxygen.
- Not contain more than 4% by volume of total inerts.
- Not contain more than 7lbs / million scf of water content.
- Not contain more than 0.1% - 0.3% by volume of hydrogen.
- Not contain more than .25 grains / 100scf (4.125 ppm) of hydrogen sulfide.
- Not contain more than 1 grain / 100scf (16.5 ppm) of total sulfur.
- Not contain more than 10ppm of ammonia.
- Not contain more than 0.5ppm of total siloxanes (depending on molecular weight).
- Not contain more than 1-2ppm of halocarbons and organochlorinated compounds (depending on molecular weight).
- Be technically free of volatile organic compound, bacteria, particles, and dust.
- Not form liquid hydrocarbons at temperatures of 15°F or higher at the delivery pressure.
- Be delivered at a maximum temperature of 105°F.

Table 1: Renewable Natural Gas – Pipeline Gas Quality Specifications

		Value	Unit	Monitoring Frequency*	Recommended Test
Heating Value	HV	970 - 1110	BTU/scf	Continuous	D1945 / D7164
Wobbe Index	WN	1270 – 1400	BTU/scf	Continuous	D1945 / D7164
Carbon Dioxide	CO ₂	2	% vol	Continuous	D1945
Oxygen	O ₂	0.1 - 0.4	% vol	Continuous	D1945
Total Inerts		4	% vol	Continuous	D1945
Water Content	H ₂ O	7	Lbs/Mscf	Continuous	D1142 / D5454 / D3588
Hydrogen	H ₂	0.1 – 0.3	% vol	Periodic	D1945
Hydrogen Sulfide	H ₂ S	4.125	ppm	Continuous	D4084 / D6228 / D4468 / D5504 / D7166
Total Sulfur	S	16.5	ppm	Periodic	D4084 / D6228 / D4468 / D5504 / D7166
Ammonia	NH ₃	10	ppm	Periodic	D1945
Siloxanes	Si	0.5	ppm	Periodic	E.g., Gas Chromatography (ELCD, AED, MS)
Halocarbons and organochlorinated compounds		1 - 2	ppm	Periodic	E.g., Gas Chromatography / Electrolytic Conductivity Detector
Volatile organic compound	VOCs	Technically free of		Periodic	E.g., Gas Chromatography / Mass Spectrometry (GC/MS)
Bacteria		Technically free of		Periodic	E.g., Most Probable Number Determination of Total Live Bacteria (MPN), others
Particles, dust, etc.		Technically free of		Continuous	E.g., Environmental recommendations 0.1µm filters
Hydrocarbon Dew Point		15 / -9	°F / C°	Continuous	D5504 / D1142
Delivery Temperature (plastic pipe)		105 / 40.5	°F / C°	Continuous	

* In this document, continuous monitoring means real-time or near-real time. Periodic monitoring could be seasonal, semi-annually, or annually. Final monitoring frequency will be defined for each RNG facility

Control and Maintenance

For document control and maintenance purposes, the following table captures important information related to this document.

Review: Annually or as needed
Distribution: Liberty Utilities employees
Regulations: N/A
Related Documents: N/A

EXHIBIT C
Supply Point

The Supply Point shall be the North Country Environmental Services landfill located at 581 Trudeau Rd
Bethlehem, NH 03574

EXHIBIT D
Facility Design Specifications

The LFG to RNG Processing and Production System components shall be fabricated and installed in five (5) Primary Phased / Skid Sections.

Phase 1a

- System Process - Primary H₂S and Sulfur system removal
- Method - Staged activated carbon with vessels. Includes carbon, appurtenances, pumps, drivers, instrumentation and controls
- Supplier - DMT, Montreal, Canada

Phase 1b

- System Process - Trim H₂S and Sulfur system removal - Sizing and final spec to be determined based on LF chromatograph measurements
- Method - Staged activated carbon with vessels. Includes media, appurtenances, pumps, drivers, instrumentation and controls complete
- Supplier - DMT, Montreal, Canada
- Special Notes - Trim system to be installed after Phase 2 system

Phase 2

- System Process - Temperature Swing Absorption System - TSA - for removal of siloxanes, H₂O, VOCs, other NMOCs
- Method - Temperature swing, mole sieves and medias. Includes LFG inlet blower, separator, vessels, piping, medias, chiller systems, VOC flare system, panels, drives, starters, instrumentation and controls complete
- Supplier - Air Sciences, Montreal, Canada

Phase 3

- System Process - Process gas compression and separation / removal of CO₂
- Method - Carborex MS System - Staged membrane separation system. Includes all needed membranes, instrumentation, vessels, valves piping, compressor, drives, panels, starters and controls with master HMI and data logger complete to monitor and track entire system
- Supplier - DMT, Montreal, Canada

Phase 4

- System Process - Nitrogen rejection unit - NRU - for removal of nitrogen, oxygen and other trace from process gas

- Method - PS adsorption using molecular sieve approach - absorbs CH₄ in a staged fashion. Includes compressors, drives, vessels, media, piping, controls, starters, instrumentation, devices and all panels complete
- Supplier - Sep-Pro Systems, Houston

Phase 5

- System Process - Compress RNG from Phase 4 to 3200 - 4000 psig for truck loading
- Method - Natural Gas high compression system. Includes three stage compression systems - lead and lag - with 3 loading tables, gas flow meter and instrumentation. Includes all piping, hardware, panels, starters and controls
- Supplier - Rudarpa North Country LLC.

EXHIBIT E
Supplier Credit Support

[Supplier shall fund an escrow account in the amount of \$500,000. Such escrow will be placed either in a customer account with purchaser or with a third-party escrow agent, in each case subject to mutually agreed provisions governing draws from such escrow.]

EXHIBIT F
Production Facility Purchase and Sale Agreement

To be agreed to by the parties prior to the transfer of the Production Facility

EXHIBIT G
Shortfall Amount Calculation

Delivery Reconciliations: Shortfalls in MASQ for the periods described in section 4.2 of the Supply Contract shall be calculated and credited to the Company by using the following formula: $RSF = (YRR/YMASQ) \times (YMASQ - TDMASQ)$ where:

RSF= Revenue Shortfall
YMASQ= Total of delivery quantities required by the Supply Contract for the reconciliation period.
YRR= Total of all revenue requirements for the reconciliation period.
TDMASQ = Total of actual deliveries for the reconciliation period.

For example, Contract Year 1

YMASQ= 490,000 DTH
YRR= \$1,282,735
TDMASQ = 350,000

Then $RSF = (1,282,735/490,000) \times (490,000 - 350,000)$ or
 $RSF = (2.62) \times (140,000)$ or
 $RSF = \$366,496$ due for Contract Year 1

When there are deliveries in excess of the MASQ requirements during any Contract Year, those excess deliveries may be carried forward to offset future shortfalls. If production continues to be in excess, the yearly credits may accumulate and may carry forward but in no case shall Liberty be responsible for paying for credits not used to offset shortfalls. Excess deliveries may NOT be used to offset prior year MASQ commitments:

For example, Contract Years 2 and 3

YMASQ Year 2= 490,000
YMASQ Year 3= 490,000
Delivered Year 2= 550,000
Delivered Year 3= 400,000
YRR Year 2= \$1,216,398
YRR Year 3= \$1,046,057

Then $RSF = (1,216,398/490,000) \times (490,000 - 550,000)$ or
 $RSF = (2.48) \times (-60,000)$ or
 $RSF = \$148,800$ carry forward credit from Contract Year 2

$RSF = (1,046,057/490,000) \times (490,000 - 400,000)$ or
 $RSF = (2.13) \times (90,000) - 148,000$ or
 $RSF = \$192,133 - \$148,000$
 $RSF = \$44,133$ payment due for Contract Year 3

EXHIBIT H
Supplier Insurance Requirements

1. Supplier shall, at its sole cost and expense, obtain and maintain throughout the Term with reputable insurance companies qualified to do business in New Hampshire, the following insurance:

(a) Comprehensive public liability insurance indemnifying Purchaser, any Purchaser Indemnified Parties and Supplier against all claims and demands for any injury to person (including death) or property which may occur or be claimed to have occurred as a result of the construction, development, operation or maintenance of the Production Facility and the transport of RNG to the Designated Receipt Points by Supplier or its agents or contractors, in amounts which shall at the beginning of the Term, be not less than Ten Million Dollars (\$10,000,000), and, from time to time during the Term, may be for such higher amounts as Purchaser may reasonably require, taking into account the region in which the Production Facility is located and similar facilities property, used for similar purposes;

(b) Workmen's compensation and any other insurance required by law or the nature of Supplier's business;

(c) Automobile or motor vehicle liability insurance in form and substance reasonably satisfactory to Purchaser and with a minimum limit of liability of Ten Million (\$10,000,000) Dollars per occurrence;

(d) Such other insurance with respect to the Premises as reasonably required by Purchaser against loss or damage of the kinds from time to time customarily insured against and in such amounts as required by Purchasers for properties comparable to the Premises.

16.1 Supplier shall furnish Purchaser with certificates or policies of all such insurance prior to the beginning of the Term and of each renewal policy at least ten (10) days prior to the expiration of the policy being renewed. Not less than thirty (30) days written notice will be given by Supplier to Purchaser prior to any material modification or cancellation of the policies.

16.2 During any period or periods of construction by Supplier relating to the Production Facility, including construction completed in part by Purchaser or any of the Purchaser Indemnified Parties, if any, the construction of which (a) is of a type to which Builder's Risk Insurance is applicable and (b) requires the advance written approval of Purchaser, Supplier shall obtain and maintain in effect standard Builder's Risk Insurance or with Purchaser's written consent, which consent may be made at Purchaser's sole discretion, a reasonable equivalent alternative. Any such Builder's Risk Insurance shall be written on a completed value basis, including extended coverage, and utilizing a maximum value at date of completion not less than the greater of (y) the aggregate contract price or prices for the construction of such facilities or (z) the amount which may be required by a mortgagee which is financing such construction. If such construction by Supplier is of a type to which Builder's Risk Insurance is not applicable, Supplier shall provide additional equivalent coverage under the policies as required by Purchaser.

16.3 The foregoing insurance coverages shall be primary and non-contributing with respect to any other insurance of self-insurance that may be maintained by Purchaser. Supplier shall place all

insurances for which Supplier is responsible with an insurer and on terms approved by Purchaser. Each policy required of Supplier herein shall contain a cross liability or severability of interest clause and name Purchaser or any other of Purchaser Indemnified Parties as requested by Purchaser as an additional insured. With the exception of professional liability (if design work is completed) insurance, Supplier shall obtain from each of its insurers a waiver of subrogation in favor of Purchaser, its officers, directors, employees, and agents, and any Purchaser Indemnified Party, its officers, directors, employees, and agents with respect to losses arising out of or in connection with the such work.

Exhibit I
Taxes/ Fees/License/ Franchise/

Responsibility of Supplier

1. Property taxes for the Facility and Leasehold

Property Taxes to Be Assessed.

EXHIBIT J
Site Lease Agreement
[copy attached]

GROUND LEASE

THIS GROUND LEASE (this "Lease"), made as of December 29, 2017 (the "Effective Date"), between NORTH COUNTRY ENVIRONMENTAL SERVICES, INC. (the "LESSOR"), a New Hampshire corporation having an address at 581 Trudeau Road, Bethlehem, NH 03574; and RUDARPA (the "LESSEE"), a Utah corporation having an address at 808 East South Temple, Salt Lake City, Utah 84108.

PRELIMINARY STATEMENT

A certain Landfill Gas Rights Agreement dated as of December 29, 2017 (the "Landfill Agreement") between LESSOR, the owner and operator of the North County Landfill at 581 Trudeau Road, Bethlehem, Coos County, New Hampshire, and LESSEE, requires LESSOR to make available to LESSEE pursuant to the provisions of this Lease, a land area for LESSEE adjacent to the Landfill selected by LESSOR of up to one-and-one-half (1.5) acres in size that is suitable to allow LESSEE to construct, operate, maintain and own all or a part of a facility capable of the production of products derived from the gases that result from the decomposition of refuse material within the said North County Landfill (as more particularly defined in the Landfill Agreement, the "CRNG Facility"). Pursuant to the Landfill Agreement, the LESSOR has selected the land described on Schedule A attached hereto and incorporated herein by reference (the "Demised Premises"), upon which LESSEE will construct, own, maintain and operate the CRNG Facility.

As contemplated by the terms of the Landfill Agreement, LESSOR agreed to lease the Demised Premises to LESSEE on the terms and conditions set forth herein.

NOW, THEREFORE, LESSOR and LESSEE agree as follows:

ARTICLE I – BASIC LEASE DATA/DEFINED TERMS

- 1.1. Basic Rent: \$0.00/None
- 1.2. Commencement Date: The date on which LESSEE has received both (a) approval of the New Hampshire Public Utilities Commission of the construction and operation of the CRNG Facility on the Demised Premises as contemplated by the Landfill Agreement and this Lease, and (b) the adoption by the Town of Bethlehem, New Hampshire of such changes to its zoning regulations as are required for the construction and operation of the CRNG Facility on the Demised Premises as contemplated by the Landfill Agreement and this Lease. This Lease shall terminate if the Commencement Date has not occurred on or prior to the date that is eighteen (18) months following the Effective Date. LESSEE will have no right to occupy or utilize the Demised Premises until the Commencement Date.
- 1.3. Permitted Use: solely to construct, operate, maintain and own the CRNG Facility
- 1.4. Property: the Demised Premises, together with all structures and improvements now existing or hereafter located thereon, with the exception of the LFG Management System on the upstream side of the flange connection point where LESSOR delivers gas to LESSEE
- 1.5. Term: Approximately 19.5 years, beginning on the Commencement Date and ending on the Termination Date
- 1.6. Termination Date: the eighteenth (18th) anniversary of the Commercial Operation Date (as defined in the Landfill Agreement), unless earlier terminated in accordance with this Lease

1.7. Additional capitalized terms used in this Lease, but not defined in the body of this Lease, shall have the definitions ascribed to such terms on Schedule B annexed hereto. Capitalized terms used in this Lease but not otherwise defined in this Lease shall have the meaning ascribed to them in the Landfill Agreement.

ARTICLE 2 - DEMISE; TERM

2.1. LESSOR, for and in consideration of the covenants hereinafter contained and made on the part of LESSEE, does hereby demise and lease to LESSEE, and LESSEE does hereby hire from LESSOR, the Demised Premises for the Term, subject, however, to the terms and conditions of this Lease.

2.2. The Term shall commence on the Commencement Date and shall end on the Termination Date, unless earlier terminated in accordance with this Lease. LESSEE may terminate this Lease at any time by providing written notice to the LESSOR following the seventeenth (17th) anniversary of the Commercial Operation Date (as defined in the Landfill Agreement), provided that LESSEE has first removed the CRNG Facility from the Demised Premises in accordance with Section 12.2 of the Landfill Agreement.

ARTICLE 3 - BASIC RENT; ADDITIONAL RENT; UTILITIES; NET LEASE

3.1. During the Term, LESSEE shall pay to LESSOR the Basic Rent set forth in Section 1.1.

3.2. In addition to the Basic Rent, LESSEE will pay and discharge when due, as additional rent, all other amounts, liabilities and obligations which LESSEE herein agrees to pay to LESSOR pursuant to the terms of this Lease, together with all interest, penalties and costs which may be added thereto pursuant to the terms of this Lease (collectively, "Additional Rent"); each such amount, liability and obligation, together with any interest, penalty and/or cost thereon, shall be deemed Additional Rent regardless of whether it is specifically referred to as Additional Rent in this Lease. LESSOR shall have all the rights, powers and remedies provided for in this Lease or at law or in equity or otherwise for failure to pay Additional Rent as are available for nonpayment of rent.

3.3. If any installment of Additional Rent is not paid within ten (10) days after the date when due, LESSEE shall pay to LESSOR on demand, as Additional Rent, a late charge equal to five percent (5%) of the amount unpaid. In addition, if any installment of Additional Rent accruing hereunder is not paid within twenty (20) days after the date when due, then such installment shall also bear interest at eight percent (8%) from the original due date thereof until the date of payment, inclusive, which interest shall be deemed Additional Rent hereunder and shall be payable to LESSOR on demand.

3.4. From and after the Commencement Date, LESSEE will contract for and pay all charges for electricity, gas, fuel oil, water, sewer, telephone, internet, cable and all other services or utilities at any time rendered or used on or about the Demised Premises to the company providing the same before any interest or penalty may be added thereto. LESSEE acknowledges and agrees that LESSOR is not obligated to provide any services or utilities to the Demised Premises or to LESSEE, except landfill gas and condensate disposal pursuant to the Landfill Agreement.

3.5. This is a net lease, and except as herein provided, LESSEE hereby covenants and agrees to pay to LESSOR during the Term, at the address designated in Article 20, attention Chief Accounting Officer, or such other place as LESSOR may from time to time designate, without any offset, set-off, counterclaim, deduction, defense, abatement, suspension, deferment or diminution of any kind (i) Additional Rent and (ii) all other sums payable by LESSEE hereunder, if any, that do not constitute Additional Rent. Except as otherwise expressly provided herein, this Lease shall not terminate, nor shall LESSEE have any right to terminate or avoid this Lease or be entitled to the abatement of any Additional Rent or other sums payable hereunder or any reduction thereof, nor shall the obligations and liabilities of LESSEE hereunder be in

any way affected for any reason. The obligations of LESSEE hereunder shall be separate and independent covenants and agreements.

3.6. The receipt by LESSOR of any installment of Additional Rent with knowledge of a default by LESSEE under the terms and conditions of this Lease shall not be deemed a waiver of such default. No payment by LESSEE or receipt by LESSOR of a lesser amount than the rent herein stipulated shall be deemed to be other than on account of the earliest stipulated rent, nor shall any endorsement or statement on any check or any letter accompanying any check or payment as rent be deemed an accord and satisfaction, and LESSOR may accept such check or payment without prejudice to LESSOR'S right to recover the balance of such rent or pursue any other remedy in this Lease provided.

ARTICLE 4 - TAXES

4.1. If all or any portion of the Property is taxed separately from property of the LESSOR, LESSEE shall pay all separately taxed Taxes for each tax year occurring during the Term directly to the governmental entity, authority or agency to whom the Taxes are payable; said payments shall be made on or before the date on which the installments of Taxes are due. LESSEE shall be responsible for the payment of all fines, penalties, interest and/or late charges incurred as a result of LESSEE'S failure to timely pay any installment of the Taxes becoming due during the Term.

4.2. In the event the Property or any portion thereof is taxed together with other property of the LESSOR, LESSEE shall pay LESSOR on demand Taxes based upon an allocation method reasonably determined by LESSOR for the property occupied by LESSEE. LESSOR shall provide LESSEE with a copy of the applicable tax bill and the allocation method used by LESSOR at the time of demand.

4.3. Tenant shall pay all personal property taxes and license fees assessed against Tenant's furniture, fixtures, equipment and other personal property located on the Demised Premises during the Term.

ARTICLE 5 - LESSEE'S INSURANCE

5.1. During the Term, LESSEE will maintain with insurers authorized to do business in the State of New Hampshire such insurance policies and coverages indicated in and in accordance with Section 11 of the Landfill Agreement, the terms of which are incorporated herein by reference, together with such other insurance with respect to the Property in such amounts and against such insurable exposures as may reasonably and customarily be required by any mortgagee holding a first lien upon the Demised Premises.

5.2. On the Commencement Date, LESSEE shall deliver to LESSOR original or duplicate certificates of the insurers evidencing all the insurance which is required to be maintained hereunder by LESSEE, and, within ten (10) days prior to the expiration of any such insurance, other original or duplicate certificates evidencing the renewal of such insurance.

5.3. LESSOR hereby waives and releases LESSEE, and LESSEE hereby waives and releases LESSOR, from any and all liabilities, claims and losses for which the released party is or may be held liable to the extent of any insurance proceeds received by said injured party.

ARTICLE 6 - MAINTENANCE and ALTERATIONS

6.1. (a) LESSEE agrees, at its sole cost and expense, to keep the Property in good order and condition and in compliance with industry standards, and to perform all maintenance, repairs, alterations, and replacements to the Property, whether ordinary or extraordinary, foreseen or unforeseen, and to take such other action as may be necessary or appropriate, to keep and maintain the Property in good order and condition. Such obligation includes, without limitation, the obligation to (i) make all repairs (structural or otherwise) to the CRNG Facility (including all systems servicing the same), (ii) replace the CRNG

Facility's roof if the repair thereof is not a commercially reasonable alternative, (iii) replace the component of any system servicing the CRNG Facility that has failed if the repair thereof is not a commercially reasonable alternative, (iv) repair or replace any broken exterior windows and clean the exterior windows from time to time as necessary, (v) replace all lamps, bulbs and ballasts for the lights located within or on the CRNG Facility or elsewhere on the Demised Premises, (vi) maintain any landscaping in good condition, which includes replacing any flowers, shrubs, plants or trees from time to time as necessary, (vii) maintain and repair the walkways, driveways and parking areas on the Demised Premises, and resurface the same from time to time during the Term as and when reasonably required, (viii) keep the walkways, driveways and parking areas clean and free from snow and ice, and (ix) keep the Property in a clean and sanitary condition, and to cause the garbage and trash to be removed therefrom on a regular basis (not less frequently than once a week).

(b) LESSOR is not obligated to maintain or make any repairs, improvements or replacements to the Property.

6.2. Any such maintenance, repair or replacement to the Property by LESSEE, and each addition, improvement or alteration to the Property by LESSEE, (i) must not, individually or in the aggregate, lessen the fair market value of the Property or adversely affect the usefulness of the Property for the Permitted Use, (ii) shall be completed expeditiously in a good and workmanlike manner, and in compliance with all applicable Legal Requirements and Insurance Requirements, and (iii) shall be completed free and clear of all Liens.

6.3. (a) LESSEE may, upon prior notice to LESSOR, make non-structural additions, improvements, or alterations to the Property.

(b) LESSEE shall not make structural additions, improvements or alterations to the Property (hereinafter referred to as "Major Work"), including without limitation the construction of the CRNG Facility, unless LESSEE first submits to LESSOR detailed plans and specifications therefor and LESSOR approves such plans and specifications in writing, which approval shall not be unreasonably withheld, conditioned, or delayed beyond ten (10) business days of LESSEE's completed submission.

6.4. (a) All additions, improvements and alterations to the Demised Premises, including without limitation the CRNG Facility, shall be and remain the property and/or responsibility of LESSEE, and shall be removed by LESSEE in their entirety on or before first anniversary of the Termination Date. The obligation to remove said additions, improvements and alterations shall survive the Termination Date.

(b) LESSEE may install or place or reinstall or replace and remove from the CRNG Facility any trade equipment, machinery and personal property belonging to LESSEE and used in connection with the Permitted Use. Such trade equipment, machinery and personal property shall not become the property of LESSOR.

ARTICLE 7 - USE OF DEMISED PREMISES

7.1. LESSEE shall not, except with the prior consent of LESSOR, use or suffer or permit the use of the Property or any part thereof for any purposes other than for the Permitted Use.

7.2. LESSEE shall not use, or suffer or permit the use of, the Property or any part thereof in any manner or for any purpose or do, bring or keep anything, or suffer or permit anything to be done, brought or kept, therein (including, but not limited to, the installation or operation of any electrical, electronic or other equipment) (i) which is unlawful or in contravention of the certificates of occupancy for the CRNG Facility, or is in contravention of any Legal Requirements or Insurance Requirement to which the CRNG Facility or the Property are subject, or (ii) suffer or permit the CRNG Facility or any component thereof

to be used in any manner which would exceed structural integrity or result in the use of the CRNG Facility or any component thereof in a manner or for a purpose not intended.

ARTICLE 8 – INDEMNIFICATION

8.1. LESSEE hereby indemnifies, and shall pay, protect and hold LESSOR harmless from and against all liabilities, losses, claims, demands, costs, expenses (including attorneys' fees and expenses) and judgments of any nature, (except to the extent LESSOR is compensated by insurance maintained by LESSEE hereunder and except for such of the foregoing as arise from the gross negligence or willful misconduct of LESSOR, its agents, servants or employees), arising, or alleged to arise, from or in connection with, (a) any injury to, or the death of, any person or loss or damage to property on or about the Demised Premises, (b) any violation of this Lease or of any Legal Requirements or Insurance Requirement, or (c) performance of any labor or services or the furnishing of any materials or other property in respect of the Property or any part thereof. LESSEE will resist and defend any action, suit or proceeding brought against LESSOR by reason of any such occurrence by independent counsel selected by LESSEE, which is reasonably acceptable to LESSOR. The obligations of LESSEE under this Article 8 shall survive any termination of this Lease.

8.2. LESSEE agrees to make no claim against LESSOR for any injury or damage to, or loss (by theft or otherwise) of, any property of LESSEE or of any other person, it being understood that LESSEE assumes all risk in connection therewith.

ARTICLE 9 - COMPLIANCE WITH REQUIREMENTS

9.1. LESSEE will (i) comply with all Legal Requirements and Insurance Requirements applicable to the Property and the use thereof and (ii) obtain, maintain and comply with all permits, licenses and other authorizations required by any governmental authority for its use of the Property and for the proper operation, maintenance and repair of the Property or any part thereof. LESSOR will join in the application for any permit or authorization with respect to Legal Requirements if such joinder is necessary.

9.2. Except as required for the Permitted Use and then only in full compliance with all applicable Environmental Law: (i) LESSEE shall not cause or permit any "hazardous substance" or "hazardous waste" (as such terms are defined in any Environmental Law) to be brought, kept or stored on or about the Property, and (ii) LESSEE shall not engage in, or permit any other person or entity to engage in, any activity, operation or business on or about the Property which involves the generation, manufacture, refining, transportation, treatment, storage, handling or disposal of hazardous substances and/or hazardous wastes.

9.3. LESSEE shall deliver promptly to LESSOR a true and complete photocopy of any correspondence, notice, report, sampling, test, finding, declaration, submission, order, complaint, citation or any other instrument, document, agreement and/or information submitted to, or received from, any governmental entity, department or agency in connection with any Environmental Law relating to or affecting LESSEE, LESSEE'S employees, LESSEE'S use and occupancy of the Property.

9.4. (a) If a spill or discharge of a hazardous substance or a hazardous waste occurs on the Property, LESSEE shall give LESSOR immediate oral and written notice of such spill and/or discharge, setting forth in reasonable detail all relevant facts. In the event such spill or discharge arose out of or in connection with LESSEE'S use and occupancy of the Property, or in the event such spill or discharge was caused by the act, negligence or omission of LESSEE or LESSEE'S Visitors, then LESSEE shall pay all costs and expenses relating to compliance with the applicable Environmental Law (including, without limitation, the reasonable out-of-pocket costs and expenses of the site investigations and of the removal and remediation of such hazardous substance or hazardous wastes).

(b) Without relieving LESSEE of its obligations under this Lease and without waiving any default by LESSEE under this Lease, LESSOR shall have the right, but not the obligation, to take such action as LESSOR deems reasonably necessary or advisable to cleanup, remove, resolve or minimize the impact of or otherwise deal with any spill or discharge of any hazardous substance or hazardous waste. In the event such spill or discharge arose out of or in connection with LESSEE'S use and occupancy of the Property, or in the event such spill or discharge was caused by the act, negligence or omission of LESSEE or LESSEE'S Visitors, then the following provisions shall apply: (i) LESSOR agrees not to exercise its right to cleanup, remove, resolve or minimize the impact of or otherwise deal with such spill or discharge until after the giving of any applicable notice to LESSEE and the expiration of any applicable cure or grace period, except in the case of an emergency; and (ii) if LESSEE elects to take any action to cleanup, remove, resolve or minimize the impact of or otherwise deal with such spill or discharge, then LESSEE shall pay to LESSOR within thirty (30) days after demand, as Additional Rent, all reasonable out-of-pocket costs and expenses incurred by LESSOR in connection with any action taken by LESSOR.

9.5. LESSEE hereby agrees to defend, indemnify and hold LESSOR harmless from and against any and all claims, losses, liability, damages and expenses (including, without limitation, site investigation costs, removal and remediation costs and reasonable attorneys' fees and disbursements) (except to the extent LESSOR is compensated by insurance maintained by LESSOR or LESSEE hereunder or caused by the gross negligence or willful misconduct of LESSOR or LESSOR'S employees or contractors) arising out of or in connection with (i) LESSEE'S use and occupancy of the Property, (ii) any spill or discharge of a hazardous substance or hazardous waste by LESSEE or LESSEE'S Visitors and/or (iii) LESSEE'S failure to comply with the provisions of this Article 9.

9.6. LESSEE'S obligations under this Article 9 shall survive the expiration or earlier termination of this Lease.

ARTICLE 10 - DISCHARGE OF LIENS

LESSEE will discharge within fifteen (15) days after receipt of notice thereof any Lien on the Demised Premises or Additional Rent, caused by or arising out of LESSEE'S acts or LESSEE'S failure to perform any obligation hereunder.

ARTICLE 11 - ASSIGNMENT AND SUBLETTING

11.1. (a) LESSEE shall not sell, assign, transfer, hypothecate, mortgage, encumber, grant concessions or licenses, sublet, or otherwise dispose of any interest in this Lease or the Demised Premises, by operation of law or otherwise, without the prior written consent of LESSOR, which consent shall be in LESSOR'S sole and absolute discretion. Any consent granted by LESSOR in any instance shall not be construed to constitute consent with respect to any other instance or request. If the Demised Premises or any part thereof should be sublet, used, or occupied by anyone other than LESSEE, or if this Lease should be assigned by LESSEE, LESSOR shall have the right to collect rent from the assignee, subtenant, user or occupant, but no such assignment, subletting, use, occupancy or collection shall be deemed a waiver of any of LESSOR'S rights under the provisions of this Article 11, a waiver of any of LESSEE'S covenants contained in this Article 11, the acceptance of the assignee, subtenant, user or occupant as tenant, or a release of LESSEE from further performance by LESSEE of LESSEE'S obligations under the Lease.

