



**Verified Carbon
Standard**

MONITORING REPORT #2023-2 FOR THE GREATER NEW BEDFORD LFG UTILIZATION PROJECT, DARTMOUTH, MA

CommonWealth
Resource Management Corporation

Document Prepared By: CommonWealth Resource Management Corporation
For its wholly owned subsidiary
CommonWealth New Bedford Energy, LLC

Project title	Greater New Bedford LFG Utilization Project
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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Project is a landfill methane (a.k.a., “landfill gas” or “LFG”) capture and utilization project located at a solid waste landfill (the “Landfill”) in Dartmouth, Massachusetts. The Landfill is owned by the Greater New Bedford Regional Refuse Management District (the “District”). The owner of the Project is Commonwealth New Bedford Energy, LLC (“CNBE”), a wholly-owned subsidiary of Commonwealth Resource Management Corporation (“CRMC”), a Massachusetts corporation based in Boston, Massachusetts, U.S.A. CNBE also owns the exclusive rights to all of the LFG at the Landfill, and all of the environmental attributes associated with the collection, destruction and use of all of the LFG at the Landfill.

The Project voluntarily captures and destroys LFG methane from the Crapo Hill Landfill located in Dartmouth, Massachusetts (latitude and longitude are 41° 43’ 28.12” N and 70° 59’ 04.82” W, respectively). The Project captures LFG from the expanded active collection system and destroys it either via four Caterpillar 3516 engine-generator sets or a back-up open flare (the Project Activity). The Project achieves emissions reductions through the destruction of LFG that would otherwise have been released to the atmosphere. The back-up flare did not operate for any significant period during the current verification period; therefore, emission reductions are not claimed from flaring.

The Project was implemented according to the description provided in the revalidated PD. The Project became operational in January 2002 with the expansion of an existing active LFG collection and destruction system. Emission reductions from the current verification period were claimed for LFG collected from the expanded active LFG collection system and destroyed in the Caterpillar 3516 engine-generator sets. The back-up flare had limited operation during the current verification period and no emission reductions are claimed from flaring. CRMC claims GHG emission reductions eligible under VCS program of **32,417 metric tons of CO2e for the verification period 01-October-2023 through 31-December-2023.**

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	Validation 29-March-2016 to 28-March-2026	Energy industries (renewable/non-renewable sources)	GHD Limited	Validation for 10 years: 29-March-2016 to 28-March-2026

Verification	29-March-2016 to 30-June-2016	Energy industries (renewable/non-renewable sources)	Ruby Canyon Engineering	0.25 years
Verification	1-July-2016 to 31-December-2016 and 1-January-2017 to 30-April-2017	Energy industries (renewable/non-renewable sources)	Ruby Canyon Engineering	0.75-year
Verification	1-May-2017 to 31-December-2017	Energy industries (renewable/non-renewable sources)	Ruby Canyon Engineering	1.0 year
Verification	1-January-2018 to 31-December-2018	Energy industries (renewable/non-renewable sources)	GHD Limited	1.0 year
Verification	1-January-2019 to 30-September-2019	Energy industries (renewable/non-renewable sources)	GHD Limited	0.75-year
Verification	1-October-2019 to 31-December 31-2019 1-January-2020 to 30-June-2020	Energy industries (renewable/non-renewable sources)	GHD Services, Inc.	0.75-year
Verification	1-July-2020 to 31-December-2021 1-January-2021 to 31-March-2021	Energy industries (renewable/non-renewable sources)	GHD Services, Inc.	0.75-year
Verification	1-April-2021 to 31-December-2021	Energy industries (renewable/non-renewable sources)	GHD Services, Inc.	0.75-year
Verification	1-January-2022 to 30-June-2022	Energy industries (renewable/non-renewable sources)	GHD Services, Inc.	0.5 years
Verification	1-July-2022 to 31-December-2022	Energy industries (renewable/non-renewable sources)	GHD Services, Inc.	0.5 years

Verification	1-Jan-2023 to -30-Sept-2023	Energy industries (renewable/non-renewable sources)	GHD Services, Inc.	0.75 years
Verification	1-Oct-2023 to -31-Dec-2023	Energy industries (renewable/non-renewable sources)	GHD Services, Inc.	0.25 years
Total	29-March-2016 to 31-Dec-2023	Energy industries (renewable/non-renewable sources)		8.00 years

1.3 Sectoral Scope and Project Type

Sectoral scope ¹	Renewable Energy
Project activity type	Landfill gas capture, utilization and methane destruction

Sectoral scope	Not Applicable
AFOLU project category ²	Not Applicable
Project activity type	Not Applicable

1.4 Project Proponent

Organization name	CommonWealth Resource Management Corporation For its wholly-owned subsidiary CommonWealth New Bedford Energy, LLC
Contact person	Thomas Yeransian
Title	Principal of CRMC
Address	One Bornheimer Place, Scarborough, Maine 04074
Telephone	508-339-3074
Email	tyeransian@crmcx.com

¹ Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

² See Appendix 1 of the VCS Standard

1.5 Other Entities Involved in the Project

Organization name	None
Role in the project	
Contact person	
Title	
Address	
Telephone	
Email	

1.6 Project Start Date

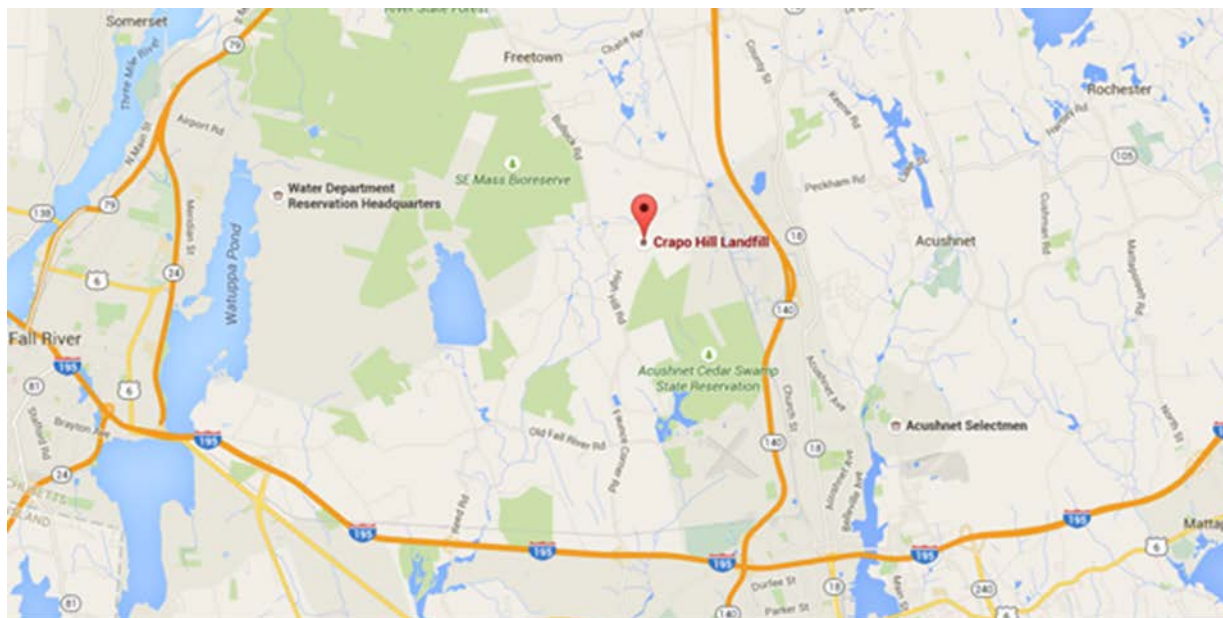
Project start date	01-January-2002
Justification	The Project began generating GHG emission reductions on the Project Start Date. The Project was validated by First Environment. First Environment performed a validation of the Project's approach as outlined in the PDD as part of the VCS 2007.1 validation process. First Environment used VCS 2007.1 and the UNFCCC's ACM0001 (Version 9.1) methodology as the basis for the validation. The VCS approved the validation and hence the Project Start Date.

1.7 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☒ Ten years, twice renewable ☐ Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)
Start and end date of first or fixed crediting period	The first Project Credit Period was a 10-year period starting 28-March-2006 and ending 28-March-2016. The second Project Credit Period is a 10-year period starting 29-March-2016 and ending 28-March-2026.

1.8 Project Location

The Project is at the Crapo Hill Landfill located west of Samuel Barnett Boulevard in the northeast portion of the Town of Dartmouth, Massachusetts (latitude and longitude are 41° 43' 28.12" N and 70° 59' 04.82").



1.9 Title and Reference of Methodology

As outlined in the Project Description document, the VCS methodology applied to the Project was the approved consolidated baseline methodology UNFCCC's ACM0001, Version 16, "Large-scale Consolidated Methodology – Flaring or use of landfill gas".

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	UNFCCC's ACM0001,	Large-scale Consolidated Methodology – Flaring or use of landfill gas".	16

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

If yes, provide required evidence of no double issuance as outlined by the VCS Standard.

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☒ Yes ☐ No

The Project is registered at the American Carbon Registry – Project ID of ACR 113. The emission reductions verified for this monitoring period will not be claimed under or registered on the ACR or any other registry. The last year that credits from this Project were registered under the ACR were for the full year of 2008 vintage. The ACR crediting period ended December 31, 2008, the date of inactivity. See both “Exhibit 7 Attestation Statement” and separately submitted to VERRA “Issuance Deed of Representation”, which attest that carbon credits verified hereunder will be registered on the VERRA Registry only.

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☐ No

If yes:

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through the Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."

☐ Yes ☒ No

If yes to all:

Provide evidence of the public statement. Evidence must be provided in this section or in an appendix.

1.12 Sustainable Development Contributions

The Project is a renewable energy project that supports sustainable development in the United States. The Project continues to add collection equipment to new areas of the active landfill to collect newly generated landfill gas. The Project continues to add automated monitoring and collection equipment to well heads to monitor and record real time data from new wellheads and control the flow of landfill gas through the wellheads to optimize the efficiency of the collection system to collect the maximum quantity of landfill gas.

The Project supports the United States Environmental Protection Agency Landfill Methane Outreach Program (LMOP), which is a voluntary program that works cooperatively with industry stakeholders and waste officials to reduce or avoid methane emissions from landfills. LMOP encourages the recovery and beneficial use of landfill gas generated from organic municipal solid waste. CRMC has been a member of LMOP since 1995. The project is listed on LMOP and CRMC reports performance of the project annually. The project helps LMOP to achieve its stated goals to reduce greenhouse gas emissions, reduction of air pollution by offsetting the use of non-renewable resources, create health and safety benefits, and benefit the community and economy.

The Project supports several of the United Nations Sustainable Development Goals. The specific support of these goals is described in the table below.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	7.0	Ensure access to Affordable, Reliable, Sustainable and Modern Energy	Implemented activities to increase production of reliable, low cost, base-load renewable energy to four local municipal utilities.	During last quarter of 2023, production of renewable electricity was 5,120 Megawatt hours.	The project has increased affordable, reliable, base-load renewable electricity in Massachusetts by 376,676 Megawatt hours since 2005.
2)	9.0	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Implemented activities to increase the collection of landfill gas.	Installed additional landfill collectors and automated monitoring and control of landfill wells using LoCI Controls technology. The current contributions of these efforts increase collection of landfill gas by approximately 15% or 4,326 metric tons of CO2e for the monitoring period.	The project increased collection of landfill gas by expanding collection and increased the efficiency of the collection by adding automated collection and control system. Collected approximately 4.8 trillion Btus of landfill gas (methane) since 2005. The landfill gas was destroyed but first converted to renewable energy.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented project activities to collect and destroy methane gas that would otherwise be emitted to the atmosphere.	By collecting and destroying landfill gas, the Project has reduced or avoided methane emissions of 33,169 metric tons of CO2 equivalents during the last quarter of 2023.	Reduced 1.8 million metric tons of CO2 equivalents since 2005.

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1.13 Commercially Sensitive Information

None.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

No change in the stakeholder make up has changed since validation.

Stakeholder Identification	No change in the stakeholder make up has changed since validation.
Legal or customary tenure/access rights	No change in the stakeholder make up has changed since validation..
Stakeholder diversity and changes over time	No change in the stakeholder make up has changed since validation.
Expected changes in well-being	No change in the stakeholder make up has changed since validation.
Location of stakeholders	No change in the stakeholder make up has changed since validation.
Location of resources	No change in the stakeholder make up has changed since validation.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	The Project stakeholders are the CNBE and the District. CNBE communicates daily during the work week with
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	the District. CNBE meets with the District monthly after CNBE operations meetings.
Date(s) of stakeholder consultation	Monthly in-person meeting stakeholder consultations during the Monitoring Period included October 4, 2023, November 14, 2023 and December 8, 2023. Telephone, email or text communications occur daily during the workweek from October 1 through December 31, 2023.
Communication of monitored results	Emails, telephone communications and in-person meetings.
Consultation records	CNBE prepares and submits to the District the Project's performance in "Statement for Purchase of Landfill Gas from the District" within the first week after each month.
Stakeholder input	The Project operations accommodate changes to the District operations as communicated and coordinated each week. No project design occurred during the monitoring period

2.1.3 Free, Prior, and Informed Consent

Consent	The Project does not affect Indigenous People, local communities, and customary rights holders, rights to land, territories and resources. CNBE has gone through all legal measures to develop the Project at the Landfill and implement the collection, use and destruction of landfill gas.
Outcome of FPIC	The Project has not encroached on land, relocated people, and forced physical or economic displacement.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
No grievances were received.	No resolution was required because no grievance was received during monitoring period. Grievances can be sent directly to CRMC by email or phone. CRMC has not received a grievance by the public during its years of operation. Commonwealth Resource Management Corporation (CRMC) maintains a website that contains the owners' emails and telephone numbers, which the public has easy access. The public also can send grievances to the Greater New Bedford Regional Refuse Management District (District), which has an odor hotline for public reports and a website with contacts email and phone. CRMC is in contact with the District each work day and during this monitoring period, no grievance from the District was communicated to CRMC. If CRMC receives a grievance directly or through the District, CNBE would work with the District to address the grievance by assessing the conditions of the grievance and take actions to cure or mitigate the cause of the grievance.

2.1.5 Public Comments

Summary of comments received	Actions taken
No comments were received.	No actions were required to be taken.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

Since 1991, the three principals of CRMC have developed several landfill gas utilization projects itself and many other projects for companies as consultants. CRMC provides the technical, environmental and business expertise and experience to implement and operate such projects and as necessary engage communities. Typically, these projects are supported by the public and during the development process and operations of the projects CRMC receives little if any public comment or public comments that are supportive of the projects.

Regarding the public that may be interested in the Project, CNBE provides tours of the Project to interested parties including school groups, college students, environmental advocacy groups, political leaders, etc. The Project has been typically used as an example by the State of Massachusetts Clean Energy Council and Department of Environmental Protection as an important environmental project that helps to achieve the environmental, renewable energy, GHG reduction and sustainability goals of Massachusetts. The Project was awarded the Silver Metal for Excellence in 2010 for landfill gas projects by the Solid Waste Association of North America (SWANA). Criteria used for this national award for excellence included Site Design & Construction, Environmental Controls, Regulatory Compliance, Planning, Operations & Financial Management, Utilization of Equipment/Systems and Technologies, Public Acceptance, Appearance and Aesthetics, and Innovation and Creativity.

The mechanisms for ongoing communication with the public include

1. Providing the general public with detailed descriptions of the Project through both the Commonwealth Resource Management Corporation (CRMC) website (www.crmcx.com) and the Greater New Bedford Regional Refuse Management District website (<https://gnbrmdistrict.org>).
2. Direct outreach from CNBE by providing presentations to industry groups, by responding to inquiries from the public and organizing public tours of the facility and providing annual data to the Massachusetts Department of Environmental Protection and other regulatory agencies.
3. Direct outreach from the Executive Director of the Greater New Bedford Regional Refuse Management District who responds to all public inquiries regarding all activities at the landfill including the Project. Public inquiries of the Project are typically relayed to CNBE and CNBE communicates with the interested public.
4. Members of the public have access to CNBE's owners and operators through direct email and telephone contact information listed on the CRMC website.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified.	None. The Project does not adversely impact stakeholders wellbeing. On the contrary, any potential stakeholders' risk are reduced by Project.
Risks to stakeholder participation	No risk identified.	Stakeholders do not have risk of participation.
Working conditions	Operations.	CNBE implemented a Safety Plan, Spill Prevention Control & Countermeasures Plan for Project operations, safety training, logs, and insurance.
Safety of women and girls	No risk identified.	No risks exist regarding the safety of women and girls due to the implementation of this Project.
Safety of minority and marginalized groups, including children	No risk identified.	No risks exist concerning the safety of minority and marginalized groups, including children due to the implementation of this Project.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	Uncontrolled release of landfill gas from the Landfill.	The Project collects and controls landfill gas generated by the Landfill and thereby reduces uncontrolled releases of landfill gas to the environment and therefore has only beneficial impacts on the surrounding environment and residents that live in the area. The Project does not release hazardous materials and chemical pesticides and fertilizers to the environment. Noise generated by the Project meets State permit requirements and does not impact the public beyond the property boundaries owned by the District.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified ³	Mitigation or preventative measure(s) taken
Discrimination	No risk identified.	Prohibited by CNBE in accordance with United States federal and Massachusetts State laws.
Sexual harassment	No risk identified.	Prohibited by CNBE in accordance with United States federal and Massachusetts State laws.
Gender equity in labor and work	No risk identified.	Prohibited by CNBE in accordance with United States federal and Massachusetts State laws.
Forced labor	No risk identified.	Prohibited by CNBE in accordance with United States federal and Massachusetts State laws.
Child labor	No risk identified.	Prohibited by CNBE in accordance with United States federal and Massachusetts State laws.
Human trafficking	No risk identified.	Prohibited by CNBE in accordance with United States federal and Massachusetts State laws.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	Prohibited by CNBE in accordance with United States federal and Massachusetts State laws.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The Project does not affect the cultural heritage of the Indigenous People, local communities, and customary rights holders.

³ The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified.	The Project does not affect the property rights of Indigenous People, local communities, and customary rights holders.

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	CNBE pays the District for the landfill gas utilized by the Project and provides the District with additional contingent payments based upon the sale of products produced by the Project. No change to the compensation to the District occurred during the monitoring period.
Benefit sharing during the monitoring period	The District is a Massachusetts legislated solid waste district that serves two host communities, the City of New Bedford and Town of Dartmouth. The benefits that CNBE pays the District also benefits the host communities by providing economic support of the District's solid waste management to its host communities.

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	The Project has no impact on biodiversity and ecosystem health.
Soil degradation and soil erosion	No risk identified	The Project has no impact on soil degradation and soil erosion.
Water consumption and stress	No risk identified	The Project has no impact on water consumption and stress.

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	The Project is not located in or adjacent to habitats for rare, threatened, or endangered species. When originally permitted, the Secretary of the Massachusetts Executive Office of Environmental Affairs approved the Project through the Massachusetts Environmental Policy Act regulations. As part of the approval, the Secretary found that the Project is sited on previously disturbed land that does not contain a habitat of rare species, vernal pools, priority sites of rare species or exemplary natural communities, and therefore, no alteration of designated significant habitat or taking of an endangered or threatened species will occur. No changes occurred during the monitoring period.
Areas needed for habitat connectivity	The Project is not located in or adjacent to habitats for rare, threatened, or endanger species.

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	No risk identified	The Project is not located in or adjacent to habitats for rare, threatened, or endangered species.
Areas for habitat connectivity	No risk identified	The Project is not located in or adjacent to habitats for rare, threatened, or endangered species.

2.4.2 Introduction of species

Species introduced	Classification	Justification for use	Adverse effects and mitigation
No species introduced.	No classification	Not applicable	Not applicable because, no species introduced. The Project is maintained as a fully developed industrial site.

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
None	The Project site is maintained as an industrial site.