(b) Each of the following events shall be deemed to constitute an assignment of this Lease and each shall require the prior written consent of LESSOR: (i) any assignment or transfer of this Lease by operation of law; or (ii) any hypothecation, pledge, or collateral assignment of this Lease; or (iii) any involuntary assignment or transfer of this Lease in connection with bankruptcy, insolvency, receivership, or similar proceeding; or (iv) any assignment, transfer, disposition, sale or acquisition of a controlling interest in LESSEE to or by any person, entity, or group of related persons or affiliated entities, whether

in a single transaction or in a series of related or unrelated transactions; or (v) any issuance of an interest or interests in LESSEE (whether stock, partnership interests, or otherwise) to any person, entity, or group of related persons or affiliated entities, whether in a single transaction or in a series of related or unrelated transactions, which results in such person, entity, or group holding a controlling interest in LESSEE. For purposes of the immediately foregoing, a "controlling interest" of LESSEE shall mean 50% or more of the aggregate issued and outstanding equitable interests (whether stock, partnership interests, or otherwise) of LESSEE.

11.2. No assignment of this Lease nor any sublease of all or any portion of the Demised Premises shall release or discharge LESSEE from any liability, whether past, present, or future, under this Lease and LESSEE shall continue to remain primarily liable under this Lease.

ARTICLE 12 - CASUALTY

12.1. If there is any damage to or destruction of the Property, LESSEE shall promptly give notice thereof to LESSOR, describing the nature and extent thereof.

12.2. If the Property shall be damaged or destroyed by fire or other casualty, in whole or in part, LESSEE shall promptly and diligently repair, rebuild and restore the Property, at its sole cost and expense, to a condition at least equal to the condition thereof prior to such damage or destruction.

12.3. This Lease shall continue in full force and effect notwithstanding such damage or destruction and notwithstanding the amount of insurance proceeds collected by LESSEE. In addition, the Additional Rent payable hereunder shall not be diminished or otherwise abate as a result of such damage or destruction of the Property.

ARTICLE 13 - CONDEMNATION

13.1. In the event of a Taking of the whole or any material part of the Demised Premises, then the Term shall cease and terminate as of the date when possession is taken by the condemning authority and all Additional Rent shall be paid up to that date. For the purposes of this Article 13, the phrase "material part" shall mean any portion of the Demised Premises, the taking or sale of which would, in LESSEE'S reasonable, good faith business judgment, render the balance of the Demised Premises unusable or uneconomical or prevent LESSEE from economically continuing its business from the Demised Premises.

13.2. In the event of a permanent Taking of less than a material part of the Demised Premises, this Lease shall continue in full force and effect.

ARTICLE 14 - EVENTS OF DEFAULT

14. 1. Any of the following occurrences, conditions or acts shall constitute an "Event of Default" under this Lease:

a. if LESSEE shall default in making payment when due of any Additional Rent or other amount payable by LESSEE hereunder, and such default shall continue for thirty (30) days after LESSOR shall have given notice to LESSEE specifying such default and demanding that the same be cured (or ten (10) days in the case of a payment default); or

(b) if LESSEE shall file a petition in bankruptcy pursuant to the Bankruptcy Code or under any similar federal or state law, or shall be adjudicated a bankrupt or become insolvent, or shall commit any act or bankruptcy as defined in any such law, or shall take any action in furtherance of any of the foregoing; or

(c) if a petition or answer shall be filed proposing the adjudication of LESSEE as a bankrupt pursuant to the Bankruptcy Code or any similar federal or state law, and (i) LESSEE shall consent to the filing thereof, or (ii) such petition or answer shall not be discharged or denied within sixty (60) days after the filing thereof; or

(d) if a receiver, trustee or liquidator (or other similar official) of LESSEE or of all or substantially all of its business or assets or of the estate or interest of LESSEE in the Demised Premises shall be appointed and shall not be discharged within sixty (60) days thereafter or if LESSEE shall consent to or acquiesce in such appointment; or

(e) if the estate or interest of LESSEE in the Demised Premises shall be levied upon or attached in any proceeding and such process shall not be vacated or discharged within sixty (60) days after such levy or attachment; or

(f) the occurrence of any event giving LESSOR the right to terminate the Landfill Agreement, including without limitation pursuant to Sections 4.3 and 14.1(a) thereof; or

(g) if LESSEE shall default in the observance or performance of any provision of this Lease other than those provisions contemplated by clause (a) through (f), inclusive, of this Section 14.1, and such default shall continue for thirty (30) days after LESSOR shall have given notice to LESSEE specifying such default and demanding that the same be cured.

ARTICLE 15 - CONDITIONAL LIMITATIONS; REMEDIES

15.1. This Lease and the Term and estate hereby granted are subject to the limitation that whenever an Event of Default shall have happened and be continuing, LESSOR shall have the right, at its election, then or thereafter while any such Event of Default shall continue, to exercise any remedies available to LESSOR at law and equity, including without limitation, the remedy of forcible entry and detainer, and LESSOR lawfully may, immediately or at any time thereafter, and without demand or notice, mail a notice of termination to LESSEE, or enter into and upon the Demised Premises or any part thereof in the name of the whole and repossess the same as of its former estate, and expel LESSEE and those claiming through or under it and remove it or their effects without being deemed guilty of any manner of trespass, and without prejudice to any remedies which might otherwise be used for arrears of rent or preceding breach of covenant, and upon such mailing or entry as aforesaid, this Lease shall terminate; and LESSEE covenants and agrees, notwithstanding any entry or re-entry by LESSOR, whether by summary proceedings, termination, or otherwise, that LESSEE shall, as of the date of such termination, immediately be liable for and pay to LESSOR the entire unpaid Additional Rent and all other balances due under this Lease for the remainder of the Term.

15.2. In the event that LESSOR does not elect to terminate this Lease, LESSOR may, at its sole discretion, and for so long as LESSOR does not terminate LESSEE'S right to possession of the Demised Premises, enforce all of its rights and remedies under this Lease, including the right to recover all Additional Rent and other payments as they become due hereunder. Additionally, LESSOR shall be entitled to recover from LESSEE all costs of maintenance and preservation of the Property, and all costs, including attorneys' and receiver's fees, incurred in connection with the appointment of or performance by a receiver to protect the Property and LESSOR'S interest under this Lease.

15.3. Nothing herein shall be deemed to affect the right of LESSOR to indemnification pursuant to Articles 8 and 9 of this Lease.

15.4. If LESSEE shall be in default in the observance or performance of any provision of this Lease, and an action shall be brought for the enforcement thereof in which it shall be determined that LESSEE

was in default, LESSEE shall pay to LESSOR all fees, costs and other expenses which may become payable as a result thereof or in connection therewith, including attorneys' fees and expenses.

15.5. Except as otherwise provided in this Article 15, no right or remedy herein conferred upon or reserved to LESSOR is intended to be exclusive of any other right or remedy, and every right and remedy shall be cumulative and in addition to any other legal or equitable right or remedy given hereunder, or now or hereafter existing. No waiver by LESSOR of any provision of this Lease shall be deemed to have been made unless expressly so made in writing. LESSOR shall be entitled, to the extent permitted by law, to injunctive relief in case of the violation, or attempted or threatened violation, of any provision of this Lease, or to a decree compelling observance or performance of any provision of this Lease, or to any other legal or equitable remedy.

Any dispute arising under this Lease not involving a request for injunctive or similar relief shall be resolved in accordance with the mediation and arbitration provisions of the Landfill Agreement.

ARTICLE 16 - ACCESS

16.1. LESSOR and LESSOR'S agents and representatives shall have the right to enter into or upon the Property, or any part thereof, at all reasonable hours, upon reasonable prior notice (except in the case of an emergency), for the following purposes: (i) examining the Property; (ii) showing the Property during the Term to any mortgagees, tenants, or prospective purchasers of the Demised Premises; or (iii) all other reasonable purposes.

16.2. LESSOR, in exercising any of its rights under this Article 16, shall not be deemed guilty of an eviction, partial eviction, constructive eviction or disturbance of LESSEE'S use or possession of the Demised Premises and shall not be liable to LESSEE for same.

16.3. Nothing contained in this Article 16 shall be deemed to relieve LESSEE of any duty, obligation or liability of LESSEE with respect to making any repair, replacement or improvement or complying with any Legal Requirement.

ARTICLE 17 - SUBORDINATION

This Lease and the term and estate hereby granted shall be subject and subordinate to the lien of any mortgage that may now or at any time hereafter affect all or any portion of the Demised Premises or LESSOR'S interest therein; provided, however, that LESSOR shall use commercially reasonable efforts to procure from any holder of such mortgage a commercially reasonable Subordination, Non-Disturbance and Attornment Agreement.

ARTICLE 18 - LESSEE'S REMOVAL

Upon the expiration or earlier termination of this Lease, and unless otherwise agreed upon in writing by LESSOR, LESSEE shall surrender the Demised Premises free of any and all personal property, buildings, structures and improvements thereon, the same having been removed by LESSEE in accordance with all Legal Requirements and Insurance Requirements.

ARTICLE 19 - BROKERS

LESSEE represents to LESSOR that no real estate broker or sales representative participated in this transaction or has any interest herein. LESSEE agrees to indemnify and hold harmless LESSOR and its directors, officers, employees and partners from and against any threatened or asserted claims, liabilities, losses or judgments (including reasonable attorneys' fees and disbursements) by any broker or sales

representative arising out of or in connection with this Lease. The provisions of this Article shall survive the expiration or sooner termination of this Lease.

ARTICLE 20 - NOTICES

Any notice, demand or communication concerning the Lease shall be in writing and shall be deemed sufficiently given or rendered if delivered in accordance with Section 17 of the Landfill Agreement.

ARTICLE 21 - NATURE OF LESSOR'S OBLIGATIONS

Anything in the Lease to the contrary notwithstanding, no recourse or relief shall be had under any rule of law, statute or constitution or by any enforcement of any assessments or penalties, or otherwise or based on or in respect of this Lease (whether by breach of any obligation, monetary or non-monetary), against LESSOR, it being expressly understood that all obligations of LESSOR under or relating to this Lease are solely obligations payable out of the Demised Premises and are compensable solely therefrom. It is expressly understood that all such liability is and is being expressly waived and released as a condition of and as a condition for the execution of this Lease, and LESSEE expressly waives and releases all such liability as a condition of, and as a consideration for, the execution of this Lease by LESSOR.

ARTICLE 22 – SECURITY DEPOSIT

22.1. Not later than the Commencement Date, LESSEE shall deposit with LESSOR the sum of \$10,000, which shall be held by LESSOR as security for the full and faithful performance by LESSEE of the terms and conditions by it to be observed and performed hereunder. If any Additional Rent or other sum payable by LESSEE to LESSOR becomes overdue and remains unpaid, or should LESSOR make any payments on behalf of LESSEE, or should LESSEE fail to perform any of the terms and conditions of this Lease, then LESSOR, at its option, and without prejudice to any other remedy which LESSOR may have on account thereof, shall appropriate and apply said deposit, or so much thereof as may be required to compensate or reimburse LESSOR, as the case may be, toward the payment of Additional Rent or other such sum payable hereunder, or loss or damage sustained by LESSOR due to the breach or failure to perform on the part of LESSEE, and upon demand, LESSEE shall restore such security to the amount then required under this Lease.

22.2. Provided that no Event of Default shall exist and be continuing as of the Termination Date, said deposit, if any, without interest, shall be returned in full to LESSEE within thirty (30) days after the end of the Term.

22.3. In the event of bankruptcy or other debtor/creditor proceeding against LESSEE, such security deposit, if any, shall be deemed to be applied first to the payment of rent and other charges due LESSOR for all periods prior to filing of such proceedings.

22.4. In the event of any transfer of title to the Demised Premises, or any assignment of LESSOR'S interest under this Lease, LESSOR shall have the right to transfer the security deposit, if any, to said transferee or assignee, and, provided that LESSOR procures and provides to LESSEE an acknowledgement of the receipt of the security deposit by said transferee or assignee, LESSOR shall thereupon be released by LESSEE from all liability for the return of such security deposit. In such event, LESSEE agrees to look to the new lessor for the return of the security deposit. It is hereby agreed that the provisions of this Section shall apply to every transfer or assignment made of the security deposit to a new lessor.

ARTICLE 23 -MISCELLANEOUS

23.1. This Lease may not be amended, modified or nor may any obligation hereunder be waived, orally, and no such amendment, modification, termination or waiver, shall be effective unless in writing and signed by the party against whom enforcement thereof is sought. No waiver by LESSOR of any obligation of LESSEE hereunder shall be deemed to constitute a waiver of the future performance of such obligation by LESSEE. If any provision of this Lease or any application thereof shall be invalid or unenforceable, the remainder of this Lease and any other application of such provision shall not be affected thereby. This Lease shall be binding upon and inure to the benefit of and be enforceable by the respective successors and assigns of the parties hereto, except as provided in Article 11. Upon due performance of the covenants and agreements to be performed by LESSEE under this Lease, LESSOR covenants that LESSEE shall and may at all times peaceably and quietly have, hold and enjoy the Demised Premises during the Term. The article headings are for convenience of reference only and shall not limit or otherwise affect the meaning hereof. Schedules A and B annexed hereto are incorporated into this Lease. This Lease will be simultaneously executed in several counterparts, each of which when so executed and delivered, shall constitute an original, fully enforceable counterpart for all purposes. This Lease shall be governed by and construed in accordance with the laws of the State of New Hampshire.

23.2. The term "LESSOR," as used in this Lease, shall mean only the owner of the title to the Demised Premises as of the date in question. Upon the sale, transfer or other conveyance by LESSOR of the Demised Premises, LESSOR shall be released from any and all liability under this Lease arising after the date of such sale, transfer or other conveyance without further instrument or agreement.

(Remainder of page intentionally left blank; signature page follows.)

IN WITNESS WHEREOF, the parties have executed this Lease as of the date first above written.

LESSOR:

NORTH COUNTRY ENVIRONMENTAL SERVICES, INC.

By: [Signature]
Title: President & Sec.
Date: Oct 29 2017

LESSEE:

RUDARPA

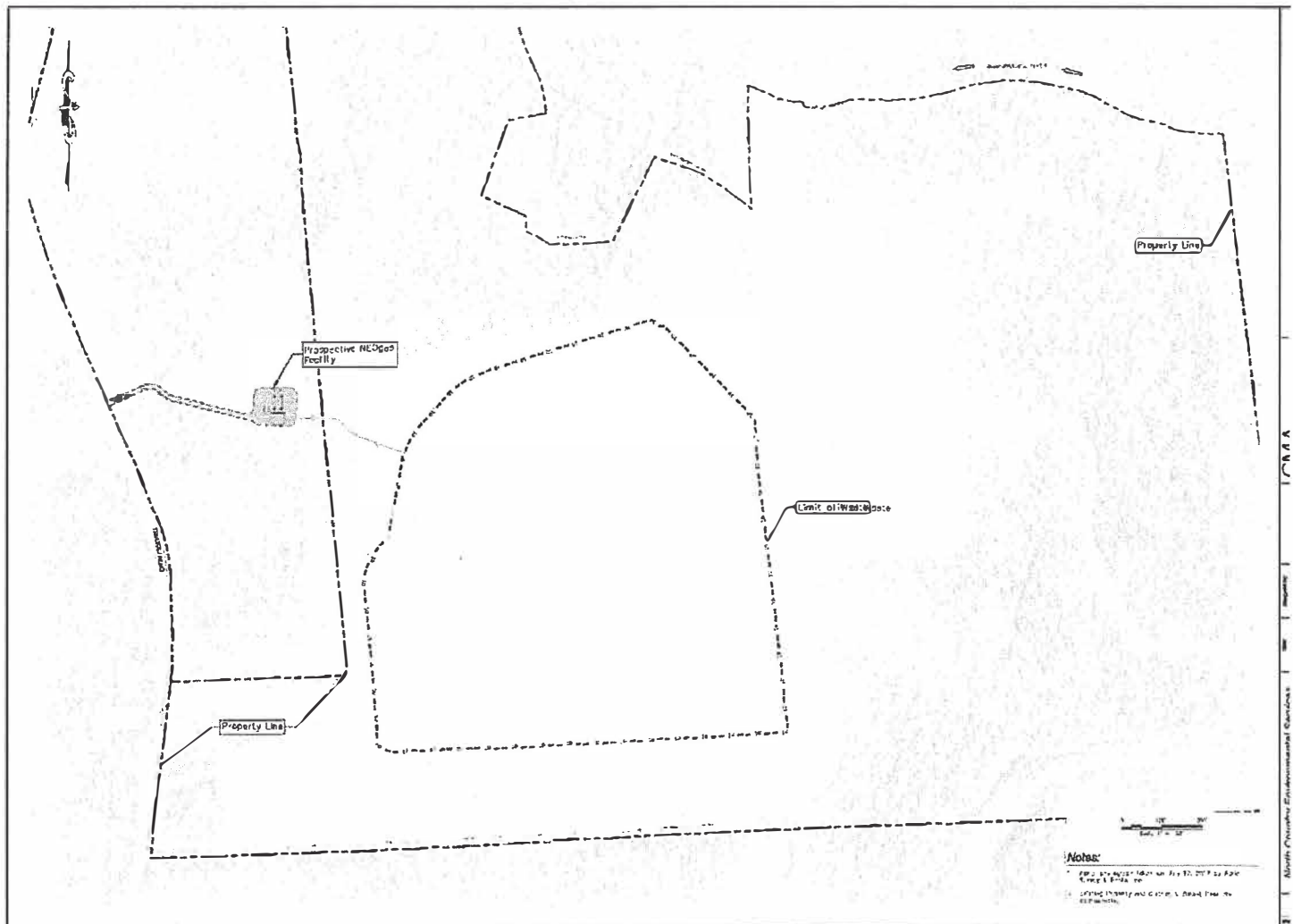
By: [Signature]
Title: President
Date: 12/30/17

SCHEDULE A

DESCRIPTION OF LAND

All that land and premises situate, lying and being in the Town of Bethlehem, County of Coos, and State of New Hampshire and described as follows:

RUDARPA SITE



SCHEDULE B

DEFINITIONS

As used in this Lease, the following terms have the following respective meanings:

Environmental Laws: all current and future statutes, regulations, codes and ordinances of any governmental entity, authority, agency and/or department relating to (i) air emissions, (ii) water discharges, (iii) noise emissions, (iv) air, water, soil or groundwater pollution, (v) tanks and tank licensing, or (vi) any other environmental or health matter, including, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq. and the regulations promulgated thereunder.

Hazardous Material: any chemicals or other materials or substances that are defined as hazardous substances, hazardous wastes, toxic substances, pollutants or contaminants under any law of the United States or the State of New Hampshire, including, without limitation, any petroleum, waste oil, and wastes.

Insurance Requirements: all terms of any insurance policy maintained by LESSEE with respect to the Property and all requirements of the National Board of Fire Underwriters (or any other body exercising similar function) applicable to or affecting all or any part of the Property.

Legal Requirements: all statutes, regulations, codes and ordinances of any governmental entity, authority, agency and/or department, which now or at any time hereafter may be applicable to the Property or any part thereof, including, but not limited to, all Environmental Laws.

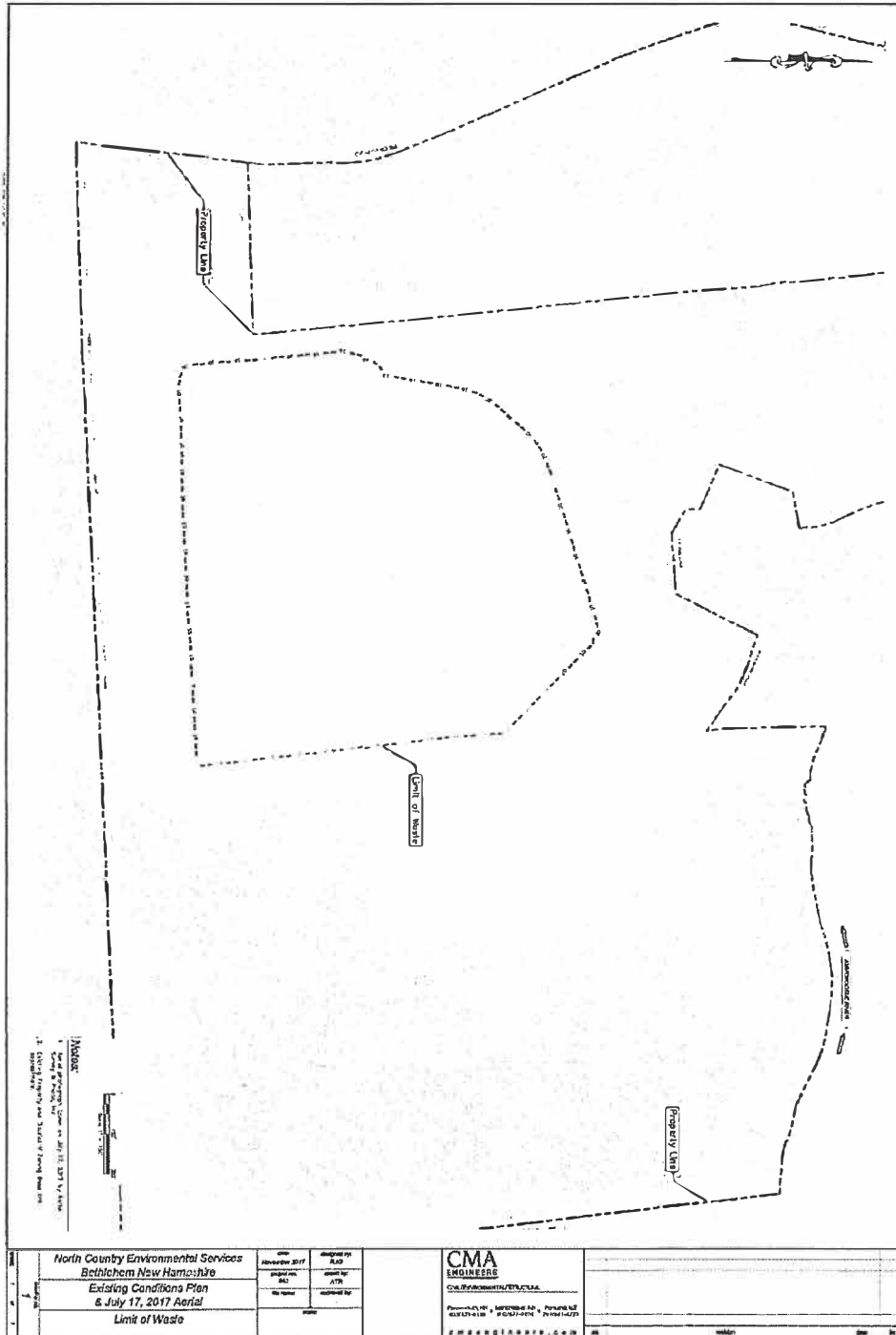
LESSEE'S Visitors: LESSEE'S agents, servants, employees, subtenants, contractors, invitees, licensees and all other persons invited by LESSEE onto the Demised Premises as guests or doing lawful business with LESSEE.

Lien: any mortgage, pledge, lien, charge, encumbrance or security interest of any kind, including any mechanic's or materialmen's lien.

Taking: a taking of all or any part of the Demised Premises, or any interest therein or right accruing thereto, as the result of, or in lieu of, or in anticipation of, the exercise of the right of condemnation or eminent domain pursuant to any law, general or special, or by reason of the temporary requisition of the use or occupancy of the Demised Premises or any part thereof, by any governmental authority, civil or military.

Taxes: all real estate taxes and assessments or substitutes therefor or supplements thereto, upon, applicable, attributable or assessed against the Property or any part thereof. If and to the extent that due to a change in the method of taxation or assessment any franchise, capital stock, capital, rent, income, profit or other tax or charge shall be substituted by the applicable taxing authority for the Taxes now or hereafter imposed upon the Property, such franchise, capital stock, capital, rent, income, profit or other tax or charge shall be deemed included in the term "Taxes", provided, however, that the amount of such tax, assessment, levy, imposition, charge or fee deemed to be included in the term "Taxes" shall be determined as if the Demised Premises were the only asset of LESSOR and as if the rent received therefrom were the only income of LESSOR.

EXHIBIT B
Landfill Diagram



(W6342103.11)

The projects listed below are expected to be Operational by 12/31/2020.

PROJECT TYPE	NAME	STATE	OPERATIONAL CALENDAR 2020
Food waste	Blue Line Biogenic CNG Facility	CA	Yes
Food waste	CR&R Perris Transfer Station and MRF	CA	Yes
Food waste	Northstate Rendering Anaerobic Digester (Biogas Energy)	CA	Yes
Food waste	Rialto Bioenergy Facility	CA	Yes
Food waste	Archer Daniels Midland corn processing facility	IL	Yes
Food waste	Central Ohio BioEnergy (Equilibrium Capital)	OH	Yes
Food waste	Zanesville Energy (Quasar)	OH	Yes
Food waste	Seaboard Foods/High Plains Bioenergy	OK	Yes
Food waste	Wasatch Resource Recovery	UT	Yes
Food waste	Impact Bioenergy Vashon Island	WA	Yes
Food waste	New Organic Digestion, Denmark (Big Ox)	WI	Yes
Landfill	City of Fort Smith Landfill (Morrow Renewables)	AR	Yes
Landfill	Altamont Landfill (Waste Management)	CA	Yes
Landfill	Live Oak Landfill	GA	Yes
Landfill	Milam Recycling and Disposal Facility (Waste Management)	IL	Yes
Landfill	Randolph Farms Landfill	IN	Yes
Landfill	Indy High BTU/Southside	IN	Yes
Landfill	Hamm Sanitary Landfill/Renewable Power Producers	KS	Yes
Landfill	Johnson County Landfill (formerly Deffenbaugh) (WM, Aria)	KS	Yes
Landfill	Big Run	KY	Yes
Landfill	Outer Loop	KY	Yes
Landfill	Jefferson Davis Parish Landfill	LA	Yes
Landfill	Keithville (Republic, Element Markets)	LA	Yes
Landfill	River Birch Landfill	LA	Yes
Landfill	St. Landry Parish Landfill	LA	Yes
Landfill	Waste Connections Timberlane	LA	Yes
Landfill	Richfield Landfill ("Blue Sky") (Blue Skies Energy)	MI	Yes
Landfill	Riverview Land Preserve	MI	Yes
Landfill	Sauk Trail Hills Landfill (Republic Services, Aria)	MI	Yes
Landfill	Waste Management Woodland Meadows (WM, Ameresco)	MI	Yes
Landfill	Westside Recycling and Disposal Facility (WM, DTE Biomass Energy)	MI	Yes
Landfill	North East Mississippi Regional Landfill (Air Liquide)	MS	Yes
Landfill	Billings Regional Landfill	MT	Yes
Landfill	Butler County (Waste Connections, Aria)	NE	Yes
Landfill	Douglas County Landfill-- State Street (BioResource Development)	NE	Yes
Landfill	Sarpy County Landfill, BioResource Development N1	NE	Yes
Landfill	Fresh Kills Landfill (Montauk)	NY	Yes
Landfill	Seneca Meadows SWMF (Progressive)	NY	Yes
Landfill	American (WM)	OH	Yes
Landfill	APEX Sanitary Landfill (Apex, Montauk)	OH	Yes
Landfill	Franklin County Sanitary Landfill (Aria)	OH	Yes
Landfill	Pinnacle Road Landfill (North Sanitary Landfill) (WM, DTE Biomass Energy)	OH	Yes
Landfill	Rumpke Sanitary Landfill	OH	Yes
Landfill	Stony Hollow Landfill (WM, DTE Biomass Energy)	OH	Yes
Landfill	Oklahoma City Landfill (Waste Connections, Aria)	OK	Yes
Landfill	Southeast Oklahoma City (Republic, Aria)	OK	Yes
Landfill	Southern Oklahoma Regional Disposal Landfill	OK	Yes
Landfill	Advanced Disposal Services Greentree Landfill, LLC (Advanced Disposal, EDF Renewables)	PA	Yes
Landfill	Imperial Sanitary Landfill (Republic, EDF Renewables)	PA	Yes
Landfill	Laurel Highlands Landfill (WM, Montauk Energy)	PA	Yes
Landfill	Monroeville Landfill (WM)	PA	Yes
Landfill	Seneca Landfill	PA	Yes
Landfill	Shade Landfill (WM, Montauk)	PA	Yes
Landfill	Southern Alleghenies Landfill (WM, Montauk)	PA	Yes
Landfill	Valley Landfill	PA	Yes
Landfill	Westmoreland County Sanitary Landfill	PA	Yes

PROJECT TYPE	NAME	STATE	OPERATIONAL CALENDAR 2020
Landfill	Carter Valley Landfill	TN	Yes
Landfill	Meadow Branch Landfill (Waste Connections)	TN	Yes
Landfill	North Shelby Landfill (Republic, Aria)	TN	Yes
Landfill	South Shelby (Republic, Aria)	TN	Yes
Landfill	Atascocita/Humble (WM, Montauk)	TX	Yes
Landfill	Edinburg Landfill (Morrow)	TX	Yes
Landfill	Fort Bend Regional Landfill (DTE Biomass Energy)	TX	Yes
Landfill	Galveston County Landfill	TX	Yes
Landfill	Greenwood Farms Landfill/Tyler (Morrow "East Texas")	TX	Yes
Landfill	McCarty Road Landfill (Republic, Montauk)	TX	Yes
Landfill	McCommas Bluff Landfill (Energy Power Partners)	TX	Yes
Landfill	North Texas Municipal Water District, Melissa ("NTMWD") (Morrow)	TX	Yes
Landfill	Pine Hill/Longview (Kilgore) (Morrow)	TX	Yes
Landfill	Renovar Arlington (Coalition database)	TX	Yes
Landfill	Republic Services Blue Ridge Landfill ("Houston") (Morrow)	TX	Yes
Landfill	Seabreeze Environmental Landfill (Seabreeze, DTE Biomass)	TX	Yes
Landfill	Skyline Landfill	TX	Yes
Landfill	Turkey Creek Landfill/Alvarado (Morrow)	TX	Yes
Landfill	Cedar Hills Regional Landfill	WA	Yes
Landfill	Roosevelt Regional Landfill (Republic)	WA	Yes
Landfill	Dane County Landfill #2 - Rodefild (BioCNG)	WI	Yes
Landfill	City of Charleston Landfill (WM)	WV	Yes
Livestock, agriculture	Wastewater Opportunity Fund Southwest GGP LLC (Green Gas Partners Stanfield Project)	AZ	Yes
Livestock, agriculture	4K Dairy	CA	Yes
Livestock, agriculture	ABEC Lakeview Farms Dairy Digester	CA	Yes
Livestock, agriculture	Aukeman Dairy	CA	Yes
Livestock, agriculture	Belonave Dairy	CA	Yes
Livestock, agriculture	Bos Farms Dairy	CA	Yes
Livestock, agriculture	BV Dairy	CA	Yes
Livestock, agriculture	Circle A Dairy Digester Fuel Pipeline Project (Calgren)	CA	Yes
Livestock, agriculture	Cloverdale Dairy	CA	Yes
Livestock, agriculture	Cornerstone	CA	Yes
Livestock, agriculture	Dykstra	CA	Yes
Livestock, agriculture	El Monte	CA	Yes
Livestock, agriculture	Hamstra Dairy	CA	Yes
Livestock, agriculture	Hilarides Dairy	CA	Yes
Livestock, agriculture	K&M Visser Dairy Digester Fuel Pipeline Project (Calgren)	CA	Yes
Livestock, agriculture	Legacy Dairy Digester Fuel Pipeline project (Calgren)	CA	Yes
Livestock, agriculture	Little Rock	CA	Yes
Livestock, agriculture	Moonlight Dairy	CA	Yes
Livestock, agriculture	Pixley Dairy Digester Fuel Pipeline Project (Calgren)	CA	Yes
Livestock, agriculture	R Vander Eyk Dairy Digester Fuel Pipeline Project (Calgren)	CA	Yes
Livestock, agriculture	Rancho Teresita Dairy Biogas	CA	Yes
Livestock, agriculture	Riverbend	CA	Yes
Livestock, agriculture	Riverview Dairy	CA	Yes
Livestock, agriculture	S&S Dairy	CA	Yes
Livestock, agriculture	Scheenstra Dairy Biogas	CA	Yes
Livestock, agriculture	Sousa and Sousa	CA	Yes
Livestock, agriculture	T&W Dairy	CA	Yes
Livestock, agriculture	Trilogy Dairy	CA	Yes
Livestock, agriculture	Udder Dairy	CA	Yes
Livestock, agriculture	Valadao	CA	Yes
Livestock, agriculture	Vander Poel	CA	Yes
Livestock, agriculture	AG Power DCD, unnamed farm	ID	Yes
Livestock, agriculture	AG Power Jerome LLC	ID	Yes
Livestock, agriculture	RDF Jasper (Bos, Herrema and Windy Ridge Farms)	IN	Yes
Livestock, agriculture	RDF Prairie's Edge Dairy 1 (formerly Fair Oaks 1)	IN	Yes
Livestock, agriculture	RDF Prairie's Edge Dairy 2 (formerly Fair Oaks 2)	IN	Yes
Livestock, agriculture	Roeselin South Meadows Farms	MO	Yes

PROJECT TYPE	NAME	STATE	OPERATIONAL CALENDAR 2020
Livestock, agriculture	Roeslein Alternative Energy - Homan	MO	Yes
Livestock, agriculture	Roeslein Alternative Energy - Somerset	MO	Yes
Livestock, agriculture	Roeslein Locust Ridge	MO	Yes
Livestock, agriculture	Roeslein Ruckman	MO	Yes
Livestock, agriculture	Roeslein Valley View	MO	Yes
Livestock, agriculture	Optima KV	NC	Yes
Livestock, agriculture	Optima Tar Heel	NC	Yes
Livestock, agriculture	Three Mile Canyon Farms	OR	Yes
Livestock, agriculture	Cactus Digester Gas Utilization Plant (Coalition database)	TX	Yes
Livestock, agriculture	JBS USA Dalhart	TX	Yes
Livestock, agriculture	George DeRuyter & Sons Dairy Digester (Brightmark Augean RNG Project)	WA	Yes
Livestock, agriculture	Brightmark Energy Demeter Project	WI	Yes
Livestock, agriculture	Calumet Renewable Energy (Dairy Dreams, Pagels Ponderosa, Maple Leaf and Grotegut Dairies)	WI	Yes
Livestock, agriculture	Dane Renewable Energy (Statz Bros Dairy)	WI	Yes
Livestock, agriculture	Holsum Dairies	WI	Yes
Livestock, agriculture	Kewaunee Renewable Energy (Kinnard Dairy)	WI	Yes
Livestock, agriculture	New Chester Renewable Energy (New Chester Dairy)	WI	Yes
Livestock, agriculture	Rosendale Renewable Energy (Rosendale Dairy)	WI	Yes
Livestock, agriculture	US Gain S&S Jerseyland Dairy	WI	Yes
Livestock, agriculture	US Gain Cloverhill Dairy	WI	Yes
Livestock, agriculture	US Gain Dallmann East River Dairy	WI	Yes
WRRF	91st Avenue, Phoenix	AZ	Yes
WRRF	City of San Mateo Wastewater Treatment Plant	CA	Yes
WRRF	Ellis Creek Water Recycling Facility	CA	Yes
WRRF	Las Gallinas Valley Sanitary District	CA	Yes
WRRF	Los Angeles County Sanitation Districts Joint Water Pollution Control Plant	CA	Yes
WRRF	Point Loma Wastewater Treatment Plant	CA	Yes
WRRF	Longmont Wastewater Treatment Plant	CO	Yes
WRRF	Persigo Wastewater Treatment Plant	CO	Yes
WRRF	City of Boulder WRRF	CO	Yes
WRRF	South Platte Water Renewal Partners	CO	Yes
WRRF	Honouliuli Wastewater Treatment Plant	HI	Yes
WRRF	Dubuque Water and Resource Recovery Center	IA	Yes
WRRF	Sioux City WWTP	IA	Yes
WRRF	Warrior Biogas Reuse Project	KS	Yes
WRRF	Lincoln, Nebraska Theresa Street WWTP	NE	Yes
WRRF	Newtown Creek Wastewater Treatment Plant	NY	Yes
WRRF	Newark Wastewater Treatment Plant	OH	Yes
WRRF	Columbia Boulevard Wastewater Treatment Plant	OR	Yes
WRRF	Dos Rios Water Recycling Center	TX	Yes
WRRF	South Wastewater Treatment Plant (King County)	WA	Yes
WRRF	Janesville Wastewater Treatment Plant	WI	Yes

157 Operational Projects in Calendar 2020

11 Food waste
67 Landfill
58 Livestock, agriculture
21 WWTP
157 TOTAL

Prepared and managed by RNG Global Initiative, Inc.

Resolution Supporting Pipeline Quality Biomethane Development as a Renewable Gas Resource in the Clean Energy Economy

WHEREAS, Critical legislation is under consideration in the U.S. House of Representatives and the U.S. Senate that seeks to create clean energy jobs, achieve energy independence, mitigate the effects of climate change, and transition to a clean energy economy; *and*

WHEREAS, The transformation to a clean energy economy and sustainable American economic and international policy leadership will require properly designed market incentives, as well as increased investment in human and technological capital; *and*

WHEREAS, Transitioning to a clean energy economy will require a robust portfolio of cost-effective and environmentally benign renewable energy resources that achieve greenhouse gas reductions and provide safe, affordable, and reliable energy to consumers; *and*

WHEREAS, According to the Energy Information Administration, natural gas consumption accounted for 23.9 percent¹ of total primary energy consumption (99.4 quads) in the United States in 2008, and will continue to be a strategic resource that delivers significant greenhouse gas reductions, enables the development of intermittent renewable resources such as wind and solar, and provides a foundational fuel for residential, commercial and industrial end-use; *and*

WHEREAS, Emerging renewable sources of natural gas have great potential to complement the critical role of traditional natural gas supplies in the clean energy economy; *and*

WHEREAS, Biogas is derived from the decay of organic materials through anaerobic digestion and thermal gasification, and varies in chemical composition but is primarily comprised of methane, a greenhouse gas which is at least 20 times more potent than carbon dioxide when directly released to the atmosphere;² *and*

WHEREAS, Methane from renewable gas can be captured, cleaned, and converted into biomethane through the use of proven gas conditioning technologies, transported by the existing gas pipeline system, stored and/or delivered for productive use in renewable electricity generation, clean transportation, or commercial, industrial and residential end use; *and*

WHEREAS, Biogas from manure, agricultural and food waste, landfills, wastewater treatment facilities, sustainable biomass, and other viable sources could provide a significant renewable gas resource, which, when conditioned into pipeline quality biomethane, is interchangeable with conventional natural gas,³ efficient in the use of existing natural gas storage, transmission, and distribution infrastructure, and is a suitable renewable fuel for use in the transportation sector and in today's most efficient combined-cycle natural gas-powered electric generation facilities; *and*

¹ *Electric Power Monthly*, United States Energy Information Administration, 15 Oct. 2009. Web. 3 Nov. 2009.

<http://www.eia.doe.gov/emeu/mer/pdf/pages/sec1_7.pdf>

² Eaves, Michael, Clean Energy. "Biomethane Renewable Natural Gas: California Energy Commission Workshop on Natural Gas and Propane Vehicles." September 18, 2009.

³ Renewable Energy Institute, "EPA Moves Closer to Regulating Greenhouse Gas Emissions." 18 April 2009.

WHEREAS, Federal incentives are available for renewable electricity from solar, wind, biomass, and geothermal resources, but are not available for the development or production of renewable pipeline quality biomethane; *and*

WHEREAS, The current Renewable Electricity Production Tax Credit provides a per-kilowatt-hour production tax credit for wind and geothermal projects, and a per-kilowatt-hour production tax credit for on-site generation from biomass and landfill gas projects;⁴ *and*

WHEREAS, The current Business Energy Investment Tax Credit⁵ provides a 30 percent federal investment tax credit or grant for solar, wind and fuel cell facilities, and a 10 percent investment tax credit or grant for geothermal, microturbines, and combined heat and power energy facilities; *and*

WHEREAS, Renewable pipeline biomethane facilities do not qualify for investment tax credit incentives under the Business Energy Investment Tax Credit, and renewable pipeline biomethane production does not qualify for production tax credit incentives under the current Renewable Electricity Production Tax Credit; *and*

WHEREAS, There are current legislative proposals under consideration in the U.S. House of Representatives and the U.S. Senate that would support the development of renewable pipeline quality biomethane by providing incentives that are comparable to existing incentives for the development of other forms of renewable electricity; *now, therefore be it*

RESOLVED, That the Board of Directors of the National Association of Regulatory Utility Commissioners, convened at its 2010 Winter Committee Meetings in Washington, D.C., supports the role and development of biogas, and in particular, pipeline quality biomethane, as a feasible renewable fuel in an effort to capture methane greenhouse gas emissions and simultaneously provide an alternative source of renewable energy; *and be it further*

RESOLVED, That the Board of Directors of the National Association of Regulatory Utility Commissioners supports federal incentives for the development of pipeline quality biomethane that are *en par* with incentives currently afforded to other resources for the production of renewable electricity; *and be it further*

RESOLVED, That the Board of Directors of the National Association of Regulatory Utility Commissioners urges the U.S. Senate and the U.S. House of Representatives to approve legislation as a means to provide unequivocal support for pipeline quality biomethane development in order to achieve significant greenhouse gas reductions in the transition to a clean energy economy.

Sponsored by the Committee on Gas

Adopted by the NARUC Board of Directors February 17, 2010

⁴ The American Jobs Creation Act of 2004 (H.R. 4520) expanded the Production Tax Credit (PTC) to include additional eligible resources: geothermal energy, open-loop biomass, solar energy, small irrigation power, landfill gas and municipal solid waste combustion -- in addition to the formerly eligible wind energy, closed-loop biomass, and poultry-waste energy resources. However, while this includes anaerobic digestion for landfill gas, it does not apply specifically to biomethane production for pipeline use. See http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US13F&re=1&ee=1 for more information.

⁵ The federal business energy investment tax credit available under 26 USC § 48 was expanded significantly by the [Energy Improvement and Extension Act of 2008](#) (H.R. 1424), enacted in October 2008. However, this does not apply specifically to facilities for biomethane pipeline facilities. See http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US02F&re=1&ee=1.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T														
1	Rate Base model					CapEx																												
2													Ratio	Rate	Weighted Rate	PreTax																		
3	Purchase Price					\$ 12,500,000						Long Term Debt	49.85%	4.42%	2.20%	2.20%																		
4	Decompression (Broken Bridge)					\$ 804,368						Short Term Debt	0.95%	2.49%	0.02%	0.02%																		
5	Total Cost					\$ 13,304,368						CommonEquity	49.21%	9.30%	4.58%	6.32%																		
6	Required Return (pre tax)					8.55%																												
7	Depreciation					\$ 665,218																												
8	OpEx					\$ 10,000																												
9																																		
10																																		
11																																		
12																																		
13																																		
14																																		
15	Year	MACRS Rates	MACRS Table	Book Depreciation	Delta	Tax Rate	DIT	ADIT	Rate Base	Return Required	O&M - Ins 1.7% escalator (2)	Revenue Requirement	Dth Projections (1)	\$/Dth	Rudarpa Fee 1.7% escalator (2)	Delivered COG	Rudarpa ownership	TREC Estimate	COG W/TREC	Potential Savings														
16																																		
17									\$13,304,368																									
18	1	3.75%	\$ 498,914	\$ 665,218	\$ 166,305	27.48%	\$ 45,701	\$ 45,701	\$12,684,850	\$1,110,817	\$ 10,000.00	\$1,786,035	538,083	\$3.32	\$6.11	\$9.43	\$10.47	\$ 4.07	\$5.36															
19	2	7.22%	\$ 960,442	\$ 665,218	\$ (295,224)	27.48%	\$ (81,128)	\$ (35,427)	\$11,938,504	\$1,052,438	\$ 10,170.00	\$1,727,826	572,077	\$3.02	\$6.21	\$9.23	\$10.88	\$ 4.07	\$5.16															
20	3	6.68%	\$ 888,333	\$ 665,218	\$ (223,114)	27.48%	\$ (61,312)	\$ (96,739)	\$11,211,974	\$989,485	\$ 10,342.89	\$1,665,046	532,220	\$3.13	\$6.32	\$9.45	\$11.73	\$ 4.07	\$5.38															
21	4	6.18%	\$ 821,811	\$ 665,218	\$ (156,592)	27.48%	\$ (43,032)	\$ (139,770)	\$10,503,724	\$928,160	\$ 10,518.72	\$1,603,897	572,977	\$2.80	\$6.43	\$9.23	\$12.64	\$ 4.07	\$5.16															
22	5	5.71%	\$ 760,079	\$ 665,218	\$ (94,860)	27.48%	\$ (26,068)	\$ (165,838)	\$9,812,438	\$868,342	\$ 10,697.54	\$1,544,258	494,219	\$3.12	\$6.54	\$9.66	\$12.86	\$ 4.07	\$5.59	25%														
23	6	5.29%	\$ 703,136	\$ 665,218	\$ (37,917)	27.48%	\$ (10,420)	\$ (176,258)	\$9,136,800	\$809,918	\$ 10,879.40	\$1,486,016	458,786	\$3.24	\$6.65	\$9.89	\$13.07	\$ 4.07	\$5.82	24%														
24	7	4.89%	\$ 650,317	\$ 665,218	\$ 14,901	27.48%	\$ 4,095	\$ (172,163)	\$8,475,676	\$752,783	\$ 11,064.35	\$1,429,065	425,750	\$3.36	\$6.76	\$10.12	\$13.30	\$ 4.07	\$6.05	24%														
25	8	4.52%	\$ 601,624	\$ 665,218	\$ 63,595	27.48%	\$ 17,476	\$ (154,687)	\$7,827,934	\$696,840	\$ 11,252.44	\$1,373,311	394,946	\$3.48	\$6.88	\$10.35	\$13.52	\$ 4.07	\$6.28	23%														
26	9	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (135,018)	\$7,182,385	\$641,563	\$ 11,443.73	\$1,318,225	375,000	\$3.52	\$6.99	\$10.51	\$13.75	\$ 4.07	\$6.44	24%														
27	10	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ (115,312)	\$6,536,872	\$586,381	\$ 11,638.27	\$1,263,238	375,000	\$3.37	\$7.11	\$10.48	\$13.99	\$ 4.07	\$6.41	25%														
28	11	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (95,642)	\$5,891,323	\$531,199	\$ 11,836.12	\$1,208,254	314,478	\$3.84	\$7.23	\$11.07	\$14.22	\$ 4.07	\$7.00	22%														
29	12	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ (75,936)	\$5,245,811	\$476,017	\$ 12,037.34	\$1,153,273	291,197	\$3.96	\$7.35	\$11.32	\$14.47	\$ 4.07	\$7.25	22%														
30	13	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (56,266)	\$4,600,262	\$420,835	\$ 12,241.97	\$1,098,296	270,000	\$4.07	\$7.48	\$11.55	\$14.71	\$ 4.07	\$7.48	22%														
31	14	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ (36,560)	\$3,954,750	\$365,654	\$ 12,450.09	\$1,043,322	270,000	\$3.86	\$7.61	\$11.47	\$14.96	\$ 4.07	\$7.40	23%														
32	15	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (16,891)	\$3,309,201	\$310,472	\$ 12,661.74	\$988,352	270,000	\$3.66	\$7.74	\$11.40	\$15.22	\$ 4.07	\$7.33	25%														
33	16	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ 2,815	\$2,663,689	\$255,290	\$ 12,876.99	\$933,385	270,000	\$3.46	\$7.87	\$11.32	\$15.48	\$ 4.07	\$7.25	27%														
34	17	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ 22,485	\$2,018,140	\$200,108	\$ 13,095.90	\$878,422	270,000	\$3.25	\$8.00	\$11.26	\$15.74	\$ 4.07	\$7.19	28%														
35	18	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ 42,191	\$1,372,627	\$144,926	\$ 13,318.53	\$823,463	270,000	\$3.05	\$8.14	\$11.19	\$16.01	\$ 4.07	\$7.12	30%														
36	19	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ 61,860	\$727,079	\$89,744	\$ 13,544.94	\$768,508	270,000	\$2.85	\$8.28	\$11.12	\$16.28	\$ 4.07	\$7.05	32%														
37	20	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ 81,566	\$81,566	\$34,563	\$ 13,775.21	\$713,556	270,000	\$2.64	\$8.42	\$11.06	\$16.55	\$ 4.07	\$6.99	33%														
38	21	2.23%	\$ 296,820																															
39																																		
40	(1) No Landfill Expansion												541,915																					
41	(2) Last ten year average																																	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Rate Base model					CapEx														
2																				
3	Purchase Price										Long Term Debt		Ratio	Rate	Weighted	PreTax				
4	Decompression (Broken Bridge)										Short Term Debt		0.95%	2.49%	0.02%	0.02%				
5	Total Cost										CommonEquity		49.21%	9.30%	4.58%	6.32%				
6	Required Return (pre tax)														6.80%	8.55%				
7	Depreciation																			
8	OpEx																			
9																				
10																				
11	Year	MACRS	MACRS	Book Depr	Delta	Tax Rate	DIT	ADIT	Rate Base	Return	O&M - Ins	Revenue	Dth (1)	\$/Dth	Rudarpa Fee	Delivered	Rudarpa	TREC	COG	Potential
12		Rates	Table							Required	1.7% escalator (2)	Requirement			1.7% escalator (2)	COG	ownership	Estimate	W/TREC	Savings
13									\$13,304,368											
14	1	3.75%	\$ 498,914	\$ 665,218	\$ 166,305	27.48%	\$ 45,701	\$ 45,701	\$12,684,850	\$1,110,817	\$ 10,000.00	\$1,786,035	490,000	\$3.64	\$6.11	\$9.75	\$10.47	\$ 4.07	\$5.68	
15	2	7.22%	\$ 960,442	\$ 665,218	\$ (295,224)	27.48%	\$ (81,128)	\$ (35,427)	\$11,938,504	\$1,052,438	\$ 10,170.00	\$1,727,826	490,000	\$3.53	\$6.21	\$9.74	\$10.88	\$ 4.07	\$5.67	
16	3	6.68%	\$ 888,333	\$ 665,218	\$ (223,114)	27.48%	\$ (61,312)	\$ (96,739)	\$11,211,974	\$989,485	\$ 10,342.89	\$1,665,046	490,000	\$3.40	\$6.32	\$9.72	\$11.73	\$ 4.07	\$5.65	
17	4	6.18%	\$ 821,811	\$ 665,218	\$ (156,592)	27.48%	\$ (43,032)	\$ (139,770)	\$10,503,724	\$928,160	\$ 10,518.72	\$1,603,897	490,000	\$3.27	\$6.43	\$9.70	\$12.64	\$ 4.07	\$5.63	
18	5	5.71%	\$ 760,079	\$ 665,218	\$ (94,860)	27.48%	\$ (26,068)	\$ (165,838)	\$9,812,438	\$868,342	\$ 10,697.54	\$1,544,258	490,000	\$3.15	\$6.54	\$9.69	\$12.86	\$ 4.07	\$5.62	25%
19	6	5.29%	\$ 703,136	\$ 665,218	\$ (37,917)	27.48%	\$ (10,420)	\$ (176,258)	\$9,136,800	\$809,918	\$ 10,879.40	\$1,486,016	375,000	\$3.96	\$6.65	\$10.61	\$13.07	\$ 4.07	\$6.54	19%
20	7	4.89%	\$ 650,317	\$ 665,218	\$ 14,901	27.48%	\$ 4,095	\$ (172,163)	\$8,475,676	\$752,783	\$ 11,064.35	\$1,429,065	375,000	\$3.81	\$6.76	\$10.57	\$13.30	\$ 4.07	\$6.50	20%
21	8	4.52%	\$ 601,624	\$ 665,218	\$ 63,595	27.48%	\$ 17,476	\$ (154,687)	\$7,827,934	\$696,840	\$ 11,252.44	\$1,373,311	375,000	\$3.66	\$6.88	\$10.54	\$13.52	\$ 4.07	\$6.47	22%
22	9	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (135,018)	\$7,182,385	\$641,563	\$ 11,443.73	\$1,318,225	375,000	\$3.52	\$6.99	\$10.51	\$13.75	\$ 4.07	\$6.44	24%
23	10	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ (115,312)	\$6,536,872	\$586,381	\$ 11,638.27	\$1,263,238	375,000	\$3.37	\$7.11	\$10.48	\$13.99	\$ 4.07	\$6.41	25%
24	11	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (95,642)	\$5,891,323	\$531,199	\$ 11,836.12	\$1,208,254	270,000	\$4.48	\$7.23	\$11.71	\$14.22	\$ 4.07	\$7.64	18%
25	12	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ (75,936)	\$5,245,811	\$476,017	\$ 12,037.34	\$1,153,273	270,000	\$4.27	\$7.35	\$11.63	\$14.47	\$ 4.07	\$7.56	20%
26	13	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (56,266)	\$4,600,262	\$420,835	\$ 12,241.97	\$1,098,296	270,000	\$4.07	\$7.48	\$11.55	\$14.71	\$ 4.07	\$7.48	22%
27	14	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ (36,560)	\$3,954,750	\$365,654	\$ 12,450.09	\$1,043,322	270,000	\$3.86	\$7.61	\$11.47	\$14.96	\$ 4.07	\$7.40	23%
28	15	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ (16,891)	\$3,309,201	\$310,472	\$ 12,661.74	\$988,352	270,000	\$3.66	\$7.74	\$11.40	\$15.22	\$ 4.07	\$7.33	25%
29	16	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ 2,815	\$2,663,689	\$255,290	\$ 12,876.99	\$933,385	270,000	\$3.46	\$7.87	\$11.32	\$15.48	\$ 4.07	\$7.25	27%
30	17	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ 22,485	\$2,018,140	\$200,108	\$ 13,095.90	\$878,422	270,000	\$3.25	\$8.00	\$11.26	\$15.74	\$ 4.07	\$7.19	28%
31	18	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ 42,191	\$1,372,627	\$144,926	\$ 13,318.53	\$823,463	270,000	\$3.05	\$8.14	\$11.19	\$16.01	\$ 4.07	\$7.12	30%
32	19	4.46%	\$ 593,641	\$ 665,218	\$ 71,577	27.48%	\$ 19,669	\$ 61,860	\$727,079	\$89,744	\$ 13,544.94	\$768,508	270,000	\$2.85	\$8.28	\$11.12	\$16.28	\$ 4.07	\$7.05	32%
33	20	4.46%	\$ 593,508	\$ 665,218	\$ 71,711	27.48%	\$ 19,706	\$ 81,566	\$81,566	\$34,563	\$ 13,775.21	\$713,556	270,000	\$2.64	\$8.42	\$11.06	\$16.55	\$ 4.07	\$6.99	33%
34	21	2.23%	\$ 296,820																	
35																				
36	(1) Minimum Annual Supply Quantity																			
37	(2) Last ten year average																			



August 29, 2018

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

This letter of intent ("**Letter of Intent**") sets forth the material terms and conditions under which Liberty Utilities (EnergyNorth Natural Gas) Corp d/b/a Liberty Utilities ("**Liberty**" or the "**Company**") will provide renewable natural gas (RNG) supply and distribution services to [REDACTED] Liberty and [REDACTED] for the purposes of this Letter of Intent are, collectively, the "**Parties**."

This Letter of Intent is not binding on either party and shall not create any obligation or commitment of any kind (except for Section 6), including to enter into a definitive agreement or to give any rights or claims in the event that for any reason either party terminates negotiations with respect thereto. The material terms and conditions set forth in this non-binding Letter of Intent are intended to be the subject of further discussions and then incorporated into a legally binding definitive agreement, which definitive agreement may contain additional terms and conditions yet to be agreed upon by the Parties.

1. Description of Stonyfield Facilities.

- (i) The Parties acknowledge that the intent of the project is to locate all or substantially all of the fuel delivery equipment at a site owned by Liberty with the only equipment located on [REDACTED] property being the natural gas service riser, regulator(s) and gas meter (the "Project").
- (ii) The Parties acknowledge that certain modifications to the [REDACTED] natural gas metering facilities as well as customer owned natural gas piping may be necessary to allow [REDACTED] to utilize RNG from the Project as its primary source of fuel. The Parties shall work together to determine the supply and design requirements. The Parties agree that the transition point between Liberty owned equipment and [REDACTED] owned equipment shall be the outlet flange of the gas meter.

2. Description of Liberty Facilities.

Liberty has completed preliminary scoping of the Project based on its understanding of the peak and average volumes of customer demand. Liberty intends to utilize existing company property for the primary delivery, storage, decompression, and delivery equipment. Liberty anticipates that the Project will consist of the following primary equipment.

- (i) **Distribution:** Liberty will construct, own and operate certain fuel delivery and metering equipment to distribute sufficient quantities, in supply and pressure, of natural gas to the [REDACTED] facilities. Liberty will maintain all material and equipment required to deliver natural gas to the [REDACTED] facilities as part of the distribution services pricing contract.
- (ii) **Supply:** Liberty will construct, own and operate a natural gas decompression facility as part of the Project that will be utilized to provide RNG supply to [REDACTED] and other Liberty customers.

3. Liberty – [REDACTED] Special Contract

- (i) Liberty has entered into contracts with large commercial customers and/or customers that will require substantial utility system modifications to establish gas supply services. These special contracts are negotiated and executed between the utility and customer and approved by the New Hampshire Public Utilities Commission and are the definitive document providing the details of service and pricing.
- (ii) The definitive agreement being considered by the Parties will include mutually agreeable terms that are typical for agreements for the delivery and sale of gas services to customers of similar size and operating characteristics. These terms will include, but are not be limited to, the following:
 - (a) [REDACTED] purchasing all RNG delivery services from Liberty.
 - (b) The Parties agreeing on minimum and maximum quantities of gas delivery services.
 - (c) The Parties agreeing on contract length, renewal, and exit options.
 - (d) Liberty conveying all State of New Hampshire renewable attributes to [REDACTED]
- (iii) The Parties recognize and agree that finalization of the definitive agreement is dependent upon the Parties agreeing upon mutually acceptable terms (including, without limitation, agreement to acceptable payment terms and to comply with all applicable laws and regulations), and upon receipt of all necessary internal approvals, up to and including approvals of the management of both Parties. The Parties hereunder shall only be obligated to negotiate in good faith to attempt to agree upon the terms of a definitive agreement, and nothing contained herein shall require any party to enter into any definitive agreement unless the terms thereof are satisfactory to such Party in its sole discretion.

- (iv) The Parties agree and understand that any definitive agreement is subject to the approval of the New Hampshire Public Utilities Commission.

5. Fuel Commodity Purchase

The Parties agree to negotiate in good faith the terms and conditions for the purchase and delivery of RNG as needed to support the fuel requirements of [REDACTED]

6. General Provisions.

- (i) **Representations Regarding this Letter of Intent.** By their execution of this non-binding Letter of Intent, the Parties represent and warrant that they are authorized to enter into this Letter of Intent, that it does not conflict with any contract, lease, instrument, or other obligation to which either is a party or by which either is bound, and that, to the extent specifically so described in the preamble hereto, it represents their valid and binding obligation, enforceable in accordance with its terms.
- (ii) **Notices.** Any notices to be given hereunder by either Party to the other shall be in writing and shall be sent by fax with confirmation sent via regular mail, addressed to the other Party at the address set forth below, or at such other address as such Party may specify in writing as provided below:

[REDACTED]
[REDACTED]
[REDACTED]
Attention: [REDACTED]
Email: [REDACTED]

To Liberty
116 North Main St
Concord, NH 03301
Attention: William Clark
Email: william.clark@LibertyUtilities.com

Notices shall be effective upon receipt.

- (iii) **Confidentiality.** The Parties agree that during the term of this Letter of Intent, a Party may obtain access to certain confidential and proprietary business and commercial information of another Party or of third parties, and agree to maintain the confidentiality of such information in accordance with the terms of the NDA executed by the Parties as of August 9, 2018 (the "NDA"). Upon termination of this Letter of Intent, any confidential or proprietary information in the possession of either Party shall be returned to the other Party and/or destroyed with

notification and proof of destruction to the appropriate Party. The NDA shall survive termination of this Letter of Intent.

- (iv) **Governing Law.** This Letter of Intent shall be governed by and construed in accordance with the laws of the New Hampshire.

If the foregoing is acceptable to you, please countersign this Letter of Intent where indicated below and return a copy to me.

**LIBERTY UTILITIES (ENERGYNORTH
NATURAL GAS) CORP.**

By: William J Clark Digitally signed by William J Clark
Date: 2018.08.29 14:04:55 -04'00'

Name: William J Clark

Title: Director, Business Development

[Redacted Signature]

By:

Name:

Title:



February 27, 2018

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

This letter of intent ("**Letter of Intent**") sets forth the material terms and conditions under which Liberty Utilities (EnergyNorth Natural Gas – Keene Division) Corp d/b/a Liberty Utilities ("**Liberty**" or the "**Company**") will provide renewable natural gas (**RNG**) supply and distribution services to [REDACTED] Liberty and [REDACTED] for the purposes of this Letter of Intent are, collectively, the "**Parties**."