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	No Risk	The Project site is maintained as an industrial site.

2.4.3 Ecosystem conversion

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	No risk identified	The Project site has been maintained as an industrial site since 2005.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The Project Activity was in service during the monitoring period. Note that the Project Activity no longer includes an operating anaerobic digester that had previously generated biogas to supplement the landfill gas. The anaerobic digester ceased operations July 2023. Consequently, all prior references and calculations pertaining to GHG emission reductions and monitoring associated with the anaerobic digester and biogas have been excluded from this Monitoring Report.

The Project Activity operated normally during the monitoring period.. The four engines destroyed landfill gas during the period. The back-up flare had limited operation during the current verification period and no emission reductions are claimed from flaring.

One event that impacted operation during the monitoring period was a 23-hour unplanned outage of the landfill gas-to-energy facility caused by the utility, The outage occurred on November 8 through 9, 2023. During this period, the back-up flare was used to destroy landfill gas. The data logs that document the outage is provided in Exhibit 5.

No other changes to the project proponent or other entities were made during this monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

The following methodology deviations were previously validated and approved for the Project during the initial crediting period and again during the revalidation assessment in 2016:

- The SCADA system was programmed to calculate the methane gas flow in units of million British thermal units (MMBtu) using standardized gas flow (at 68°F and one atmosphere of pressure), methane concentration, the gross heat content (higher heating value) of methane, and the actual temperature and pressure. CNBE determined the volume of methane destroyed by converting the MMBtu values to total methane gas flow in standard cubic feet. This deviation from the monitoring methodology was previously approved by independent verifiers and had a conservative impact on the quantification of GHG emissions reductions during the verification period.
- The Project reference conditions are 20 degrees Centigrade and 1 atmosphere rather than ACM0001 reference conditions of 0 degrees Centigrade and 1 atmosphere.

The following methodology deviations were previously approved during the re-validation assessment in 2016.

1. A separate LFG meter is not present on each of the four combustion engines. A single meter is used immediately before the piping splits to each engine. This meter is continuously recording data. Operating data is tracked for each engine, so it is possible to calculate the flow destroyed by each engine and to ensure that LFG is destroyed. Flow controls are in place to ensure no LFG is sent to an engine that is not operating. This does not affect the conservativeness of the emissions reductions claimed.
2. Ex-ante emissions reductions calculations use historic Project specific data as the basis for projecting future emissions rather than the required CDM estimation tools. Using real data allows the estimations to be more accurate and reflect actual Project operating conditions. This does not affect the conservativeness of the emissions reductions claimed but increases the accuracy of the ex-ante projections ensuring the project is forecasting obtainable, appropriate emissions reductions.

3. There is no flow meter installed on the collection pipe from the District Initial System to separately monitor the contribution of the original baseline system. Given the collection system design and meter requirements, installing a meter at this location would not produce reliable, meaningful results. Instead, well-head flow measurements are collected manually. These results are used to calculate the relative contribution of the District Initial System to the overall flow of LFG destroyed by the engines. This portion of the total flow represents FCH₄,BL,y and will be calculated on a monthly basis and subtracted from the total flow to account for the amount of methane destroyed in the baseline scenario. This approach represents an accurate measurement of the flow because (a) the portion of the landfill that includes the District Initial System (Phase 1) is capped so no landfill gas can be passively emitted to the atmosphere, and (b) the remaining active wells from the District Initial System are located in such a way as to enable capture of all LFG generated within the sphere of influence of the District Initial System. This deviation decreases the conservativeness of the emissions reductions claimed but significantly increases the accuracy of the calculations as is allowable under VCS Standard v4.1, Section 3.17.1 and 2.
4. The Project uses the eGrid electricity emissions factor rather than the default emissions factor provided in the CDM tool as explained in the project emissions section. This deviation decreases the conservativeness of the emissions reductions claimed but significantly increases the accuracy of the calculations as is allowable under VCS Standard v4.1, Section 3.17.1 and 2.

These deviations only apply to the monitoring and measurement portions of the Project.

3.2.2 Project Description Deviations

No project description deviations applied during this monitoring period.

3.3 Grouped Projects

The Project is not a grouped project.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	OXtop_layer
Data unit	Dimensionless
Description	Fraction of methane that would be oxidized in the top layer of the SWDS in the baseline
Source of data	Consistent with how oxidation is accounted for in the methodological tool "Emissions from solid waste disposal"
Value applied:	0.1
Justification of choice of data or description of measurement methods and procedures applied	In accordance with requirements of ACM0001
Purpose of Data	Calculation of baseline emissions
Comments	No comments

Data / Parameter	GWpch4
Data unit	T CO ₂ e / t CH ₄
Description	Global warming potential of methane
Source of data	IPCC – Fifth Assessment Report
Value applied:	28
Justification of choice of data or description of measurement methods and procedures applied	Updated from 25 to 28 pursuant to (1) the re-validation report dated May 16, 2016, and (2) the VCS approval (in its VCS Standard v.4.1 issued April 22, 2021 and VCS Standard v4.2 issued January 20, 2022) of updated global warming potentials provided in the IPCC's Fifth Assessment Report (Table 8.A.1) (2013). The Verified Carbon Standard Version 4.5 October 4, 2023, v4.5 states the GWP for methane at 28 (Table 2, Page 37). The Verified Carbon Standard Version 4.7 April 16, 2024, v4.7 also states the GWP for methane at 28 (Table 2, Page 37).
Purpose of Data	Calculation of baseline emissions
Comments	No comments

Data / Parameter	Regulatory requirements
Data unit	Not applicable
Description	Regulatory requirements applicable to the Project Activity
Source of data	Publicly available information on local, regional and national regulations
Value applied:	Not applicable
Justification of choice of data or description of measurement methods and procedures applied	Not applicable
Purpose of Data	To ensure continued compliance and regulatory additionality
Comments	This information is summarized in the PDD and will be monitored during the crediting period for any applicable changes.

Data / Parameter	Methane oxidation efficiency for electricity generation
Data unit	Percent
Description	Quantity of methane oxidized during combustion for electricity generation
Source of data	CDM Methodologies and Tools
Value applied:	100
Purpose of the data	Calculation of baseline and emissions reductions
Comments	None

Data Unit / Parameter:	Methane oxidation efficiency for flare
Data unit:	Percent
Description:	Quantity of methane oxidized during combustion using flare
Source of data:	ACM0001Flaring or use of landfill gas, version 16
Value applied:	50
Purpose of the data:	Baseline and emissions reductions
Any comment:	None

Data / Parameter	Fuel Use by the Emergency Generator
Data unit	Gallons/hour
Description	Average consumption of a 150kW generator operating at ¾ load to be used to calculate fuel consumed annually
Source of data	Diesel Service and Supply Company
Value applied:	8.4 gallons/hour
Justification of choice of data or description of measurement methods and procedures applied	Conservative for this piece of equipment given output needed vs total capacity
Purpose of the data	Calculation of project emissions
Comments	None

4.2 Data and Parameters Monitored

Data Unit / Parameter:	Methane content of landfill gas
Data unit:	Percent methane content of landfill gas
Description:	Methane content of landfill gas
Source of data:	SCADA System at Facility
Description of measurement methods and procedures to be applied:	Non-dispersive infrared
Frequency of monitoring/recording:	Continuous, hourly, daily
Value monitored:	Methane concentration, % Value varies. During the monitoring period methane value averaged 53% with range of 50% to 56%.
Monitoring equipment:	California Analytical 602P, Serial # S07002
QA/QC procedures to be applied:	Field calibrated once per week. A zero check and value check is performed by comparison with standard certified gas.
Purpose of the data	Calculate baseline and emissions reductions.
Calculation method:	Used in calculation to obtain heat value of landfill gas in Btu per scf of landfill gas
Any comment:	CO2 and O2 are also continuously monitored using the same instrument.

Data Unit / Parameter:	Volume of landfill gas to engines
Data unit:	Actual cubic feet per minute
Description:	Quantity of landfill gas used to fuel engines
Source of data:	SCADA System at Facility
Description of measurement methods and procedures to be applied:	Differential pressure measured across orifice plate

Frequency of monitoring/recording:	Continuous, hourly, daily
Value monitored:	Differential pressure Value varies. During monitoring period differential pressure value ranged between 7 to 9 inches water gauge that is used to calculate actual cubic feet per minute flow average.
Monitoring equipment:	Oripac Model 4150, Serial #30154
QA/QC procedures to be applied:	Field calibrated once per month.
Purpose of the data	Calculate baseline and emissions reductions.
Calculation method:	Fluid flow equation (Bernoulli) calculates actual cubic feet per minute of landfill gas.
Any comment:	None

Data Unit / Parameter:	Temperature of landfill gas to engines
Data unit:	Degrees Fahrenheit
Description:	Temperature of landfill gas
Source of data:	SCADA System at Facility
Description of measurement methods and procedures to be applied:	Thermocouple
Frequency of monitoring/recording:	Continuous
Value monitored:	Temperature Value varies. Typical range of temperatures is 109 to 120 degrees F.
Monitoring equipment:	Thermocouple, Applied Sensor Technologies (a division of United Electric Controls) Model # 617/923-6966, Style M194 589 UEC 2404, No serial # provided.
QA/QC procedures to be applied:	Field calibrated using thermometer.
Purpose of the data	Calculate baseline and emissions reductions.
Calculation method:	Used in fluid flow equation (Bernoulli) to calculate standard cubic feet per minute from actual cubic feet per minute of landfill gas.
Any comment:	None

Data Unit / Parameter:	Pressure of landfill gas to engines
Data unit:	PSIG
Description:	Pressure of landfill gas
Source of data:	SCADA System at Facility
Description of measurement methods and procedures to be applied:	Pressure transducer
Frequency of monitoring/recording:	Continuous
Value monitored:	Static pressure Value varies. The typical range of static pressure is 2.0 to 2.4 psig.
Monitoring equipment:	Pressure transducer, Ashcroft, Model K17M0242F215#, Serial #: 60803605
QA/QC procedures to be applied:	Field calibrated using pressure gauge.
Purpose of the data	Calculate baseline and emissions reductions.
Calculation method:	Used in fluid flow equation (Bernoulli) to calculate standard cubic feet per minute from actual cubic feet per minute of landfill gas.
Any comment:	None

Data Unit / Parameter:	Volume of LFG to the flare
Data unit:	Standard cubic feet per minute
Description:	Quantity of landfill gas combusted in flare
Source of data:	Flare station
Description of measurement methods and procedures to be applied:	Differential pressure measured across orifice plate
Frequency of monitoring/recording:	Continuous, hourly, daily
Value monitored:	Standard cubic feet per minute Varies periodically. Typically, 0 scfm. Few times that flare operates varies between 300 to 800 scfm.
Monitoring equipment:	Omega PDF65 sqrt, Serial #57493
QA/QC procedures to be applied:	Field calibrated as required when operating.

Data Unit / Parameter:	Volume of LFG to the flare
Purpose of the data	Calculate baseline and emissions reductions.
Calculation method:	Fluid flow equation (Bernoulli) calculates standard cubic feet per minute of LFG.
Any comment:	None

Data / Parameter	Fraction of total LFG collected attributable to District Initial System
Data unit	Percentage
Description	Amount of LFG collected from the District Initial System that would have been destroyed in the baseline scenario
Source of data	Well-head measurements
Description of measurement methods and procedures to be applied	Measurements at each well-head using a hand-held instrument
Frequency of monitoring/recording	Once per month
Value applied:	4.3% was used in the ex-ante calculation based on data October 1, 2023 through December 31, 2023. See Exhibit 4.
Monitoring equipment	Elkin Earthworks Model 1104M64-06
QA/QC procedures to be applied	Calibrations are conducted prior to each set of measurements and documented.
Purpose of data	Calculation of the baseline emissions
Calculation method	LFG flows from District Initial System/Total LFG flow from all wells
Comments	None

Data Unit / Parameter	EF EL,Grid,y
Data unit	tonnes CO2/MWh

Description	Emission factor for electricity generation in year y
Source of data	US EPA eGRID data
Description of measurement methods and procedures to be applied	This value converted from the pounds CO ₂ /MWh provided by the US EPA.
Frequency of monitoring/recording	The eGRID data will be reviewed each year to ensure that the most current value is used. See Exhibit 4
Value applied	0.24 tonnes CO ₂ e/MWh
Monitoring equipment	None
QA/QC procedures to be applied	None
Purpose of data	Calculation of project emissions
Calculation method	536.4 lbs CO ₂ e/MWh*0.454545455 kg/lbs*0.001 tonnes/kg = 0.24 tonnes CO ₂ /eMWh
Any comment:	None

Data Unit / Parameter	TDL Grid,y
Data unit	--
Description	Average technical transmission and distribution losses for grid in year y
Source of data	U.S. Energy Information Administration (EIA) State Electricity Profiles. Table 10: Supply and Disposition of Electricity Data for 2023, Table 10. Supply and disposition of electricity United States, 1990 through 2023, November 6, 2024.
Description of measurement methods and procedures to be applied	None
Frequency of monitoring/recording	This data will be reviewed each year to ensure that the most current value is used.
Value applied	0.045

Data Unit / Parameter	TDL Grid,y
Monitoring equipment	None
QA/QC procedures to be applied	None
Purpose of data	Calculation of project emissions
Calculation method	None
Any comment	None

Data Unit / Parameter	EC Grid,y
Data unit	MWh
Description	Amount of grid electricity consumed by the project
Source of data	Bills as shown in Exhibit 5
Description of measurement methods and procedures to be applied	CNBE staff will compile the data.
Frequency of monitoring/recording	Data will be compiled annually.
Value applied	Ex Ante Calculation: 0 MWh/year based on October 1 through December 31, 2023 usage
Monitoring equipment	None
QA/QC procedures to be applied	None
Purpose of data	Calculation of project emissions
Calculation method	None
Any comment	None.

Data Unit / Parameter:	FCDiesel,y
Data unit:	Gallons/year
Description:	Amount of diesel consumed by the emergency generator

Source of data:	Run time log as shown in Exhibit 5
Description of measurement methods and procedures to be applied:	Plant operator will log the run time of the engine each time it is used
Frequency of monitoring/recording:	Data will be compiled annually.
Value applied:	Ex Ante Calculation: Based on October 1 – December 31, 2023 usage, the engine ran for 20.3 hours. Using a conservative assumption that the engine operated at $\frac{3}{4}$ load, it was assumed that the engine uses 8.4 gallons of diesel per hour run. (Technical specifications provided to validator. See Parameter in Section 5.1 of PD)
Monitoring equipment:	None
QA/QC procedures to be applied:	None
Purpose of data:	Calculation of project emissions
Calculation method:	The total run time will be multiplied by 8.4 gallons/hour to determine the total amount of diesel consumed in the year.
Any comment:	None.

Data Unit / Parameter:	NCVdiesel
Data unit:	MMBtu/ gallon
Description:	Energy content of the diesel
Source of data:	Draft 2011 US Greenhouse Gas Inventory Report
Description of measurement methods and procedures to be applied:	This was converted from the MMBtu/barrel data provided by the USEPA. 5.809 MMBtu/barrel
Frequency of monitoring/recording:	Annual
Value applied:	0.13831 MMBtu/gallon See ExAnteEstimate or Annual Calculation Workbooks for conversion
Monitoring equipment:	None
QA/QC procedures to be applied:	None

Data Unit / Parameter:	NCVdiesel
Purpose of data:	Calculation of project emissions
Calculation method:	None
Any comment:	Values provided by the EPA will be reviewed annually to ensure this value is the most up to date value available. This value is higher than the range provided by the IPCC in its 2006 Guidelines for National Greenhouse Gas Inventories and is therefore conservative.

Data Unit / Parameter:	EF CO ₂ ,Diesel,y
Data unit:	t CO ₂ /MMBtu
Description:	CO ₂ emissions factor for diesel
Source of data:	Draft 2011 US Greenhouse Gas Inventory Report
Description of measurement methods and procedures to be applied:	This was converted from the Tg C/Qbtu data provided by the US EPA. See ExAnteEstimate or Annual Calculation Workbooks for conversion
Frequency of monitoring/recording:	Annual
Value applied:	0.073957 t CO ₂ /MMBtu
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Purpose of data	Calculation of project emissions
Calculation method:	N/A
Any comment:	Values provided by the EPA will be reviewed annually to ensure this value is the most up to date value available.

The difference in monitoring equipment in the Monitoring Report from the PD document include eliminating references to biogas flow, methane, temperature and pressure measuring devices from the anaerobic digester because the AD biogas component ceased operations and data

from these instruments are not applicable. Any other difference in monitoring equipment is a result of an update or replacement of the equipment.

4.3 Monitoring Plan

Critical for the accuracy and transparency of the calculation is that:

1. Measurements of gas flows are undertaken with reliable equipment that is regularly calibrated;
2. Sampling of Methane concentration in gas is undertaken with reliable equipment that is regularly calibrated;
3. Methane concentration in gas is measured once per minute and average concentrations are calculated for each hour and day. The average concentrations are statistically unbiased (i.e. they reflect the actual methane concentration of the gas);
4. Measurements of gas flows are undertaken at least on a monthly basis and are as frequent as necessary to apply statistically valid methane concentration factors (as described in (3), above);
5. Measurement and calibration equipment and processes and changes thereof are clearly described as part of the GHG emissions reporting process.

Unless otherwise specified through the GHG emissions reporting process, the following system is assumed to be in place.

4.3.1 Data Collection

At the Facility, the Supervisory Control and Data Acquisition (SCADA) system measures and records methane content and landfill gas volume to the engines and flare once per minute, and then calculates methane quantities each minute. The results are then accumulated to provide hourly and daily totals in units of million British thermal units on a higher heating value basis [MMBtu (HHV)] and thousand standard cubic feet (KSCF) of LFG.

Flow Measurements

The flow meters are located directly upstream of the destruction devices. flow meter serves as the unit for flow meter measurements to the four engines, and one unit for flow meter measurements to the flare. Each flow meter is equipped with a totalizer that indicates the cumulative actual cubic feet of gas that have passed through that flow meter.

The Project uses an orifice plate flow meter purchased directly from its manufacturer, Lambda Square Inc for the engine measurements. The orifice plate flow meter is an Oripac® Model 5300 that determines flow based on pressure differentials measured across a 5-inch diameter bore pressure differential plate installed in the Project's 8-inch diameter LFG pipe. The design data for the instrument specifies an accuracy of ± 0.6 percent of full scale and the capability of measuring flows from 0 to 1,600 actual cubic feet per minute. The performance of the instrument in the field

is assured by the manufacturer based on bench scale testing in accordance with applicable design and methodologies prescribed by the International Standards Organization (ISO) and the American Society of Mechanical Engineers (ASME).

Methane Measurements

The methane content of the landfill gas, on a percent volume basis, is measured at a sampling port in the main header pipe near the flow meter with the use of a California Analytical Instrument Non-dispersive infrared (NDIR) analyzer. The readings are also logged by the SCADA system once per minute, hour and day.

Wellfield Measurements

The landfill gas collection system is balance in two ways including (1) high quantity LFG producing wells incorporate automated landfill gas collection technology and (2) low quantity LFG producing wells incorporate manual landfill gas collection technology.

The automated landfill gas collection was installed and is operated by Loci Controls Inc. The Loci system allows for near continuous gas collection well measurements and valve adjustments using cellular connections to cloud based computing and data storage systems to improve gas collection system efficiency. These automated systems deploy collection well mounted hardware that provides continuous gas collection system measurement, data storage, control, and optimization. Algorithms are used to automate the valve adjustments to maximize collection efficiency, and reduce GHG emissions, based on individual collection well measurements and operating thresholds, along with aggregate gas composition thresholds for the entire collection system. The Loci automated technology transforms the high quantity LFG collection wells from periodic manual to continuous automated operation that increases landfill gas collection efficiency beyond regulatory requirements.