Liberty is a regulated natural gas utility serving approximately 91,000 customers in New Hampshire, including in Keene where the Company provides propane distribution services to 1,250 customers. Liberty is proposing a multistage project, which would bring natural gas service to residential, commercial, and industrial customers in Keene. Liberty intends to design, develop, permit, construct, own, and operate a regulated natural gas distribution system with the primary supply of natural gas to the system in the form of RNG, LNG and/or CNG (the **Project**). RNG will be the fuel source provided for [REDACTED] unless otherwise agreed upon by Parties. The Parties acknowledge that significant time and financial resources will be incurred by Liberty to develop the Project and by executing this Letter of Intent [REDACTED] is expressing its intent to use RNG as a fuel source.

This non-binding Letter of Intent is not binding on any Party and shall not create any obligation or commitment of any kind (except for Section 6 and 7(iv)), including to enter into definitive documentation or to give any rights or claims in the event that for any reason any party terminates negotiations with respect thereto. The material terms and conditions set forth in this non-binding Letter of Intent are intended to be the subject of further discussions and may be incorporated into legally binding definitive agreements (the "**Definitive Agreements**"), which Definitive Agreements will contain additional terms and conditions yet to be agreed upon.

1. Description of [REDACTED]

- (i) The Parties acknowledge that the intent of the Project is to locate all or substantially all of the fuel delivery equipment at a site owned by Liberty with the only equipment located on [REDACTED] property being the natural gas service riser, regulator(s) and gas meter.

- (ii) The Parties acknowledge that certain modifications to the [REDACTED] boiler plant will be necessary to allow [REDACTED] to use RNG from the Project as one of its sources of fuel. The Parties shall work together to determine the supply and design requirements. The Parties agree that the transition point between Liberty owned equipment and [REDACTED] owned equipment shall be the outlet flange of the gas meter.
- (iii) The Parties agree that [REDACTED] will maintain its current fuel supply systems and be able to operate as a dual fuel system.

2. Description of Liberty Facilities.

Liberty has completed preliminary scoping of the Project based on its understanding of the peak and average volumes of customer demand. It owns and has full control of approximately 17 acres of industrial zoned property that it intends to use for the primary delivery, storage, vaporization, and delivery equipment. Liberty anticipates that the Project will consist of the following primary equipment.

- (i) **Distribution:** Liberty will construct, own and operate certain fuel delivery and supply equipment and utility distribution piping within the City of Keene which will vaporize, odorize and distribute sufficient quantities, in supply and pressure, of natural gas to the [REDACTED]. Such fuel and distribution equipment shall include, but is not limited to, vaporizers, mercaptan odorization, gas regulators, gas meters, underground gas distribution piping and system control mechanisms. Liberty will maintain all material and equipment required to deliver natural gas to the [REDACTED] as part of the distribution services pricing contract.
- (ii) **Supply:** Liberty will construct, own and operate a natural gas decompression facility as part of the Project that will be utilized to provide RNG supply to [REDACTED].
- (iii) Pricing of gas distribution service provided by Liberty to [REDACTED] shall be based on Liberty's investment in the equipment necessary to serve [REDACTED] as described above, and shall be sufficient to yield a reasonable return to Liberty, taking into account anticipated delivery sales and minimum quantities of gas delivery services.

3. Liberty – [REDACTED]

- (i) Liberty has entered into contracts with large commercial customers and/or customers that will require substantial utility system modifications to establish gas supply services. These special contracts (“**Special Contracts**”) are negotiated and executed between the utility and customer and approved by the New Hampshire Public Utilities Commission and are the definitive document providing the details of service and pricing.

- (ii) The Special Contract will include mutually agreeable terms that are typical for agreements for the delivery and sale of gas services to customers of similar size and operating characteristics. These terms will include, but are not be limited to, the following:
 - (a) [REDACTED] will purchase all RNG delivery services for the contemplated purposes from Liberty.
 - (b) The Parties will agree on minimum and maximum quantities of gas delivery services.
 - (c) The Parties will agree on contract length, renewal, confidentiality and exit options.
 - (d) [REDACTED] shall maintain properly trained employees able to manage the operation of a dual fuel system.
- (iii) The Parties recognize and agree that finalization of the Special Contract is dependent upon the Parties agreeing upon mutually acceptable terms (including, without limitation, agreement to acceptable payment terms and to comply with all applicable laws and regulations), and upon receipt of all necessary internal approvals, up to and including approvals of the management of both Parties. The Parties hereunder shall only be obligated to negotiate in good faith to attempt to agree upon the terms of a Special Contract, and nothing contained herein shall require any party to enter into any Special Contract or any other definitive agreement unless the terms thereof are satisfactory to such Party in its sole discretion.
- (iv) The Parties agree and understand that any Special Contract is subject to the approval of the New Hampshire Public Utilities Commission.

5. Fuel Commodity Purchase

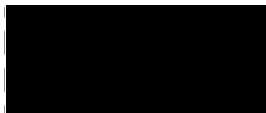
The Parties agree to negotiate in good faith the terms and conditions for the purchase and delivery of RNG as needed to support the fuel requirements of [REDACTED]. Unless otherwise agreed upon by the Parties, all State of New Hampshire environmental attributes related to RNG delivered to [REDACTED] will be owned by [REDACTED].

6. Exclusivity

Until mutually agreed upon by the Parties, Liberty shall maintain the exclusive right to negotiate with [REDACTED] for the delivery, storage, vaporization, orderization, and distribution of RNG services to [REDACTED]. This exclusive right will be for a period of one year and will continue on a month to month basis thereafter unless terminated with thirty (30) days written notice.

7. **General Provisions.**

- (i) **Representations Regarding this Letter of Intent.** By their execution of this non-binding Letter of Intent, the Parties represent and warrant that they are authorized to enter into this Letter of Intent, that it does not conflict with any contract, lease, instrument, or other obligation to which either is a party or by which either is bound, and that, to the extent specifically so described in the preamble hereto, it represents their valid and binding obligation, enforceable in accordance with its terms.
- (ii) **Notices.** Any notices to be given hereunder by either Party to the other shall be in writing and shall be sent by electronic mail with confirmation sent via regular mail, addressed to the other Party at the address set forth below, or at such other address as such Party may specify in writing as provided below:



Attention:

Email:

To Liberty
116 North Main St
Concord, NH 03301
Attention: William Clark
Email: william.clark@LibertyUtilities.com

Notices shall be effective upon confirmation of receipt.

- (iii) **No Consequential Damages.** No Party shall be responsible to any other Party for any consequential damages of any kind arising hereunder and directly related to this Letter of Intent.
- (iv) **Confidentiality.** The Parties agree that during the term of this Letter of Intent, a Party may obtain access to certain confidential and proprietary business and commercial information of another Party or of third parties, and agree to maintain the confidentiality of such information. Upon termination of this Letter of Intent, any confidential or proprietary information in the possession of either Party shall be returned to the other Party and/or destroyed with notification and proof of destruction to the appropriate Party.
- (v) **Waiver.** The waiver by either Party of a breach of any term or provision of this Letter of Intent shall not operate or be construed as a waiver of any subsequent breach of the same provision or of the breach of any other term or provision of this Letter of Intent.

- (vi) **Counterparts.** This Letter of Intent may be executed in two or more counterparts, each of which shall be deemed an original, and which together shall constitute one and the same agreement.
- (vii) **Governing Law.** This Letter of Intent shall be governed by and construed in accordance with the laws of the New Hampshire.

If the foregoing is acceptable to you, please countersign this Letter of Intent where indicated below and return a copy to me.

**LIBERTY UTILITIES (ENERGYNORTH
NATURAL GAS) CORP.**

By: 

Name: William J Clark

Title: Director, Business Development


By: 

Name: 

Title: 


By: 

Name: 

Title: 



November 6, 2019

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

This non-binding letter of intent ("**Letter of Intent**") sets forth the material terms and conditions under which Liberty Utilities (EnergyNorth Natural Gas) Corp d/b/a Liberty Utilities ("**Liberty**" or the "**Company**") will provide renewable natural gas ("**RNG**") supply and distribution services to [REDACTED] Liberty and [REDACTED] for the purposes of this Letter of Intent are, collectively, the "**Parties**."

Liberty is a regulated natural gas utility serving approximately 95,000 customers in New Hampshire. Liberty is proposing a project, which would bring natural gas service to commercial and industrial customers in [REDACTED] Liberty intends to design, develop, permit, construct, own, and operate a regulated natural gas distribution system with the primary supply of natural gas to the system in the form of RNG with the available backup of CNG (the "**Project**"). In instances where Liberty cannot supply RNG or cannot supply sufficient quantities, the price of CNG will not be allowed to exceed the agreed price of RNG. In instances where CNG market rates are below RNG, [REDACTED] will be charged the market rate of CNG. Initially, [REDACTED] would be Liberty's sole natural gas customer in [REDACTED] and RNG will be the fuel source provided for [REDACTED] The Parties acknowledge that significant time and financial resources will be incurred by both Parties to develop the Project and, by executing this Letter of Intent, the Parties are expressing their interest in the Project.

This non-binding Letter of Intent is not binding on either Party and shall not create any obligation or commitment of any kind (except for Section 6 and 7(iv)), including to enter into definitive documentation or to give any rights or claims in the event that for any reason either Party terminates negotiations with respect thereto. The material terms and conditions set forth in this non-binding Letter of Intent are intended to be the subject of further discussions and then potentially incorporated into legally binding definitive agreements (the "**Definitive Agreements**"), which Definitive Agreements will contain additional terms and conditions yet to be agreed upon.

1. Description of [REDACTED] Facilities.

- (i) The Parties acknowledge that the intent of the Project is to initially locate all or substantially all of the fuel delivery equipment at 9 [REDACTED], on property owned by [REDACTED].
- (ii) The Parties acknowledge that certain modifications to the [REDACTED] facilities would be necessary to allow [REDACTED] to use RNG from the Project as its primary source of fuel. The Parties would work together to determine the supply and design requirements. The Parties acknowledge that the transition point between Liberty-owned equipment and [REDACTED]-owned equipment would be the outlet flange of the gas meter. The gas meter location will be located as close as practicable to the point of use. Meter location will be determined by [REDACTED] with input from Liberty Utilities.

2. Description of Liberty Facilities.

Liberty intends to utilize property owned by [REDACTED] for the initial phase of the Project for the primary delivery, storage, decompression, and metering equipment. Liberty anticipates that the Project would consist of the following primary equipment, which will be placed within an area at [REDACTED] facility of no greater than 6,000 sq ft square feet. Liberty will be required to work with [REDACTED] to minimize the required square footage to the minimum practicable for the installation. [REDACTED] will lease required space to Liberty as part of the contract as part of negotiated RNG rates.

- (i) **Distribution:** Liberty would construct, own, and operate certain fuel delivery and supply equipment and utility distribution piping within the property of [REDACTED] which would distribute sufficient quantities, in supply and pressure, of RNG to the [REDACTED] facility. Such fuel and distribution equipment shall include, but is not limited to, gas regulators, gas meters, underground gas distribution piping, and system control mechanisms.
- (ii) **Supply:** Liberty would construct, own, and operate a natural gas decompression system on [REDACTED] property as part of the Project to provide RNG supply to [REDACTED].
- (iii) Liberty would maintain all material and equipment required to deliver RNG to [REDACTED] as part of the tariff distribution rates, and [REDACTED] will not otherwise bear any cost or expense related to the foregoing distribution and supply materials and equipment. Liberty will maintain property insurance in an amount no less than the full replacement cost for such materials and equipment, and Liberty shall maintain liability insurance in an amount no less than \$10,000,000 per claim that shall cover damages to persons and to property at [REDACTED] facility arising from the Project or Liberty's actions. Between the execution of this Letter of Intent and a contract proposal, detailed insurance requirements will be determined and agreed upon by both Parties.
- (iv) Pricing of gas distribution service provided by Liberty to [REDACTED] would be based on Liberty's Line Extension Policy contained within the current EnergyNorth Tariff taking into account anticipated delivery sales and minimum quantities of gas

delivery services. As soon as practicable, Liberty shall provide [REDACTED] with pricing information; accurate pricing information is a critical factor in [REDACTED] assessment of the Project.

3. Liberty – [REDACTED] Special Contract

- (i) Liberty has entered into contracts with large commercial customers and/or customers that will require substantial utility system modifications to establish gas supply services. These special contracts (“**Special Contracts**”) are negotiated and executed between the utility and customer and approved by the New Hampshire Public Utilities Commission and are the definitive document providing the details of service and pricing.
- (ii) The Special Contract will include mutually agreeable terms for the delivery and sale of gas services to customers. These terms would include, but are not be limited to, the following:
 - (a) [REDACTED] will purchase all RNG delivery services to its [REDACTED] facility from Liberty, subject to agreed exceptions and limitations. [REDACTED] shall receive, at no additional cost, all thermal renewable energy certificates pertaining to the RNG delivered to its [REDACTED] facility.
 - (b) The Parties will establish minimum and maximum quantities of gas delivery services, subject to agreed exceptions and limitations.
 - (c) The Parties will establish contract length, renewal, and exit options.
- (iii) The Parties recognize that finalization of the Special Contract is dependent upon the Parties agreeing upon mutually acceptable terms (including, without limitation, agreement to acceptable payment terms, insurance coverages, indemnity obligations, and requirements to comply with all applicable laws and regulations), and upon receipt of all necessary internal approvals, up to and including approvals of the management of both Parties. The Parties shall negotiate in good faith to attempt to agree upon the terms of a Special Contract, but nothing contained herein shall require either Party to enter into any Special Contract or any other definitive agreement unless the terms thereof are satisfactory to such Party in its sole discretion.
- (iv) The Parties understand that any Special Contract is subject to the approval of the New Hampshire Public Utilities Commission.

5. Fuel Commodity Purchase

In addition to the Special Contract, the Parties shall negotiate in good faith the terms and conditions for the purchase and delivery of RNG (an RNG Supply Agreement) as needed to support the fuel requirements of [REDACTED] but nothing contained herein shall require any either Party to enter into any definitive agreement unless the terms thereof are satisfactory to such Party

in its sole discretion. [REDACTED] shall receive, at no additional cost, all thermal renewable energy certificates pertaining to the RNG delivered to its [REDACTED] facility.

6. Exclusivity

Liberty shall maintain the exclusive right to negotiate with [REDACTED] for the delivery, storage, and distribution of RNG to [REDACTED] for a period of one year from the date of this Letter of Intent, or earlier if mutually agreed to by the Parties, and will continue on a month to month basis thereafter unless terminated by [REDACTED] with thirty (30) days written notice.

7. General Provisions.

- (i) **Representations Regarding this Letter of Intent.** By their execution of this non-binding Letter of Intent, the Parties represent and warrant that they are authorized to enter into this Letter of Intent, that it does not conflict with any contract, lease, instrument, or other obligation to which either is a party or by which either is bound, and that, to the limited extent specifically so described in the preamble hereto, it represents their valid and binding obligation, enforceable in accordance with its terms.
- (ii) **Notices.** Any notices to be given hereunder by either Party to the other shall be in writing and shall be sent by fax with confirmation sent via regular mail, addressed to the other Party at the address set forth below, or at such other address as such Party may specify in writing as provided below:

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

I

To Liberty
116 North Main St
Concord, NH 03301
Attention: Mark Stevens
Email: mark.stevens@libertyutilities.com

Notices shall be effective upon receipt.

- (iii) **No Consequential Damages.** No Party shall be responsible to any other Party for any consequential damages of any kind arising hereunder and directly related to this Letter of Intent, excepting only a violation of Section 7(iv) below.
- (iv) **Confidentiality.** The Parties agree that during the term of exclusivity set forth in in Section 6 of this Letter of Intent, a Party may obtain access to certain

confidential and proprietary business and commercial information of the other Party ("**Confidential Information**"). During the term of exclusivity and for a period of two (2) years thereafter, the Parties agree to (i) use the Confidential Information only for the purpose of the activities covered under this Letter of Intent, (ii) hold in confidence all Confidential Information, and (iii) not disclose Confidential Information to third parties. However, a Party shall not be liable for disclosure of the Confidential Information if the same:

- (a) is, at the time of disclosure hereunder, described in the literature available to the public or otherwise in the public domain;
- (b) comes into the public domain after the disclosure hereunder through no breach or fault of the disclosing Party;
- (c) can be shown by the disclosing Party to have been in its possession at the time of disclosure hereunder;
- (d) is legally acquired by the disclosing Party from a third party who is not subject to a contractual or fiduciary relationship with the other Party; or
- (e) is required to be disclosed by federal, state, or local statutes, or by the order of a court of competent jurisdiction; provided, however, that the disclosing Party shall provide the other Party with notice immediately so that the other Party may contest such potential use or disclosure.

Upon termination of this Letter of Intent, any Confidential Information in the possession of either Party shall be returned to the other Party and/or destroyed with notification and proof of destruction to the appropriate Party. In case of breach of the confidentiality obligations in this Section 7(iv), the Parties acknowledge that damages alone would not be an adequate remedy. Accordingly, without prejudice to any other rights and remedies it may have, a Party shall be entitled to seek equitable relief (including without limitation injunctive relief) concerning any threatened or actual breach of the provisions of this Section 7(iv).

- (v) **Waiver.** The waiver by either Party of a breach of any term or provision of this Letter of Intent shall not operate or be construed as a waiver of any subsequent breach of the same provision or of the breach of any other term or provision of this Letter of Intent.
- (vi) **Counterparts.** This Letter of Intent may be executed in two or more counterparts, each of which shall be deemed an original, and which together shall constitute one and the same agreement.

(vii) **Governing Law.** This Letter of Intent shall be governed by and construed in accordance with the laws of the New Hampshire.

If the foregoing is acceptable to you, please countersign this Letter of Intent where indicated below and return a copy to me.

**LIBERTY UTILITIES (ENERGYNORTH
NATURAL GAS) CORP.**

By: Mark Stevens 11/6/19

Name: Mark Stevens

Title: Business Development

[REDACTED]

By: _____
Name _____
Title: _____

[REDACTED]

	Days				Total	RNG supply 5 yr average	Socialized		
January	31	16,509	10,533	6,347	33,389	46,026	12,636	Production Facility	1484.70
February	28	13,426	9,844	6,347	29,617	41,572	11,954	Daily 5 Year Average	
March	31	12,799	10,692	6,347	29,838	46,026	16,187		
April	30	9,561	9,925	6,347	25,833	44,541	18,708		
May	31	5,874	11,796	6,347	24,017	46,026	22,008		
June	30	3,983	11,381	6,347	21,711	44,541	22,830		
July	31	3,988	12,286	6,347	22,621	46,026	23,404		
August	31	2,218	11,691	6,347	20,256	46,026	25,769		
September	30	4,773	11,699	6,347	22,819	44,541	21,722		
October	31	8,292	11,755	6,347	26,394	46,026	19,631		
November	30	12,239	10,095	6,347	28,681	44,541	15,860		
December	31	15,294	10,348	6,347	31,989	46,026	14,036		
	365	108,956	132,045	76,168	317,169	541,915	224,746		



Interconnect Guide for Renewable Natural Gas (RNG) in New York State

Final Report
August 2019

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¹ The Northeast Gas Association is a regional trade association that focuses on education and training, technology research and development, operations, planning, and increasing public awareness of natural gas in the Northeast U.S. The Northeast Gas Association (NGA) represents natural gas distribution companies, transmission companies, liquefied natural gas suppliers and associate member companies. Its member companies provide natural gas service to over 13 million customers in 9 states (CT, MA, ME, NH, NJ, NY, PA, RI, VT).

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Foreword

The objective of this document is to provide the technical framework and guidance necessary for the introduction of renewable natural gas (RNG) into the natural gas distribution pipeline network.

RNG is a product of anaerobic digestion or gasification of a wide variety of waste products. These include dairy/animal residuals, landfill biomass material, wastewater treatment produced gases, digestion of agricultural wastes and, in advanced systems, co-digestion of mixed biomass substrates. Digestion of biomass material results in “raw” biogas production; gasification of biomass similarly produces a “raw” syngas. To be suitable for introduction to the natural gas pipeline network, these raw gases must be processed in order to increase methane content and remove constituents potentially problematic to pipeline integrity and end-use applications.

Over the past decade, significant research has been conducted to better understand the similarities and differences between the composition of the raw biogas/syngas and traditional pipeline quality natural gas delivered into the gas distribution system pipeline network. In parallel, significant technology advancements have been achieved in processing and treating raw biogas/syngas to address trace constituent concerns of end-users, thus making RNG compatible with the local gas distribution system and end-use requirements.

This document is intended to encourage maximum acceptance of RNG into the natural gas network by using a “*good science and common sense*” approach to establishing composition equivalency and interchangeability with RNG and pipeline supplies - bridging policy and technical concerns of both project developers and pipeline operators. Much of the information contained in this document is based on prior work by GTI and others in assessing the interchangeability and overall compatibility of RNG with traditional pipeline supplies. A list of these resources is included in this document. This manual is a compilation of prior member-sponsored research, publicly available technical literature, Internet information and opinions of researchers, and other experts in the industry.

The industry is still learning about RNG and its effects on pipeline infrastructure and end use. It is in the industry’s best interest to continue research, collaboration and dissemination of available history and experience. Even though attempts were made to gather information from reliable sources and correctly interpret it, this information should be used only for educational purposes. More in-depth specific analysis may be required to address project specific situations.

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- National Fuel Gas Distribution
- National Grid
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A. Executive Summary

Throughout North America, RNG project developers are in discussion with gas pipeline operators. However, the processes, requirements, and agreements to enable connecting these valuable supplies are not uniform, resulting in commercial and technical uncertainties for both parties that inhibit maximum recovery and utilization of this valuable resource. A consistent, non-discriminatory approach is needed to assess the commercial and technical viability of each project. Such an approach would encourage and enable introduction of RNG from a range of biomass sources into the pipeline system without compromising safety or reliability of the pipeline grid and end-use applications. Additionally, the approach provides increased certainty for all parties involved in negotiations regarding safety, reliability, continuity, and interchangeability. Development and use of a proper approach can be instrumental in defining the requirements to keep gas flowing from an RNG facility and avoid unnecessary service interruption. Importantly, a project approach will aid project developers and RNG producers by providing a standardized framework that can be applied, as appropriate, to reduce uncertainty about what is needed to optimize biogas/syngas processing facility design.

This document is intended to outline a structured approach that all parties can use to begin the technical collaboration processes necessary to understand each stakeholder's requirements, and ultimately, make each biogas development project a success story for all parties involved. It lays out the distinct roles and responsibilities of the pipeline operator and the project developer/ producer, and offers a common technical framework describing what each party needs to accomplish. Successful and sustainable introduction of RNG into the natural gas network often depends on multiple variables beyond specific gas quality objectives. Defining these variables and their impact on a project will lead to productive dialog among all parties.

Although fundamental interchangeability criteria have been established for processed gases, including RNG, the lack of a consistent approach to evaluating acceptance criteria and trace constituent composition equivalency has sometimes been a barrier to broader acceptance of RNG directly into distribution networks. This guidance document provides an example of an evaluation process, including identification of reasonably expected potential constituents of concern (including trace constituents) based on biomass feedstock and conversion processed used, and compares these constituents to those found in typical pipeline supplies. The approach to trace constituent *composition equivalency* helps eliminate a "one size fits all" assessment and gas processing solution by focusing on specific, reasonably expected raw gas constituents relative to biomass feedstock. Project developers can then evaluate, optimize and employ raw biogas/syngas upgrading technologies to produce RNG with comparable reasonably expected trace constituent levels presently found in flowing pipeline supplies (i.e., trace constituent compositional equivalency).

A user-friendly technical framework is provided to help reduce overall operational risk for both the developer and pipeline operator, thereby minimizing potential impacts to end-use consumers. This framework includes the following key elements:

- ✓ Interconnect Agreement Evaluation Process Flow Diagram
- ✓ Producer/Developer & Pipeline Operator Assessment Checklists
- ✓ Gas Quality & Interchangeability Management Program Matrix
- ✓ Raw Biogas & Upgraded RNG Trace Constituents Measurement Matrix & Proposed Sampling Plans

Finally, the document provides a comprehensive list of technical references that support the overall suggested process approach to accepting RNG supplies into the distribution network. The appendix contains a sample Interconnect Feasibility Analysis Agreement (IFA) and Gas Sales Agreement (Interconnect Agreement). These sample agreements serve as a starting place in the evaluation and gas acceptance process and provide essential elements for project/company-specific agreements.

B. Introduction - RNG Gas to Pipeline Grid

Biogas, Syngas and RNG

RNG is a pipeline-compatible, gaseous fuel derived from biomass or other renewable sources. It has lower lifecycle CO₂e emissions than geological natural gas and is compositionally equivalent and fully interchangeable with natural gas. It is the product of raw biogas (from anaerobic digestion) or syngas (from biomass gasification) that has been upgraded to pipeline quality.

Anaerobic digestion (AD) produces biogas through the biological decomposition of organic matter in the absence of oxygen. The digestion process begins with bacterial hydrolysis of the input materials in order to break down insoluble organic polymers such as carbohydrates and make them available for other bacteria. Acidogenic bacteria then convert the sugars and amino acids into carbon dioxide, hydrogen, ammonia, and organic acids. Acetogenic bacteria then convert these resulting organic acids into acetic acid, along with additional ammonia, hydrogen, and carbon dioxide. Finally, methanogens convert these products to methane and carbon dioxide. Potential waste-derived biogas sources include landfills, source separated organics anaerobic digestion (AD) facilities, wastewater treatment plants (WWTPs), and animal farms. Gasification produces syngas from biomass feedstocks such as wood waste, the organic fraction of municipal solid waste, bagasse, and other biologically derived materials. Gasification is a high temperature conversion process with very low oxygen present that transforms organic material into syngas that can be further processed to reform the predominantly hydrogen and carbon monoxide syngas to methane, and ultimately into RNG.

Regardless of the biomass source or conversion technology, when the raw gas is appropriately upgraded to meet trace constituent compositional equivalency and interchangeability requirements, RNG is an overall low carbon product that facilitates meeting long-term decarbonization goals. In addition, in certain areas RNG recovery can be a viable option for meeting localized demand for pipeline natural gas and reducing the need for pipeline expansion.

RNG is already being accepted and used in many parts of the country. As an example, introduction of RNG directly into a gas distribution system has been successfully practiced for over 30 years at the Fresh Kills landfill in Staten Island, New York, and one of the largest sewage treatment plant digester gas to RNG projects is planned at the Newtown Creek wastewater treatment plant (WWTP) in New York City. Today, more companies are considering RNG as a fuel of choice and part of their overall equation in meeting renewable energy needs. This is an opportunity to further shape the energy future of the gas network by recovering a valuable fuel resource while reducing the release of greenhouse gases to the environment. Indeed, much like the “great conversion” from manufactured gas to pipeline supplies in the 1960’s, a comprehensive energy strategy regarding recovery and introduction of RNG directly into the pipeline grid may be the industry’s second great conversion.

Commercial and Contractual Relationships

The two main parties involved in an RNG interconnection project are the project developer/producer (who recovers, processes, and sells the RNG) and the pipeline operator or the local natural gas utility (who receives RNG for purchase, and/or transportation for purchase, by another party for end use).

The developer/producer is responsible for project development, which includes producing and upgrading the gas to meet pipeline requirements. The producer may be the digester owner, or it may be the upgrade process developer, or even a third party who has contracted with one of the above. In some cases, it may be a gas utility.

The pipeline operator owns and operates the pipeline system that would receive the RNG. For the purposes of this document, the pipeline operator may be a local distribution company (LDC) or utility, or it may be an interstate pipeline transmission company who transports gas to the LDC.

In most cases, it is not the intention of the pipeline operator to select, own, or operate the biogas conditioning and/or upgrading facility. The developer/producer is typically the owner of any gas treatment system (prior to gas entering the LDC gas distribution system). Pipeline operator gas quality and interchangeability requirements are driven by pipeline safety, integrity and end-use requirements in addition to local regulatory requirements. For example, in New York State, regulatory compliance with New York State Code Title 16, Chapter III 16 NYCRR Part 229 standards for pipeline injection of any gas source for distribution to consumers is the utility or pipeline operator’s responsibility. The developer/producer is solely responsible for ensuring that upgraded RNG intended for pipeline injection meet these statutory requirements as well as any other requirements of the pipeline operator to ensure trace constituent compositional equivalency and interchangeability.

Social and Economic Benefits of RNG Recovery

The social benefits of using RNG are numerous. Depending on the feedstocks used to generate RNG, it can be a net carbon-negative or low carbon energy source because the carbon released by its combustion is already fixed from the natural carbon cycle and may originally derive from the collection of potent greenhouse gas emission-related carbon gases. Consequently, recovery of biogas and subsequent processing to RNG represents a holistic view of the energy system by capturing gaseous by-products of local waste stream decomposition to address climate change. Furthermore, an existing gas network is delivering a new source of renewable energy.

Recovering RNG also makes economic sense. Construction, operation, and maintenance of RNG gas production plants create new jobs and stimulates the local economy. Producing, recovering, and using RNG increases the security and diversity of energy supplies in the United States. For local distribution system operators, RNG introduction can significantly help meet growing local demand for natural gas, and in some cases, do so without the need for construction of additional pipeline capacity. Where pipeline interconnects are not economical due to the proximity of the RNG supply relative to the pipeline network, virtual pipelines are providing valuable options to transport the RNG product to local distribution systems.

Essential Elements of Getting Connected

There are a few essential steps in the process for getting an RNG project connected to the pipeline grid. It is recommended that the project developer/producer engage with the pipeline operator 18-24 months in advance of the desired in-service date. Figure 1 shows the basic connection process, with each step discussed in detail in ensuing sections.



Figure 1: Sequence of Events in Getting Connected

C. Preliminary Evaluation

The first step is the preliminary evaluation. This is a high-level concept feasibility assessment focused on the ability of a pipeline operator to receive gas into its distribution or transmission system based on the interconnection location and associated system flow capacity. The developer/producer will describe the project to the pipeline operator. Providing as much information at this point will make the process go as quickly and smoothly as possible. At a minimum, the preliminary evaluation should cover:

- Proposed facility location and land ownership,
- Source of raw gas (WWTP, landfill, agriculture, food, gasification, etc.),
- Anticipated interconnect pressure,
- Temperature,
- Interconnect pipe size,

- Anticipated gas quality at the interconnect point,
- Information about proposed upgrading/cleanup technology (including commercial track-record if available),
- Production flow rates (net anticipated hourly/daily flow rates),
- Any RNG expected daily/seasonal variations, and
- Any other key process variables such as the ability to aggregate supply, if needed.