The manual technology requires a technician to monitor the landfill gas at each wellhead with a handheld gas analyzer and based on the data the technician adjusts a mechanical valve located on the wellhead above ground. The data is recorded by the technician and then moves on to the next wellheads to perform this same task repeatedly until all collection wells are monitored and adjusted. The technician measures LFG pressures, LFG flow rate, methane, carbon dioxide, oxygen and balance gas content of the LFG and based on these measurements adjusts the mechanical valve to control vacuum and flow from the collection well. Opening of the manual valve will increase the vacuum applied to the collection well. Closing the valve, will reduce the vacuum applied to the collection well. These results are logged in an electronic file to document system performance as well as to determine the percent contribution of LFG from the District Initial System.

Meter Calibrations

On installation, CNBE performed initial calibrations of the instruments, under actual field conditions using the USEPA Protocols described below. As a back-up to the flowmeter measurements, actual

quantities of LFG destroyed in the Project engine-generators can be accurately calculated based on (a) the known engine heat rate (the number of British Thermal Units (Btus) required to produce a kilowatt hour electric power, (b) the measured heat content of the LFG fuel, and the metered electric power output of the Project.

CNBE performs calibration of the orifice plate flow meter at least quarterly and often monthly. CNBE follows the USEPA-promulgated test methods (USEPA Protocols) for determining flow rates of gas through pipes at 40 CFR 60 Appendix A, including (a) Method 1a - sample and velocity traverses for stationary sources with small stacks or ducts, and (b) Method 2c - determination of gas velocity and volumetric flow rate in small stacks or ducts (standard pitot tube). The USEPA Protocols were established by the USEPA to accurately determine the volumetric flow rates of gases through pipes at industrial facilities to determine compliance with permit limitations on process and exhaust gases.

The calibration is performed by measuring the flow at a point near the orifice flow meters. A pitot tube attached to a manometer measures the flow. The pitot tube is inserted into the pipe and several points are measured across the full diameter of the pipe. The measurements taken by the pitot tube and manometer include velocity pressure and static pressure. Other measurements taken during calibration include gas temperature and barometric pressure.

Each week or more frequently as necessary, CNBE calibrates methane concentration measured on an automated basis by a California Instruments NDIR Analyzer installed at the Project, and any hand-held instrument that may be used in addition to the NDIR Analyzer is calibrated prior to its use. CNBE has found that weekly calibrations are sufficient to provide accurate measurements because of the reliable performance of the instrument, and the stringent dependence of engine operations on the accuracy of the methane measurements. CNBE typically experiences a weekly variance in the accuracy of methane content readings of one percent or less, which readings are measured by the California Instruments NDIR Analyzer and compared to readings from a certified standard gas containing a known methane concentration.

Another performance measure that is a further check and balance of methane content is the calculation of efficiency of the operating engine-generator sets, which is calculated daily and does not vary by more than approximately five percent during normal operations.

4.3.2 Organizational structure, responsibilities, and competencies

CNBE owns and manages the operations of the Facility and is responsible for oversight of operations and data collection, calculating emissions reductions and ensuring proper Project documentation. CNBE personnel have extensive experience in these areas. They have successfully implemented the Project over many years and have had no employee turnover.

CNBE contracts an operating company to conduct the operations and maintenance of the Facility. The operating company employs a full-time operator to conduct operations, maintenance, inspections, calibrations, monitoring and record-keeping at the facility. The operator receives training on the necessary tasks and has a task reminder calendar to ensure duties are performed at the appropriate time.

4.3.3 Recordkeeping

The SCADA system creates a Microsoft Excel file that contains the hourly and daily totals of landfill gas flow, landfill gas heat value, landfill gas methane content, operating hours of each engine, gross power output of each engine, gross and net power output of the facility. This file is created each day at mid-night for the prior 24-hour period. The file is automatically stored on the SCADA system computer. This file can be accessed remotely or at the facility. The file is manually copied from its entirety and pasted into the monthly quantification excel spreadsheet. No individual pieces of data are manually entered. The files are backed up at the Facility and off-site.

Operator records including the Facility operation logs, maintenance logs and manually recorded data logs are maintained at the Facility. Operator records also include the log noting the run time of the emergency generator.

4.3.4 Internal Review

The Project uses several layers of review to ensure proper operations, data collection and quantification of emissions reductions.

The monthly quantification spreadsheet calculates several key performance parameters each day that are compared a few times per week to the expected performance range of each parameter. If the calculations show a significant deviation, corrective actions are taken. Corrective actions involve repairing equipment that is performing outside its normal range or correcting data that may have been reported in error. Equipment problems and corrective actions are noted in the “Service Section” of the monthly reports. CNBE includes notes to fully explain the problem and corrective action to the extent necessary. This information also identifies any deviations from this monitoring plan which can then be recorded in the verified Monitoring Report.

CNBE has established monthly operations meetings at the Facility between CNBE’s contract operator and the owners of CNBE. During each monthly meeting CNBE and the operator review the prior month operations performance including the production reports, work order list, unscheduled repairs and maintenance, and routine maintenance; the current month’s additions to the work orders that would prevent and correct deficiencies discovered and make overall improvements in performance of the Facility; review reports including monthly outage report, methane calibration logs, exhaust gas oxygen logs, lubricating oil logs, spare parts inventory report and others that may be relevant. In addition, CNBE meets with the District and Loci Control

Inc. to review the status of the LFG collection system performance and work required to prevent and correct deficiencies discovered and make overall improvements in performance of the system.

CNBE annually calculates the project emissions from electricity use and emergency generator use as outlined in the PD.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

For Section 5.1 through 5.4 below and in accordance with the process for Periodic VCU Issuance described in section 4.5 of the document entitled "Registration and Issuance Process, v4.3" (issued 17 January 2023), Commonwealth Resource Management Corporation (the Project Proponent) will submit to Verra via the Registry's on-line document upload mechanism the an electronic Microsoft Excel spreadsheet file the contains all of the equations used in the Monitoring Report's ERR calculations. This spreadsheet, which is also submitted to GHD for verification, provides the Exhibits 1 through 4 that are included in the Appendix.

5.1 Baseline Emissions

UNFCCC CDM "Large scale Consolidated Methodology – Flaring or use of landfill gas", ACM0001, Version 16.0 dated 16 October 2015.

The calculation methodology was applied to the calculation of emissions from methane contained within LFG which is generated from the decomposition of solid waste from within the landfill and combusted during electricity generation or in a flare.

For this Project Activity the baseline emissions consist of those associated with the volume of LFG that is destroyed in the flare and the engines to generate electricity. Further, the emissions associated with the fraction of LFG related to the District Initial System, need to be subtracted as this system was installed voluntarily as part of the baseline of the Project Activity. This subtraction of emissions is understood to occur in the baseline of the Project Activity. Note that carbon stock changes are not applicable as the emission reductions are permanent.

The Baseline Emissions also include quantification of the fraction of methane in the LFG that would be oxidized in the top layer of the landfill in the baseline. This is a dimensionless value (0.1) that was available at validation and is therefore defined in the VCS PD. The Baseline Emissions calculations are presented in Exhibits 1 and 2 and the equation is shown below:
Baseline emissions of methane from the Project Activity in year y are found as follows:

$$BE_{CH_4,y} = ((1-OX_{top_layer}) \times F_{CH_4,PJ,y} - F_{CH_4,PJ,y}) \times GWP_{CH_4} \text{ (Eq. 2)}$$

$$BE_{CH_4,y} = ((1-0.1) \times 1,317.56 - 27.98) \times 28 = 32,419$$

Where:

BECH_{4,y} = Baseline emissions of methane from the SWDS in monitoring period y (tCO₂e/monitoring period)
OX_{top_layer} = Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline (dimensionless)
FCH_{4,PJ,y} = Amount of methane in the LFG which is flared and/or used in the project activity in monitoring period y (tCH₄/monitoring period)
FCH_{4,BL,y} = Amount of methane in the LFG that would be flared in the baseline in monitoring period y (tCH₄/monitoring period)
GWPC_{H4} = Global warming potential of CH₄ (tCO₂e / tCH₄)

For this Project, FCH_{4,PJ,y} is the sum of the quantities of methane flared and used in power generation during the year. This term is calculated as follows according to Equation 3 from the methodology, modified to remove the heat generation and natural gas distribution terms, which are not applicable to this Project.

$FCH_{4,PJ,y} = FCH_{4,flared,y} + FCH_{4,EL,y}$ (modified Eq. 3)

$FCH_{4,PJ,y} = 0 + 1,317.56 = 1,317.56$ tCH₄/monitoring period

** Note that the back-up flare did not operate for any significant period during the current verification period; therefore, emission reductions are not claimed from flaring.*

Where:

FCH_{4,PJ,y} = Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH₄/monitoring period)
FCH_{4,flared,y} = Amount of methane in the LFG which is destroyed by flaring in monitoring period (tCH₄/monitoring period)
FCH_{4,EL,y} = Amount of methane in the LFG which is used for electricity generation in monitoring period (tCH₄/monitoring period)

5.2 Project Emissions

The following methodology and tool were used to quantify Project Emissions:

- UNFCCC CDM "Large scale Consolidated Methodology – Flaring or use of landfill gas", ACM0001, Version 16.0 dated 16 October 2015.
- UNFCCC CDM "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (Version 01) 16 March 2008.

Project emissions are defined by the following equation:

$PE_y = PEEC_y + PEFC_{j,y} = 0.0 + 1.7 = 1.7$ t CO₂/monitoring period

Where:

PEEC_y = Emissions from consumption of electricity due to the Project activity, in year y (t CO₂/monitoring period)
PEFC_{j,y} = Emissions from consumption of fossil fuels due to the Project activity, for purpose other than electricity generation, in year y (t CO₂/monitoring period)

Note that emissions reductions from methane destruction from the flare are not included in this monitoring report.

The calculation methodology for the project emissions was applied to the calculation of emissions from the following sources:

- Fossil Fuel Emissions – CO₂ – Generated from the combustion of fossil fuels (diesel) in an emergency generator. The equations and calculations are presented in “Exhibit 4” under Supporting Information. The equations and calculations are repeated herein below.

Supporting Information for Exhibit 4			
Fossil Fuel Project Emissions			
Emergency Generator - Diesel Use			
Gallons of Diesel Consumed during			
Period: October 1, 2023 - December 31, 2024			
170.5	gallons	FC _{Diesel}	= Number of hours run * Gallons used/hour
COEF _{Diesel,Period} = NCV _{Diesel,Period} * EF _{CO2,Diesel,Period}			
COEF _{Diesel,Period}		0.010229	See inputs on USEPA Data Conversions Tab
tonnes CO2/gallon diesel			
PE _{FC,Period} = FC _{Diesel,Period} * COEF _{Diesel,Period}			
PE _{FC, Period}	1.74	tonnes CO2	
Assumptions Used			
Generator runs at 3/4 load during testing and operation			
(This is conservative as the plant requires 75-90kW/hr to operate and the generator can produce up to 150kW/hr)			
The generator requires 8.4 gallons/hour running at 3/4 Load (see estimate fuel consumption)			
Period:	Run time from October 1 - December 31, 2023		
	20.3 hours* 8.4 gallons/hour		
	170.5 gallons		

- Electricity Consumption Emissions – CO₂ – Generated from the grid consumption of electricity within the Project Boundary. The equations and calculations are presented in “Exhibit 4” under Supporting Information. The equations and calculations are repeated herein below.

Supporting Information for Exhibit 4			
Electricity Consumption Project Emissions			
$PE_{EC,y} = EC_{PJ,Grid,y} * FE_{EL,Grid,y} * (1 + TDL_{Grid,y})$			
	0.00	tonnes CO2	
Variable	Value	Units	Data Source
EC _{PJ,Grid,y}	0	MWhr	See Eversource bill
FE _{EL,Grid,y}	0.24	tonnes CO2/MWh	USEPA Conversions tableGrid data
TDL _{Grid,y}	0.045	None	EIA Annual Energy Report 2023

5.3 Leakage Emissions

As per the applied methodology (ACM0001): “No leakage effects are accounted for under this methodology.”

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCUs (tCO ₂ e)	Removal VCUs (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-Oct-2023 to 31-Dec-2023	32,419	2	0	32,419	0	32,417
Total	32,419	2	0	32,419	0	32,417

The net GHG emission reductions are simply calculated by subtracting the project emissions and leakage emissions from the baseline emissions. The equation is as follows:

Net GHG emissions reduction = Baseline emissions - Project emissions – Leakage emissions.

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Oct-2023 to 31-Dec-2023	22,109	32,417	47%	The difference is a result of (1) VERRA Standard updated the 100-year global warming potential (GWP) of methane from the IPCC Second Assessment value of 21 to IPCC Fifth Assessment Report value of 28, which represents a 33% increase coupled with more actual LFG quantities than estimated to calculate ex-ante estimated reductions, together account for the 47%. Validation allowed GWP of methane to change in accordance with changes in VERRA Standard.
Total	22,109	32,417	47%	

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

Section	Information	Justification
<u>Appendix X, Exhibit 9</u>	RECs Agreements	Redacted because contract entities and pricing is confidential information and commercially sensitive.

APPENDIX X:

SUPPORTING DOCUMENTATION

- Exhibit 1: The emission reductions credits in CO2 equivalent tons in accordance with Project Methodology from October 1, 2023 through December 31, 2023.
- Exhibit 2: Gas totalizer readings, and methane content readings for the period October 1, 2023 through December 31, 2023, and calculations using the verification protocols under the VCS to obtain emission reductions from methane oxidation during energy generation.
- Exhibit 3: LFG totalizer readings, and methane content readings for the periods from October 1, 2023 through December 31, 2023, and calculations using the verification protocols under the VCS to obtain emission reductions from methane oxidation during flaring.
- Exhibit 4: The key factors, equations, and calculation of VCUs in accordance with the approved consolidated baseline methodology ACM0001, Version 16.0 Large-scale Consolidated Methodology – Flaring or use of landfill gas" dated 16 October 2015 as promulgated by the United Nations Framework Convention of Climate Change (UNFCCC) under the Clean Development Mechanism (CDM).
- Exhibit 5: Compilation of the field data logs recording the total gas volumes and methane content readings for the identified reporting period. Comment section includes information on Planned and Unplanned Outages. Emergency Generator Operating Hours during period. Eversource Meter Photo and Data
- Exhibit 6: Calibration of the LFG, composition meter, other instrumentation for the periods.
- Exhibit 7: Attestation Statement
- Exhibit 8: Permits and Other Regulatory Documentation
1. Amended Final Air Quality Operation Permit (Renewal) Issued August 3, 2022.
 2. NMOC Emission Rate Report, September 7, 2023. The NMOC Emission Report demonstrates that the NMOCs emissions continue to be below the NSPS applicability threshold and therefore the Crapo Hill Landfill is not subject to the requirements of NSPS.
- Exhibit 9: RECs Agreements

Exhibit 1:

The emission reductions credits in CO2 equivalent tons in accordance with Project Methodology from October 1, 2023 through December 31, 2023.

EXHIBIT 1
CommonWealth New Bedford Energy LLC
Greater New Bedford LFG Utilization Project
Dartmouth, Massachusetts
Calculation of Verified Emission Reduction Credits in CO2 equivalent tons
in accordance with the Project Methodology

Key parameters used in calculations

Parameter	VCS
Methane oxidation efficiency electricity generation	100.0%
Methane oxidation efficiency LFG flaring	98.0%
Methane, molecular weight (lb/lb-mole)	16.04
Pounds per metric ton	2,204.62
Gas constant (scf per lb-mole)	385.32
Global Warming Potential (GWP) methane	28

Summary results

	Unit	
Electricity generation		
Start date		1-Oct-23
End date		31-Dec-23
Methane delivered	scf	69,767,968
Emission Reductions	metric tons CO2e	36,892
Flaring		
Start date		1-Oct-23
End date		31-Dec-23
Methane delivered	scf	-
Emission Reductions	metric tons CO2e	-
Subtotal		
Methane delivered	scf	69,767,968
Emission Reductions	metric tons CO2e	36,892
Deductions		
Oxidation potential	metric tons CO2e	3,689
District Initial System	metric tons CO2e	783
Project Emissions Utility electricity and diesel	metric tons CO2e	2
Total		
Emission Reductions eligible under VCS program (rounded down)	metric tons CO2e	32,417

Exhibit 2:

Gas totalizer readings, and methane content readings for the period October 1, 2023 through December 31, 2023, and calculations using the verification protocols under the VCS to obtain emission reductions from methane oxidation during energy generation.

EXHIBIT 2
CommonWealth New Bedford Energy LLC
Emission Reductions from methane oxidation during energy generation

Physical constants: Methane, molecular weight (lb per lb-mole)16.04Pounds to metric ton2,204.62Gas constant, scf per lb-mole385.32									Calculation of Verified Emission Reduction in CO2 equivalent tons per the following: Verification Process: UNFCCC's CDM methodology ACM0001 (Version 16)Standard of Verification: Verified Carbon Standard Version 4.7 April 16, 2024					
Begin period - date	End period - date	Totalizer reading end period	Totalizer reading start period	Total in period	Methane delivered to engines	Methane delivered cumulative	Methane delivered in the period	Methane delivered in the period cumulative	Methane oxidation efficiency	MD electricity, Mass methane destroyed in the period	MD electricity, Mass methane destroyed cumulative	Global warming potential methane tons CO2 equivalent per ton methane	Emission reduction CO2 equivalent metric tons	Emission reduction cumulative CO2 equivalent metric tons
mm/dd/yy	mm/dd/yy	MMBtu HHV	MMBtu HHV	MMBtu HHV	scf	scf	metric tons	metric tons	%	metric tons	metric tons			
	1-Oct-23													
1-Oct-23	31-Oct-23	23,886	-	23,886	23,603,063	23,603,063	446	446	100.0%	446	446	28	12,481	12,481
1-Nov-23	30-Nov-23	46,742	23,886	22,855	22,584,273	46,187,336	427	872	100.0%	427	872	28	11,942	24,423
1-Dec-23	31-Dec-23	70,605	46,742	23,864	23,580,632	69,767,968	445	1,318	100.0%	445	1,318	28	12,469	36,892

Exhibit 3:

LFG totalizer readings, and methane content readings for the periods from October 1, 2023 through December 31, 2023, and calculations using the verification protocols under the VCS to obtain emission reductions from methane oxidation during flaring.

EXHIBIT 3
CommonWealth New Bedford Energy LLC
Calculation of Verified Emission Reduction in CO2 equivalent tons per the Project Methodology
Emission Reductions from methane oxidation from **LFG flaring**

Physical constants:	
Methane, molecular weight (lb per lb-mole)	16.04
Pounds to metric ton	2,204.62
Gas constant, scf per lb-mole	385.32

Calculation of Verified Emission Reduction in CO2 equivalent tons per the following:
Verification Process: UNFCCC's CDM methodology ACM0001 (Version 16)
Standard of Verification: Verified Carbon Standard Version 4.7 April 16, 2024

Begin period - date	End period - date	Totalizer reading end period	Totalizer reading start period	Total in period	Methane delivered to flare	Methane delivered cumulative	Methane delivered in the period	Methane delivered cumulative	Methane oxidation efficiency	MD flare, Mass methane destroyed in the period	MD flare, Mass methane destroyed cumulative	Global warming potential methane	Emission reduction	Emission reduction cumulative	PE flare, Project emissions (uncontrolled emissions to atmosphere from flare)	PE flare, Project emissions cumulative (uncontrolled emissions to atmosphere from flare)
mm/dd/yy	mm/dd/yy	MMBtu HHV	MMBtu HHV	MMBtu HHV	scf	scf	metric tons	metric tons	%	metric tons	metric tons	tons CO2 equivalent per ton methane	CO2 equivalent metric tons	CO2 equivalent metric tons	CO2 equivalent metric tons	CO2 equivalent metric tons
1-Oct-23	1-Oct-23	-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
1-Oct-23	31-Oct-23	-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
1-Nov-23	30-Nov-23	-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
1-Dec-23	31-Dec-23	-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
		-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
		-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
		-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
		-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
		-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
		-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-
		-	-	-	-	-	0	0	98%	-	-	28	-	-	-	-

Exhibit 4:

The key factors, equations, and calculation of VCUs in accordance with the approved consolidated baseline methodology ACM0001, Version 16.0 Large-scale Consolidated Methodology – Flaring or use of landfill gas" dated 16 October 2015 as promulgated by the United Nations Framework Convention of Climate Change (UNFCCC) under the Clean Development Mechanism (CDM).

EXHIBIT 4**EX Ante Estimates of Annual Emissions Reductions**

	Formula variables	Value used	Units	Source if appropriate
$ER_y = BE_y - PE_y$				
32,417	BE_y PE_y	see below 1.74	tCO2e/period tCO2e/period	See Electricity Tab + Emergency Generator Tab
$BE_y = BE_{CH4,y}$				
32,419	$BE_{CH4,y}$	see below	tCO2e/period	
$BE_{CH4,y} = ((1 - OX_{top_layer}) \times F_{CH4,PJ,y} - F_{CH,BL,y}) \times GWP_{CH4}$				
32,419	OX_{top_layer} GWP_{CH4} $F_{CH4,PJ,y}$ $F_{CH,BL,y}$	0.1 28 see below see below	 tCO2e / tCH4 t CH4/period t CH4/period	ACM0001 Methodology value IPCC Value - 5th assessment report (2013)
$F_{CH4,PJ,y} = F_{CH4,flared,y} + F_{CH4,EL,y}$				
1,318	$F_{CH4,flared,y}$ $F_{CH4,EL,y}$	0 1,318	t CH4/period t CH4/period	See Exhibit 3 tab See Exhibit 2 tab
$F_{CH4,BL,y} = F_{CH4,BL,sys,y}$				
$F_{CH4,BL,sys,y} = \%DistrictInitialSystem \times F_{CH4,PJ,y}$	$\%DistrictInitialSystem$ $F_{CH4,PJ,y}$	4.2 see above 50%	 t CH4/period Methane oxidation efficiency for flare (ACM0001 value)	See DistrictInitialSystemTab
27.98				

Supporting Information for Exhibit 4

Electricity Consumption Project Emissions

$PE_{EC,y} = EC_{PJ,Grid,y} * FE_{EL,Grid,y} * (1 + TDL_{Grid,y})$

0.00 tonnes CO2

Variable	Value	Units	Data Source
ECPJ,Grid, y	0	MW hr	See Eversource bill
FEEL,Grid,y	0.24	tonnes CO2/MW h	USEPA Conversions tableGrid data
TDLGrid,y	0.045	None	EIA Annual Energy Report 2023

Supporting Information for Exhibit 4

Fossil Fuel Project Emissions

Emergency Generator - Diesel Use

Gallons of Diesel Consumed during

Period: October 1, 2023 - December 31, 2024

$$170.5 \text{ gallons} \quad FC_{\text{Diesel}} = \text{Number of hours run} * \text{Gallons used/hour}$$

$$COEF_{\text{Diesel,Period}} = NCV_{\text{Diesel,Period}} * EF_{\text{CO}_2, \text{Diesel,Period}}$$

COEF_{Diesel,Period} 0.010229 See inputs on USEPA Data Conversions Tab
tonnes CO₂/gallon diesel

$$PE_{FC, \text{Period}} = FC_{\text{Diesel,Period}} * COEF_{\text{Diesel,Period}}$$

PEFC, Period tonnes CO₂

Assumptions Used

Generator runs at 3/4 load during testing and operation

(This is conservative as the plant requires 75-90kW/hr to operate
and the generator can produce up to 150kW/hr)

The generator requires 8.4 gallons/hour running at 3/4 Load (see estimate fuel consumption)

Period: Run time from October 1 - December 31, 2023
 20.3 hours* 8.4 gallons/hour
 170.5 gallons

Supporting Information for Exhibit 4

Gas extraction from District Initial System versus Phase 1 Area and District Total System

		See Note #1 LFG flow rate from District Initial System contained in Phase 1 area		See Note #2 LFG flow rate from District Total System, District Initial System/Total	
Month	Days	cfm @50% methane		cfm @50% methane	
Oct-23	31	45		1,057	4.3%
Nov-23	30	45		1,065	4.2%
Dec-23	31	45		1,056	4.3%
Weighted Average based on days					4.2%
Weighted Average based on LFG flow					4.2%
Average		45		1,060	4.2%

Note 1: During October 1, 2023 through December 31, 2023, the Initial District System consists of 9 remaining active wells measuring less than 5 cfm at 50% methane lower detection limit of each well. Each of the 9 wells is assumed to collect 5 cfm for a total of 45 cfm, which overestimates that quantity of landfill gas being collected by the District Initial System. Actual % is lower than 4.2%.

Note 2: Actual average monthly landfill gas flow rate corrected to 50% methane as measured. Data extracted from Exhibit 5 Monthly data reports

Month	Total LFG quantity, scfm	Monthly Average Methane Content	Total LFG quantity, scfm
October	42,001,600	56%	1,057
November	41,913,700	55%	1,065
December	44,029,210	54%	1,056

Fossil Fuel Consumption

NCV Conversion				NCV Comparison to IPCC Values							
5.809	42	0.1383095		0.13831	1,000,000	1.05506E-06	0.001	0.26417	1.176471	1,000,000	= 45.35
mmBtu/barrel	gallons/barrel	mmBtu/gallon		MMBtu/gallon	Btu/MMBtu	GJ/Btu	TJ/GJ	gallons/liter	liter/kg	kg/Gg	TJ/Gg
Emissions Factor				IPCC Values state 41.4-43.3 TJ/Gg This value is higher and therefore conservative.							
20.17	1E-15	1000000	3.666667	1E+12	0.000001	0.073957					
Tg C/Qbtu	Qbtu/btu	btu/Mmbtu	g C02/g C	g/Tg	Tonnes/g	Tonnes CO2/Mmbtu					
Data obtained from the Draft 2011 US Greenhouse Gas Report: US EPA Inventory of US Greenhouse Gas Emissions and Sinks to provide a national factor. Results were compared to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories											

Electricity Consumption

eGRID Emissions Factor				eGRID Factor taken from NEWE region of eGRID2022 data
536.4	0.454545455	0.001	0.24	
lbs CO2/MWh	kg/lbs	tonnes/kg	tonnes CO2/MWh	

Exhibit 5:

Compilation of the field data logs recording the total gas volumes and methane content readings for the identified reporting period. Comment section includes information on Planned and Unplanned Outages. Emergency Generator Operating Hours during period. Eversource Meter Photo and Data

OCTOBER 2023																		
	Sunday 10/1/2023	Monday 10/2/2023	Tuesday 10/3/2023	Wednesday 10/4/2023	Thursday 10/5/2023	Friday 10/6/2023	Saturday 10/7/2023	Sunday 10/8/2023	Monday 10/9/2023	Tuesday 10/10/2023	Wednesday 10/11/2023	Thursday 10/12/2023	Friday 10/13/2023	Saturday 10/14/2023	Sunday 10/15/2023	Monday 10/16/2023		
LFG to the Engines (KSCF)	1,288	1,312	1,294	1,317	1,313	1,318	1,309	1,332	1,330	1,338	1,343	1,303	1,350	1,350	1,375	1,375		
LFG to the Engines (MMBTU HHV)	753	760	750	753	750	756	756	751	739	751	767	753	775	781	800	781		
LFG to the Flare (KSCF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
LFG to the Flare (MMBTU HHV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
LFG Total Flow (KSCF)	1,288	1,312	1,294	1,317	1,313	1,318	1,309	1,332	1,330	1,338	1,343	1,303	1,350	1,350	1,375	1,375		
LFG Total Flow (MMBTU HHV)	753	760	750	753	750	756	756	751	739	751	767	753	775	781	800	781		
Average Methane Content (%)	57.8	57.3	57.3	56.5	56.5	56.7	57.1	55.7	54.9	55.5	56.4	57.1	56.7	57.2	57.5	56.1		
Engine 1 Hours	-	-	-	-	-	-	-	-	-	-	-	-	14	24	24	24		
Engine 2 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
Engine 3 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
Engine 4 Hours	24	24	24	24	24	24	24	24	24	24	24	24	10	-	-	-		
Generator 1 Power Output (kWhr)	19,484	19,484	19,024	19,484	19,484	19,040	19,484	19,484	19,484	19,484	19,484	19,484	11,208	19,484	19,484	19,484		
Generator 2 Power Output (kWhr)	19,480	19,476	19,020	19,476	19,476	19,476	19,476	19,476	18,452	18,540	19,396	19,476	19,472	19,472	19,476	19,476		
Generator 3 Power Output (kWhr)	19,436	19,432	19,044	19,432	19,428	19,432	19,428	19,436	19,436	19,428	19,388	19,428	8,240	-	-	-		
Generator 4 Power Output (kWhr)	58,319	58,359	57,050	58,359	58,359	57,904	58,352	58,352	57,344	57,426	58,229	56,163	58,441	58,551	58,527	58,550		
Gross Power Output (kWhr)	56,708	56,804	55,212	56,484	56,480	56,036	56,544	56,500	55,500	55,512	56,352	54,344	56,592	56,796	56,776	56,728		
Net Power Output (kWhr)	56,629	56,456	55,080	56,324	56,320	55,890	56,400	56,372	55,362	55,388	56,220	54,213	56,449	56,658	56,681	56,593		
Power Sold as metered by NStar, (kWhr)	1,611	1,755	1,838	1,875	1,879	1,868	1,808	1,852	1,844	1,914	1,877	1,819	1,849	1,755	1,751	1,822		
Offgrid RECs (kWhr)																		
Calculated Performance Results																		
Daily																		
Power output (kW average when running)																		
Generator 1	-	-	-	-	-	-	-	-	-	-	-	-	801	812	812	812		
Generator 2	812	812	793	812	812	793	812	812	812	812	812	812	812	811	812	812		
Generator 3	812	812	793	812	812	812	812	812	769	773	808	812	811	812	812	812		
Generator 4	810	810	794	810	810	810	810	810	810	810	808	718	824	-	-	-		
Power output (kW average over 24-hrs)																		
Facility Gross	2,430	2,432	2,377	2,432	2,432	2,413	2,431	2,431	2,389	2,393	2,426	2,340	2,435	2,440	2,439	2,440		
Facility Net	2,363	2,359	2,301	2,354	2,353	2,335	2,356	2,354	2,313	2,313	2,348	2,264	2,358	2,367	2,366	2,364		
In-plant load	67	73	77	78	78	78	75	77	77	80	78	76	77	73	73	76		
Daily availability factor																		
Facility	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%		
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	58%	100%	100%	100%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	42%	0%	0%	0%		
Daily capacity factor																		
Facility	74%	74%	72%	74%	74%	73%	74%	74%	72%	73%	74%	71%	74%	74%	74%	74%		
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	97%	98%	98%	98%		
Engine 2	98%	98%	96%	98%	98%	96%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 3	98%	98%	96%	98%	98%	98%	98%	98%	93%	94%	98%	98%	98%	98%	98%	98%		
Engine 4	98%	98%	96%	98%	98%	98%	98%	98%	98%	98%	98%	87%	100%	0%	0%	0%		
Cumulative by engine																		
Engine operating run hours in the month																		
Max Cumulative Available, hours	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384		
Engine 1	0	0	0	0	0	0	0	0	0	0	0	0	14	38	62	86		
Engine 2	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384		
Engine 3	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384		
Engine 4	24	48	72	96	120	144	168	192	216	240	264	288	298	298	298	298		
Engine operating run hours total from 0 hours																		
Engine 1	135,079	135,079	135,079	135,079	135,079	135,079	135,079	135,079	135,079	135,079	135,079	135,079	135,093	135,117	135,141	135,165		
Engine 2	123,424	123,448	123,472	123,496	123,520	123,544	123,568	123,592	123,616	123,640	123,664	123,688	123,712	123,736	123,760	123,784		
Engine 3	136,357	136,381	136,405	136,429	136,453	136,477	136,501	136,525	136,549	136,573	136,597	136,621	136,645	136,669	136,693	136,717		
Engine 4	131,770	131,794	131,818	131,842	131,866	131,890	131,914	131,938	131,962	131,986	132,010	132,034	132,058	132,082	132,106	132,130		
Cumulative availability, %	October 1, 2023 @ 00:00 hours																	
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	11%	17%	22%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	96%	89%	83%	78%		
Engine cumulative gross output, kWhr																		
Max cumulative capacity one engine	825	1,650	2,475	3,300	4,125	4,950	5,775	6,600	7,425	8,250	9,075	9,900	10,725	11,550	12,375	13,200		
Engine 1	-	-	-	-	-	-	-	-	-	-	-	-	801	1,612	2,424	3,236		
Engine 2	812	1,624	2,416	3,228	4,040	4,853	5,665	6,477	7,289	8,101	8,913	9,725	10,537	11,349	12,161	12,973		
Engine 3	812	1,623	2,416	3,227	4,039	4,850	5,662	6,473	7,285	8,097	8,909	9,721	10,533	11,345	12,157	12,969		
Engine 4	810	1,620	2,413	3,223	4,032	4,842	5,651	6,461	7,271	8,081	8,888	9,697	10,507	11,317	12,127	12,937		
Cumulative capacity factor, %																		
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	14%	20%	25%		
Engine 2	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 3	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 4	98%	98%	97%	98%	98%	98%	98%	98%	98%	98%	98%	98%	97%	97%	90%	84%		

	Sunday 10/1/2023	Monday 10/2/2023	Tuesday 10/3/2023	Wednesday 10/4/2023	Thursday 10/5/2023	Friday 10/6/2023	Saturday 10/7/2023	Sunday 10/8/2023	Monday 10/9/2023	Tuesday 10/10/2023	Wednesday 10/11/2023	Thursday 10/12/2023	Friday 10/13/2023	Saturday 10/14/2023	Sunday 10/15/2023	Monday 10/16/2023
Cumulative by Facility in month																
Max cumulative available engine run hours	96	192	288	384	480	576	672	768	864	960	1,056	1,152	1,248	1,344	1,440	1,536
Actual cumulative engine run hours	72	144	216	288	360	432	504	576	648	720	792	864	936	1,008	1,080	1,152
Cumulative Availability, %	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Max cumulative gross output, kWhr	79,200	158,400	237,600	316,800	396,000	478,500	557,700	636,900	716,100	795,300	874,500	953,700	1,032,900	1,112,100	1,191,300	1,270,500
Actual cumulative gross output, kWhr	58,319	116,678	173,728	232,087	290,446	348,350	406,702	465,054	522,398	579,824	638,053	694,216	752,657	811,208	869,735	928,285
Cumulative Capacity Factor	73.6%	73.7%	73.1%	73.3%	73.3%	72.8%	72.9%	73.0%	73.0%	72.9%	73.0%	72.8%	72.9%	72.9%	73.0%	73.1%
Cumulative fuel input, MMBtu HHV	753.4	1,513	2,263	3,016	3,766	4,522	5,278	6,028	6,767	7,518	8,285	9,038	9,813	10,594	11,393	12,174
Cumulative gross output, kWhr	58319	116,678	173,728	232,087	290,446	348,350	406,702	465,054	522,398	579,824	638,053	694,216	752,657	811,208	869,735	928,285
Heat Rate																
Daily heat rate, Btu/kWe gross LHV	11,629	11,723	11,831	11,611	11,575	11,750	11,660	11,578	11,593	11,774	11,854	12,076	11,930	12,008	12,300	12,000
Daily heat rate, Btu/kWe gross HHV	12,919	13,023	13,143	12,898	12,858	13,053	12,952	12,862	12,878	13,079	13,169	13,415	13,253	13,339	13,664	13,330
Cumulative heat rate, Btu/kWe gross LHV	11,629	11,676	11,727	11,698	11,673	11,686	11,682	11,669	11,661	11,672	11,689	11,720	11,736	11,756	11,792	11,806
Cumulative heat rate, Btu/kWe gross HHV	12,919	12,971	13,027	12,995	12,967	12,981	12,977	12,963	12,954	12,966	12,985	13,019	13,037	13,059	13,100	13,114
Cumulative by Facility starting Calendar Year																
Max cumulative available engine run hours	26,300	26,396	26,492	26,588	26,684	26,780	26,876	26,972	27,068	27,164	27,260	27,356	27,452	27,548	27,644	27,740
Actual cumulative engine run hours	19,925	19,997	20,069	20,141	20,213	20,285	20,357	20,429	20,501	20,573	20,645	20,717	20,789	20,861	20,933	21,005
Cumulative Availability, %	75.8%	75.8%	75.8%	75.8%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%
Max cumulative gross output, kWhr	21,730,500	21,809,700	21,888,900	21,968,100	22,047,300	22,129,800	22,209,000	22,288,200	22,367,400	22,446,600	22,525,800	22,605,000	22,684,200	22,763,400	22,842,600	22,921,800
Actual cumulative gross output, kWhr	15,308,035	15,366,394	15,423,444	15,481,803	15,540,162	15,598,066	15,656,418	15,714,770	15,772,114	15,829,540	15,887,769	15,943,932	16,002,373	16,060,924	16,119,451	16,178,001
Cumulative Capacity Factor	70.4%	70.5%	70.5%	70.5%	70.5%	70.5%	70.5%	70.5%	70.5%	70.5%	70.5%	70.5%	70.5%	70.6%	70.6%	70.6%
Cumulative fuel input, MMBtu HHV	210,809	211,569	212,319	213,071	213,822	214,578	215,333	216,084	216,822	217,574	218,340	219,094	219,868	220,649	221,449	222,229
Cumulative gross output, kWhr	15,308,035	15,366,394	15,423,444	15,481,803	15,540,162	15,598,066	15,656,418	15,714,770	15,772,114	15,829,540	15,887,769	15,943,932	16,002,373	16,060,924	16,119,451	16,178,001
Cumulative heat rate, Btu/kWe gross LHV	12,397	12,394	12,392	12,389	12,386	12,384	12,381	12,378	12,375	12,373	12,371	12,370	12,368	12,367	12,367	12,366
Cumulative heat rate, Btu/kWe gross HHV	13,771	13,768	13,766	13,763	13,759	13,757	13,754	13,750	13,747	13,745	13,743	13,742	13,740	13,738	13,738	13,737
Service																
Engine 1	Operations Meeting															
Engine 2																
Engine 3																
Engine 4																
Oil - oil and filter change	E-4 burnt valve and failed cylinder															
Service - plugs, air filter, valve inspection and adjustment	Heat rate increased with E-1															
Precipitation																
NSTAR Power Reports	Sunday 10/1/2023	Monday 10/2/2023	Tuesday 10/3/2023	Wednesday 10/4/2023	Thursday 10/5/2023	Friday 10/6/2023	Saturday 10/7/2023	Sunday 10/8/2023	Monday 10/9/2023	Tuesday 10/10/2023	Wednesday 10/11/2023	Thursday 10/12/2023	Friday 10/13/2023	Saturday 10/14/2023	Sunday 10/15/2023	Monday 10/16/2023
Date																
Hour																
1	2,362	2,359	2,354	2,351	2,351	2,349	2,350	2,351	2,348	2,287	2,351	2,353	2,351	2,363	2,360	2,360
2	2,362	2,359	2,354	2,351	2,352	2,349	2,349	2,351	2,348	2,287	2,352	2,353	2,351	2,362	2,362	2,360
3	2,361	2,359	2,355	2,352	2,352	2,349	2,350	2,351	2,348	2,287	2,353	2,353	2,351	2,363	2,364	2,360
4	2,362	2,359	2,355	2,352	2,351	2,350	2,350	2,351	2,350	2,288	2,353	2,354	2,351	2,363	2,363	2,360
5	2,362	2,359	2,355	2,353	2,352	2,350	2,351	2,351	2,349	2,287	2,354	2,353	2,352	2,362	2,364	2,360
6	2,362	2,359	2,354	2,352	2,352	2,350	2,351	2,351	2,349	2,287	2,352	2,354	2,351	2,361	2,364	2,360
7	2,361	2,358	2,354	2,353	2,352	2,350	2,351	2,351	2,349	2,287	2,352	2,353	2,352	2,360	2,364	2,361
8	2,362	2,357	2,352	2,349	2,350	2,347	2,351	2,351	2,344	2,281	2,348	2,350	2,346	2,360	2,363	2,355
9	2,362	2,351	2,342	2,344	2,340	2,344	2,351	2,350	2,286	2,278	2,329	2,342	2,340	2,360	2,364	2,354
10	2,361	2,349	1,947	2,341	2,336	1,954	2,350	2,349	2,285	2,271	2,223	1,762	2,327	2,360	2,364	2,354
11	2,359	2,347	1,448	2,340	2,340	2,292	2,350	2,348	2,285	2,271	2,330	1,637	2,328	2,359	2,364	2,354
12	2,357	2,344	2,343	2,338	2,340	2,342	2,349	2,347	2,285	2,271	2,342	2,235	2,352	2,359	2,364	2,354
13	2,358	2,342	2,341	2,338	2,340	2,342	2,349	2,347	2,285	2,281	2,340	2,337	2,353	2,360	2,364	2,354
14	2,357	2,343	2,342	2,338	2,340	2,342	2,350	2,347	2,286	2,281	2,341	2,058	2,354	2,359	2,360	2,354
15	2,357	2,344	2,342	2,338	2,341	2,342	2,350	2,346	2,286	2,307	2,342	1,867	2,354	2,360	2,360	2,355
16	2,357	2,345	2,342	2,340	2,341	2,343	2,350	2,347	2,286	2,345	2,344	2,344	2,354	2,361	2,359	2,360
17	2,358	2,351	2,347	2,346	2,348	2,348	2,351	2,347	2,286	2,349	2,350	2,349	2,359	2,361	2,360	2,360
18	2,359	2,352	2,349	2,348	2,348	2,349	2,350	2,348	2,287	2,349	2,351	2,351	2,360	2,361	2,361	2,360
19	2,358	2,352	2,349	2,348	2,349	2,349	2,350	2,348	2,287	2,350	2,351	2,351	2,360	2,361	2,361	2,360
20	2,358	2,353	2,351	2,349	2,350	2,350	2,350	2,348	2,287	2,349	2,352	2,352	2,360	2,361	2,360	2,359
21	2,358	2,353	2,351	2,350	2,349	2,350	2,349	2,348	2,286	2,349	2,352	2,351	2,360	2,361	2,359	2,359
22	2,358	2,354	2,351	2,351	2,348	2,350	2,349	2,348	2,287	2,349	2,352	2,351	2,360	2,361	2,359	2,359
23	2,359	2,353	2,351	2,351	2,349	2,350	2,349	2,348	2,286	2,349	2,353	2,351	2,361	2,361	2,359	2,360
24	2,359	2,354	2,351	2,351	2,349	2,349	2,350	2,348	2,287	2,348	2,353	2,352	2,362	2,359	2,359	2,361
TOTAL	56,629	56,456	55,080	56,324	56,320	55,890	56,400	56,372	55,362	55,388	56,220	54,213	56,449	56,658	56,681	56,593
Cumulative Output Sold, kWhr	56,629	113,085	168,165	224,489	280,809	336,699	393,099	449,471	504,833	560,221	616,441	670,654	727,103	783,761	840,442	897,035
Transformer and line efficiency	99.9%	99.7%	99.8%	99.7%	99.7%	99.7%	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.7%	99.8%	99.8%	99.8%
Hourly average	2,360	2,352	2,295	2,347	2,347	2,329	2,350	2,349	2,307	2,308	2,343	2,259	2,352	2,361	2,362	2,358