The pipeline operator's contact person will engage a technical team to perform a high-level technical review of the preliminary proposal. This process may take several weeks. The pipeline operator's contact person will then contact the developer/producer to discuss results of the preliminary assessment, which includes a pipeline capacity assessment and an order-of-magnitude interconnection cost estimate. If the project developer wishes to proceed, the pipeline operator contact can choose to set up a preliminary review meeting with the developer/producer.

During a preliminary review meeting, the pipeline operator will go over the required next steps based on pipeline operator-specific needs, and any local, state and/or federal regulatory requirements related to the interconnection. Relevant gas quality requirements will be included based on the anticipated biomass feedstock material (see Appendix H for Feedstock/Upgraded Gas Constituent Guidance Matrix)². A schedule for further meetings will be determined, if appropriate. A sample preliminary assessment form is included in Appendix A. A nominal application fee may be appropriate to enable the pipeline operator to recover its costs to perform the preliminary evaluation.

D. Interconnect Feasibility Analysis Agreement (IFA)

If the pipeline operator's analysis indicates enough capacity at the desired interconnect location, and the project developer indicates the preliminary estimate for pipeline connection cost is within their feasibility range, the process will move to the next step, which is the execution of Interconnect Feasibility Analysis Agreement (IFA).

The IFA is required for a pipeline operator to conduct more detailed engineering assessments, interconnection design and design review and cost analysis for making the connection to the pipeline system. Reasonable cost recovery for the IFA may be required to ensure ratepayers are not subsidizing a project developer's work. In this case, pipeline operators will provide an IFA cost estimate for the project developer to consider. The IFA provides the framework for the detailed evaluation of the technical aspects of the project, such as pipeline materials; pipeline easement requirements; equipment, facilities and layout of the interconnection; flow and seasonal capacity system modeling impacts on the pipeline network as a result of a new source of supply (RNG); impacts on potential sensitive end-use customers; and potential impact of RNG supply influence on therm billing zones. The assessment also includes a comparative

² The goal is to ensure that the RNG is equivalent, from a compositional and interchangeability perspective, to pipeline supplies flowing at the proposed interconnect point.

evaluation of existing gas supply composition to establish baseline RNG interchangeability and quality requirements for the project.

The detailed IFA includes the pipeline operator consulting internally within their organizations (gas supply, gas control, engineering, legal, etc.) to ensure a complete interconnection estimate is provided to the developer to formally assess project feasibility. The IFA will include a schedule of communication and required deliverables between the two parties and will designate the technical contacts for the review process.

As part of the IFA, the pipeline operator will need more detailed information about the project. The developer/producer will provide a detailed *RNG Technical Summary* to the pipeline operator, conducted under a Non-Disclosure Agreement (NDA) if required by the developer.

Included in the RNG Technical Summary is:

- A description of the biomass source, conversion technology and raw gas upgrading technologies under consideration.
- A projected RNG project schedule with planned pipeline interconnection.
- Expected RNG production rates, including anticipated periods of reduced flow due to expected downtime for maintenance, etc.
- Supporting data from reference projects that demonstrates the proposed upgrading technology is sufficient to meet the pipeline gas compositional and interchangeability equivalency requirements.

The IFA should be executed as soon as possible after the RNG project developer confirms their wish to proceed based on the preliminary evaluation, so that this detailed examination of potential impact on the existing pipeline system and its end-use customers can be quickly determined. Executing the IFA and completing the FA does not guarantee acceptance of the project. The project developer/producer should be aware that having a pipeline nearby does not guarantee that it can be used for RNG injection. The specific pipeline's capacity and network configuration and end-use customer needs must be considered. Not all pipelines have capacity to receive gas on a routine basis.

Appendices A-D offer guidance and highlight technical considerations that should be included in the IFA. Appendix E contains an *example* of an IFA. In addition to successful completion of the IFA, a Gas Sales Agreement (GSA) must be executed before the project is considered binding and construction can proceed. In some cases, the IFA/GSA is negotiated as a *single* agreement. The GSA is discussed in more detail in the next section.

E. Gas Sales Agreement (GSA) or Interconnect Agreement

Once the IFA is complete and the interconnect is found acceptable to all parties, commercial aspects of accepting gas from the proposed facility are negotiated and an Interconnect Contract or Gas Sales Agreement (GSA) is executed. Some pipeline operators may separate the GSA into a Supply Agreement (commercial terms of gas purchase) and a Tap Agreement (commercial terms of the interconnect / custody transfer facility). It is recommended that the GSA be negotiated in parallel with the IFA. Elements of a GSA include but are not limited to:

- Payment for pipeline interconnection cost(s) and any other ongoing charges,
- Delivery obligations (mutually agreeable RNG gas quality specification, expected flow rates),
- Gas pairing agreements (contractual blending net metering and compensation agreements if applicable)³,
- Gas measurement requirements (schedule and periodicity, equipment, sharing of monitoring information and electronic signals etc.),
- Operation and maintenance requirements (monitoring and measurement equipment maintenance, odorization, heating value adjustment, if needed, and metering equipment maintenance, etc.),
- Facility access,
- Gas quality monitoring requirements,
- Conditions that impact acceptance of upgraded gas and facility isolation,
- Billing and payment terms.

The GSA will include the many variables assessed by the pipeline operator during the IFA in order to complete a reliable and safe interconnection including:

1. Will the RNG be aggregated (contractual blending/pairing or in-situ system aggregation) with pipeline gas or will the gas be introduced from a sole source with limited pipeline blending capability?
2. What is the zone of influence? A zone of influence is the geographical area that could be significantly affected by changes in the gas supply, properties, and constituents. It is determined through engineering modeling of the gas flows and pressures. It includes an evaluation of pipeline integrity issues as well as end-use considerations. This approach is similar to how a utility would look at any change in gas quality such as Wobbe or Heating Value.
3. Who would receive the RNG? How will the gas be utilized by potentially sensitive receptors of the gas? An end-user such as a bakery or food processor may not be able to tolerate even a slight change in heat content of the gas or the presence of constituents of concern (COC). A customer impact survey may be needed.

³ Gas pairing agreements allow for contractual blending, where the pipeline operator provides the developer with the option for “pairing” RNG that cannot otherwise meet pipeline requirements, typically for heating value, for a negotiated fee.

4. Can the end-user handle it better if the RNG is blended with pipeline gas? Depending on the interconnect location, this may or may not be feasible.
5. Will accepting the RNG have any impact on other local pipeline interconnects? The project cannot compromise any existing interconnect agreements.
6. Does the proposed connection have enough capacity (is the pipeline main large enough)? It is very costly to install new pipelines in the public right of way.
7. Can the pipeline operator accept the proposed quantity of gas? Varying load periods must be considered to ensure sustainable acceptance into the pipeline grid and avoid injection interruptions.
8. Consideration of the raw gas source. If any Constituents of Concern (COC) are reasonably expected in the raw gas, the developer will work with the operator to provide assurance that the proposed cleanup technologies can control COCs to meet pipeline composition equivalency and interchangeability requirements.

After completion of the GSA or Interconnect Agreement, the project can then commence facility construction, ultimately leading to Commissioning. Appendix F contains an example GSA. Appendix G provides a more detailed Gas-to-Grid process flow diagram.

F. Feedstock, Pipeline Gas Quality and Safety Assessment Considerations

It is important for the engineering staff undertaking the preliminary evaluation and IFA to understand the RNG feedstock (biomass/typical raw gas composition), since raw gas quality will vary depending on the source. Raw gas from a landfill operation, for example, is different than gas from a biomass gasifier or a dairy digester. Constituents of concern (COC typically include trace constituents which may vary significantly by feedstock and conversion technology (see Appendix H for Feedstock/Upgraded Gas Constituent Guidance Matrix) and aligning testing requirements with expected COC will help optimize testing requirements. ***If a COC is not reasonably expected to be found above background levels in flowing gas supplies at the point of interconnect, then testing may not be required.***

It is the developer/producer's responsibility to affirm and demonstrate through comparative analysis that reasonably expected COC concentrations in the raw gas (based on raw gas analysis and/or similar prior processing experience or prior applicable engineering studies) will be removed and/or limited to concentrations typically found in flowing pipeline supplies at the interconnect location. It is not the pipeline operator's intent to approve the selected technology, merely to review and ensure the technology selected is appropriate to meet the gas composition and interchangeability requirements of the interconnect point.

The biomass source / raw gas evaluation needs to consider, as appropriate, the constituent classes identified below.⁴ It is also important to evaluate the natural gas supply at or near the

⁴ See Appendix H for reasonable guidance on potential constituents of concern based on biomass / raw gas.

proposed interconnect point to provide a basis for comparison. COC testing, when required, should be done by a mutually agreed upon third party analytical laboratory service provider using mutually agreeable standard sampling and testing methods.

Technical considerations include:

- *Major/minor constituents*—Including hydrogen, with properties calculation (heating value, Wobbe Number, relative density, hydrocarbon dew point temperature)
- *Sulfur*—Both major/minor and trace constituents, especially dimethyl sulfide, hydrogen sulfide and naturally occurring mercaptans including methyl and ethyl mercaptan
- *Ammonia*—Possible carry-over from gas treatment or breakthrough from raw biogas
- *Reasonably suspected volatile and semi-volatile organics*
- *Siloxanes*—May be found in raw biogas from landfills and WWTPs
- *Halogenated compounds*—For example vinyl chloride, chloroethane and Freon™ compounds may be found in landfill-derived raw biogas
- *PCBs and pesticides*--If necessary, depending on type of biogas and any reasonable indication of historical presence (such as a landfill that may have received PCB containing hazardous waste)
- *Corrosion-causing bacteria and spores*—Sulfate-reducing Bacteria (SRB), Acid-producing Bacteria (APB), and Iron-oxidizing bacteria (IOB) are widely considered the most aggressive corrosion-causing bacteria
- *Aldehydes and ketones*--Commonly associated with biogas odor
- *Volatile metals and mercury*
- *Temperature*
- *Moisture*

Each of these COCs has a differing impact on gas quality, interchangeability, end-use safety/reliability and pipeline integrity. In some cases, the individual constituent may not appear to present a problem; however, the synergistic effect of that constituent in the presence of others could result in an unacceptable condition. Full transparency and disclosure by the developer/producer of the potential for these COCs to be present and the demonstrated compatibility of the proposed treatment system to adequately treat these constituents to levels commonly found in pipeline quality natural gas⁵ is essential for any project. The pipeline operator must have a consistent and predictable RNG supply.

Table 1 highlights reasonably attainable gas quality parameter boundary limits to ensure a reliable, interchangeable RNG supply into the pipeline grid. These limits have been demonstrated to be achievable utilizing currently available raw gas upgrading/clean-up technologies. It should be noted that this table serves as a *starting place* for discussions

⁵ For purposes of this document, treated biogas that results in a biomethane product that is interchangeable from an end-use perspective and similar in constituents (both qualitative and quantitative compositional equivalency) to pipeline natural gas at the point of interconnect shall be considered commercially free of objectionable materials consistent with the intent of the definition in AGA Report 4A.

between the pipeline operator and the developer. Individual interconnect points, operating procedures or tariffs may require different limits based on system operations as determined by the pipeline operator.

Nonetheless, this table is a useful tool to enable reasonable determination of gas quality interconnect requirements and constituent limits that ensures trace constituent compositional equivalency and interchangeability at the interconnect.

Table 1: Gas Quality Minimum Considerations⁶

Gas Quality Specification	Low	High
Heat Content (BTU/scf) ⁷	970	1110
Wobbe Number (+/- 4% from historical supply) ⁸	1270	1400
Water Vapor Content (lbs./MM scf) ⁹		<7
Product Gas Mercaptans (ppmv, does not include gas odorants)		<1
Hydrocarbon Dew Point, (°F) CHDP		15
Hydrogen Sulfide (grain/100 scf)		0.25
Total Sulfur (grain/100 scf)		1
Total Diluent Gases including the following individual constituent limits:		4%

⁶ For purposes of this document “Commercially Free” is defined as “Not Detectable” relative to typical pipeline gas flowing at the interconnect location that results in RNG being compositionally equivalent to flowing supplies. The analytical method and associated detection threshold are based on a mutually agreeable analytical method and laboratory. Testing should be considered where potential COC’s are reasonably expected and should not be presumed to be required for all projects or in all cases. Typically detection thresholds / reasonable concentration limits relative to pipeline gas are provided for context.

⁷ HHV is dry, @ 14.73 psia 60°F

⁸ Wobbe +/- 4% from adjustment gas (historical supply), provided that the lower limit will not be below 1270, and upper limit will not be above 1,400, with HHV capped at 1,110.

⁹ Water vapor content specified in tariffs from interstate pipelines serving the Northeast typically ranges from <4 to <7 lbs/MMscf, and as a practical matter, actual measured values are typically below 4lbs/MMscf.

Carbon Dioxide 2% max Nitrogen 2% max Oxygen (O ₂) 0.1%-0.4% ¹⁰ max		
Hydrogen ¹¹		0.1-0.3%
Total Bacteria ¹²	Comm Free (≤0.2 microns)	
Mercury	Comm Free (<0.06 µg/m ³)	
Other Volatile Metals	Comm Free(<213 µg/m ³)	
Siloxanes as (D4) ¹³	Comm Free(<0.5 mg Si/m ³)	
Ammonia	Comm Free(<10 ppmv)	
Non-Halogenated Semi-Volatile and Volatile Compounds	Comm Free(<500 ppmv)	
Halocarbons (total measured halocarbons)	Comm Free(<0.1 ppmv)	
Aldehyde/Ketones	Comm Free(<100 ppbv)	
PCB's/Pesticides ¹⁴	Comm Free(<1 ppbv)	

The minimum heating value requirement is based on utilization by atmospheric burners typically associated with end-use appliances and is parallel to recently issued guidance in California. Factors that may ultimately influence this value include the ability of the pipeline operator to manage system flows to ensure safe, reliable supply conditions in the event there is an RNG supply interruption or processing anomaly. The pipeline operator will typically assess this value based on the zone of influence analysis and system modeling conducted in the system interconnect feasibility analysis, and discuss injection/interconnect options with the developer. This may be a specific concern for interconnect points involving a single feed, or isolated sections of a local gas distribution system due to the lack of aggregation capability.

G. Pre-Construction, Construction and Facility Start-up

Transparency during project development is key and the pipeline operator must be kept informed on the progress of the biogas upgrading/clean-up plant construction. All applicable regulatory requirements, construction codes, and standards for design and installation of safety systems (including gas and fire detection systems), electrical, and instrumentation facilities must be followed. For any equipment directly interfacing with the pipeline operator such as the metering and custody transfer point, the pipeline operator must be granted access for

10 Oxygen content specified in tariffs from interstate pipelines serving the Northeast typically range from <0.1% to <0.4% max.

11 Hydrogen content can range from 0.1% to 0.3% with typical measured values <0.1%

12 An acceptable alternative to Total Bacteria testing would be to include installation of a 0.2 micron particulate filter, coupled with appropriate filter maintenance practices. Initial start-up testing may include filter effectiveness analysis.

13 Historical testing and data presented in this document include a siloxane detection threshold of < 0.5mg Si/m³. Analytical methods have recently been improved resulting in a reduced detection threshold of < 0.1mgSi/m³. Due to specific limitations of certain identified applications within an affected zone of influence, an operator and developer may consider the reduced threshold.

14 PCB/Pesticide testing is typically not required as the maximum equilibrium concentration in recovered gas at atmospheric temperature is typically below detection thresholds.

periodic progress inspection and to ensure compliance with any applicable company engineering standards and practices. Standards and practices may include personnel and process safety procedures and assessments, detection, and security policies, etc. It is suggested that interim meetings be held to discuss the project's progress at the 50% and 90% completion points, and possibly at other mutually agreed upon points.

Prior to construction, several pre-construction questions need to be addressed and should be included in the GSA. These questions include:

- Facility start-up procedures and plans as they affect the pipeline,
- O&M and safety plans and procedures as they affect the pipeline,
- Discussion of odorization needs and responsibility,
- Final gas quality tariff specifications,
- On-line instrumentation needs and sharing of data/signals
- Determination of schedule for monitoring of gas quality,
- Identification of necessary sampling points,
- Identification of target COCs for periodic monitoring,
- Initial sampling requirements,
- Follow-up sampling requirements,
- Steady state sampling requirements,
- Trigger levels for specific COCs, and
- Response actions for out-of-compliance supply.

Some pipeline operators may separate the GSA into a Supply Agreement and a "Tap Agreement" and address the questions in those documents.

H. Facility Operation and Maintenance

Once the project is operational the developer/producer and pipeline operator should work together in the spirit of transparency to ensure on-going success of the facility. Specific areas of focus are summarized below.

Monitoring, Communication and Notification Requirements

As with all pipeline interconnects, the gas quality and flow rates must be monitored to ensure the gas is meeting the agreed-upon specifications. In cases where the quality has a potential to vary, monitoring is usually performed by on-line instrumentation for essential parameters such as hydrocarbon composition, Wobbe Number, specific gravity and heat content, non-hydrocarbons (inert and diluents including oxygen, nitrogen and carbon dioxide), sulfur compounds (total and specified), temperature, pressure, and moisture.

This information must be made available to the pipeline operator and is usually connected to a Supervisory Control and Data Acquisition system (SCADA). A SCADA process control system gathers data in real time from remote locations in order to control equipment and conditions.

A central Gas Control facility continuously monitors gas quality and pipeline conditions through computerized data input and visual inspection.

The pipeline operator must also be notified as soon as possible of any substantive expected change to the raw gas quality or upgrading process that have the potential to impact RNG quality, so that the pipeline operator can review whether any action is required. In some cases, for example, if the feedstock changes a supplemental technology review, additional sampling, or shut down of the interconnection may be required..

Facility O&M Procedures

A comprehensive, well documented Operations and Maintenance Plan (O&M) of the raw gas processing facility is the key to ensure sustainable, uninterrupted operations. Operational reliability is a key consideration for both the developer and the pipeline operator. In addition to increasing operating revenue, an effective O&M Plan also extends the productive lifetime of the assets, resulting in a reduction in the overall capital expenditure as well as environmental risks.

The interface between the upgrading plant and the pipeline interconnect is known as the gas metering station or custody transfer point. It is the “roles and responsibility demarcation point” between the pipeline operator and cleanup facility owner/operator. O&M plans should include:

- Operating specifications, plans and procedures,
- Point of ownership/demarcation at the metering facility, with a process schematic that denotes major process equipment, critical isolation valves, pressure and flow monitoring equipment, measurement equipment and sample points, odorization equipment, Btu adjustment spiking equipment
- Location and control of overpressure protection, critical isolation valves and check valves to prevent backflow,
- Gas quality monitoring alarm or “trigger levels” that require response actions and a description of required actions,
- Isolation procedures,
- Organization charts, key contact information, phone numbers, and
- Daily facility check-in protocols and communication requirements.

Emergency Plan and Facility Isolation

Should the RNG gas quality fall out of specification, based on established trigger levels that both parties have agreed upon in the GSA, the pipeline operator will have authority to isolate the interconnect to protect their system. Communications with the facility operator will determine the extent of the expected anomaly and how long the plant requires isolation until the internal facility issue related to the anomaly is resolved.

All reasonable efforts will be made to keep the facility operational. For short duration low impact anomalies that have limited impact on gas system operations, the pipeline operator may be able to accommodate these types of events occasionally through rerouting of gas supplies

and/or pipeline blending. Applying this mitigation measure is at the sole discretion of the pipeline operator and is considered an exception, not the “rule”.

If facility isolation from the pipeline system is necessary, the pipeline operator will notify the facility operator as soon as reasonably possible. The facility operator will need to provide assurance that all gas quality requirements of the GSA are satisfied before gas flow is resumed through the interconnect system.

Gas Measurement Protocols and Instrumentation

The GSA (or Tap and Supply Agreements) will specify which party is responsible for operating and maintaining the measurement facilities. In most cases this will be the facility operator or producer, with SCADA connections to a Gas Control facility. The GSA will also specify the gas measurement basis, i.e. the pressure and temperature that all data will be corrected to and reported as and whether the gas is to be considered dry or saturated with water vapor. Typical temperature is 60°F and either 14.696 or 14.73 psia. The required instrumentation for gas analysis consists of basic equipment and appropriate sampling points that are typically found at custody transfer locations:

- 10-component gas chromatograph,
- Odorant/sulfur chromatograph,
- Moisture analyzer,
- Temperature thermocouple,
- Pressure transducer, and
- Flow rate measurement.

Good practice for utilization of analytical instrumentation involves writing a Standard Operating Procedure (SOP), training of operators, determination of specific accuracy limits, calibration frequency, performance verification, periodicity of measurements, calculation methods, equipment maintenance procedures, and reporting protocols.

Gas Quality Analysis and Management

The GSA will also specify additional monitoring requirements for specific COCs that will verify the consistent operation of the upgrading facility. The COCs selected for periodic analysis will be based upon their presence in the raw biogas, likelihood for breakthrough from the upgrading technology used, potential pipeline integrity impact, potential human health concerns, interchangeability impact, and any regulatory requirements. Trigger levels for out of compliance testing will result in two possible scenarios:

1. Additional monitoring requirements if the concentration level of a COC rises above the first action limit. Gas will be accepted, but additional monitoring will be required until periodic testing proves the issue is resolved.¹⁵

¹⁵ The purpose of establishing “action levels” is to provide transparency and visibility of potential trends in gas quality that could result in reaching a trigger level requiring a shut down. Ultimately, both the developer and pipeline operator need to work together to keep the facility on-line.

2. The gas will be shut-in and the facility isolated if the concentration level rises above a second, higher action level, until periodic testing proves the out of compliance issue is resolved.

Monitoring is aimed at confirming that RNG from a discrete system, given a discrete biomass input and gas cleanup technology, can consistently achieve required value ranges for specific compounds in the treated gas. Again, the goal is to optimize any gas clean-up process to make the RNG consistently compositionally equivalent and interchangeable with the pipeline gas at the interconnect point.

Usually there will be an accelerated phase of compliance monitoring (3-6 months) for COCs at the beginning of an RNG interconnect project while the facility is on-line. This monitoring plan is designed to look at potential variation in gas quality resulting from the gas cleanup system. It is reasonable to *reduce* the frequency of maintenance sampling as the upgrading process and biogas source are shown to be in control and meeting design specifications. The maintenance sampling schedule and mutually agreeable acceptable compositional ranges should consider potential seasonal variation of gas quality. This compliance monitoring achieves three goals:

1. The pipeline operator can monitor and assure the quality of the gas product within the pipeline system based on routine production of the product over a trial period,
2. The producer can verify that the product is consistent and safe for pipeline interchange,
3. Both parties may better understand the nature of specific gas quality parameters and constituents necessary to optimize the cleanup process prior to introduction to the pipeline network.

Samples shall be taken in accordance with mutually agreeable industry accepted practices. Inert sample containers and specific sorbent materials will be used as necessary for constituents as specified in the GSA. Guidance documents for sampling and testing on the exact required COCs can be found in the Technical References section of this document.

It is recommended that all on-line measurements be available for independent viewing by qualified personnel for verification of quality during the test period. This period of testing and system analysis is for the protection of the receiving pipeline system and will provide data which assures consistent gas quality. Once the pipeline operator and producer are mutually satisfied that the facility is operating as expected and in control, maintenance monitoring may commence. Maintenance monitoring includes use of on-line monitoring equipment such as the 10-component gas chromatograph, odorant/sulfur chromatograph, moisture analyzer, and pressure and temperature monitors, to ensure the gas upgrading facility remains in control thereby allowing these parameters to act as surrogate monitoring parameters for COCs. This surrogate monitoring strategy will allow for optimization of future COC verification monitoring¹⁶.

¹⁶ When applying a surrogate parameter maintenance monitoring strategy, trace constituents are first measured and confirmed to be within specification in parallel with major constituent and other on-line monitoring requirements. During routine "maintenance monitoring", the facility and process are presumed to be in control,

Odorization

It is a federal code requirement (49 CFR 192.625) that all gas that is transported through specified populated areas be odorized as a warning agent so that the gas can be readily detected by a person with a normal sense of smell at a minimum of one-fifth of the Lower Explosive Limit. Other local jurisdictional limits may apply; for example, New York State code (16 NYCRR 255.625) is even more stringent, requiring odorization at one-tenth of the Lower Explosive Limit for distribution pipeline systems.

The RNG gas being considered for pipeline injection must also be odorized. The pipeline operator will specify the type of odorizing agent, which odorant to use, and what the odorant level should be. In some cases, the pipeline operator will design, specify, construct and operate the odorization facility as part of the gas metering and monitoring station with cost recovery as noted in the GSA; however alternative arrangements may be agreed upon and specified in the GSA.

According to 16 NYCRR 255.625, odorization equipment must be designed and maintained to ensure the required odorant level in the gas under varying conditions. The equipment must be installed so that it does not cause a release of fumes to nearby residents. These can be eliminated through engineering controls. Regardless of ultimate responsibility for odorization equipment operation, it is recommended that the developer/producer have a high-level familiarity with odorant safety practices in case of an odorant issue onsite.

It is important to keep the biogas upgrading process in control as trace constituents such as lower molecular weight mercaptans, aldehydes, ketones, and semi-volatile organic species can chemically interfere with or mask the odorant smell. Treatment chemicals and solvents from the upgrading process can also be carried over into the pipeline and “pool” within the pipeline facility providing a sponge-like effect, absorbing injected odorant, and subsequently interfering with the odorization process.

provided primary monitoring parameters stay in control avoiding routine, on-line monitoring of trace constituents. If any physical changes occur within the gas clean-up process, or operational anomalies occur that cannot be immediately corrected, additional COC monitoring may need to be repeated to establish the facility can meet gas quality control requirements.

I. Technical References

1. Natural Gas Quality Management Manual. Prepared by the AGA Transmission Measurement Committee. August 2013. Catalog # XQ1303.
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3. White Paper on Natural Gas Interchangeability and Non-Combustion End Use. NGC+ Interchangeability Work Group. February 28, 2005.
4. White Paper on Liquid Hydrocarbon Drop Out in Natural Gas Infrastructure. NGC+ Liquid Hydrocarbon Drop Out Task Group. February 28, 2005.
5. Pipeline Quality Biogas – Guidance Document for Dairy Waste, Waste Water Treatment and Landfill Conversion. USDOT/PHMSA Agreement: DTPH56-08-T-000018, Project 250. GTI Project 20736. 2009.
6. Pipeline Quality Biomethane: North American Guidance Document for Introduction of Dairy Waste Derived Biomethane into Existing Natural Gas Networks. GTI Collaborative Project 20614. GTI Report # 09/0011. September 2009.
7. Guidance Document for the Introduction of Landfill-Derived Renewable Gas into Natural Gas Pipelines. GTI Collaborative Project 20792. GTI Report # 12/0007. May 2012.
8. Guidance on Biogas Quality and RIN Generation when Biogas is Injected into a Commercial Pipeline for use in Producing Renewable CNG or LNG under the Renewable Fuel Standard Program. EPA-420-B-16-075. September 2016.
9. Renewable Gas — Vision for a Sustainable Gas Network. National Grid position paper. https://www9.nationalgridus.com/non_html/NG_renewable_WP.pdf Accessed Oct. 14, 2010.
10. The Production, Treatment, And Utilization of Biogas, Lee Enterprises Consulting Inc, July 2018
11. Biomethane in California Common Carrier Pipelines: Assessing Heating Value and Maximum Siloxane Specifications, CCST 2018, ISBN Number 978-1-930117-59-4

J. Definitions

The definitions provided here are intentionally limited in scope and are offered for general information only.

Aerobic Digestion – Decay of organic matter in the presence of oxygen. In landfills, it is the first step in microbiological conversion of organic materials to volatile fatty acids, carbon dioxide and ammonia. Aerobic microorganisms contained in all decaying matter initially react with oxygen from entrapped air.

Aggregation – Another term for gas blending.

Agricultural / Clean Organics – include organic waste derived from agriculture by-products or waste streams such as manure, crop waste, etc.

Aldehyde – An organic compound which incorporates a carbonyl functional group, C=O, bonded on one side to a hydrogen atom and on the other side to a hydrocarbon group. Aldehydes and ketones are chemically similar. They can be found in waste streams containing building materials such as OSB (oriented strand board), MDF (medium-density fiberboard), carpet and linoleum/vinyl flooring, other pressed wood products, hardwood and plywood paneling, upholstery fabrics, latex-backed fabrics, fiberglass, and urea formaldehyde foam insulation.

Ammonia – Ammonia is a colorless inorganic compound of nitrogen and hydrogen with the formula NH_3 , usually in gaseous form with a characteristic pungent odor. Ammonia is potentially encountered in anaerobic digestion of organic waste.

Anaerobic Digestion – Decay of organic matter in the absence of oxygen. It is the second step in microbiological conversion of organic materials to biogas. Once the oxygen is depleted, an anaerobic environment is created that allows for the remaining organic material to decompose and be converted into biogas.

ASTM – American Society for Testing and Materials

Biogas – The gas resulting from the anaerobic digestion of biomass. Depending upon the feedstocks used and conditions of digestion, biogas typically consists of 40 – 65% methane. The remaining 35 – 60% of the biogas consists of “other” gases, with carbon dioxide being the major other gas along with trace gases including nitrogen compounds (ammonia, etc.), water vapor, sulfur compounds (hydrogen sulfide, etc.) and other constituents, depending upon the biomass used. Biogas is considered “raw” unless “conditioned” or “upgraded” to meet the

requirements of the intended end use, including pipeline injection. “Raw” biogas is not interchangeable with natural gas pipeline networks.

Biomass – Organic materials that may be converted to gaseous fuel through digestion (breakdown) or high temperature conversion (gasification). These materials may include all organic substances, but some biomass materials have higher energy potential than others, and some are more suited for anaerobic digestion while others with high lignin content are more suitable for gasification. Biomass sources vary widely and include domestic wastes, animal wastes, livestock operation residues, forest and mill residues, agricultural crops and wastes, wood and wood wastes, aquatic plants, fast-growing trees and plants, and municipal and industrial wastes.