OCTOBER 2023																	
	Tuesday 10/17/2023	Wednesday 10/18/2023	Thursday 10/19/2023	Friday 10/20/2023	Saturday 10/21/2023	Sunday 10/22/2023	Monday 10/23/2023	Tuesday 10/24/2023	Wednesday 10/25/2023	Thursday 10/26/2023	Friday 10/27/2023	Saturday 10/28/2023	Sunday 10/29/2023	Monday 10/30/2023	Tuesday 10/31/2023	TOTAL	
LFG to the Engines (KSCF)	1,403	1,403	1,359	1,372	1,372	1,376	1,384	1,371	1,391	1,404	1,378	1,397	1,405	1,405	1,337	42,002	
LFG to the Engines (MMBTU HHV)	783	777	766	787	800	791	778	769	781	791	777	787	780	780	766	23,886	
LFG to the Flare (KSCF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LFG to the Flare (MMBTU HHV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LFG Total Flow (KSCF)	1,403	1,403	1,359	1,372	1,372	1,376	1,384	1,371	1,391	1,404	1,378	1,397	1,405	1,405	1,337	42,002	
LFG Total Flow (MMBTU HHV)	783	777	766	787	800	791	778	769	781	791	777	787	780	780	766	23,886	
Average Methane Content (%)	55.2	54.7	55.7	56.7	57.6	56.8	55.5	55.4	55.5	55.7	55.7	55.7	54.9	54.9	56.6	56.2	
Engine 1 Hours	24	24	24	24	24	24	24	24	24	12	-	-	-	-	-	314	
Engine 2 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	744	
Engine 3 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	744	
Engine 4 Hours	-	-	-	-	-	-	-	-	3	17	24	24	24	24	24	438	
Generator 1 Power Output (kWhr)	19,488	19,484	19,484	19,488	19,480	19,480	19,440	18,856	19,488	9,116	-	-	-	-	-	253,464	
Generator 2 Power Output (kWhr)	19,476	19,480	18,468	19,476	19,476	19,476	19,460	18,844	19,476	19,480	19,488	19,484	19,476	19,476	19,484	601,328	
Generator 3 Power Output (kWhr)	19,484	19,488	19,488	19,480	19,480	19,480	19,472	19,484	19,156	17,428	19,164	19,480	19,476	19,476	19,484	598,656	
Generator 4 Power Output (kWhr)	-	-	-	-	-	-	-	-	584	13,008	19,428	19,408	19,408	19,424	19,432	349,508	
Gross Power Output (kWhr)	58,553	58,553	57,540	58,549	58,549	58,535	58,469	57,275	58,798	59,062	58,035	58,318	58,338	58,338	58,356	1,803,553	
Net Power Output (kWhr)	56,708	56,764	55,792	56,792	56,888	56,888	56,744	55,552	56,996	57,316	56,464	56,804	56,824	56,824	56,912	1,749,416	
Power Sold as metered by NStar, (l	56,574	56,632	55,659	56,644	56,739	56,751	56,602	55,417	56,849	57,160	56,311	56,674	56,718	56,754	56,786	1,745,305	
Offgrid RECs (kWhr)	1,845	1,789	1,748	1,757	1,661	1,667	1,725	1,723	1,802	1,746	1,571	1,514	1,514	1,514	1,444	54,137	
Calculated Performance Results																	
Daily																	
Power output (kW average whe																	
Generator 1	812	812	812	812	812	812	810	786	812	760	-	-	-	-	-		
Generator 2	812	812	770	812	812	812	811	785	812	812	812	812	812	812	812		
Generator 3	812	812	812	812	812	812	811	812	798	726	799	812	812	812	812		
Generator 4	-	-	-	-	-	-	-	-	195	765	810	809	809	809	810		
Power output (kW average ove																	
Facility Gross	2,440	2,440	2,398	2,440	2,440	2,439	2,436	2,386	2,450	2,461	2,418	2,430	2,431	2,431	2,432		
Facility Net	2,363	2,365	2,325	2,366	2,370	2,370	2,364	2,315	2,375	2,388	2,353	2,367	2,368	2,368	2,371		
In-plant load	77	75	73	73	69	69	72	72	75	73	65	63	63	63	60		
Daily availability factor																	
Facility	75%	75%	75%	75%	75%	75%	75%	75%	78%	80%	75%	75%	75%	75%	75%		
Engine 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	0%	0%	0%	0%	0%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	0%	0%	0%	0%	0%	0%	0%	0%	13%	71%	100%	100%	100%	100%	100%		
Daily capacity factor																	
Facility	74%	74%	73%	74%	74%	74%	74%	72%	74%	75%	73%	74%	74%	74%	74%		
Engine 1	98%	98%	98%	98%	98%	98%	98%	95%	98%	92%	0%	0%	0%	0%	0%		
Engine 2	98%	98%	93%	98%	98%	98%	98%	95%	98%	98%	98%	98%	98%	98%	98%		
Engine 3	98%	98%	98%	98%	98%	98%	98%	98%	97%	88%	98%	98%	98%	98%	98%		
Engine 4	0%	0%	0%	0%	0%	0%	0%	0%	24%	93%	98%	98%	98%	98%	98%		
Cumulative by engine																	
Engine operating run hours in t																	
Max Cumulative Available,	408	432	456	480	504	528	552	576	600	624	648	672	696	720	744		
Engine 1	110	134	158	182	206	230	254	278	302	314	314	314	314	314	314		
Engine 2	408	432	456	480	504	528	552	576	600	624	648	672	696	720	744		
Engine 3	408	432	456	480	504	528	552	576	600	624	648	672	696	720	744		
Engine 4	298	298	298	298	298	298	298	298	301	318	342	366	390	414	438		
Engine operating run hours tota																	
Engine 1	135,189	135,213	135,237	135,261	135,285	135,309	135,333	135,357	135,381	135,393	135,393	135,393	135,393	135,393	135,393		
Engine 2	123,832	123,856	123,880	123,904	123,928	123,952	123,976	124,000	124,024	124,048	124,072	124,096	124,120	124,144	124,168		
Engine 3	136,765	136,789	136,813	136,837	136,861	136,885	136,909	136,933	136,957	136,981	137,005	137,029	137,053	137,077	137,101		
Engine 4	132,068	132,068	132,068	132,068	132,068	132,068	132,068	132,068	132,071	132,088	132,112	132,136	132,160	132,184	132,208		
Cumulative availability, %																	
Engine 1	27%	31%	35%	38%	41%	44%	46%	48%	50%	50%	48%	47%	45%	44%	42%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	73%	69%	65%	62%	59%	56%	54%	52%	50%	51%	53%	54%	56%	58%	59%		
Engine cumulative gross output																	
Max cumulative capacity or	14,025	14,850	15,675	16,500	17,325	18,150	18,975	19,800	20,625	21,450	22,275	23,100	23,925	24,750	25,575		
Engine 1	4,048	4,860	5,672	6,484	7,295	8,107	8,917	9,703	10,515	11,274	11,274	11,274	11,274	11,274	11,274		
Engine 2	13,762	14,574	15,343	16,155	16,966	17,778	18,588	19,374	20,185	20,997	21,809	22,621	23,432	24,244	25,055		
Engine 3	13,693	14,505	15,317	16,128	16,940	17,752	18,563	19,375	20,173	20,899	21,698	22,509	23,321	24,132	24,944		
Engine 4	10,431	10,431	10,431	10,431	10,431	10,431	10,431	10,431	10,625	11,391	12,200	13,009	13,818	14,627	15,437		
Cumulative capacity factor, %																	
Engine 1	29%	33%	36%	39%	42%	45%	47%	49%	51%	53%	51%	49%	47%	46%	44%		
Engine 2	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 3	98%	98%	98%	98%	98%	98%	98%	98%	98%	97%	97%	97%	97%	98%	98%		
Engine 4	74%	70%	67%	63%	60%	57%	55%	53%	52%	53%	55%	56%	58%	59%	60%		

	Tuesday 10/17/2023	Wednesday 10/18/2023	Thursday 10/19/2023	Friday 10/20/2023	Saturday 10/21/2023	Sunday 10/22/2023	Monday 10/23/2023	Tuesday 10/24/2023	Wednesday 10/25/2023	Thursday 10/26/2023	Friday 10/27/2023	Saturday 10/28/2023	Sunday 10/29/2023	Monday 10/30/2023	Tuesday 10/31/2023	TOTAL
Cumulative by Facility in month																
Max cumulative available engine run time, %	1,632	1,728	1,824	1,920	2,016	2,112	2,208	2,304	2,400	2,496	2,592	2,688	2,784	2,880	2,976	
Actual cumulative engine run time, %	1,224	1,296	1,368	1,440	1,512	1,584	1,656	1,728	1,803	1,878	1,952	2,024	2,096	2,168	2,240	
Cumulative Availability, %	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.1%	75.3%	75.3%	75.3%	75.3%	75.3%	75.3%	
Max cumulative gross output, kWh	1,349,700	1,428,900	1,508,100	1,587,300	1,666,500	1,745,700	1,824,900	1,904,100	1,983,300	2,062,500	2,141,700	2,220,900	2,300,100	2,379,300	2,458,500	
Actual cumulative gross output, kWh	986,838	1,045,391	1,102,931	1,161,480	1,220,029	1,278,564	1,337,033	1,394,308	1,453,106	1,512,168	1,570,203	1,628,521	1,686,859	1,745,197	1,803,553	
Cumulative Capacity Factor	73.1%	73.2%	73.1%	73.2%	73.2%	73.2%	73.3%	73.2%	73.3%	73.3%	73.3%	73.3%	73.3%	73.3%	73.4%	
Cumulative fuel input, MMBtu	12,957	13,734	14,500	15,287	16,087	16,878	17,656	18,425	19,206	19,997	20,774	21,561	22,341	23,121	23,886	
Cumulative gross output, kWh	986,838	1,045,391	1,102,931	1,161,480	1,220,029	1,278,564	1,337,033	1,394,308	1,453,106	1,512,168	1,570,203	1,628,521	1,686,859	1,745,197	1,803,553	
Heat Rate																
Daily heat rate, Btu/kWe gross	12,044	11,938	11,982	12,105	12,295	12,169	11,975	12,082	11,957	12,058	12,052	12,150	12,036	12,036	11,810	
Daily heat rate, Btu/kWe net	13,379	13,261	13,311	13,447	13,659	13,518	13,303	13,421	13,283	13,394	13,388	13,497	13,370	13,370	13,119	
Cumulative heat rate, Btu/kWe gross	11,820	11,826	11,834	11,848	11,870	11,883	11,887	11,895	11,898	11,904	11,910	11,918	11,922	11,926	11,922	
Cumulative heat rate, Btu/kWe net	13,130	13,137	13,147	13,162	13,186	13,201	13,205	13,214	13,217	13,224	13,230	13,239	13,244	13,248	13,244	
Cumulative by Facility starting 10/1/2023																
Max cumulative available engine run time, %	27,836	27,932	28,028	28,124	28,220	28,316	28,412	28,508	28,604	28,700	28,796	28,892	28,988	29,084	29,180	
Actual cumulative engine run time, %	21,077	21,149	21,221	21,293	21,365	21,437	21,509	21,581	21,656	21,733	21,805	21,877	21,949	22,021	22,093	
Cumulative Availability, %	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	
Max cumulative gross output, kWh	23,001,000	23,080,200	23,159,400	23,238,600	23,317,800	23,397,000	23,476,200	23,555,400	23,634,600	23,713,800	23,793,000	23,872,200	23,951,400	24,030,600	24,109,800	
Actual cumulative gross output, kWh	16,236,554	16,295,107	16,352,647	16,411,196	16,469,745	16,528,280	16,586,749	16,644,024	16,702,822	16,761,884	16,819,919	16,878,237	16,936,575	16,994,913	17,053,269	
Cumulative Capacity Factor	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	
Cumulative fuel input, MMBtu	223,013	223,789	224,555	225,343	226,142	226,934	227,711	228,480	229,261	230,052	230,829	231,616	232,396	233,176	233,942	
Cumulative gross output, kWh	16,236,554	16,295,107	16,352,647	16,411,196	16,469,745	16,528,280	16,586,749	16,644,024	16,702,822	16,761,884	16,819,919	16,878,237	16,936,575	16,994,913	17,053,269	
Cumulative heat rate, Btu/kWe gross	12,364	12,363	12,362	12,361	12,360	12,360	12,358	12,357	12,356	12,355	12,354	12,353	12,352	12,351	12,349	
Cumulative heat rate, Btu/kWe net	13,735	13,734	13,732	13,731	13,731	13,730	13,729	13,727	13,726	13,725	13,724	13,723	13,722	13,720	13,718	
Service																
Engine 1																
Engine 2																
Engine 3																
Engine 4																
Oil - oil and filter change																
Service - plugs, air filter, valve insp																
Precipitation																
NSTAR Power Reports																
Date	Tuesday 10/17/2023	Wednesday 10/18/2023	Thursday 10/19/2023	Friday 10/20/2023	Saturday 10/21/2023	Sunday 10/22/2023	Monday 10/23/2023	Tuesday 10/24/2023	Wednesday 10/25/2023	Thursday 10/26/2023	Friday 10/27/2023	Saturday 10/28/2023	Sunday 10/29/2023	Monday 10/30/2023	Tuesday 10/31/2023	TOTAL
Hour																
1	2,360	2,363	2,362	2,365	2,364	2,364	2,365	2,365	2,366	2,362	2,365	2,365	2,364	2,364	2,372	
2	2,360	2,363	2,363	2,366	2,363	2,364	2,365	2,366	2,366	2,362	2,365	2,365	2,364	2,364	2,372	
3	2,359	2,363	2,362	2,365	2,363	2,364	2,366	2,365	2,366	2,360	2,365	2,365	2,362	2,364	2,372	
4	2,359	2,364	2,363	2,366	2,364	2,364	2,365	2,365	2,367	2,361	2,365	2,365	2,362	2,365	2,371	
5	2,359	2,364	2,363	2,365	2,364	2,365	2,365	2,365	2,367	2,361	2,364	2,365	2,362	2,365	2,371	
6	2,358	2,362	2,364	2,366	2,364	2,365	2,364	2,366	2,367	2,362	2,363	2,365	2,361	2,365	2,371	
7	2,357	2,362	2,364	2,364	2,364	2,366	2,364	2,367	2,366	2,361	2,363	2,366	2,362	2,365	2,371	
8	2,358	2,359	2,360	2,362	2,364	2,366	2,360	2,359	2,359	2,440	2,349	2,366	2,363	2,360	2,364	
9	2,350	2,357	2,354	2,352	2,364	2,366	2,314	2,354	2,532	2,545	2,345	2,364	2,363	2,362	2,364	
10	2,343	2,349	1,941	2,348	2,364	2,365	2,358	2,346	2,544	2,374	2,350	2,361	2,363	2,365	2,355	
11	2,353	2,352	1,779	2,356	2,364	2,365	2,358	2,347	2,532	2,420	2,353	2,360	2,363	2,364	2,353	
12	2,354	2,354	2,356	2,356	2,365	2,364	2,319	1,510	2,351	2,497	2,352	2,359	2,363	2,362	2,354	
13	2,356	2,356	2,356	2,355	2,364	2,364	2,357	1,968	2,353	2,409	2,044	2,356	2,364	2,353	2,354	
14	2,351	2,356	2,354	2,354	2,365	2,364	2,356	2,348	2,354	2,336	2,354	2,354	2,364	2,352	2,354	
15	2,344	2,349	2,346	2,345	2,365	2,364	2,354	2,352	2,047	2,349	2,353	2,354	2,364	2,353	2,357	
16	2,354	2,357	2,355	2,356	2,365	2,364	2,356	2,348	2,332	2,358	2,359	2,355	2,364	2,364	2,365	
17	2,361	2,363	2,364	2,362	2,365	2,365	2,364	2,361	2,359	2,362	2,361	2,360	2,364	2,370	2,373	
18	2,362	2,363	2,364	2,363	2,365	2,365	2,366	2,360	2,361	2,362	2,360	2,364	2,371	2,371	2,372	
19	2,364	2,363	2,365	2,364	2,363	2,365	2,365	2,367	2,360	2,362	2,362	2,361	2,364	2,371	2,372	
20	2,363	2,363	2,364	2,362	2,365	2,364	2,364	2,366	2,359	2,363	2,363	2,361	2,364	2,371	2,371	
21	2,362	2,363	2,365	2,363	2,364	2,364	2,364	2,367	2,360	2,364	2,363	2,361	2,364	2,371	2,370	
22	2,362	2,362	2,365	2,364	2,364	2,364	2,365	2,366	2,360	2,363	2,363	2,362	2,364	2,371	2,370	
23	2,362	2,362	2,365	2,362	2,363	2,365	2,364	2,367	2,360	2,363	2,364	2,362	2,363	2,371	2,369	
24	2,363	2,363	2,365	2,363	2,364	2,365	2,365	2,366	2,362	2,365	2,364	2,363	2,364	2,371	2,369	
TOTAL	56,574	56,632	55,659	56,644	56,739	56,751	56,602	55,417	56,849	57,160	56,311	56,674	56,718	56,754	56,786	
Cumulative Output Sold, kWh	953,609	1,010,241	1,065,900	1,122,544	1,179,283	1,236,034	1,292,636	1,348,053	1,404,902	1,462,062	1,518,373	1,575,047	1,631,765	1,688,519	1,745,305	
Transformer and line efficiency	99.8%	99.8%	99.8%	99.7%	99.7%	99.8%	99.7%	99.8%	99.7%	99.7%	99.7%	99.8%	99.8%	99.9%	99.8%	0.0%
Hourly average	2,357	2,360	2,319	2,360	2,364	2,365	2,358	2,309	2,369	2,382	2,346	2,361	2,363	2,365	2,366	2,346