Biomethane – Another term for RNG.

Chromatograph – An analytical instrument that separates a gas sample into its components for measuring and is used to determine gas quality data such as heating value, relative density (specific gravity), and compressibility.

Commercially Free – As defined in AGA 4A, commercially free is a contract term used to qualify objectionable material to the extent the gas is reasonably free of contaminants or constituents that otherwise would interfere or cause harm to the pipeline or would preclude utilization of a gas supply in the ordinary course of business.

Compositionally Equivalent – Relative comparison of the composition of two gas streams’ trace constituents to establish supply equivalency and interchangeability from an individual constituent perspective.

Constituents of Concern (COC) – Chemicals that could reasonably be expected to be associated with specific waste streams and be volatilized into the raw biogas, with potential for breakthrough into RNG, typically includes trace constituents (see Trace Constituents).

Detection Limit – If a concentration is reported as “below detection limit” (BDL), the subject was not detected at a concentration greater than the specified detection limit concentration.

Digester (Anaerobic) – A tank, covered lagoon or another covered vessel designed to convert biomass to biogas. Digesters are common to the wastewater treatment industry as well as in farming operations for manure management. Conversion of the biomass in the digester depends upon bacterial degradation or transformation of compounds, both carbon-based and other, to gaseous products, which are then present in the resulting biogas. Digesters vary in complexity and design. The maximum quantity of biogas generated from digestion of biomass is dependent upon the design of the digester (temperature and hydraulic retention time), biologically degradable fraction of the raw material and other factors. Biogas generated through anaerobic digestion of biomass in digesters requires further cleanup prior to use (interchange) within natural gas pipeline systems.

Distributor – The distributor owns and operates the pipeline system. The distributor may be a Local Distribution Company (LDC) or utility, or it may be a pipeline transmission company who sells gas to the LDC.

Interconnect Feasibility Analysis Agreement (IFA) – An agreement where the distributor or pipeline operator performs a detailed evaluation of the technical aspects of an RNG pipeline interconnection point and overall RNG project proposal impacts on the pipeline system. During this step the producer will provide a detailed Technical Proposal.

EPA – U.S. Environmental Protection Agency

Gas Cleanup and Gas Upgrading – Used somewhat interchangeably in reference to the unit operations for treating raw gas resulting from biomass conversion. The goal of the gas cleanup unit is to remove constituents within the raw gas that could cause pipeline or end-user health or safety issues. Cleanup efficiencies for constituents of concern vary between cleanup or “conditioning” units. An upgrading unit for biogas will isolate the methane from the carbon dioxide in order to increase heating value of the RNG, while an upgrading unit for syngas will reform the hydrogen and carbon monoxide to form methane in order to produce RNG.

Gas Sales Agreement (GSA) – An agreement between the producer and the distributor, or pipeline operator, for gas purchase. Also known as an interconnect agreement. The GSA will establish the conditions in which supplies will be accepted into the pipeline operator’s pipeline. It will contain the details of the purchasing process including delivery obligations, pricing, gas measurement requirements (schedule and periodicity), operation and maintenance requirements, access, and billing and payment terms.

Gas Separation Membranes – Gas separation membranes use selective permeation, driven by partial pressure differences across the membrane, to separate gas components. Other species are removed by pre- and post- treatment as necessary.

Gasification – An alternate way to produce a raw gas which can be used to produce RNG. Gasification is a high-temperature, low oxygen conversion process of organic material into a syngas that can be reformed into methane and cleaned of trace constituents into RNG for pipeline injection.

Gasifier/Syngas – See Gasification

Grab sample – A single sample taken at a specific time or over a short period of time.

Grain – A measurement of weight. 7,000 grains = 1 lb.

GPA – Gas Processors Association

Halocarbons – Organic compounds containing the elements fluorine (F), chlorine (Cl), bromine (Br), and iodine (I), which make up the seventh period in the periodic table of the elements. Compounds which consist of these elements are often used in disinfectant solutions, or as refrigerant gases in air conditioning and other cooling equipment. Upon degradation, the elements may be released as gases. For example, these constituents include Freons, chloroethane and vinyl chloride.

Heating Value – Gross heating value, also known as Higher Heating Value (HHV), is defined as the amount of energy transferred as heat from the complete, ideal combustion of the gas with air, at a standard temperature, in which all the water formed by the reaction condenses to liquid. Another commonly seen heating value parameter is net heating value, or Lower Heating Value (LHV). The difference between HHV and LHV is that the water produced by combustion remains in the vapor state when determining the LHV. The energy gained by the condensation of the water vapor is not realized so the heating value is lower. Heating values are also often reported as wet or dry. Wet gas refers to gas that is completely saturated with water vapor. A wet gas has a lower heating value per volume than a dry gas because some of the gas volume is occupied by the water vapor, so the absolute amount of combustible gas is less. The North American Energy Standards Board recommends utilizing the HHV expressed on a dry basis.

Hydrocarbon Dewpoint Temperature – The hydrocarbon dew point temperature (HDP) is the temperature of the corresponding state condition at which the non-methane hydrocarbon components of natural gas begin to condense into the liquid phase.

Inert Gas Sample Collection Cylinder – Sample collection cylinders containing an inert coating or otherwise passivated so that the cylinder exhibits very low reactivity to compounds such as sulfur odorants or H₂S.

Interchangeability – The ability to substitute one gas for another (in the context of natural gas replacement) without materially changing or influencing environmental health and safety, end use performance, or pipeline integrity.

Interconnection Agreement – Another term for the GSA. A business contract between the gas supplier (producer) and utility, pipeline operator, or gas distributor.

Ketone – An organic compound which incorporates a carbonyl functional group, C=O, bonded on both sides to a hydrocarbon group. Aldehydes and ketones are chemically similar. They can be found in waste streams containing building materials such as OSB (oriented strand board), MDF (medium-density fiberboard), carpet and linoleum/vinyl flooring, other pressed wood products, hardwood and plywood paneling, upholstery fabrics, latex-backed fabrics, fiberglass, and urea formaldehyde foam insulation.

Landfill Gas – Gas which is emitted from the breakdown of materials in a landfill. This gas is considered “raw” and requires upgrading for introduction to the pipeline network.

Local Distribution Company (LDC) – A pipeline operator of a distribution system or utility company that typically transports natural gas from delivery points located on interstate and intrastate pipelines to residential households and commercial businesses through smaller diameter and lower pressure distribution pipe.

O&M – Operations and Maintenance

Pipeline Operator – For purposes of this document, the pipeline operator owns and operates the pipeline system. The pipeline operator may be a Local Distribution Company (LDC) or utility, or it may be a pipeline transmission company who sells gas to the LDC.

PCBs – Polychlorinated Biphenyls are synthetic chlorinated chemicals that were produced for approximately 50 years between the 1920s and the 1970s. The mixtures were sold under the registered trade mark of “Aroclor” followed by a 4-digit code. PCB oils used to be used as compressor lubricants for natural gas pipeline transmission lines. In 1976 Congress passed the Toxic Substances Control Act (TSCA) which banned their use.

Producer – The producer is responsible for producing and upgrading biogas/syngas to RNG. The producer may be the digester owner, or it may be the upgrading process developer, or even a third party who has contracted with one of the above.

Relative Density – The relative density of a gas is defined as the ratio of the mass density of the gas to the mass density of air (where the molecular weight of air is defined as 28.9625 grams per mole), both at a defined pressure and temperature. This property, along with the higher heating value, is used to determine the Wobbe Number, an interchangeability parameter that takes both HHV and the relative density of the gas into consideration and accounts for both heat content and gas flow through a fixed orifice.

RNG or Renewable Natural Gas – Pipeline compatible gaseous fuel derived from biomass or other renewable sources that has lower lifecycle CO₂e emissions than geological natural gas. It is the portion of biogas which consists primarily of methane. RNG is generally extracted from raw biogas through cleanup or conditioning, to remove those constituents which impact gas quality. Using effective biogas cleanup (removal of gases which effect overall gas quality), RNG can be up to 99% methane. RNG is considered suitable for many end-use applications and may be considered suitable for inclusion in general pipeline systems, depending upon other characteristics of the gas and specific tariff requirements.

RNG Verification Testing Program – A period during which the gas resulting from an RNG production process is subject to analytical testing and review, to confirm RNG quality. The verification program includes certain verification steps prior to introduction of the RNG product to the natural gas system, so that analytical compliance may be demonstrated, and then continued with the RNG system fully on-line.

Sensitive Receptor – An end-use customer, process or equipment that is affected, to an unusual degree, by compositional change or rate of change of gas properties.

Supervisory Control and Data Acquisition (SCADA) – A SCADA process control system gathers data in real time from remote locations in order to control equipment and conditions. A central Gas Control facility continuously monitors gas quality and pipeline conditions through computerized data input and visual inspection.

Siloxane - Any chemical compound composed of units of the form R_2SiO_2 , where R is a hydrogen atom or a hydrocarbon group. A siloxane has a branched or unbranched backbone of alternating silicon and oxygen atoms, $-Si-O-Si-O-Si-$, with side chain R groups attached to the silicon atoms. The word siloxane is derived from silicon, oxygen and alkane. Siloxanes can be found in products such as cosmetics, deodorants, water repelling windshield coatings, food additives and soaps. When combusted, the siloxane molecules are reduced to silica dust; this is extremely abrasive and damaging to internal engine components. The combustion process can cause a build up around burner tips and on the tubes of heat exchangers.

Source / Facility Separated Organics – organic materials separated at the source for separate collection.

Trace Constituents – A very small quantity of an element or compound in a given substance, especially when so small that the amount is not quantitatively determined above a method detection limit based on a mutually agreeable industry approved analytical method.

Transmission Company – A company that owns an interstate and/or intrastate natural gas pipeline network which transports processed natural gas from processing plants in producing regions to areas with natural gas requirements. A transmission company can also own an LDC or utility.

Volatile and Semi-volatile Organic Compounds – Biogas produced from landfill biomass sources typically consists of methane and other major components but can also contain hundreds of other chemicals - most of which are known as "non-methane organic compounds" or volatile or semi-volatile organic compounds (VOCs and SVOCs). These are typically compounds containing carbon, hydrogen, and sometimes oxygen. Many non-halogenated VOCs and SVOCs are present in natural gas as well, originating from the geological basin from which the gas was extracted.

Volatile Metals – Volatile metals refers to a group of mostly toxic metals that have high atomic weights. Some are always toxic (e.g. lead, mercury, cadmium, arsenic, chromium) and others are toxic at high concentrations (e.g. zinc, copper). They are found everywhere in the environment because they are naturally part of the earth's crust or are concentrated in waste streams due to the use of a compound that incorporates a heavy metal element. When a compound that contains a heavy metal is degraded, the element can be released as a toxic gas.

Wobbe Number – An interchangeability parameter that takes both the higher heating value and the relative density of the gas into consideration and accounts for both heat content and gas flow through a fixed orifice. The Wobbe Number is calculated by dividing the HHV by the square root of the relative density. Differences in the relative density, and by extrapolation the Wobbe Number, generally come from the presence of other hydrocarbons or diluent and inert gases such as carbon dioxide or air (nitrogen plus oxygen).

WWTP – Wastewater Treatment Plant. A WWTP facility treats household water waste (sewage) and can be an effective biogas source through an anaerobic digester. This gas is considered “raw” and requires upgrading for introduction to the pipeline network.

Zone of Influence – The geographical area that could be significantly affected by changes in the gas supply. It is determined through engineering modeling of the gas flows and pressures. It is an evaluation of pipeline integrity issues as well as potential gas storage and end users.

Appendix A – Preliminary Scope Details Sample Project Assessment Form

Applicant Information					
Company Name	Awesome RNG			Today's Date	10/10/18
RNG Facility	Leftovers, Inc.				
RNG Facility Address	1234 6 th Street, Brooklyn	State	NY	ZIP	11111
PROCESS INFORMATION					
Cleanup System Interconnect Pressure	Process outlet is 100#, will adjust to meet pipeline needs				
Cleanup System Interconnect Temperature	Process outlet is 80F, will adjust to meet pipeline needs				
Expected Heating Value Range (BTU) of Cleaned Biomethane ¹⁷	970-990 BTU/ft3				
Amount and Flow of Gas (in dth/hr, scf/hr or BTU/hr)	1MMCF/hr				
Daily/Seasonal Variations in Deliverability of Gas Composition	Expected to run 24/7/365 with no variation in product flow or specifications				
ADDITIONAL INFORMATION					
Please provide more detailed information about expected composition of RNG					
<ul style="list-style-type: none"> • ___% methane • ___% nitrogen • ___% CO₂ • ___% O₂ • Etc. 					
Please provide any other key process variables and any additional information if available below					

¹⁷ Specify HHV as real, dry @ 14.73 psia 60°F

- Chosen gas cleanup technology
- Data providing technology is compatible with gas feedstock
- Etc.

Pressure Swing Adsorption system. Can provide data from project X that has similar feedstock and uses a PSA system on their gas to inject into the local distribution system. Cleanup vendor TBD.

Expect to begin commissioning in August 2021 and full commercial operations in January 2022.

Appendix B – Producer and Pipeline Operator Assessment Process Checklists

- ☐ Who are the parties who are entering into the contract?
- ☐ Assignment of a project manager (technical contact) from the producer
- ☐ Assignment of a project manager (technical contact) from the pipeline operator
- ☐ Physical location of the receipt/delivery point
- ☐ Agreement of producer to allow access to site where applicable
- ☐ Description of the process: Anaerobic digester gas type (dairy, WWTP, food waste, landfill) or gasification feedstock
- ☐ Definition of any technical terms
- ☐ Regulatory requirements, as necessary
- ☐ Discussion of New York State Code NYCRR Chapter 03 Gas Standards Part 229 standards for pipeline injection and pipeline operator specifications
- ☐ Specified party responsibilities and accountability aspects of O&M of the interconnect facilities
- ☐ Agreement to forward any new information regarding the project and amend the IFA / GSA when appropriate
- ☐ Periodic meeting schedule
- ☐ Description of requirements that the pipeline operator needs to provide to the producer
 - i. Company standards for the developer to follow (electrical, instrumentation, safety etc.)
 - ii. Company specifications for metering
 - iii. Technical assistance as needed for analytical instrumentation
 - iv. Odorant design and specifications (utility may operate odor equipment, but developer is responsible for installation and costs)
 - v. Any other engineering and technical assistance
- ☐ Description of requirements for the producer (equipment and facilities required for the project that is provided by producer and specified by the pipeline operator)
 - i. Gas service and associated metering equipment
 - ii. System tie-in equipment
 - iii. System to remotely transmit gas quality and flow data to utility
 - iv. On-line gas analysis equipment and associated necessities
 - v. Commitment as to reading, cleaning, repairing, inspecting, testing, calibrating, adjusting the equipment
 - vi. Remote shut-in capability
 - vii. Odor equipment and associated necessities
- ☐ Estimation of the cost to be paid by the producer to the pipeline operator
- ☐ Agreement to follow “Good Utility Practice”
- ☐ Insurance requirements
- ☐ Expiration date and termination terms

Appendix C – Gas Quality and Interchangeability Management Program Considerations

The purpose of this matrix is to provide a checklist of items to consider when developing the gas quality and interchangeability management program. The goal is to optimize gas quality monitoring requirements, maximize gas supply, and to avoid problems with the pipeline infrastructure, end-use applications, and consumer health and safety. Information was extracted from AGA's Natural Gas Quality Management Manual and other historical references/reports. It is recommended to consult this manual for more detailed information.

The gas quality management plan should consider reasonable expectations for the presence of constituents of concern (COC) before making decisions regarding testing and monitoring plans. Project Developers typically have historical information regarding gas clean-up technologies as well as additional information regarding reasonably expected constituents that may be present in the raw gas stream. The pipeline operator and developer should work together to develop a plan that considers will look at the raw biogas composition and make technically based science-based decisions on potential breakthrough of COCs from the gas cleanup process, and any detrimental impact that such breakthrough may incur. Constituent and parameter limits should be established are established that will strike a balance between all the stakeholders concerns involved. A gas quality management plan should:

- Identify monitoring requirements
- Establish sampling, analytical and monitoring procedures, test methods and method detection thresholds to ensure conformance.
- Identify response actions and/or corrective actions for anomalies/noncompliance
- Establish data retention schedules to support compliance

The completion of an overall interchangeability assessment is advised for each project to determine what the range of acceptability should be. This assessment should include:

- Historically delivered supplies into the market area with respect to gas quality constituents and parameters that define interchangeability,
- Historical effects of anomalies or upsets in gas processing and system aggregation of the market area,
- Records of pipeline infrastructure, end user complaints, and storage operation problems potentially linked to gas quality issues into the market area,
- The history of end-user requirements, equipment upgrades, and appliance re-adjustment in the market area,
- A comprehensive review of federal, state, and local regulatory requirements; internal operating procedures; and tariff requirements,
- A model of the zone of influence of the proposed substitute gas and determination if the aggregated supply profile meets tariff and/or contract requirements, and
- Any sensitive receptors within the zone of influence.

Prior to introduction to the natural gas pipeline network, it is suggested that the RNG be monitored for quality for a discrete test period of up to 72 hours after successful start-up, where process equilibrium has been reached. The initial start-up test period should include two on/off cycles of the upgrading unit and verification that the system shuts- in and diverts potential non-conforming gas. Depending upon the specific requirements pertaining to any individual company receiving the gas and, the complexity of the upgrading process, this test period may vary in length. It is recommended that the test period be executed prior to introduction to the natural gas pipeline network. Any start-up product gas generated during the test period should be handled (thermal oxidation, ground flares etc.) in accordance with federal, state and local requirements. Additional monitoring is then conducted as the RNG is initially introduced into the natural gas pipeline network.

This initial Verification Program achieves three goals:

- The pipeline operator can monitor and assure the quality of the new fuel product and the routine production of the product over a trial period,
- The developer/producer can verify that the product is consistent, in conformance with facility performance expectations and safe for pipeline interchange,
- Both parties may better understand the nature of specific gas quality parameters and constituents necessary to optimize the cleanup process prior to introduction to the pipeline network ("system adjustments").

Modern on-line instruments provide continuous real-time or near-real time monitoring, and readings should be performed as frequently as can be done reliably and with quality results. The natural gas industry measures BTU content at custody transfer points because gas is sold on an energy basis, not a volume basis. Since the on-line BTU analyzer is commonly a gas chromatograph, its use will also provide data on methane and other hydrocarbons present, as well as nitrogen, oxygen, and carbon dioxide.

An on-line temperature probe, pressure transducer, and moisture analyzer must be installed, as well as a sulfur analyzer with capability to measure both H₂S, DMS, methyl mercaptan, ethyl mercaptan and total sulfur at a minimum.

Other COC trace constituents listed in Appendix D should be considered for follow-up testing on a spot sample basis as defined in the GSA, starting when the verification period begins. Samples should be collected every 30 days over a 90 day period. Composite samplers are encouraged as opposed to discrete "grab samples" however both methods used in combination are not unusual.

Once verification of gas quality conformance as specified in the GSA has been determined, a "maintenance" testing schedule can be established. The maintenance testing schedule should

cover seasonal variation (if applicable) of the gas quality and should be a minimum of three sample event periods over the subsequent 12 months following commissioning.

Trigger levels for COC's should be established in the monitoring plan for the maintenance period similar to the start-up analysis period.

Trigger levels for out- of- conformance testing will result in two possible scenarios:

- Additional monitoring will be required if the concentration level of a COC rises above the first action limit. Gas will be accepted, but additional monitoring will be required until periodic testing proves the issue is resolved
- The RNG product gas will be shut-in if the concentration level rises above a second, higher action level, until periodic testing proves the out of compliance issue is resolved.

Once the maintenance testing schedule is complete, on-line verification of BTU content, moisture, temperature, and sulfur content should be maintained to provide continuous confirmation of gas quality to the receiving pipeline system. Once the processing system is confirmed operating as designed, these parameters can be used as "surrogate" parameters to ensure the RNG process is in control thereby minimizing on-going testing of trace constituent COC's as described below.

Following initial start-up testing and maintenance monitoring programs, routine monitoring parameters highlighted above using on-line monitoring equipment with data signals remotely monitored by the pipeline operator, shared with the facility operator, allow both parties to ensure the facility is operating in control with similar expected outcomes for COC concentrations during start-up. As a result, unless there is reasonable cause to sample and analyze for COC's (as defined in the GSA), these routine monitoring parameters can be used as COC surrogate monitoring. If any of the routine monitoring parameters trend or spike beyond conformance expectations, and cannot be immediately explained and corrected, additional COC monitoring may be required. These anomalies and conditions should be defined and mutually agreed to as part of the GSA. An example of a routine monitoring program control limits and action levels is included in the Table below:

SAMPLE XYZ Gas Quality Monitoring - Alarm Settings and Shutdown Limits											
BTU's		CO2		Oxygen		Nitrogen		Sp. Gravity		Total Sulfur	
Alarm	ESD	Alarm	MSD	Alarm	ESD	Alarm	MSD	Alarm	ESD	Alarm	MSD
971	965	1.78%	2.00%	0.40%	0.50%	1.40%	1.8%	H- .589 L- .560	0.594	0.6 PPM	1 PPM
Contract Limit		Contract Limit		Contract Limit		Contract Limit		Contract Limit		Contract Limit	
972		1.80%		0.45%		1.60%		0.590		1 PPM	
Notes: ESD - Emergency Shut Down - Automatic valve closure											
MSD - Manual Shut Down - Pipeline Operator / Facility Operator initiates remote valve closure											
The total of nonhydrocarbon gases (CO 2 + O2 + N2) is not to exceed 4%											
Total Sulfur is measured at Plant output before Odorant is added											

Appendix D –Upgraded RNG Trace Constituents Measurement Matrix

The tables below highlight gas quality monitoring/testing considerations for RNG projects including examples of testing frequencies, test methods and common laboratory detection limits.

Parameter and Sample Frequency Considerations

Parameter	Frequency
Heating Value	Continuous real-time or near-real time GC monitoring and periodic field samples for independent confirmation.
Temperature	Continuously measured on-line
Pressure	Continuously measured on-line
Water Content	Continuously measured on-line
Sulfur, including Hydrogen Sulfide, Ethyl & Methyl Mercaptan, Dimethylsulfide	Continuous real-time or near-real time GC monitoring and periodic field samples for independent confirmation
Hydrogen	Continuous real-time or near-real time monitoring and periodic field samples for independent confirmation
Carbon dioxide	Continuous real-time or near-real time monitoring and periodic field samples for independent confirmation
Nitrogen	Continuous real-time or near-real time monitoring and periodic field samples for independent confirmation
Oxygen	Continuous real-time or near-real time monitoring and periodic field samples for independent confirmation
Biologicals (If reasonably expected)	Incorporation of a 0.2 micron filter would mitigate need for testing if bacteria/spores are reasonably expected
Mercury (if reasonably expected)	Minimum of three samples over a three-month period, with increased frequency, depending upon concentration at first sample point
Siloxanes	Minimum of three samples over a three-month period, with increased frequency, depending upon concentration at first sample point
Semi-volatile and Volatile Compounds (if reasonably expected)	Minimum of three samples over a three-month period, with increased frequency, depending upon concentration at first sample point
Halocarbons (if reasonably expected,	Minimum of three samples over a three-month period, with increased frequency, depending upon concentration at first

Parameter	Frequency
Examples are Freons, chloroethane and vinyl chloride))	sample point
Aldehydes and Ketones (if reasonably expected)	Minimum of three samples over a three-month period, with increased frequency, depending upon concentration at first sample point
PCBs/Pesticides (if reasonably expected)	Minimum of three samples over a three-month period, with increased frequency, depending upon concentration at first sample point]

Parameter, Analytical Methods and Method Detection Limits

Parameter	Method	Common Laboratory Detection Limit
Heating Value	ASTM D3588 (on-line, or off-line canister collection*)	N.A.
Water Content	ASTM D5454 (on-line only)	N.A.
Sulfur, including Hydrogen Sulfide	ASTM D6228, D5504 (off-line canister collection) ASTM D4084 (H ₂ S on-line) and D4468 (total S on-line) ASTM D7493 (on-line sulfur speciation)	0.05 ppmv
Hydrogen	ASTM D1945, D1946 (usually only off-line gas chromatographs can measure hydrogen, canister collection)	0.1 vol% (0.001 vol% with special techniques)
Carbon dioxide	ASTM D1945, D1946 (on-line, or off-line canister collection)	0.03 vol%
Nitrogen	ASTM D1945, D1946 (on-line, or off-line canister collection)	0.03 vol%
Oxygen	ASTM D1945, D1946 (on-line, or off-line canister collection)	0.03 vol%
Biologicals ¹⁸	Use of a ≤0.2 micron filter to assess the presence of total bacteria/spores	0.2 microns

¹⁸ Biological constituent testing may be precluded by incorporating a filter 0.2 micron filter or as an alternative total bacteria/spores *monitoring* using a 0.2 micron filter incorporated into a appropriate in-line sampling device. Additional detailed analytical methods are available including NACE qPCR, NASA NHB 5340.1D however as a practical operational approach, monitoring to ensure total particulate matter does not exceed 0.2 microns would address the biological COC's.

Parameter	Method	Common Laboratory Detection Limit
Mercury	ASTM D5954, D6350 (gold sorbent, on-line and off-line)	0.01 µg/m ³
Siloxanes	ASTM D8230, gas chromatography (off-line canister collection) with atomic emission detection (GC-AED) or mass spectral detection (GC-MS)**	0.1 mg Si/m ³ (0.01 mg Si/m ³ with pre-concentration)
Semi-volatile and Volatile Compounds	EPA TO-14, TO-15 (off-line) Canister collection (volatiles) XAD sorbent media (semi-volatiles)	0.1 ppmv or lower, depending on technique and/or volume of gas sampled
Halocarbons	EPA TO-14, TO-15 (off-line canister collection)	0.1 ppmv or lower, depending on technique and/or volume of gas sampled
Aldehydes and Ketones	EPA TO-11 (off-line DNPH sorbent)	10 ppbv or lower, depending on volume of gas sampled
PCBs/Pesticides?	PUF/XAD sorbent tube sampling followed by EPA Method 8082 or EPA TO-10A	<1 ppbv depending on technique

* Canister collection refers to a sample collected in a sample cylinder, Summa canister, or other device.

**The prior detection threshold of 0.5 mg Si/m³ was considered “commercially free”. The Operator and Developer should consider end use implications in defining an appropriate detection threshold.

N.A. = Not Applicable

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Appendix E – Example of Interconnect Feasibility Analysis Agreement¹⁹ (IFA)

This Interconnect Feasibility Analysis Agreement (Engineering Services Reimbursement Agreement⁰ ("Agreement"), effective as of this ____ day of ____ ("Effective Date"), is by and between ____ ("Customer"), an ____ organized and existing under the laws of ____ and ____ ("Company"), a corporation organized and existing under the laws of the State of New York.

WHEREAS, Customer is proposing to build an anaerobic digester within a ____ located in ____, New York that will recover raw biogas from ____ and upgrade the raw biogas to renewable natural gas (RNG), with excess gas RNG to be sent to Company's natural gas distribution system (the "Project"); and

WHEREAS, Customer desires to have Company perform certain services (as specified below) in connection with the Project, and Company has agreed to perform such services upon the terms and conditions set forth below;

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties entering into this Agreement (each a "Party", and collectively, the "Parties"), with the intent to be bound, agree as follows:

ARTICLE I – SERVICES

Section 1 - Scope of Services

Company will perform those services specified in Exhibit A attached hereto and hereby incorporated herein ("Services"). No goods, equipment, or materials will be provided under this Agreement.

This Agreement does not provide for generation gas interconnection service, procurement of equipment, installation or construction, or electric transmission and distribution service.

Section 2 - Customer's Responsibilities

Customer shall provide:

¹⁹ This sample agreement is for illustrative purposes only. Each Operator will have a company specific/project specific agreement which considers/incorporates Articles and content contained within the sample provided.

1. Complete and accurate information regarding requirements for Services, including, without limitation, constraints, space requirements and relationships, special equipment, systems, site requirements, underground or hidden facilities and structures, and all applicable drawings and specifications;
2. If and to the extent applicable, Company access to the site where the Project will be developed;
3. A project manager who will be given the authority to coordinate all aspects of the Services between Customer and Company;
4. If and to the extent applicable, adequate parking for the vehicles of Company personnel performing the Services; and
5. Other responsibilities and access deemed necessary by, and in the sole discretion of, Company to facilitate performance of the Services.

Customer shall reasonably cooperate with Company as required to facilitate Company's performance of the Services. Other express Customer responsibilities, if any, shall be as specified in Exhibit A attached hereto.

Anything in this Agreement to the contrary notwithstanding, Company shall have no responsibility or liability under this Agreement for any defective performance or nonperformance to the extent such defective performance or nonperformance is caused by the inability or failure of (i) Customer to cooperate or to perform any of the tasks or responsibilities contemplated to be performed or undertaken by Customer in Exhibit A or elsewhere in this Agreement, or (ii) Customer and Company cannot reach agreement on any matter requiring their mutual agreement as contemplated in Exhibit A or elsewhere in this Agreement.

Section 3 - Unknown Conditions

Customer represents, warrants and covenants that all information provided by Customer is accurate and complete and acknowledges and agrees that Company may and will rely on this representation, warranty and covenant in performing under this Agreement. If, as a result of additional, different, or previously unknown information, any changes in the Services are required, in the sole discretion of the Company, that will result in an increase or decrease in the cost and/or time of performance under the Agreement, the Price, schedule and other affected provisions of this Agreement shall be amended in writing to memorialize such changes and to recognize the increase or decrease in costs and/or time required to perform the Services.

Section 4 - Changes and Extras

Customer may request changes in Services in writing. If the Company, in its sole discretion, accepts such changes, and such changes will result in an increase or decrease in the cost or time

of performance under this Agreement, the Price, schedule this Agreement shall be amended in writing to memorialize such changes and to recognize any increases or decreases in the cost and/or time required to perform the Services. Company may make changes in Services with the prior written approval of Customer (which approval shall not be unreasonably withheld, conditioned, or delayed).