NOVEMBER 2023																	
		Wednesday 11/1/2023	Thursday 11/2/2023	Friday 11/3/2023	Saturday 11/4/2023	DLST Sunday 11/5/2023	Monday 11/6/2023	Tuesday 11/7/2023	Wednesday 11/8/2023	Thursday 11/9/2023	Friday 11/10/2023	Saturday 11/11/2023	Sunday 11/12/2023	Monday 11/13/2023	Tuesday 11/14/2023	Wednesday 11/15/2023	Thursday 11/16/2023
LFG to the Engines (KSCF)		1,376	1,388	1,375	1,367	1,429	1,388	1,359	1,089	390	1,396	1,394	1,402	1,427	1,415	1,461	1,446
LFG to the Engines (MMBTU HHV)		784	781	774	777	814	784	781	602	199	789	778	778	797	788	803	803
LFG to the Flare (KSCF)		-	-	-	-	-	-	-	177	634	-	-	-	-	-	-	-
LFG to the Flare (MMBTU HHV)		-	-	-	-	-	-	-	98	323	-	-	-	-	-	-	-
LFG Total Flow (KSCF)		1,376	1,388	1,375	1,367	1,429	1,388	1,359	1,267	1,024	1,396	1,394	1,402	1,427	1,415	1,461	1,446
LFG Total Flow (MMBTU HHV)		784	781	774	777	814	784	781	701	522	789	778	778	797	788	803	803
Average Methane Content (%)		56.3	55.6	55.6	56.2	56.3	55.8	56.8	54.6	50.4	55.8	55.2	54.9	55.2	55.0	54.3	54.9
Engine 1 Hours		5	1	1	1	1	1	14	19	9	24	24	24	24	24	24	24
Engine 2 Hours		24	24	24	24	25	24	12	-	-	-	-	-	-	16	24	24
Engine 3 Hours		24	24	24	24	25	24	24	19	6	24	24	24	24	24	24	24
Engine 4 Hours		24	24	24	24	25	24	24	19	9	24	24	24	24	8	-	-
Generator 1 Power Output (kWhr)		976	-	304	-	-	-	10,480	15,064	5,132	19,504	19,488	19,484	19,448	19,484	19,468	19,496
Generator 2 Power Output (kWhr)		19,484	19,488	19,484	19,484	20,300	19,480	9,028	-	-	-	-	-	196	12,684	19,464	19,496
Generator 3 Power Output (kWhr)		19,484	19,484	19,480	19,480	20,292	19,476	19,488	15,064	4,532	19,508	19,492	19,492	19,456	19,488	19,468	19,496
Generator 4 Power Output (kWhr)		19,436	19,440	19,440	19,428	20,244	19,432	19,428	15,016	5,116	19,452	19,440	19,444	19,420	6,680	-	-
Gross Power Output (kWhr)		59,337	58,356	58,652	58,345	60,770	58,343	58,426	45,191	14,911	58,466	58,458	58,482	58,558	58,377	58,462	58,544
Net Power Output (kWhr)		57,736	56,744	57,108	56,784	59,104	56,764	56,920	44,080	14,480	57,176	57,224	57,260	57,120	56,836	56,900	56,968
Power Sold as metered by NStar, (kWhr)		57,604	56,614	56,980	56,649	58,973	56,635	56,775	43,985	14,490	57,032	57,121	57,152	56,983	56,712	56,820	56,810
Offgrid RECs (kWhr)		1,601	1,612	1,544	1,561	1,666	1,579	1,506	1,111	431	1,290	1,234	1,222	1,438	1,541	1,562	1,576
Calculated Performance Results																	
Daily																	
Power output (kW average when running)																	
Generator 1		195	-	304	-	-	-	749	793	570	813	812	812	810	812	811	812
Generator 2		812	812	812	812	812	812	752	-	-	-	-	-	-	793	811	812
Generator 3		812	812	812	812	812	812	812	793	755	813	812	812	811	812	811	812
Generator 4		810	810	810	810	810	810	810	790	568	811	810	810	809	835	-	-
Power output (kW average over 24-hrs)																	
Facility Gross		2,472	2,432	2,444	2,431	2,431	2,431	2,434	1,883	621	2,436	2,436	2,437	2,440	2,432	2,436	2,439
Facility Net		2,406	2,364	2,380	2,366	2,364	2,365	2,372	1,837	603	2,382	2,384	2,386	2,380	2,368	2,371	2,374
In-plant load		67	67	64	65	67	66	63	46	18	54	51	51	60	64	65	66
Daily availability factor																	
Facility		80%	76%	76%	76%	76%	76%	77%	59%	25%	75%	75%	75%	75%	75%	75%	75%
Engine 1		21%	4%	4%	4%	4%	4%	58%	79%	38%	100%	100%	100%	100%	100%	100%	100%
Engine 2		100%	100%	100%	100%	100%	100%	50%	0%	0%	0%	0%	0%	0%	67%	100%	100%
Engine 3		100%	100%	100%	100%	100%	100%	100%	79%	25%	100%	100%	100%	100%	100%	100%	100%
Engine 4		100%	100%	100%	100%	100%	100%	100%	79%	38%	100%	100%	100%	100%	33%	0%	0%
Daily capacity factor																	
Facility		75%	74%	74%	74%	74%	74%	74%	57%	19%	74%	74%	74%	74%	74%	74%	74%
Engine 1		24%	0%	37%	0%	0%	0%	91%	96%	69%	99%	98%	98%	98%	98%	98%	98%
Engine 2		98%	98%	98%	98%	98%	98%	91%	0%	0%	0%	0%	0%	0%	96%	98%	98%
Engine 3		98%	98%	98%	98%	98%	98%	98%	96%	92%	99%	98%	98%	98%	98%	98%	98%
Engine 4		98%	98%	98%	98%	98%	98%	98%	96%	69%	98%	98%	98%	98%	101%	0%	0%
Cumulative by engine																	
Engine operating run hours in the month																	
Max Cumulative Available, hours		24	48	72	96	121	145	169	193	217	241	265	289	313	337	361	385
Engine 1		5	6	7	8	9	10	24	43	52	76	100	124	148	172	196	220
Engine 2		24	48	72	96	121	145	157	157	157	157	157	157	157	173	197	221
Engine 3		24	48	72	96	121	145	169	188	194	218	242	266	290	314	338	362
Engine 4		24	48	72	96	121	145	169	188	197	221	245	269	293	301	301	301
Engine operating run hours total from 0 hours																	
Engine 1	135,393	135,398	135,399	135,400	135,401	135,402	135,403	135,417	135,436	135,445	135,469	135,493	135,517	135,541	135,565	135,589	135,613
Engine 2	124,168	124,192	124,216	124,240	124,264	124,289	124,313	124,325	124,325	124,325	124,325	124,325	124,325	124,341	124,365	124,389	124,389
Engine 3	137,101	137,125	137,149	137,173	137,197	137,222	137,246	137,270	137,289	137,295	137,319	137,343	137,367	137,391	137,415	137,439	137,463
Engine 4	132,208	132,232	132,256	132,280	132,304	132,329	132,353	132,377	132,396	132,405	132,429	132,453	132,477	132,501	132,509	132,509	132,509
Cumulative availability, % November 1, 2023 @ 00:00 hours																	
Engine 1	21%	13%	10%	8%	7%	7%	7%	14%	22%	24%	32%	38%	43%	47%	51%	54%	57%
Engine 2	100%	100%	100%	100%	100%	100%	100%	93%	81%	72%	65%	59%	54%	50%	51%	55%	57%
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	97%	89%	90%	91%	92%	93%	93%	94%	94%
Engine 4	100%	100%	100%	100%	100%	100%	100%	100%	97%	91%	92%	92%	93%	94%	89%	83%	78%
Engine cumulative gross output, kWhr																	
Max cumulative capacity one engine		825	1,650	2,475	3,300	4,125	4,950	5,775	6,600	7,425	8,250	9,075	9,900	10,725	11,550	12,375	13,200
Engine 1		195	195	499	499	499	499	1,248	2,041	2,611	3,424	4,236	5,047	5,858	6,670	7,481	8,293
Engine 2		812	1,624	2,436	3,248	4,060	4,871	5,624	5,624	5,624	5,624	5,624	5,624	5,624	6,416	7,227	8,040
Engine 3		812	1,624	2,435	3,247	4,059	4,870	5,682	6,475	7,230	8,043	8,855	9,668	10,478	11,290	12,101	12,914
Engine 4		810	1,620	2,430	3,239	4,049	4,859	5,668	6,459	7,027	7,838	8,648	9,458	10,267	11,102	11,102	11,102
Cumulative capacity factor, %																	
Engine 1		24%	12%	20%	15%	12%	10%	22%	31%	35%	41%	47%	51%	55%	58%	60%	63%
Engine 2		98%	98%	98%	98%	98%	98%	97%	85%	76%	68%	62%	57%	52%	56%	58%	61%
Engine 3		98%	98%	98%	98%	98%	98%	98%	98%	97%	97%	98%	98%	98%	98%	98%	98%
Engine 4		98%	98%	98%	98%	98%	98%	98%	98%	95%	95%	95%	96%	96%	96%	90%	84%

	Wednesday 11/1/2023	Thursday 11/2/2023	Friday 11/3/2023	Saturday 11/4/2023	Sunday 11/5/2023	Monday 11/6/2023	Tuesday 11/7/2023	Wednesday 11/8/2023	Thursday 11/9/2023	Friday 11/10/2023	Saturday 11/11/2023	Sunday 11/12/2023	Monday 11/13/2023	Tuesday 11/14/2023	Wednesday 11/15/2023	Thursday 11/16/2023
Cumulative by Facility in month																
Max cumulative available engine run hours	96	192	288	384	480	576	672	768	864	960	1,056	1,152	1,248	1,344	1,440	1,536
Actual cumulative engine run hours	77	150	223	296	372	445	519	576	600	672	744	816	888	960	1,032	1,104
Cumulative Availability, %	80.2%	78.1%	77.4%	77.1%	77.5%	77.3%	77.2%	75.0%	69.4%	70.0%	70.5%	70.8%	71.2%	71.4%	71.7%	71.9%
Max cumulative gross output, kWhr	79,200	158,400	237,600	316,800	396,000	478,500	557,700	636,900	716,100	795,300	874,500	953,700	1,032,900	1,112,100	1,191,300	1,270,500
Actual cumulative gross output, kWhr	59,337	117,693	176,345	234,690	295,460	353,803	412,229	457,420	472,331	530,797	589,255	647,737	706,295	764,672	823,134	881,678
Cumulative Capacity Factor	74.9%	74.3%	74.2%	74.1%	74.6%	73.9%	73.9%	71.8%	66.0%	66.7%	67.4%	67.9%	68.4%	68.8%	69.1%	69.4%
Cumulative fuel input, MMBtu HHV	783.7	1,565	2,339	3,116	3,930	4,714	5,495	6,097	6,296	7,085	7,863	8,641	9,438	10,226	11,028	11,831
Cumulative gross output, kWhr	59337	117,693	176,345	234,690	295,460	353,803	412,229	457,420	472,331	530,797	589,255	647,737	706,295	764,672	823,134	881,678
Heat Rate																
Daily heat rate, Btu/kWe gross LHV	11,889	12,054	11,879	11,985	12,058	12,095	12,030	12,000	12,000	12,147	11,984	11,979	12,252	12,147	12,360	12,343
Daily heat rate, Btu/kWe gross HHV	13,208	13,390	13,196	13,314	13,395	13,436	13,364	13,330	13,330	13,493	13,312	13,307	13,610	13,493	13,730	13,711
Cumulative heat rate, Btu/kWe gross LHV	11,889	11,971	11,941	11,952	11,973	11,994	11,999	11,999	11,999	12,015	12,012	12,009	12,029	12,038	12,061	12,080
Cumulative heat rate, Btu/kWe gross HHV	13,208	13,298	13,264	13,277	13,301	13,323	13,329	13,329	13,329	13,347	13,344	13,340	13,363	13,373	13,398	13,419
Cumulative by Facility starting Calendar Year																
Max cumulative available engine run hours	29,276	29,372	29,468	29,564	29,660	29,756	29,852	29,948	30,044	30,140	30,236	30,332	30,428	30,524	30,620	30,716
Actual cumulative engine run hours	22,170	22,243	22,316	22,389	22,465	22,538	22,612	22,669	22,693	22,765	22,837	22,909	22,981	23,053	23,125	23,197
Cumulative Availability, %	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.7%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%
Max cumulative gross output, kWhr	24,189,000	24,268,200	24,347,400	24,426,600	24,505,800	24,588,300	24,667,500	24,746,700	24,825,900	24,905,100	24,984,300	25,063,500	25,142,700	25,221,900	25,301,100	25,380,300
Actual cumulative gross output, kWhr	17,112,606	17,170,962	17,229,614	17,287,959	17,348,729	17,407,072	17,465,498	17,510,689	17,525,600	17,584,066	17,642,524	17,701,006	17,759,564	17,817,941	17,876,403	17,934,947
Cumulative Capacity Factor	70.7%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.7%	70.7%
Cumulative fuel input, MMBtu HHV	234,726	235,507	236,281	237,058	237,872	238,656	239,436	240,039	240,238	241,027	241,805	242,583	243,380	244,168	244,970	245,773
Cumulative gross output, kWhr	17,112,606	17,170,962	17,229,614	17,287,959	17,348,729	17,407,072	17,465,498	17,510,689	17,525,600	17,584,066	17,642,524	17,701,006	17,759,564	17,817,941	17,876,403	17,934,947
Cumulative heat rate, Btu/kWe gross LHV	12,348	12,347	12,345	12,344	12,343	12,342	12,341	12,340	12,340	12,339	12,338	12,337	12,336	12,336	12,336	12,336
Cumulative heat rate, Btu/kWe gross HHV	13,717	13,715	13,714	13,712	13,711	13,710	13,709	13,708	13,708	13,707	13,706	13,704	13,704	13,703	13,704	13,704
Service																
Engine 1																
Engine 2																
Engine 3																
Engine 4																
Oil - oil and filter change																
Service - plugs, air filter, valve inspection and adjustment																
Precipitation																
NSTAR Power Reports	Wednesday 11/1/2023	Thursday 11/2/2023	Friday 11/3/2023	Saturday 11/4/2023	Sunday 11/5/2023	Monday 11/6/2023	Tuesday 11/7/2023	Wednesday 11/8/2023	Thursday 11/9/2023	Friday 11/10/2023	Saturday 11/11/2023	Sunday 11/12/2023	Monday 11/13/2023	Tuesday 11/14/2023	Wednesday 11/15/2023	Thursday 11/16/2023
Date																
Hour																
1	2,370	2,355	2,365	2,364	2,360	2,359	2,363	2,371	-	2,383	2,380	2,381	2,382	2,369	2,367	2,370
2	2,371	2,356	2,365	2,364	2,360	2,358	2,363	2,371	-	2,383	2,381	2,381	2,381	2,369	2,367	2,370
3	2,370	2,355	2,365	2,363	2,359	2,359	2,363	2,371	-	2,383	2,381	2,382	2,381	2,369	2,367	2,370
4	2,371	2,356	2,366	2,363	2,360	2,358	2,363	2,371	-	2,383	2,380	2,383	2,381	2,371	2,368	2,369
5	2,371	2,355	2,365	2,363	2,359	2,359	2,363	2,371	-	2,383	2,381	2,383	2,381	2,370	2,367	2,370
6	2,370	2,355	2,365	2,363	2,360	2,359	2,362	2,371	-	2,382	2,381	2,382	2,382	2,370	2,367	2,370
7	2,370	2,355	2,365	2,363	2,359	2,358	2,363	2,367	-	2,381	2,380	2,383	2,383	2,370	2,365	2,369
8	2,419	2,350	2,404	2,364	2,360	2,358	2,359	2,362	-	2,376	2,380	2,383	2,370	2,336	2,361	2,363
9	2,654	2,353	2,637	2,363	2,360	2,357	2,357	2,366	-	2,365	2,381	2,382	2,418	2,290	2,360	2,361
10	2,558	2,358	2,420	2,363	2,360	2,357	2,357	2,363	-	2,364	2,380	2,380	2,351	2,366	2,361	2,359
11	2,556	2,358	2,357	2,361	2,360	2,358	2,356	2,370	-	2,361	2,379	2,380	2,403	2,363	2,369	2,361
12	2,546	2,357	2,357	2,357	2,358	2,358	2,383	2,370	-	2,361	2,379	2,380	2,364	2,368	2,372	2,361
13	2,354	2,355	2,357	2,357	2,358	2,358	2,364	2,370	-	2,364	2,379	2,381	2,363	2,369	2,370	2,360
14	2,355	2,353	2,358	2,357	2,358	2,358	2,362	2,371	-	2,371	2,380	2,380	2,363	2,369	2,368	2,361
15	2,355	2,358	2,363	2,357	2,357	2,358	2,362	2,371	-	2,380	2,379	2,381	2,365	2,364	2,363	2,362
16	2,358	2,362	2,363	2,358	2,358	2,363	2,370	2,377	-	2,380	2,380	2,380	2,370	2,363	2,370	2,366
17	2,359	2,367	2,363	2,358	2,358	2,363	2,371	2,381	-	2,379	2,381	2,380	2,370	2,367	2,371	2,371
18	2,359	2,367	2,364	2,358	2,358	2,363	2,371	2,381	516	2,379	2,380	2,380	2,368	2,368	2,371	2,371
19	2,358	2,366	2,364	2,358	2,358	2,362	2,370	1,310	2,058	2,378	2,380	2,381	2,367	2,367	2,371	2,371
20	2,357	2,364	2,363	2,358	2,358	2,362	2,371	-	2,383	2,378	2,379	2,381	2,368	2,367	2,370	2,371
21	2,356	2,364	2,363	2,358	2,358	2,362	2,370	-	2,384	2,378	2,380	2,382	2,367	2,365	2,368	2,371
22	2,356	2,365	2,363	2,359	2,359	2,362	2,371	-	2,383	2,378	2,379	2,381	2,368	2,366	2,368	2,371
23	2,356	2,365	2,364	2,360	2,360	2,363	2,370	-	2,383	2,381	2,380	2,382	2,368	2,368	2,369	2,371
24	2,355	2,365	2,364	2,360	2,359	2,363	2,371	-	2,383	2,381	2,381	2,383	2,369	2,368	2,370	2,371
TOTAL	57,604	56,614	56,980	56,649	58,973	56,635	56,775	43,985	14,490	57,032	57,121	57,152	56,983	56,712	56,820	56,810
Cumulative Output Sold, kWhr	57,604	114,218	171,198	227,847	286,820	343,455	400,230	444,215	458,705	515,737	572,858	630,010	686,993	743,705	800,525	857,335
Transformer and line efficiency	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.7%	99.8%	100.1%	99.7%	99.8%	99.8%	99.8%	99.8%	99.9%	99.7%
Hourly average	2,400	2,359	2,374	2,360	2,457	2,360	2,366	1,833	604	2,376	2,380	2,381	2,374	2,363	2,368	2,367

NOVEMBER 2023																
	Friday 11/17/2023	Saturday 11/18/2023	Sunday 11/19/2023	Monday 11/20/2023	Tuesday 11/21/2023	Wednesday 11/22/2023	Thursday 11/23/2023	Friday 11/24/2023	Saturday 11/25/2023	Sunday 11/26/2023	Monday 11/27/2023	Tuesday 11/28/2023	Wednesday 11/29/2023	Thursday 11/30/2023	TOTAL	
LFG to the Engines (KSCF)	1,432	1,409	1,422	1,443	1,432	1,395	1,425	1,446	1,441	1,446	1,411	1,415	1,461	1,426	41,102	
LFG to the Engines (MMBTU HHV)	803	797	794	773	775	802	799	789	770	786	786	782	791	776	22,855	
LFG to the Flare (KSCF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	811	
LFG to the Flare (MMBTU HHV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	422	
LFG Total Flow (KSCF)	1,432	1,409	1,422	1,443	1,432	1,395	1,425	1,446	1,441	1,446	1,411	1,415	1,461	1,426	41,914	
LFG Total Flow (MMBTU HHV)	803	797	794	773	775	802	799	789	770	786	786	782	791	776	23,277	
Average Methane Content (%)	55.4	55.9	55.2	52.9	53.5	56.8	55.4	53.9	52.8	53.7	55.1	54.6	53.5	53.8	54.9	
Engine 1 Hours	11	-	-	-	-	-	-	-	-	-	-	-	-	-	231	
Engine 2 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	557	
Engine 3 Hours	24	24	24	24	24	20	24	24	24	24	24	24	24	24	694	
Engine 4 Hours	14	24	24	24	24	24	24	24	24	24	24	24	24	24	627	
Generator 1 Power Output (kWhr)	8,956	-	-	-	-	428	-	-	-	-	-	-	-	-	177,712	
Generator 2 Power Output (kWhr)	19,480	19,488	19,480	19,192	18,892	19,444	19,608	19,612	19,212	18,896	19,304	19,488	19,488	19,484	449,656	
Generator 3 Power Output (kWhr)	19,480	19,476	19,476	19,184	18,884	16,284	19,480	19,480	18,484	18,892	19,296	19,484	19,480	19,480	560,040	
Generator 4 Power Output (kWhr)	10,544	19,432	19,440	19,140	18,840	19,404	19,568	19,572	19,164	18,844	19,248	19,444	19,444	18,248	501,748	
Gross Power Output (kWhr)	58,458	58,357	58,327	57,454	56,560	55,485	58,581	58,565	56,795	56,560	57,791	58,336	58,331	57,122	1,688,400	
Net Power Output (kWhr)	56,876	56,820	56,768	55,828	55,008	53,992	56,996	56,924	55,168	54,968	56,192	56,704	56,680	55,500	1,643,628	
Power Sold as metered by NStar, (l	56,754	56,681	56,654	55,680	54,911	53,850	56,877	56,805	55,032	54,870	56,044	56,572	56,552	55,364	1,639,981	
Offgrid RECs (kWhr)	1,582	1,537	1,559	1,626	1,552	1,493	1,585	1,641	1,627	1,592	1,599	1,632	1,651	1,622	44,772	
Calculated Performance Results																
Daily																
Power output (kW average whe																
Generator 1	814	-	-	-	-	-	-	-	-	-	-	-	-	-		
Generator 2	812	812	812	800	787	810	817	801	787	804	812	812	812	812		
Generator 3	812	812	812	799	787	814	812	812	770	787	804	812	812	812		
Generator 4	753	810	810	798	785	809	815	816	799	785	802	810	810	760		
Power output (kW average ove																
Facility Gross	2,436	2,432	2,430	2,394	2,357	2,312	2,441	2,440	2,366	2,357	2,408	2,431	2,430	2,380		
Facility Net	2,370	2,368	2,365	2,326	2,292	2,250	2,375	2,372	2,299	2,290	2,341	2,363	2,362	2,313		
In-plant load	66	64	65	68	65	62	66	68	68	66	67	68	69	68		
Daily availability factor																
Facility	76%	75%	75%	75%	75%	71%	75%	75%	75%	75%	75%	75%	75%	75%		
Engine 1	46%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	83%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	58%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Daily capacity factor																
Facility	74%	74%	74%	73%	71%	70%	74%	74%	72%	71%	73%	74%	74%	72%		
Engine 1	99%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Engine 2	98%	98%	98%	97%	95%	98%	99%	99%	97%	95%	97%	98%	98%	98%		
Engine 3	98%	98%	98%	97%	95%	99%	98%	98%	93%	95%	97%	98%	98%	98%		
Engine 4	91%	98%	98%	97%	95%	98%	99%	99%	97%	95%	97%	98%	98%	92%		
Cumulative by engine																
Engine operating run hours in t																
Max Cumulative Available,	409	433	457	481	505	529	553	577	601	625	649	673	697	721		
Engine 1	231	231	231	231	231	231	231	231	231	231	231	231	231	231		
Engine 2	245	269	293	317	341	365	389	413	437	461	485	509	533	557		
Engine 3	386	410	434	458	482	502	526	550	574	598	622	646	670	694		
Engine 4	315	339	363	387	411	435	459	483	507	531	555	579	603	627		
Engine operating run hours tota																
Engine 1	135,624	135,624	135,624	135,624	135,624	135,624	135,624	135,624	135,624	135,624	135,624	135,624	135,624	135,624		
Engine 2	124,413	124,437	124,461	124,485	124,509	124,533	124,557	124,581	124,605	124,629	124,653	124,677	124,701	124,725		
Engine 3	137,487	137,511	137,535	137,559	137,583	137,603	137,627	137,651	137,675	137,699	137,723	137,747	137,771	137,795		
Engine 4	132,523	132,547	132,571	132,595	132,619	132,643	132,667	132,691	132,715	132,739	132,763	132,787	132,811	132,835		
Cumulative availability, %																
Engine 1	56%	53%	51%	48%	46%	44%	42%	40%	38%	37%	36%	34%	33%	32%		
Engine 2	60%	62%	64%	66%	68%	69%	70%	72%	73%	74%	75%	76%	77%	77%		
Engine 3	94%	95%	95%	95%	95%	95%	95%	95%	96%	96%	96%	96%	96%	96%		
Engine 4	77%	78%	79%	80%	81%	82%	83%	84%	84%	85%	86%	86%	87%	87%		
Engine cumulative gross output																
Max cumulative capacity or	14,025	14,850	15,675	16,500	17,325	18,150	18,975	19,800	20,625	21,450	22,275	23,100	23,925	24,750		
Engine 1	9,107	9,107	9,107	9,107	9,107	9,107	9,107	9,107	9,107	9,107	9,107	9,107	9,107	9,107		
Engine 2	8,851	9,663	10,475	11,275	12,062	12,872	13,689	14,506	15,307	16,094	16,898	17,710	18,522	19,334		
Engine 3	13,725	14,537	15,348	16,148	16,935	17,749	18,560	19,372	20,142	20,929	21,733	22,545	23,357	24,169		
Engine 4	11,855	12,665	13,475	14,272	15,057	15,866	16,681	17,496	18,295	19,080	19,882	20,692	21,502	22,263		
Cumulative capacity factor, %																
Engine 1	65%	61%	58%	55%	53%	50%	48%	46%	44%	42%	41%	39%	38%	37%		
Engine 2	63%	67%	68%	68%	70%	71%	72%	73%	74%	75%	76%	77%	77%	78%		
Engine 3	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 4	85%	85%	86%	86%	87%	87%	88%	88%	89%	89%	89%	90%	90%	90%		

	Friday 11/17/2023	Saturday 11/18/2023	Sunday 11/19/2023	Monday 11/20/2023	Tuesday 11/21/2023	Wednesday 11/22/2023	Thursday 11/23/2023	Friday 11/24/2023	Saturday 11/25/2023	Sunday 11/26/2023	Monday 11/27/2023	Tuesday 11/28/2023	Wednesday 11/29/2023	Thursday 11/30/2023	TOTAL
Cumulative by Facility in month															
Max cumulative available engine run time, hours	1,632	1,728	1,824	1,920	2,016	2,112	2,208	2,304	2,400	2,496	2,592	2,688	2,784	2,880	
Actual cumulative engine run time, hours	1,177	1,249	1,321	1,393	1,465	1,533	1,605	1,677	1,749	1,821	1,893	1,965	2,037	2,109	
Cumulative Availability, %	72.1%	72.3%	72.4%	72.6%	72.7%	72.6%	72.7%	72.8%	72.9%	73.0%	73.0%	73.1%	73.2%	73.2%	
Max cumulative gross output, kWh	1,349,700	1,428,900	1,508,100	1,587,300	1,666,500	1,745,700	1,824,900	1,904,100	1,983,300	2,062,500	2,141,700	2,220,900	2,300,100	2,379,300	
Actual cumulative gross output, kWh	940,136	998,493	1,056,820	1,114,274	1,170,834	1,226,319	1,284,900	1,343,465	1,400,260	1,456,820	1,514,611	1,572,947	1,631,278	1,688,400	
Cumulative Capacity Factor	69.7%	69.9%	70.1%	70.2%	70.3%	70.2%	70.4%	70.6%	70.6%	70.6%	70.7%	70.8%	70.9%	71.0%	
Cumulative fuel input, MMBtu	12,634	13,431	14,225	14,998	15,773	16,575	17,374	18,163	18,934	19,719	20,505	21,288	22,079	22,855	
Cumulative gross output, kWh	940,136	998,493	1,056,820	1,114,274	1,170,834	1,226,319	1,284,900	1,343,465	1,400,260	1,456,820	1,514,611	1,572,947	1,631,278	1,688,400	
Heat Rate															
Daily heat rate, Btu/kWe gross	12,361	12,297	12,251	12,110	12,338	13,015	12,283	12,123	12,211	12,508	12,242	12,072	12,213	12,232	
Daily heat rate, Btu/kWe net	13,731	13,661	13,609	13,453	13,706	14,458	13,644	13,467	13,565	13,895	13,599	13,410	13,567	13,588	
Cumulative heat rate, Btu/kWe gross	12,097	12,109	12,117	12,116	12,127	12,167	12,173	12,170	12,172	12,185	12,187	12,183	12,184	12,186	
Cumulative heat rate, Btu/kWe net	13,438	13,451	13,460	13,460	13,472	13,516	13,522	13,520	13,521	13,536	13,538	13,534	13,535	13,537	
Cumulative by Facility starting C															
Max cumulative available engine run time, hours	30,812	30,908	31,004	31,100	31,196	31,292	31,388	31,484	31,580	31,676	31,772	31,868	31,964	32,060	
Actual cumulative engine run time, hours	23,270	23,342	23,414	23,486	23,558	23,626	23,698	23,770	23,842	23,914	23,986	24,058	24,130	24,202	
Cumulative Availability, %	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	
Max cumulative gross output, kWh	25,459,500	25,538,700	25,617,900	25,697,100	25,776,300	25,855,500	25,934,700	26,013,900	26,093,100	26,172,300	26,251,500	26,330,700	26,409,900	26,489,100	
Actual cumulative gross output, kWh	17,993,405	18,051,762	18,110,089	18,167,543	18,224,103	18,279,588	18,338,169	18,396,734	18,453,529	18,510,089	18,567,880	18,626,216	18,684,547	18,741,669	
Cumulative Capacity Factor	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.7%	70.8%	
Cumulative fuel input, MMBtu	246,576	247,373	248,167	248,940	249,715	250,517	251,316	252,105	252,875	253,661	254,447	255,230	256,021	256,797	
Cumulative gross output, kWh	17,993,405	18,051,762	18,110,089	18,167,543	18,224,103	18,279,588	18,338,169	18,396,734	18,453,529	18,510,089	18,567,880	18,626,216	18,684,547	18,741,669	
Cumulative heat rate, Btu/kWe gross	12,336	12,336	12,336	12,335	12,335	12,337	12,337	12,336	12,336	12,336	12,336	12,335	12,335	12,334	
Cumulative heat rate, Btu/kWe net	13,704	13,704	13,703	13,702	13,702	13,705	13,705	13,704	13,703	13,704	13,704	13,703	13,702	13,702	
Service															
Engine 1															
Engine 2															
Engine 3															
Engine 4															
Oil - oil and filter change															
Service - plugs, air filter, valve insp															
Precipitation															
NSTAR Power Reports	Friday 11/17/2023	Saturday 11/18/2023	Sunday 11/19/2023	Monday 11/20/2023	Tuesday 11/21/2023	Wednesday 11/22/2023	Thursday 11/23/2023	Friday 11/24/2023	Saturday 11/25/2023	Sunday 11/26/2023	Monday 11/27/2023	Tuesday 11/28/2023	Wednesday 11/29/2023	Thursday 11/30/2023	TOTAL
Hour															
1	2,371	2,362	2,362	2,358	2,286	2,289	2,371	2,368	2,363	2,287	2,285	2,361	2,359	2,357	
2	2,371	2,363	2,362	2,357	2,288	2,128	2,371	2,369	2,329	2,286	2,286	2,360	2,359	2,356	
3	2,371	2,362	2,362	2,356	2,287	1,522	2,370	2,369	2,303	2,286	2,286	2,360	2,358	2,357	
4	2,371	2,362	2,361	2,355	2,287	1,523	2,371	2,369	2,303	2,287	2,287	2,360	2,358	2,358	
5	2,371	2,362	2,362	2,355	2,288	1,524	2,371	2,369	2,303	2,286	2,288	2,360	2,359	2,357	
6	2,371	2,361	2,361	2,357	2,288	1,801	2,370	2,369	2,305	2,286	2,288	2,360	2,359	2,357	
7	2,370	2,361	2,362	2,357	2,288	2,479	2,370	2,368	2,304	2,286	2,288	2,359	2,359	2,357	
8	2,365	2,361	2,363	2,352	2,289	2,575	2,371	2,369	2,304	2,287	2,314	2,356	2,359	2,354	
9	2,370	2,360	2,362	2,352	2,287	2,444	2,371	2,368	2,303	2,287	2,353	2,354	2,352	2,349	
10	2,359	2,361	2,363	2,351	2,288	2,368	2,372	2,368	2,305	2,287	2,353	2,355	2,349	1,693	
11	2,364	2,360	2,362	2,354	2,288	2,370	2,372	2,367	2,271	2,286	2,353	2,354	2,352	1,843	
12	2,379	2,361	2,362	2,339	2,288	2,370	2,371	2,367	2,246	2,284	2,354	2,354	2,353	2,357	
13	2,352	2,362	2,361	2,288	2,289	2,370	2,370	2,367	2,256	2,286	2,355	2,356	2,353	2,355	
14	2,357	2,362	2,361	2,286	2,290	2,370	2,370	2,367	2,285	2,285	2,355	2,353	2,351	2,353	
15	2,361	2,364	2,361	2,287	2,290	2,370	2,370	2,367	2,286	2,285	2,356	2,354	2,354	2,352	
16	2,361	2,364	2,361	2,287	2,289	2,372	2,370	2,368	2,285	2,286	2,361	2,357	2,360	2,358	
17	2,362	2,363	2,360	2,286	2,288	2,373	2,370	2,367	2,284	2,287	2,361	2,357	2,358	2,358	
18	2,362	2,363	2,359	2,285	2,287	2,373	2,369	2,368	2,285	2,287	2,361	2,359	2,356	2,357	
19	2,361	2,362	2,358	2,286	2,286	2,372	2,368	2,365	2,284	2,285	2,361	2,356	2,358	2,356	
20	2,361	2,362	2,359	2,287	2,288	2,371	2,368	2,364	2,285	2,286	2,360	2,358	2,357	2,356	
21	2,361	2,360	2,358	2,287	2,288	2,372	2,368	2,363	2,285	2,287	2,359	2,357	2,357	2,356	
22	2,361	2,360	2,357	2,286	2,288	2,372	2,368	2,364	2,285	2,287	2,359	2,357	2,358	2,355	
23	2,361	2,361	2,357	2,286	2,287	2,371	2,367	2,363	2,285	2,287	2,360	2,357	2,357	2,356	
24	2,361	2,362	2,358	2,286	2,289	2,371	2,368	2,362	2,288	2,287	2,361	2,358	2,357	2,357	
TOTAL	56,754	56,681	56,654	55,680	54,911	53,850	56,877	56,805	55,032	54,870	56,044	56,572	56,552	55,364	
Cumulative Output Sold, kWh	914,089	970,770	1,027,424	1,083,104	1,138,015	1,191,865	1,248,742	1,305,547	1,360,579	1,415,449	1,471,493	1,528,065	1,584,617	1,639,981	
Transformer and line efficiency	99.8%	99.8%	99.8%	99.7%	99.8%	99.7%	99.8%	99.8%	99.8%	99.8%	99.7%	99.8%	99.8%	99.8%	0.0%
Hourly average	2,365	2,362	2,361	2,320	2,288	2,244	2,370	2,367	2,293	2,286	2,335	2,357	2,356	2,307	2,278