Section 5 - Governmental Requirements

Changes in Services may be necessary in order to meet the requirements of governmental authorities, laws, regulations, ordinances, Good Utility Practice (as such term is defined in Article V, Section 1, below) and/or codes. After Customer's approval (which shall not be unreasonably withheld, conditioned, or delayed), Company will make changes in Services as it deems necessary, in its sole discretion, to conform to such requirements. If any such changes will result in an increase or decrease in the cost or time of performance under this Agreement, the Price, schedule and other affected provisions of this Agreement shall be amended in writing to memorialize such changes and will recognize any increases or decreases in the cost and/or time required to perform the services. If Customer withholds its approval, and in Company's sole and exclusive judgment the withholding of approval by Customer is not reasonable, then, at Company's election, this Agreement may be immediately terminated upon written notice to Customer. Nothing in this Agreement shall relieve Customer of the responsibility to comply with requirements of an ISO- or other utilities about the Project and the Services.

ARTICLE II – PRICE, TAXES, AND PAYMENT

Section 1 - Price

The price for the Services to be paid by Customer shall be the actual costs and expenses incurred by the Company and its affiliates in connection with performance of the Services or otherwise incurred by Company in connection with this Agreement, and shall include, without limitation, any such costs that may have been incurred by Company prior to the Effective Date (the "Price").

The Price shall include, without limitation, the actual costs and expenses for the following to the extent incurred in connection with performance of the Services: labor (including, without limitation, internal labor); materials; subcontracts; equipment; travel, lodging, and per diem paid in accordance with Company policy; copying and reproduction of materials, overnight delivery charges, certified mailing charges, first class mailing charges and similar types of incidental charges; transportation; carrying charges and surcharges; all applicable overheads including an Administrative and General (A&G) expense charge at Company's current rate at the time of invoicing; all federal, state and local taxes incurred; all costs and fees of outside experts, consultants, counsel and contractors; all other third-party fees and costs; and all costs of obtaining any required consents, releases, approvals, or authorizations. All invoiced sums will include applicable expenses, surcharges, and federal, state and local taxes.

If Customer claims exemption from sales tax, Customer agrees to provide Company with an appropriate, current and valid tax exemption certificate, in form and substance satisfactory to Company, relieving Company from any obligation to collect sales taxes from Customer ("Sales Tax Exemption Certificate"). During the term of this Agreement, Customer shall promptly provide Company with any modifications, revisions or updates to the Sales Tax Exemption Certificate or to Customer's exemption status. If Customer fails to provide an acceptable Sales Tax Exemption Certificate for a particular transaction, Company shall add the sales tax to the applicable invoice to be paid by Customer.

Section 2 – Payment

Customer shall provide Company with an initial prepayment equal to the estimated cost of the Services (the amount of _____ US dollars \$_____.00) ("Initial Prepayment"). Company shall not be obligated to commence performance of Services until it has received the Initial Prepayment. If, during the performance of the Services, Company determines that one or more additional prepayments are required before completing the Services, Company may, but is not required to, request additional prepayment from Customer; any such requests will be in writing. If an additional prepayment is requested and is not received from Customer on or before the date specified in each such request, or if no date is specified, within 30 days of receipt of the written request, Company may cease work upon the depletion of the Initial Prepayment and any other prepayments made by Customer to date, as applicable. Upon Company's receipt of the additional requested prepayment from Customer (such prepayment to be additional to the Initial Prepayment and any other prepayments made by Customer to date), Company will continue to perform the Services. The Initial Prepayment and the additional prepayments (if any) represent estimates only.

Company is not required to request additional prepayments from Customer and may elect, in its sole discretion, to continue performing Services hereunder after the depletion of the Initial Prepayment, or any other prepayments made by Customer to date, as applicable, without additional prepayments and invoice Customer for such Services later. Customer shall be responsible to pay Company the total Price for completing the Services performed by Company whether any additional prepayments were made at Company's request. Any election by Company to seek or defer additional prepayments in one instance shall not obligate the Company to seek or defer additional prepayments in any other instance.

Company will invoice Customer for all sums owed under this Agreement. Except for additional prepayments required under the first paragraph of this Section 2 of Article II, in which case the due date provided in such paragraph shall apply, payment shall be due in full within thirty (30) days of Company's submittal of an invoice, without regard to claims or off-sets. Payment shall be made in immediately available funds transmitted by the method specified in the invoice. A continuing late payment charge of 1.5% per month will be applied on any late payments.

If Company's Price for completing the Services is less than the Initial Prepayment plus any such additional prepayments paid by Customer under this Article ("Total Prepayment"), Company will refund the remaining unused portion of the Total Prepayment to Customer.

ARTICLE III - SCHEDULE, DELAYS, AND FORCE MAJEURE

Company will use reasonable efforts to commence the Services promptly following its receipt of all the following: a fully executed Agreement, the Initial Prepayment, and all information required by this Agreement to be supplied by Customer prior to commencement of the Services.

If Company's performance of the Agreement is delayed by Customer, this Agreement shall be amended to recognize the increase in cost and/or time to perform the Services caused by the delay.

Any delays in, or failure of, performance by Customer or Company, other than payment of monies, shall not constitute default and shall be excused hereunder, if and to the extent such delays or failures of performance are caused by occurrences beyond the reasonable control of Customer or Company, as applicable, including, but not limited to, acts of God, Federal and/or state law or regulation, sabotage, explosions, acts of terrorism, unavailability of personnel, equipment, supplies, or other resources for utility-related duties, delays by governmental authorities in granting licenses, permits or other approvals necessary in connection with Services, compliance with any order or request of any governmental or judicial authority, compliance with Company's public service obligations, storms, fires, inclement or adverse weather, floods, riots or strikes or other concerted acts of workers, and accidents.

ARTICLE IV – INTELLECTUAL PROPERTY

Any drawings, specifications or other documents (i) prepared or used by Company, or (ii) prepared by Customer for Company in connection with this Agreement, shall be the proprietary, confidential information and sole property of Company at no cost to Company (collectively "Materials"). Proprietary information provided by the Customer in connection with this Agreement will remain the sole property of the Customer.

Excluding third-party owned documents and software, Customer is granted an irrevocable, nontransferable, and non-assignable license to use such Materials solely in connection with the Project. No commercialization of such Materials by Customer is authorized. Customer shall not disclose any of the Materials to any third party, in whole or in part, without the prior written consent of Company.

The obligations imposed by this Article IV shall survive the completion, cancellation, or termination of this Agreement.

ARTICLE V – PERFORMANCE

Section 1 -- Performance.

Company shall perform the Services in a manner consistent with "Good Utility Practice" (as such term is defined below); provided, however, that Company shall have no responsibility or liability in connection with (i) any items or services provided by Customer or its third party contractors or representatives whether or not such items or services are incorporated in the Services, (ii) any items or services provided, manufactured or licensed by third parties whether or not such items or services are incorporated in the Services, or (iii) any defects in Services that result from the acts or omissions of persons other than Company or accidents not caused by Company.

"Good Utility Practice" shall mean the practices, methods and acts engaged in or approved by a significant portion of the gas utility industry during the relevant time period, or any practices, methods and acts which, in the exercise of good judgment in light of the facts known at the time the decision was made, would have been reasonably expected to accomplish the desired result consistent with good business practices, safety, and law. Good Utility Practice is not intended to require or contemplate the optimum practice, method or act, to the exclusion of all others, but rather to be reasonably acceptable practices, methods, or acts generally accepted in the region in which the Services are to be performed.

Prior to the expiration of one (1) year following the date of completion of a Service, Customer shall have the right to give Company written notice that some or all of such Service was not performed in compliance with the first paragraph of this Section 1. If Company concurs, and the Company shall, at the option of Company, either (i) re-perform or repair the defective portion of such Service, or (ii) refund the amount of money paid by the Customer to Company attributable to the defective portion of such Service. The remedy set forth in this Section 1 of Article V is the sole and exclusive remedy granted to Customer for any failure of Company to meet the performance standards or requirements set forth in this Agreement.

ARTICLE VI – INSURANCE

From the commencement of the Agreement through its expiration, each Party shall provide and maintain, at its own expense, insurance policies issued by reputable insurance companies with an A. M. Best rating of at least B+ (collectively, the "Required Insurance Policies"). The Required Insurance Policies shall, at a minimum, include the following coverages and limitations:

Workers' Compensation and Employers Liability Insurance, as required by the State in which the work activities under this Agreement will be performed. If applicable, coverage will include the U.S. Longshoremen's & Harbor Workers' Compensation Act, and the Jones Act. If a Party is a qualified self-insurer by the State, Excess Workers' Compensation coverage shall be maintained in lieu of the Workers' Compensation coverage.

Public Liability, including Contractual Liability and Products/Completed Operations coverage, covering all operations to be performed under this Agreement, with minimum limits of:

Bodily Injury	\$1,000,000 per occurrence
Property Damage	\$1,000,000 per occurrence

Automobile Liability, covering all owned, non-owned and hired vehicles used under or in connection with this Agreement, with minimum limits of:

Bodily Injury	\$500,000 per occurrence
Property Damage	\$500,000 per occurrence OR
Combined Single Limit	\$1,000,000 per occurrence

If requested, each Party will provide evidence to the other Party that it maintains the Required Insurance Policies required under this Article.

Either Party may elect to self-insure to the extent authorized or licensed to do so under the applicable laws of the State of New York, provided, that, the electing Party provides written notice of any such election to the other Party. Company hereby notifies Customer that it is a qualified self-insurer under the applicable laws of the State of New York and that it elects to self-insure to satisfy its obligations under this Article.

ARTICLE VII – TERM AND TERMINATION

The term of this Agreement shall expire one (1) year from the Effective Date. As of the expiration of this Agreement or, if earlier, its termination, the Parties shall no longer be bound by the terms and provisions hereof, except (a) to the extent necessary to enforce the rights and obligations of the Parties arising under this Agreement before such expiration or termination (including, without limitation, with respect to payment of all amounts due and payable hereunder), and (b) such terms and provisions that expressly or by their operation survive the termination or expiration of this Agreement.

Either Party may terminate this Agreement for convenience by delivery of written notice to the other Party, such termination to be effective on the tenth (10th) day following delivery of such written notice, or upon payment in full of all amounts due and payable hereunder, whichever is later. On or before the effective termination date of this Agreement, Customer shall pay Company all amounts due and payable as the Price for that portion of the Services performed to the effective date of termination ("Amount Outstanding"), including, without limitation, all costs and expenses incurred, less the Total Prepayment. If the Total Prepayment exceeds the Amount Outstanding, Company shall remit the balance to Customer.

ARTICLE VIII – MISCELLANEOUS PROVISIONS

Section 1 - Assignment and Subcontracting

Customer agrees that Company has the right, but not the obligation, to (i) use the services of its affiliated companies in connection with the performance of Services, and (ii) issue contracts to third parties for, or in connection with, the performance of Services hereunder, without the prior consent of Customer, and that the costs and expenses of such affiliated companies or third parties charged or chargeable to Company shall be paid by Customer as part of the Price.

Section 2 – No Third-Party Beneficiary

Nothing in this Agreement is intended to confer on any person, other than the Parties, any rights or remedies under or by reason of this Agreement.

Section 3 – Amendment; Equitable Adjustments

This Agreement shall not be amended, superseded or modified, except in a writing signed by both Parties. In any circumstance in which this Agreement contemplates an equitable adjustment to Price, schedule or any other term of this Agreement, Company shall have no obligation to continue performance hereunder until and unless such adjustment has been mutually agreed to by both Parties in writing.

Section 4 – Notices

Any notice given under this Agreement shall be in writing and shall be hand delivered, sent by registered or certified mail, delivered by a reputable overnight courier, or sent by facsimile (fax) with electronic confirmation of receipt, to the party's representatives as follows:

Customer:

[_____]
ATTN: [_____]
[_____]
[_____]
Phone: [_____]
Fax: [_____]
Email: [_____]

Company:

[_____]
ATTN: [_____]
[_____]
[_____]
Phone: [_____]
Fax: [_____]
Email: [_____]

Section 5 - Waiver

No term of this Agreement may be waived except in a writing signed by an authorized representative of the Party against whom the amendment, modification, or waiver is sought to be enforced. Waiver of any provision herein shall not be deemed a waiver of any other provision herein, nor shall waiver of any breach of this Agreement be construed as a continuing waiver of other breaches of the same or other provisions of this Agreement.

Section 6 - Approvals

It is understood that Company may be required to obtain, regulatory, and other third- party approvals and releases in connection with the provision of the Services. If so, this Agreement shall be effective subject to the receipt of any such approvals and releases, in form and substance satisfactory to Company in its sole discretion, and to the terms thereof.

Section 7 - Laws

This Agreement shall be interpreted and enforced according to the laws of the State of New York and not those laws determined by application of the State of New York's conflicts of law principles. Venue in any action with respect to this Agreement shall be in the State of New York; each Party agrees to submit to the personal jurisdiction of courts in the State of New York with respect to any such actions.

Section 8 - Severability

To the extent that any provision of this Agreement shall be held to be invalid, illegal or unenforceable, it shall be modified to give as much effect to the original intent of such provision as is consistent with applicable law and without affecting the validity, legality or enforceability of the remaining provisions of the Agreement.

Section 9 - Integration and Merger; Entire Agreement

Customer and Company each agree that there are no understandings, agreements, or representations, expressed or implied, with respect to the subject matter hereof other than those expressed herein. This Agreement supersedes and merges all prior discussions and understandings with respect to the subject matter hereof and constitutes the entire agreement between the Parties with respect to such subject matter.

Section 10 – Authority

Each Party represents to the other that the signatory identified beneath its name below has full authority to execute this Agreement on its behalf.

Section 11 – Information and Coordination Contact

[____ Name/contact information _____] or such other representative as Company may designate, will be the point of contact for Customer to submit the information required for Company to perform the Services stated in this Agreement.

[____ Name/contact information _____] or such other representative as Customer may designate, will be the point of contact for Company to request additional information from Customer, if required.

Section 12 – Counterparts

This Agreement may be executed in multiple counterparts, each of which shall be considered an original, and all of which together shall constitute one and the same agreement. The exchange of copies of this Agreement and of signature pages by facsimile or other electronic transmission (including, without limitation, by e-mailed PDF) shall constitute effective execution and delivery of this Agreement as to the Parties and may be used in lieu of the original Agreement for all purposes. Signatures of the Parties transmitted by facsimile or other electronic means (including, without limitation, by e-mailed PDF) shall be deemed to be their original signatures for all purposes.

Section 13 – Limitation of Liability

In no event shall any Party or its subcontractors be liable for indirect, special, incidental, punitive, or consequential damages of any kind including loss of profits, arising under or in connection with this Agreement or performance of the Services, or from reliance on the studies, designs and analyses performed hereunder. Nor shall any Party or its subcontractors be liable for any delay in delivery or for the non-performance or delay in performance of its obligations under this Agreement.

Section 14 – Disclaimer of Warranty

In performing the Services, the Company and any subcontractors employed by it shall have to rely on information provided by the other Party, and possibly by third parties, and may not have control over the accuracy of such information. Accordingly, neither the Company nor any subcontractor employed by the Company makes any warranties, express or implied, whether arising by operation of law, course of performance or dealing, custom, usage in the trade or profession, or otherwise, including without limitation implied warranties of merchantability and fitness for a particular purpose, with regard to the accuracy, content, or conclusions of the analyses, studies, and designs prepared in accordance with this Agreement. Customer acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.

Section 15 – Indemnification

Company/Project specific mutually agreeable indemnification language.

Section 16 - Confidentiality

Company/Project specific mutually agreeable non-disclosure agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the Effective Date.

[____ Customer Name _____]

By: _____

Name:

Title:

[____ Company Name _____]

By: _____

Name:

Title:

EXHIBIT A - Scope of Services [

Company's scope of Services may include:

- Assign a Project Engineer and Project Manager to provide technical support for the services;
- Arrange and schedule periodic meetings, as appropriate, to review the status and results of the Services;
- Provide standards for Customer to follow in order to design metering equipment in accordance with Company specifications and requirements;
- Provide the specifications and requirements for the meters to be installed and determine the size and quantity of meters required;
- Review the design and layout provided by Customer for analytical equipment to be installed by Customer in accordance with manufacturer's recommendations;
- Reviewing the design and layout provided by Customer for odorant equipment to be installed by Customer in accordance with applicable health and safety codes for the storage of odorant, including (insert applicable local, state, county regulatory agencies);
- Review drawings, designs and specifications provided by Customer for the equipment set forth below. Company reserves the right to require changes to the design in order to meet company standards; and
- Review the design and specifications for the work to purchase and install the equipment and facilities set forth below.

Equipment and Facilities Required for Project (to be provided by Customer) may include:

- Gas service and associated metering equipment for back up supply from Company
- Gas outlet system tie-in and associated metering equipment for gas produced on site
- Remote Terminal Unit (RTU) to transmit gas quality and flow data to Company's Gas Control Room
- Gas Chromatograph (10 component) to measure BTU, inert (CO₂, N₂), Oxygen of digester gas
- Odorant Chromatograph to measure mercaptans, total sulfur, and H₂S in the digester gas
- Moisture Meter to measure amount of H₂O in the digester gas
- Remote control valve to enable remote shut-in of Customer's outlet in cases where gas from the plant is out of specification as listed in Table below.
- Odorant injection system with sight glass diffusion probe, storage tank(s) with dike
- Gas filters with differential gauges on plant outlet line
- Analyzer Building – prefab concrete building to house RTU and all analytical equipment with electric service and Power Conditioning, and Battery Back Up system, gas detector(s)
- Odorant Building – negative pressure concreted building to house odorant equipment with electric service and gas detector(s), charcoal filter, blower, fire suppression and monitoring equipment (as required by _____ Fire Marshall).
- Such other equipment and facilities that may be required under Company's interconnection specifications or by law or regulation.

Illustrative Assumptions and Conditions:

Any dates, schedules or cost estimates resulting from the Services are preliminary projections/estimates only and shall not become or give rise to any binding commitment.

The Services contemplated by this Exhibit and this Agreement do not include any construction, relocations, alterations, modifications, or upgrades with respect to any facilities ("Construction"), nor does Company make any commitment to undertake such Construction. If the Parties elect, in their respective sole discretion, to proceed with any Construction: (i) such Construction would be performed pursuant to a separate, detailed, written, and mutually acceptable EPC Agreement to be entered into by the Parties prior to the commencement of any such Construction, and (ii) payment of all actual costs incurred by Company or its Affiliates in connection with or related to such Construction shall be the responsibility of Customer and Customer shall reimburse Company for all such costs.

For the avoidance of doubt: This Agreement does not provide for electric generation or gas supply interconnection service, procurement of equipment, installation or construction. The Company shall not have any responsibility for seeking or acquiring any real property rights in connection with the Services or the Project including, without limitation, licenses, consents, permissions, certificates, approvals, or authorizations, or fee, easement or right of way interests. Neither this Agreement nor the Services include securing or arranging for Customer or any third party to have access rights in, throw, over, or under any real property owned or controlled by the Company.

Appendix F – Example of Gas Sales Agreement (aka Interconnect Agreement)²⁰

This Digester Gas Sales Agreement ("Agreement"), effective as of this _____ day of _____ ("Effective Date"), is by and between _____ ("Buyer"), a corporation organized and existing under the laws of the State of New York, and _____ ("Seller"), an _____ organized and existing under the laws of _____.

WHEREAS, Seller owns an anaerobic digester within a _____ located in _____, New York that recovers digester raw biogas from _____ and upgrades the raw biogas to renewable natural gas ("RNG"); and

WHEREAS, Buyer is a regulated natural gas distribution company which owns and operates a natural gas distribution system in _____ counties; and

WHEREAS, Seller desires to sell and deliver RNG to Buyer, and Buyer desires to purchase and accept such RNG from Seller; and

WHEREAS, Buyer has agreed to operate and maintain certain of the facilities required in connection with the delivery of RNG, and Seller has agreed to reimburse Buyer for performing such operation and maintenance services; and

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties entering into this Agreement (each a "Party", and collectively, the "Parties"), with the intent to be bound, agree as follows:

ARTICLE 1: DEFINITIONS

- 1.1 The term "Btu" means British Thermal Unit and shall be the quantity of heat required to raise the temperature of one (1) pound of water one (1) degree Fahrenheit at sixty (60) degrees Fahrenheit at a pressure of 14.73 psia.
- 1.2 The term "Critical Day" shall mean any day during which the average temperature is less than _____ °F
- 1.3 The term "dekatherm" means a unit of heat energy equal to 1,000,000 BTUs.
- 1.4 The term "Day" means a period of twenty-four (24) consecutive hours beginning and _____

²⁰ This sample agreement is for illustrative purposes only. Each Operator will have a company specific/project specific agreement which considers/incorporates Articles and content contained within the sample provided.

ending at 9:00 AM Central Standard Time.

- 1.5 The term "Delivery Point" shall mean the point at which the facilities owned by the Seller connect to facilities owned by the Buyer, as shown on Exhibit A hereto.

[Attach Schematic drawing]

- 1.6 "Interconnection Facilities" means the facilities necessary to connect Seller's plant to Buyer's natural gas transmission and/or distribution system and the additions, modifications and upgrades to Buyer's natural gas transmission and/or distribution system necessary to permit the safe and reliable delivery of RNG at the Delivery Point. Such facilities may be owned by the Buyer or Seller, as specified herein.
- 1.7 The term "Maximum Daily Quantity" (or "MDQ") means ____Dt, which is the maximum amount of RNG that Buyer is obligated to purchase and receive on any Day during the term of this Agreement.
- 1.8 [If a Minimum Quantity applies], the term "Minimum Daily Quantity" means ____Dt which is the minimum amount of RNG that Seller is obligated to deliver on any Day during the term of the Agreement.
- 1.9 The term "MMbtu" means one million Btu.
- 1.10 The term "mdth" means one thousand dekatherms.
- 1.11 The term "Month" means a period beginning at 9:00 AM Central Standard Time on the first Day of any calendar month and ending at 9:00 AM Central Time on the first Day of the next succeeding calendar month (per NAESB and FERC).
- 1.12 The term "Plant" means the digester and processing facilities operated by Seller.
- 1.13 The term "RNG" means the gas produced by Seller at the Plant.
- 1.14 "Services" has the meaning set forth in Article 8 of this Agreement.
- 1.15 "Pipeline Quality" has the meaning defined in latest version of AGA Report 4A.

ARTICLE 2: EFFECTIVE DATE AND TERM

- 2.1 The term of the Agreement shall commence as of the date first written above and shall remain in effect through _____, and from month to month thereafter unless terminated by either Party on no less than thirty (30) days prior written notice to the other.

- 2.2 Upon the termination of this Agreement for any reason, any monies due and owing Seller or Buyer shall be paid pursuant to the terms hereof, and any corrections or adjustments to payments previously made shall be determined and made at the earliest possible time. The provisions of this Agreement shall remain in effect until the obligations under this paragraph have been fulfilled.

ARTICLE 3: SALE AND PURCHASE OBLIGATIONS

- 3.1 Subject to the terms and conditions of this Agreement, Seller agrees to sell and deliver, and Buyer agrees to purchase and receive, on each Day during the term of this Agreement, at the Delivery Point, a quantity of RNG equal to at least the Minimum Quantity, if applicable, but not exceeding the MDQ..
- 3.2 Seller shall tender RNG for delivery at a substantially uniform rate of flow throughout each Day. If Seller becomes aware that the rate of delivery or the total quantity of RNG that Seller will deliver for any Day will differ by more than twenty-five percent (25%) (positive or negative) from that achieved the previous Day, Seller shall so notify Buyer's Gas Control Center at the contact set forth in Section 13.10 below. Seller also shall notify Buyer's Gas Control Center at least twenty-four (24) hours in advance of any suspension of RNG deliveries under this Agreement necessitated by Seller's maintenance of its Plant or for other reasons.

ARTICLE 4: PRICE OF GAS

- 4.1 The price paid for each MMBtu of RNG sold and purchased under this Agreement in any Month shall be equal to the {specify monthly local price index}

ARTICLE 5 TITLE TO GAS

- 5.1 Seller hereby warrants good and merchantable title to all RNG delivered hereunder, free and clear of all liens, encumbrances and claims whatsoever. Unless otherwise negotiated by the parties, Seller shall retain all beneficial environmental, renewable energy and similar rights associated with the generation of such RNG. Seller will indemnify Buyer and hold it harmless from any and all suits, actions, debts, accounts, damages, costs, losses, and expenses arising from or out of adverse title claims of any and all persons to said RNG.
- 5.2 Title to all RNG received by Buyer and all beneficial environmental, renewable energy and similar rights associated with the generation of such RNG shall pass to Buyer at the Delivery Point. As between the Parties hereto, Seller shall be deemed to be in exclusive control and possession of the RNG deliverable hereunder and responsible for any damage or injury caused thereby until the same shall have been delivered to Buyer at

the Delivery Point; thereafter Buyer shall be deemed to be in exclusive control and possession of such gas and responsible for any damage or injury caused thereby.

ARTICLE 6: GAS PRESSURE, TEMPERATURE AND QUALITY

- 6.1 Seller shall tender RNG for delivery to Buyer under this Agreement at the Delivery Point at pressures sufficient for such RNG to enter Buyer's natural gas transmission and distribution system at such point, but in no event in excess of the maximum allowable operating pressure on Buyer's system which, at the time of execution of this Agreement, is _____ psig. Buyer shall promptly notify Seller of any changes in the maximum operating pressure of the Buyer's system.
- 6.2 Seller shall tender RNG for delivery to Buyer under this Agreement at the Delivery Point at a temperature no less than _____ degrees Fahrenheit and no greater than _____ degrees Fahrenheit. Should Seller tender RNG to Buyer at the Delivery Point at a temperature colder or warmer than such range and Buyer's meter is damaged as a result thereof, then in addition to and without limitation of any other remedy Buyer may have, Buyer shall be entitled to receive from Seller an amount equal to Buyer's cost to repair or replace such meter and any other related equipment affected.
- 6.3 Seller agrees that it will exercise reasonable care and diligence in tendering RNG for delivery to Buyer under this Agreement, and warrants that all RNG when tendered for delivery to Buyer hereunder at the Delivery Point shall:
- a. be compatible and interchangeable with pipeline gas as defined in 16 NYCRR 229;
 - b. be within the gas quality limits set forth below, and
 - c. be monitored as to conformity with all the foregoing criteria by manual test or by mutually acceptable continuous monitoring equipment; and Buyer will require quarterly random grab sampling to ensure gas is free of objectionable materials with analytical costs to be reimbursed by the Seller.

Table 1: Gas Quality Specifications (Sample: The operator and developer should consider use of limits in Section F Feedstock, Pipeline Gas Quality and Safety Assessment Considerations as a starting place for specification development.)

Gas Quality Specification	Low	High
Heat Content) (BTU/scf)		
Wobbe Number +/- 4% from historical supply		
Relative Density		
Water Vapor Content (lbs./MM scf)		
Product Gas Mercaptans (ppmv, does not include gas odorants))		
Hydrocarbon Dew Point, (°F) CHDP		
Hydrogen Sulfide (grain/100 scf)		
Total Sulfur (grain/100 scf)		
Total Diluent Gases including the following individual constituent limits: Carbon Dioxide 2% max Nitrogen 2% max Oxygen (O ₂) 0.4% max		
Hydrogen		
Total Bacteria (as particulates)		
Mercury		
Other Volatile Metals		
Siloxanes		
Ammonia		
Non-Halogenated Semi-Volatile and Volatile Compounds		
Halocarbons		
Aldehyde/Ketones		

NOTES:

1. *Commercially Free (Comm Free) is defined as "Not Detectable" relative to typical pipeline gas flowing at the interconnect location that results in RNG being "compositionally equivalent" to flowing supplies. Not-detectable for purposes of this specification is defined as a value less than the lowest detectable level for a mutually agreeable standard industry analytical test method or the lowest level detected for pipeline gas flowing at the interconnect point.*
2. *BTU = commonly referred to as Higher Heating Value (HHV)*
3. *Wobbe = Interchangeability parameter; ratio of BTU content to specific gravity*
4. *In addition to the specified limits above, gas received into Buyer's pipeline system shall be pipeline quality and as such remain commercially free of objectionable materials and merchantable as defined in latest edition of AGA Report 4A "Natural Gas Contract Measurement and Quality Clauses"*

*5 Testing should only take place when **COC's are reasonably expected**, as mutually agreed by both parties.*

- 6.4 Seller shall maintain in good working order its interconnection Facilities and other facilities and equipment at the Plant that enable it to ensure that the pressure, temperature and quality of the RNG it tenders for delivery under this Agreement fully conform with the criteria set forth in this Agreement.
- 6.5 In addition to any and all other remedies that it may have, Buyer shall have the right to reject as non-conforming any RNG Seller tenders for delivery under this Agreement that fails to comply with the pressure, temperature or quality specifications set forth in this Agreement, and will maintain suitable equipment at Seller's premise in order to remotely monitor and shut off Seller's supply should it not meet such specifications.
- 6.6 The Parties shall develop a Plant start-up gas quality sampling and testing plan (the "Plan") to ensure all equipment is functioning as intended in order to provide RNG conforming to the quality specifications set forth in Table 1 above. The Plan shall include provisions regarding frequency of initial testing.

ARTICLE 7: GAS MEASUREMENT

- 7.1 The quantity of RNG delivered hereunder shall be measured according to Boyle's and Charles' Laws for the measurement of gas under varying temperatures and pressures and shall be determined as follows:
 - a. the sales unit of the RNG delivered shall be one (1) MMBtu of gas measured as HHV on a real, dry, basis at standard temperature and pressure;
 - b. the unit of weight for the purpose of measurement shall be one (1) pound mass of gas;
 - c. the average absolute atmospheric pressure shall be assumed to be 14.73 pounds per square inch; and
 - d. the temperature of gas passing through the meter shall be determined by the continuous use of a temperature measuring device; the arithmetic averages of the temperature recorded each twenty-four (24) hour Day shall be used in computing gas volumes or continuous instantaneous temperature measurements may be applied to metering instruments to provide the volume computation.
- 7.2 The metering equipment shall be sealed, and the seals shall be broken only upon occasions when the meters are to be inspected, tested or adjusted, and representatives of Seller shall be afforded at least twenty-four (24) hour notice and reasonable opportunity to be present upon such occasions. The owner of such metering equipment shall use reasonable efforts to give the other Party more than twenty-four (24) hour notice of such inspections, tests or adjustments.

- 7.3 Periodic tests of such metering equipment, by the owner of such equipment at intervals not to exceed two times per year, will be made at any reasonable time upon request by the other Party. If, as a result of any such additional test, the metering equipment is found to be defective or inaccurate, it will be restored to a condition of accuracy or replaced by the equipment owner. If an additional test of the metering equipment is made at the request of the non-owning Party with the result that said metering equipment is found to be registering correctly or within two percent (2%) plus or minus of one hundred percent (100%) accuracy, such Party shall bear the expense of such additional test. If such additional test shows an error greater than two percent (2%) plus or minus of one hundred percent (100%) accuracy, then the owner of such metering equipment shall bear the expense of such additional test and any necessary repair or replacement.
- 7.4 All meters shall be adjusted as close as practical to one hundred percent (100%) accuracy at time of installation and testing by the party owning the meter equipment. If any of the metering equipment tests provided for herein disclose that the error for such equipment exceeds two percent (2%) plus or minus of one hundred percent (100%) accuracy, and the period of inaccuracy cannot be reasonably ascertained, then the period of inaccuracy will be assumed to have begun at the midpoint in time between the discovery of the inaccuracy and the previous meter test.
- 7.5 Any correction in billing resulting from such correction in meter records shall be made in the next monthly invoice rendered [Not clear that Buyer will be rendering invoices] after the inaccuracy is discovered. Should any metering equipment fail to register the gas delivered or received during any period of time during the term of this Agreement, the amount of RNG delivered or received during such period will be estimated by the Parties according to the amounts previously delivered or received during similar periods under substantially similar conditions, and upon mutual agreement of the Parties shall be used as the basis for billing for that period.

ARTICLE 8: OPERATION and MAINTENANCE SERVICES, EQUIPMENT REPLACEMENT COSTS

- 8.1 **SCOPE** – During the term of this Agreement the Buyer will perform, or cause to be performed, in a prudent and workman like manner the Services set forth in Section 8.2 below. Upon the mutual agreement of the Parties, the Buyer may perform additional Services (the "Unscheduled Services") in connection with the Interconnection Facilities. In the case of emergencies that render the Interconnection Facilities unsafe, the Buyer may perform emergency services that it deems necessary to make the Interconnection Facilities safe (the "Emergency Services"), including shutting off gas supply and the gas delivery. The Buyer shall attempt to notify Seller prior to commencing any such Emergency Services, however if prior notification is impractical, the Buyer shall have the right to commence the Emergency Services immediately and to notify Seller within 24 hours thereafter.

- 8.2 **SERVICES** – During the term of this Agreement, the Buyer shall provide the labor and materials necessary to construct, install, operate and maintain Interconnection Facilities required by the Buyer in connection with the delivery of RNG pursuant to this Agreement, as specified in Attachment A-1 (the "Services"). The Services do not include repairs for damages, malfunctions or failures caused by or occurring as the result of: (a) repairs, adjustments or any other actions performed by persons other than the Buyer's authorized representatives; (b) failure of components not serviced by the Buyer's authorized representatives; (c) abuse, misuse or negligent acts of Seller or others; or (d) an event of force majeure as defined in Article 11 hereof. Installation of the equipment described above is the Seller's responsibility.
- 8.3 **COST OF SERVICES** – Seller shall reimburse the Buyer for the fully loaded cost incurred by Buyer in performing the Services, Unscheduled Services and/or Emergency Services. Seller's reimbursement shall be made pursuant to Section 9.2 below.
- 8.4 **EQUIPMENT REPLACEMENT AT END OF LIFE** – Seller shall reimburse the Buyer for the fully loaded cost to replace Buyer's Interconnection Facilities when such equipment reaches the end of its service life. Seller's reimbursement shall be made pursuant to Section 9.2 below.

ARTICLE 9: BILLING AND PAYMENT FOR RNG DELIVERIES

- 9.1 On or before the fifth (5th) day of each Month, Buyer shall notify Seller of the quantity of RNG delivered by Seller to Buyer during the preceding Month. Seller shall render a written statement to Buyer on or before the fifteenth (15th) day of such succeeding Month which, upon verification by Buyer, shall be paid by Buyer by the twenty-fifth (25th) day of such Month. If the twenty-fifth (25th) day of any Month falls on a weekend or bank holiday, payment by Buyer shall be due on the next succeeding business day.
- 9.2 The fully loaded costs incurred by the Buyer in performing any Services, Unscheduled Services, and/or Emergency Services will be applied as an offset to the amount invoiced by Seller pursuant to Section 9.1 above.
- 9.3 **AUDITS** – Each Party shall have the right at its own expense to examine and audit at a reasonable time and upon reasonable prior notice the books, records and charts of the other Party relevant to this Agreement. Each Party shall use reasonable efforts to make available such records as may be necessary to verify the accuracy of any statements or charges made under or pursuant to any of the provisions of this Agreement. A formal audit of accounts shall not be made more than once each calendar year.

ARTICLE 10: ACCESS TO PREMISES

- 10.1 Seller agrees during the term of this Agreement that it will provide access as may be

required by the Buyer's authorized representatives for the performance of its obligations hereunder. Upon 24 hours' notice, Seller shall grant access to, or obtain access for, the Buyer's authorized representatives for performance of the Services and the Unscheduled Services. Furthermore, Seller shall grant or obtain immediate access for the Buyer's authorized representatives for the performance of Emergency Services.

ARTICLE 11: FORCE MAJEURE

- 11.1 The term force majeure as employed herein shall mean acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, wars, blockades, insurrections, riots, epidemics, landslides, lightning earthquakes, fires, storms, floods, washouts, arrests, the order of any court of governmental authority having jurisdiction while the same is in force and effect, civil disturbances, explosions, breakage, accidents to machinery or lines or pipe, freezing of or damage to facilities, inability to obtain or unavoidable delay in obtaining material, equipment, and any other cause whether of the kind herein enumerated or otherwise, not reasonably within the control of the Party claiming suspension and which by the exercise of due diligence such Party is unable to prevent or overcome.
- 11.2 In the event of either Party being rendered unable, wholly or in part, by force majeure to carry out its obligations (other than the continuing obligation set forth herein below), it is agreed that on such Party's giving notice and full particulars of such force majeure in writing or by electronic mail to the other Party as soon as possible (not to exceed two (2) days) after occurrence of the cause relied on, the obligations of both Parties, so far as they are affected by such force majeure, shall be suspended during such period of force majeure, but for no longer period, and such cause shall so far as possible be remedied with all reasonable dispatch.
- 11.3 Neither Party shall be liable in damages to the other for any act, omission or circumstance occasioned by, or in consequence of, force majeure, as herein defined. Such causes or contingencies affecting the performance by either Party, however, shall not relieve it of liability unless such Party shall give notice and full particulars of such cause or contingency in writing, to the other Party at the address set forth in Section 13.10 as soon as possible (not to exceed two (2) days) after the occurrence relied upon, nor shall such causes or contingencies affecting the performance by either Party relieve it of liability in the event of its failure to use due diligence to remedy the situation and remove the cause with all reasonable dispatch, nor shall such causes or contingencies affecting the performance relieve Buyer from its obligation to make payments of amounts in respect of RNG delivered.
- 11.4 To the extent that, in Buyer's sole judgment. Buyer's ability to receive, measure monitor and/or odorize RNG is impaired by conditions on its system including, but not limited to, the performance of routine maintenance or repairs, then Buyer's obligation to purchase and receive such RNG shall be suspended for the duration of such condition.

ARTICLE 12: EVENTS OF DEFAULT

12.1 EVENTS OF DEFAULT – The occurrence of anyone or more of the following shall be an "Event of Default" under this Agreement:

- a. Failure by a party to pay/reimburse any amount when due and payable that is required to be paid by the terms of this Agreement.
- b. Failure by Seller to deliver to the Buyer the Minimum Quantity of RNG pursuant to Article 3 above for any Critical Day or on more than five (5) cumulative Days in any thirty (30) day period.
- c. Failure by a party to perform any other covenant, condition or agreement required to be performed by it by the terms of this Agreement that continues for a period of ten (10) days after the required date of performance.

12.2 REMEDIES / CERTAIN DAMAGES ON DEFAULT

- a. The non-defaulting party shall have the right, upon written notice to the defaulting party, to terminate this Agreement upon any Event of Default. The non-defaulting party's written notice shall specify the termination date which may be no earlier than the defaulting party's receipt of the termination notice and no later than twenty (20) days thereafter.
- b. If Seller fails to deliver the Minimum Quantity of RNG to Buyer as specified in Section 12.1(b) above, Seller shall pay to Buyer, within five (5) Business Days of its receipt of Buyer's invoice, the difference between the purchase price paid by Buyer to obtain any replacement Gas and the Price of Gas set forth in Article 4 above (adjusted for commercially reasonable differences in transportation costs to or from the Delivery Point) multiplied by the quantity of Gas that Seller failed to deliver to Buyer, plus any applicable penalties or charges incurred by Buyer related to violation of interstate pipeline Operational Flow Orders or other similar requirements.
- c. If the Agreement is terminated pursuant to Section 12.1 above, the non-defaulting party shall determine the outstanding amounts, including termination damages, that are owed by each party to the other under the Agreement and shall, in a timely manner, provide a written statement of account to the defaulting party setting forth the net amount that one party owes to the other party. In either case, the net amount shall be paid within 30 Days of the defaulting party's receipt of the written statement of account.
- d. Seller shall provide security in the amount of \$_____ in a form acceptable to Buyer to guarantee its performance under this Agreement. Buyer shall be permitted to draw

on such security following an Event of Default.

ARTICLE 13: MISCELLANEOUS

- 13.1 Assignment. Except as provided hereinafter, neither this Agreement nor any rights or obligations hereunder may be assigned or transferred, by operation of law or otherwise by either Party without the prior written consent of the other Party, which consent shall not be unreasonably withheld. Notwithstanding the foregoing, Buyer may assign this Agreement and all its rights and obligations to an affiliate of Buyer at any time upon 30 days prior written notice to Seller.
- 13.2 Electric Power and Compressed Air. Seller shall provide, at no cost to Buyer, all the electricity and compressed air required for Buyer to operate, if applicable, the facilities that will measure, regulate and odorize the RNG gas delivered by Seller to Buyer under this Agreement for Buyer's Interconnection Facilities.
- 13.3 Compliance with Applicable Laws/Termination Right. The sale and delivery of RNG by Seller and the purchase and receipt thereof by Buyer are subject to all valid laws with respect to the subject matter hereof and to all valid present and future statutes, orders, rules and regulations of duly constituted authorities having jurisdiction. Neither Buyer nor Seller shall be liable to the other for failure to perform any obligation hereunder where such failure is due to compliance with such valid laws, orders, rules or regulations. If any statute, order, rule, or regulation of a duly constituted authority having jurisdiction over a Party or the performance of this Agreement prevents Seller from charging or collecting the price or prices payable hereunder or prevents Buyer from recovering costs representing the price or prices payable hereunder, the following shall apply notwithstanding any other provision of this Agreement:
- a. If Buyer is prevented from recovering any costs representing all or a portion of the price or prices payable hereunder, or Buyer's recovery of such costs is made subject to refund, Buyer may, at its option, terminate this Agreement by written notice to Seller, effective not less than sixty (60) days after delivery thereof;
 - b. If Seller is prevented from charging or collecting all or any part of the price or prices payable hereunder, or Seller's collection of such prices is made subject to refund, Seller may, at its option, terminate this Agreement by written notice to Buyer, effective not less than sixty (60) days after delivery thereof.
- 13.4 Entire Agreement. This Agreement sets forth all understandings between the Parties respecting the terms and conditions of this transaction. All other agreements, understandings and representations by and between the Parties hereto prior to this Agreement, whether consistent or inconsistent, oral or written, concerning this transaction are merged into and superseded by this written Agreement.

- 13.5 Headings. All headings appearing herein are for convenience only and shall not be considered a part of this Agreement for any purpose.
- 13.6 Waivers. The Parties may, by mutual agreement, waive any provision herein; however, a waiver shall not be construed to constitute a continuing waiver hereunder and furthermore, a waiver by either Party of any one or more defaults by the other Party in performance of any provision of this Agreement shall not operate or be construed as a waiver of future default or defaults, whether of a like or different character.
- 13.7 Severability. In the event that any provision in this Agreement is deemed as a matter of law to be unenforceable or null and void, such unenforceable or void provision shall be deemed severable from this Agreement and the obligations of the Parties under this Agreement shall continue in full force and effect as if such severable provision was not contained herein.
- 13.8 No Third Party Beneficiaries. This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and their permitted assigns.
- 13.9 Amendments. The Parties may by mutual agreement amend the agreement or its Attachments, by a written instrument duly executed by both Parties. Such an amendment shall become effective and a part of this agreement upon satisfaction of all applicable laws and regulations.
- 13.10 Confidentiality. Company/Project specific mutually agreeable non-disclosure agreement.
- 13.11 Indemnification. Company/Project specific mutually agreeable indemnification language.
- 13.12 Subcontractors. [Needs to be added]
- 13.13 Limitation of Liability. Neither Party shall be liable to the other Party in tort (including negligence or strict liability) or otherwise for loss of profits or revenue, loss of use of gas system related to or connected with the Project, cost of capital, claims of customers, or for any other special, indirect, incidental, or consequential damages of any kind or natural whatsoever arising from the activities to be performed hereunder. Notwithstanding the forgoing, the disclaimer set forth herein shall not be deemed to release, discharge, limit or otherwise affect Seller's obligation or liabilities arising out of the criminal, reckless, willful misconduct or the grossly negligent acts or omissions of Seller or its subcontractors or any of their respective agents, servants, employees or representatives.
- 13.14 Governing Law. This agreement shall be governed by and construed in accordance with

the laws of the state of New York, without regard to any rules governing conflicts of laws that would require application of the laws of another jurisdiction.

- 13.15 Waiver of Trial by Jury. Each Party hereby waives trial by jury in any action, proceeding or counterclaim brought by a Party against the other on all matters whatsoever arising out of or in any way connected with this Agreement or any claim of damage resulting from any act or omission of the Parties in any way connected with this Agreement.
- 13.16 Multiple Counterparts. This Agreement may be executed in several counterparts, each of which is an original and all of which constitute one and the same instrument.
- 13.17 Notices. All notices ("Notices") required by this Agreement, including without limitation, requests, demands, and statements, shall be in writing and may be sent by electronic mail or other mutually acceptable electronic means, a nationally-recognized overnight courier service, first-class mail, or may be hand-delivered. If the Day on which the Email is received is not a Business Day or is after 5:00 p.m., then such Email shall be deemed to have been received on the next Business Day. Notice sent by overnight courier service, courier or hand-delivery shall be deemed to have been received on the next Business Day after it was sent or delivered, or such earlier time as is confirmed by the receiving party; and notice via first class mail shall be considered delivered within 4 Business Days after mailing.

CONTACT INFORMATION REQUIREMENTS & NOTIFICATIONS

- Buyer Notices
- Buyer Billing
- Buyer Gas Control

- Seller Notices
- Seller Billing
- Seller Gas Control

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the Effective Date.

[_____ Buyer _____]

By: _____

Name:

Title:

[_____ Seller _____]

By: _____

Name:

Title:

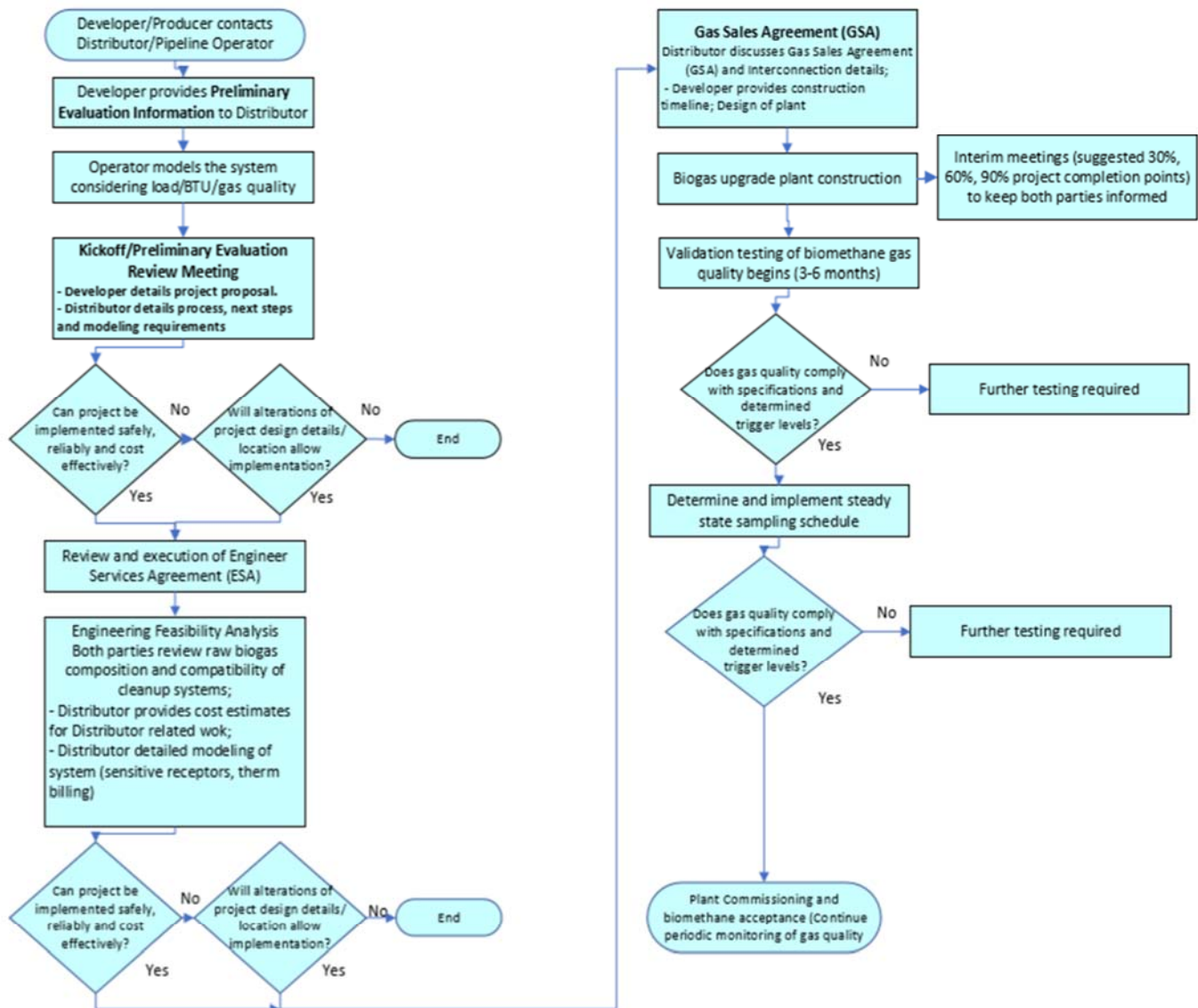
ATTACHMENT A-1. INTERCONNECTION SCOPE OF WORK

- Include scope of work (including references to applicable specifications), division of responsibility (including permitting), schedule and budget for construction of the interconnection facilities
- Also include provisions applicable to payment, change orders, insurance, deposits or security related to the construction of the interconnection facilities

ATTACHMENT A-2. PROCEDURES FOR COMMISSIONING AND START-UP

- Provisions addressing how operations will be coordinated and gas quality testing conducted during commissioning and initial start-up (and related payments and invoicing)

Appendix G – Overall Gas to Grid Process



Appendix H – Feedstock/Upgraded Gas Constituent Guidance Matrix

The following table lists some potential COCs that may be found in raw gas from specific feedstocks for RNG production. Each biogas to RNG project will be different, and the final list of constituents of concern will depend on many unique criteria. The goal here is to test only for what may be reasonably expected based on the feedstock biomass. ***If the developer has supporting technical information that the raw gas analysis need not consider the analytes in the COC table then testing may not be required.*** Based on general available data (ensuing tables), blue shading identifies possible COCs of interest to a feedstock while white shading represents COCs that are potentially not of interest

Parameter	Landfill	Agricultural and Clean Organics	WWTP	Source Separated Organics and Facility Separated Organics ²¹	Gasifier, Syngas
Water Content ²²					
Sulfur, including Hydrogen Sulfide					
Hydrogen					
Carbon dioxide					
Nitrogen					
Oxygen					
Ammonia					
Biologicals (bacteria or spores ≤ 0.2 micron)					
Mercury					
Volatile metals					
Siloxanes					
Volatile Organic Compounds					
Semi-volatile Organic Compounds					
Halocarbons					
Aldehydes and Ketones					
Polychlorinated biphenyls (PCBs) ⁽²³⁾					
Pesticides ⁽¹¹⁾					

²¹ Analytes of concern were selected based on experience with other biomass sources and the relative likelihood for constituents to be present.

²² Water vapor content of <7 lbs/MMscf is an industry acceptable practice for defining “dry” gas for purposes of metering and measurement. Actual pipeline supplies are typically less than 4 lbs/MMscf and this constituent value should be relatively consistent with flowing supplies at the point of interconnect.

²³ Not required unless the facility has a verified history of PCB/Pesticide contamination or use. Prior studies have confirmed that under ordinary conditions, these analytes are not likely to be found in the gas phase due to vapor pressure limitations.

Observed Ranges Found in Fully Upgraded RNG from Landfills

The following data on upgraded RNG from landfills is from GTI lab analyses from 2006-2016.

Parameter	AGA 4A Reported Range	Range Found in Upgraded Landfill-Derived RNG	Range Found in Pipeline Natural Gas Samples
Total Sulfur	maximum 0.5 to 20 grains per 100 SCF	BDL (0.003) to 0.32 grains per 100 SCF	BDL (0.003) to 1.1 grains per 100 SCF
Hydrogen Sulfide	maximum 0.25 to 1.0 grains per 100 SCF	BDL (0.003) to 0.03 grains per 100 SCF	BDL (0.003) to 0.36 grains per 100 SCF
Hydrogen	max. 0.04 to 0.1 vol%	BDL (0.1) to 1.0 vol%	BDL (0.1) to 0.3 vol%
Carbon dioxide	maximum 1 to 3 vol%	BDL (0.03) to 2.2 vol%	BDL (0.03) to 2.6 vol%
Nitrogen	maximum 1 to 4 vol%	0.5 to 9.5 vol%	BDL (0.03) to 12.7 vol%
Oxygen	max. 0.001 to 1 vol% majority: 0.1 to 0.2 vol%	BDL (0.03) to 1.3 vol%	BDL (0.03) to 1.2 vol%
Diluents + Inerts	maximum 3 to 6 vol%	0.6 to 10.0 vol%	0.3 to 12.7 vol %
Ammonia	none	BDL (10 ppmv)	BDL (10 ppmv)
Total Bacteria	none	2.46×10^4 to 3.29×10^8 # per 100 SCF	3.47×10^4 to 6.39×10^7 # per 100 SCF
Mercury	none	BDL (0.01) to 0.3 $\mu\text{g}/\text{m}^3$	BDL (0.01) to 0.06 $\mu\text{g}/\text{m}^3$
Other Volatile Metals	none	BDL (30) to 250 $\mu\text{g}/\text{m}^3$ (Cr, Cu, Mn, Pb, Sb, Zn)	BDL (30) to 213 $\mu\text{g}/\text{m}^3$ (As, Cu, Pb, Zn)
Siloxanes (D4)	none	BDL ¹ (0.5 mg/m ³) to 6.0 mg Si/m ³	BDL ¹
Non-Halogenated Semi-Volatile and Volatile Compounds	none	BDL ² to 1.4 ppmv (BTEX, phthalates)	BDL ² to 471 ppmv (1,3-butadiene, acrylonitrile, BTEX)
Halocarbons	none	BDL (0.1) to 3.6 ppmv (Freons, chloroethane, vinyl chloride)	BDL (0.1 ppmv)
Aldehyde/Ketones	none	BDL (10) to 522 ppbv	BDL (10) to 103 ppbv
Polychlorinated biphenyls (PCBs)	none	BDL (1 ppbv)	BDL (1 ppbv)
Pesticides ³	none	BDL (0.3 to 3 ppbv)	BDL (0.3 to 3 ppbv)

¹ Detection limits for siloxane ranged from 0.5 mg Si/m³ to 0.1 as analysis methods improved resulting in publication of ASTM D8230.

² Detection limits vary from 1 ppmv (volatiles) to 5 ppbv (semi-volatiles), depending on compound analyzed..

³ Current achievable detection limit range is 0.3 to 3 ppbv

Observed Ranges Found in Fully Upgraded RNG from Dairies

The following data on upgraded RNG from dairies is from GTI lab analyses from 2006-2016.

Parameter	AGA 4A Reported Range	Range Found in Upgraded Dairy-Derived RNG	Range Found in Pipeline Natural Gas Samples
Total Sulfur	maximum 0.5 to 20 grains per 100 SCF	BDL (0.003) to 0.31 grains per 100 SCF	BDL (0.003) to 1.1 grains per 100 SCF
Hydrogen Sulfide	maximum 0.25 to 1.0 grains per 100 SCF	BDL (0.003 ppmv)	BDL (0.003) to 0.36 grains per 100 SCF
Hydrogen	max. 0.04 to 0.1 vol%	BDL (0.1 vol%)	BDL (0.1) to 0.3 vol%
Carbon dioxide	maximum 1 to 3 vol%	0.06 to 0.95 vol%	BDL (0.03) to 2.6 vol%
Nitrogen	maximum 1 to 4 vol%	0.20 to 7.81 vol%	BDL (0.03) to 12.7 vol%
Oxygen	max. 0.001 to 1 vol% majority: 0.1 to 0.2 vol%	BDL (0.03) to 1.99 vol%	BDL (0.03) to 1.2 vol%
Diluents + Inerts	maximum 3 to 6 vol%	0.37 to 10.65 vol%	0.3 to 12.7 vol %
Ammonia	none	BDL (10 ppmv)	BDL (10 ppmv)
Total Bacteria	none	3.28×10^3 to 1.02×10^7 # per 100 SCF	3.47×10^4 to 6.39×10^7 # per 100 SCF
Mercury	none	BDL (0.01 $\mu\text{g}/\text{m}^3$)	BDL (0.01) to 0.06 $\mu\text{g}/\text{m}^3$
Other Volatile Metals	none	BDL (20 $\mu\text{g}/\text{m}^3$)	BDL (30) to 213 $\mu\text{g}/\text{m}^3$ (As, Cu, Pb, Zn)
Siloxanes (D4)	none	BDL ¹ (0.5 mg/m ³)	BDL ¹
Non-Halogenated Semi-Volatile and Volatile Compounds	none	BDL ² to 0.1 ppmv (BTEX, N-nitroso-di-n-propylamine, benzyl alcohol)	BDL ² to 471 ppmv (1,3-butadiene, acrylonitrile, BTEX)
Halocarbons	none	BDL (0.1 ppmv)	BDL (0.1 ppmv)
Aldehyde/Ketones	none	not tested	BDL (10) to 103 ppbv
Polychlorinated biphenyls (PCBs)	none	BDL (1 ppbv)	BDL (1 ppbv)
Pesticides ³	none	BDL (0.3 to 3 ppbv to 0.5 ppbv gamma-chlordane))	BDL (0.3 to 3 ppbv)

¹ Detection limits for siloxane ranged from 0.5 mg Si/m³ to 0.1 as analysis methods improved resulting in publication of ASTM D8230.

² Detection limits vary from 1 ppmv (volatiles) to 5 ppbv (semi-volatiles), depending on compound analyzed..

³ Current achievable detection limit range is 0.3 to 3 ppbv.

Observed Ranges Found in Fully Upgraded RNG from WWTPs

The following data on upgraded RNG from WWTPs is from GTI lab analyses from 2006-2016. Only one fully upgraded site was analyzed.

Parameter	AGA 4A Reported Range	Range Found in Upgraded WWTP-Derived RNG	Range Found in Natural Gas Samples
Total Sulfur	maximum 0.5 to 20 grains per 100 SCF	BDL (0.003) to 0.01 grains per 100 SCF	BDL (0.003) to 1.1 grains per 100 SCF
Hydrogen Sulfide	maximum 0.25 to 1.0 grains per 100 SCF	BDL (0.003) to 0.01 grains per 100 SCF	BDL (0.003) to 0.36 grains per 100 SCF
Hydrogen	max. 0.04 to 0.1 vol%	BDL (0.1 vol%)	BDL (0.1) to 0.3 vol%
Carbon dioxide	maximum 1 to 3 vol%	0.49 to 0.66 vol%	BDL (0.03) to 2.6 vol%
Nitrogen	maximum 1 to 4 vol%	BDL (0.03 vol%)	BDL (0.03) to 12.7 vol%
Oxygen	max. 0.001 to 1 vol% majority: 0.1 to 0.2 vol%	BDL (0.03 vol%)	BDL (0.03) to 1.2 vol%
Diluents + Inerts	maximum 3 to 6 vol%	0.49 to 0.66 vol%	0.3 to 12.7 vol %
Ammonia	none	BDL (10 ppmv)	BDL (10 ppmv)
Total Bacteria	none	9.85×10^5 to 2.14×10^6 # per 100 SCF	3.47×10^4 to 6.39×10^7 # per 100 SCF
Mercury	none	BDL (0.01 $\mu\text{g}/\text{m}^3$)	BDL (0.01) to 0.06 $\mu\text{g}/\text{m}^3$
Other Volatile Metals	none	BDL to 229 $\mu\text{g}/\text{m}^3$ (Zn)	BDL (30) to 213 $\mu\text{g}/\text{m}^3$ (As, Cu, Pb, Zn)
Siloxanes (D4)	none	BDL (0.51 mg/m^3)	BDL ¹
Non-Halogenated Semi-Volatile and Volatile Compounds	none	BDL ² to 6 ppbv (phthalate)	BDL ² to 471 ppmv (1,3-butadiene, acrylonitrile, BTEX)
Halocarbons	none	BDL (0.1 ppmv)	BDL (0.1 ppmv)
Aldehyde/Ketones	none	BDL (10 ppbv)	BDL (10) to 103 ppbv
Polychlorinated biphenyls (PCBs)	none	BDL (1 ppbv)	BDL (1 ppbv)
Pesticides ³	none	BDL (0.3 to 3 ppbv)	BDL (.3 to 3 ppbv)

¹ Detection limits for siloxane ranged from 0.5 $\text{mg Si}/\text{m}^3$ to 0.1 as analysis methods improved resulting in publication of ASTM D8230.

² Detection limits vary from 1 ppmv (volatiles) to 5 ppbv (semi-volatiles) depending on compound analyzed.

³ Current achievable detection limit range is 0.3 to 3 ppbv