DECEMBER 2023																		
	Friday 12/1/2023	Saturday 12/2/2023	Sunday 12/3/2023	Monday 12/4/2023	Tuesday 12/5/2023	Wednesday 12/6/2023	Thursday 12/7/2023	Friday 12/8/2023	Saturday 12/9/2023	Sunday 12/10/2023	Monday 12/11/2023	Tuesday 12/12/2023	Wednesday 12/13/2023	Thursday 12/14/2023	Friday 12/15/2023	Saturday 12/16/2023		
LFG to the Engines (KSCF)	1,429	1,421	1,410	1,385	1,408	1,409	1,421	1,421	1,358	1,450	1,397	1,423	1,442	1,421	1,411	1,383		
LFG to the Engines (MMBTU HHV)	779	776	783	772	774	782	782	766	741	808	785	768	773	751	768	729		
LFG to the Flare (KSCF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
LFG to the Flare (MMBTU HHV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
LFG Total Flow (KSCF)	1,429	1,421	1,410	1,385	1,408	1,409	1,421	1,421	1,358	1,450	1,397	1,423	1,442	1,421	1,411	1,383		
LFG Total Flow (MMBTU HHV)	779	776	783	772	774	782	782	766	741	808	785	768	773	751	768	729		
Average Methane Content (%)	53.9	54.0	54.9	55.1	54.3	54.8	54.4	53.2	53.9	55.0	55.5	53.3	53.0	52.2	53.8	52.1		
Engine 1 Hours	-	-	-	-	-	-	-	-	11	24	12	-	-	-	-	-		
Engine 2 Hours	24	24	24	24	24	24	24	24	11	-	13	24	24	24	24	24		
Engine 3 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
Engine 4 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
Generator 1 Power Output (kWhr)	-	-	-	-	1,160	-	-	-	8,984	19,468	9,600	-	-	-	-	-		
Generator 2 Power Output (kWhr)	19,000	19,484	19,484	19,480	19,488	19,440	19,488	19,488	9,920	19,488	9,920	19,492	19,488	18,940	19,036	19,488		
Generator 3 Power Output (kWhr)	19,032	19,472	19,476	19,472	18,336	19,436	19,488	19,484	19,488	19,476	19,500	19,480	19,480	18,704	19,024	18,100		
Generator 4 Power Output (kWhr)	19,440	19,440	19,440	19,436	19,444	19,400	19,452	19,448	19,440	19,424	19,452	19,444	19,444	18,852	18,996	18,484		
Gross Power Output (kWhr)	57,369	58,321	58,325	58,312	58,361	58,205	58,354	58,341	56,934	58,347	58,407	58,326	58,332	56,422	57,000	56,026		
Net Power Output (kWhr)	55,716	56,720	56,736	56,724	56,732	56,596	56,752	56,688	55,372	56,804	56,832	56,644	56,640	54,768	55,372	54,380		
Power Sold as metered by NStar, (kWhr)	55,596	56,597	56,611	56,600	56,600	56,607	56,619	56,574	55,254	56,732	56,660	56,516	56,505	54,641	55,234	54,252		
Offgrid RECs (kWhr)	1,653	1,601	1,589	1,588	1,629	1,609	1,602	1,653	1,562	1,543	1,575	1,682	1,692	1,654	1,628	1,646		
Calculated Performance Results																		
Daily																		
Power output (kW average when running)																		
Generator 1	-	-	-	-	-	-	-	-	817	811	800	-	-	-	-	-		
Generator 2	792	812	812	812	812	810	812	812	824	-	763	812	812	789	793	812		
Generator 3	793	811	812	811	764	810	812	812	812	812	813	812	812	779	793	754		
Generator 4	810	810	810	810	810	808	811	810	810	809	811	810	810	786	792	770		
Power output (kW average over 24-hrs)																		
Facility Gross	2,390	2,430	2,430	2,430	2,432	2,425	2,431	2,431	2,372	2,431	2,434	2,430	2,431	2,351	2,375	2,334		
Facility Net	2,322	2,363	2,364	2,364	2,364	2,358	2,365	2,362	2,307	2,367	2,368	2,360	2,360	2,282	2,307	2,266		
In-plant load	69	67	66	66	68	67	67	69	65	64	66	70	71	69	68	69		
Daily availability factor																		
Facility	75%	75%	75%	75%	75%	75%	75%	75%	73%	75%	76%	75%	75%	75%	75%	75%		
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	46%	100%	50%	0%	0%	0%	0%	0%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	46%	0%	54%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Daily capacity factor																		
Facility	72%	74%	74%	74%	74%	73%	74%	74%	72%	74%	74%	74%	74%	71%	72%	71%		
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	99%	98%	97%	0%	0%	0%	0%	0%		
Engine 2	96%	98%	98%	98%	98%	98%	98%	98%	100%	0%	92%	98%	98%	96%	96%	98%		
Engine 3	96%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	94%	96%	91%		
Engine 4	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	95%	96%	93%		
Cumulative by engine																		
Engine operating run hours in the month																		
Max Cumulative Available, hours	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384		
Engine 1	0	0	0	0	0	0	0	0	11	35	47	47	47	47	47	47		
Engine 2	24	48	72	96	120	144	168	192	203	203	216	240	264	288	312	336		
Engine 3	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384		
Engine 4	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384		
Engine operating run hours total from 0 hours																		
Engine 1	135,636	135,636	135,636	135,636	135,636	135,636	135,636	135,636	135,647	135,671	135,683	135,683	135,683	135,683	135,683	135,683		
Engine 2	124,726	124,750	124,774	124,798	124,822	124,846	124,870	124,894	124,929	124,929	124,942	124,966	124,990	125,014	125,038	125,062		
Engine 3	137,793	137,817	137,841	137,865	137,889	137,913	137,937	137,961	137,985	138,009	138,033	138,057	138,081	138,105	138,129	138,153		
Engine 4	132,833	132,857	132,881	132,905	132,929	132,953	132,977	133,001	133,025	133,049	133,073	133,097	133,121	133,145	133,169	133,193		
Cumulative availability, %	December 1, 2023 @ 00:00 hours																	
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	5%	15%	18%	16%	15%	14%	13%	12%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	94%	85%	82%	83%	85%	86%	87%	88%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine cumulative gross output, kWhr																		
Max cumulative capacity one engine	825	1,650	2,475	3,300	4,125	4,950	5,775	6,600	7,425	8,250	9,075	9,900	10,725	11,550	12,375	13,200		
Engine 1	-	-	-	-	-	-	-	-	817	1,628	2,428	2,428	2,428	2,428	2,428	2,428		
Engine 2	792	1,604	2,415	3,227	4,039	4,849	5,661	6,473	7,297	7,297	8,060	8,873	9,685	10,474	11,267	12,079		
Engine 3	793	1,604	2,416	3,227	3,991	4,801	5,613	6,425	7,237	8,048	8,861	9,673	10,484	11,264	12,056	12,810		
Engine 4	810	1,620	2,430	3,240	4,050	4,858	5,669	6,479	7,289	8,099	8,909	9,719	10,529	11,315	12,106	12,877		
Cumulative capacity factor, %																		
Engine 1	0%	0%	0%	0%	0%	0%	0%	0%	11%	20%	27%	25%	23%	21%	20%	18%		
Engine 2	96%	97%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 3	96%	97%	98%	98%	97%	97%	97%	97%	97%	98%	98%	98%	98%	98%	97%	97%		
Engine 4	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		

	Friday 12/1/2023	Saturday 12/2/2023	Sunday 12/3/2023	Monday 12/4/2023	Tuesday 12/5/2023	Wednesday 12/6/2023	Thursday 12/7/2023	Friday 12/8/2023	Saturday 12/9/2023	Sunday 12/10/2023	Monday 12/11/2023	Tuesday 12/12/2023	Wednesday 12/13/2023	Thursday 12/14/2023	Friday 12/15/2023	Saturday 12/16/2023
Cumulative by Facility in month																
Max cumulative available engine run hours	96	192	288	384	480	576	672	768	864	960	1,056	1,152	1,248	1,344	1,440	1,536
Actual cumulative engine run hours	72	144	216	288	360	432	504	576	646	718	791	863	935	1,007	1,079	1,151
Cumulative Availability, %	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	74.8%	74.8%	74.9%	74.9%	74.9%	74.9%	74.9%	74.9%
Max cumulative gross output, kWhr	79,200	158,400	237,600	316,800	396,000	478,500	557,700	636,900	716,100	795,300	874,500	953,700	1,032,900	1,112,100	1,191,300	1,270,500
Actual cumulative gross output, kWhr	57,369	115,690	174,015	232,327	290,688	348,893	407,247	465,588	522,522	580,869	639,276	697,602	755,934	812,356	869,356	925,382
Cumulative Capacity Factor	72.4%	73.0%	73.2%	73.3%	73.4%	72.9%	73.0%	73.1%	73.0%	73.0%	73.1%	73.1%	73.2%	73.0%	73.0%	72.8%
Cumulative fuel input, MMBtu HHV	779.4	1,556	2,338	3,110	3,884	4,666	5,448	6,214	6,955	7,763	8,548	9,316	10,088	10,840	11,607	12,336
Cumulative gross output, kWhr	57369	115,690	174,015	232,327	290,688	348,893	407,247	465,588	522,522	580,869	639,276	697,602	755,934	812,356	869,356	925,382
Heat Rate																
Daily heat rate, Btu/kWe gross LHV	12,230	11,981	12,079	11,921	11,936	12,094	12,064	11,813	11,718	12,465	12,096	11,856	11,923	11,985	12,121	11,713
Daily heat rate, Btu/kWe gross HHV	13,586	13,309	13,418	13,243	13,259	13,435	13,401	13,123	13,017	13,846	13,437	13,171	13,245	13,314	13,465	13,012
Cumulative heat rate, Btu/kWe gross LHV	12,230	12,104	12,096	12,052	12,029	12,040	12,043	12,014	11,982	12,030	12,036	12,021	12,014	12,012	12,019	12,000
Cumulative heat rate, Btu/kWe gross HHV	13,586	13,446	13,437	13,388	13,362	13,374	13,378	13,346	13,310	13,364	13,371	13,354	13,346	13,343	13,351	13,331
Cumulative by Facility starting Calendar Year																
Max cumulative available engine run hours	32,156	32,252	32,348	32,444	32,540	32,636	32,732	32,828	32,924	33,020	33,116	33,212	33,308	33,404	33,500	33,596
Actual cumulative engine run hours	24,274	24,346	24,418	24,490	24,562	24,634	24,706	24,778	24,848	24,920	24,993	25,065	25,137	25,209	25,281	25,353
Cumulative Availability, %	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%
Max cumulative gross output, kWhr	26,568,300	26,647,500	26,726,700	26,805,900	26,885,100	26,967,600	27,046,800	27,126,000	27,205,200	27,284,400	27,363,600	27,442,800	27,522,000	27,601,200	27,680,400	27,759,600
Actual cumulative gross output, kWhr	18,799,038	18,857,359	18,915,684	18,973,996	19,032,357	19,090,562	19,148,916	19,207,257	19,264,191	19,322,538	19,380,945	19,439,271	19,497,603	19,554,025	19,611,025	19,667,051
Cumulative Capacity Factor	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%
Cumulative fuel input, MMBtu HHV	257,577	258,353	259,135	259,908	260,681	261,463	262,245	263,011	263,752	264,560	265,345	266,113	266,886	267,637	268,404	269,133
Cumulative gross output, kWhr	18,799,038	18,857,359	18,915,684	18,973,996	19,032,357	19,090,562	19,148,916	19,207,257	19,264,191	19,322,538	19,380,945	19,439,271	19,497,603	19,554,025	19,611,025	19,667,051
Cumulative heat rate, Btu/kWe gross LHV	12,334	12,333	12,332	12,331	12,330	12,329	12,328	12,327	12,325	12,325	12,325	12,323	12,322	12,321	12,320	12,319
Cumulative heat rate, Btu/kWe gross HHV	13,702	13,700	13,699	13,698	13,697	13,696	13,695	13,693	13,691	13,692	13,691	13,689	13,688	13,687	13,686	13,684
Service																
Engine 1																
Engine 2																
Engine 3																
Engine 4																
Oil - oil and filter change																
Service - plugs, air filter, valve inspection and adjustment																
Precipitation																
NSTAR Power Reports	Friday 12/1/2023	Saturday 12/2/2023	Sunday 12/3/2023	Monday 12/4/2023	Tuesday 12/5/2023	Wednesday 12/6/2023	Thursday 12/7/2023	Friday 12/8/2023	Saturday 12/9/2023	Sunday 12/10/2023	Monday 12/11/2023	Tuesday 12/12/2023	Wednesday 12/13/2023	Thursday 12/14/2023	Friday 12/15/2023	Saturday 12/16/2023
Date																
Hour																
1	2,357	2,359	2,358	2,361	2,361	2,360	2,363	2,361	2,359	2,366	2,363	2,356	2,357	2,356	2,172	2,356
2	2,356	2,359	2,358	2,361	2,360	2,360	2,363	2,361	2,359	2,365	2,363	2,356	2,357	2,356	2,174	2,355
3	2,356	2,358	2,358	2,361	2,360	2,358	2,362	2,360	2,359	2,365	2,363	2,356	2,356	2,355	2,174	2,321
4	2,357	2,358	2,357	2,361	2,360	2,360	2,362	2,360	2,358	2,365	2,363	2,355	2,357	2,354	2,173	2,294
5	2,357	2,359	2,358	2,361	2,361	2,361	2,361	2,361	2,359	2,365	2,363	2,357	2,357	2,354	2,174	2,294
6	2,356	2,358	2,358	2,361	2,360	2,360	2,361	2,360	2,358	2,364	2,366	2,357	2,357	2,316	2,175	2,293
7	2,357	2,357	2,358	2,360	2,360	2,360	2,361	2,359	2,358	2,365	2,367	2,358	2,356	2,294	2,175	2,295
8	2,351	2,358	2,358	2,354	2,360	2,354	2,354	2,356	2,357	2,364	2,363	2,351	2,351	2,272	2,328	2,294
9	2,348	2,359	2,358	2,353	2,361	2,353	2,355	2,355	2,357	2,366	2,361	2,349	2,349	2,289	2,353	2,282
10	1,910	2,360	2,359	2,354	2,364	2,353	2,355	2,355	2,356	2,365	2,359	2,350	2,349	2,307	2,353	2,232
11	2,316	2,359	2,358	2,355	2,351	2,353	2,355	2,354	2,354	2,365	2,359	2,350	2,350	2,308	2,353	2,232
12	1,906	2,359	2,358	2,354	2,354	2,354	2,354	2,353	1,693	2,363	2,371	2,352	2,350	2,308	2,353	2,232
13	2,352	2,359	2,359	2,353	2,353	2,354	2,356	2,355	1,618	2,363	2,358	2,351	2,351	2,308	2,354	2,231
14	2,351	2,359	2,359	2,353	2,354	2,355	2,355	2,353	2,367	2,363	2,356	2,349	2,356	2,309	2,358	2,231
15	2,352	2,358	2,359	2,355	2,354	2,357	2,358	2,354	2,366	2,363	2,360	2,353	2,358	2,325	2,357	2,232
16	2,357	2,359	2,359	2,361	2,359	2,361	2,362	2,356	2,364	2,362	2,362	2,358	2,357	2,328	2,359	2,231
17	2,357	2,358	2,359	2,361	2,359	2,360	2,361	2,358	2,364	2,363	2,360	2,359	2,355	2,297	2,358	2,231
18	2,356	2,357	2,360	2,362	2,359	2,361	2,361	2,357	2,363	2,363	2,360	2,357	2,356	2,171	2,356	2,230
19	2,357	2,357	2,360	2,359	2,358	2,361	2,361	2,357	2,363	2,363	2,358	2,357	2,356	2,173	2,356	2,231
20	2,357	2,357	2,359	2,360	2,358	2,362	2,360	2,357	2,364	2,363	2,358	2,357	2,355	2,172	2,356	2,231
21	2,357	2,357	2,359	2,360	2,358	2,362	2,360	2,357	2,364	2,362	2,357	2,358	2,353	2,172	2,356	2,230
22	2,357	2,357	2,360	2,359	2,358	2,362	2,360	2,358	2,364	2,363	2,357	2,357	2,354	2,172	2,355	2,230
23	2,358	2,358	2,361	2,360	2,359	2,363	2,360	2,358	2,365	2,363	2,357	2,357	2,353	2,172	2,356	2,232
24	2,358	2,358	2,361	2,361	2,359	2,363	2,359	2,359	2,365	2,363	2,356	2,356	2,355	2,173	2,356	2,232
TOTAL	55,596	56,597	56,611	56,600	56,600	56,607	56,619	56,574	55,254	56,732	56,660	56,516	56,505	54,641	55,234	54,252
Cumulative Output Sold, kWhr	55,596	112,193	168,804	225,404	282,004	338,611	395,230	451,804	507,058	563,790	620,450	676,966	733,471	788,112	843,346	897,598
Transformer and line efficiency	99.8%	99.8%	99.8%	99.8%	99.8%	100.0%	99.8%	99.8%	99.8%	99.9%	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Hourly average	2,317	2,358	2,359	2,358	2,358	2,359	2,359	2,357	2,302	2,364	2,361	2,355	2,354	2,277	2,301	2,261

DECEMBER 2023																	
	Sunday 12/17/2023	Monday 12/18/2023	Tuesday 12/19/2023	Wednesday 12/20/2023	Thursday 12/21/2023	Friday 12/22/2023	Saturday 12/23/2023	Sunday 12/24/2023	Monday 12/25/2023	Tuesday 12/26/2023	Wednesday 12/27/2023	Thursday 12/28/2023	Friday 12/29/2023	Saturday 12/30/2023	Sunday 12/31/2023	TOTAL	
LFG to the Engines (KSCF)	1,490	1,370	1,443	1,443	1,443	1,462	1,444	1,451	1,442	1,434	1,419	1,397	1,379	1,402	1,421	44,029	
LFG to the Engines (MMBTU HHV)	803	766	766	766	761	767	760	769	764	761	764	779	765	779	760	23,864	
LFG to the Flare (KSCF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LFG to the Flare (MMBTU HHV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LFG Total Flow (KSCF)	1,490	1,370	1,443	1,443	1,443	1,462	1,444	1,451	1,442	1,434	1,419	1,397	1,379	1,402	1,421	44,029	
LFG Total Flow (MMBTU HHV)	803	766	766	766	761	767	760	769	764	761	764	779	765	779	760	23,864	
Average Methane Content (%)	53.3	55.3	52.4	52.4	52.1	51.8	52.0	52.3	52.3	52.4	53.2	55.1	54.8	54.9	52.9	53.6	
Engine 1 Hours	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	
Engine 2 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	696	
Engine 3 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	744	
Engine 4 Hours	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	744	
Generator 1 Power Output (kWhr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39,212	
Generator 2 Power Output (kWhr)	19,480	18,824	19,424	19,476	19,476	19,476	19,472	19,456	19,484	19,476	19,472	19,476	19,476	19,436	19,468	562,156	
Generator 3 Power Output (kWhr)	18,544	18,680	18,536	19,092	18,864	18,360	17,964	18,392	18,048	19,140	19,424	19,460	19,460	19,416	18,936	589,764	
Generator 4 Power Output (kWhr)	19,112	18,720	18,784	19,424	19,428	19,428	19,408	19,408	19,436	19,428	19,396	19,424	19,420	19,380	19,424	598,676	
Gross Power Output (kWhr)	57,070	56,171	56,675	57,923	57,753	57,281	56,924	57,294	57,019	58,082	58,344	58,412	58,414	58,285	57,868	1,788,897	
Net Power Output (kWhr)	55,444	54,584	54,976	56,224	56,044	55,640	55,296	55,652	55,384	56,384	56,656	56,788	56,808	56,704	56,208	1,738,268	
Power Sold as metered by NSTar, (l	55,349	54,448	54,843	56,086	55,909	55,172	55,605	55,249	56,259	56,525	56,663	56,681	56,700	56,125	1,734,732		
Offgrid RECs (kWhr)	1,626	1,587	1,699	1,699	1,709	1,641	1,628	1,642	1,635	1,698	1,688	1,624	1,606	1,581	1,660	50,629	
Calculated Performance Results																	
Daily																	
Power output (kW average whe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Generator 1	812	784	809	812	812	812	811	811	812	812	811	812	812	810	811		
Generator 2	773	778	772	796	786	765	749	766	752	798	809	811	811	809	789		
Generator 3	796	780	783	809	810	810	810	809	810	810	808	809	809	808	809		
Power output (kW average ove	2,378	2,340	2,361	2,413	2,406	2,387	2,372	2,387	2,376	2,420	2,431	2,434	2,434	2,429	2,411		
Facility Gross	2,310	2,274	2,291	2,343	2,335	2,318	2,304	2,319	2,308	2,349	2,361	2,366	2,367	2,363	2,342		
Facility Net	68	66	71	71	71	68	68	68	68	71	70	68	67	66	69		
In-plant load	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%		
Daily availability factor	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Facility	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Daily capacity factor	72%	71%	72%	73%	73%	72%	72%	72%	72%	73%	74%	74%	74%	74%	73%		
Facility	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Engine 1	98%	95%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 2	94%	94%	94%	96%	95%	93%	91%	97%	98%	98%	98%	98%	98%	98%	96%		
Engine 3	97%	95%	95%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Engine 4																	
Cumulative by engine																	
Engine operating run hours in t	408	432	456	480	504	528	552	576	600	624	648	672	696	720	744		
Max Cumulative Available,	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47		
Engine 1	360	384	408	432	456	480	504	528	552	576	600	624	648	672	696		
Engine 2	408	432	456	480	504	528	552	576	600	624	648	672	696	720	744		
Engine 3	408	432	456	480	504	528	552	576	600	624	648	672	696	720	744		
Engine 4	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683	135,683		
Engine 1	125,086	125,110	125,134	125,158	125,182	125,206	125,230	125,254	125,278	125,302	125,326	125,350	125,374	125,398	125,422		
Engine 2	138,201	138,225	138,249	138,273	138,297	138,321	138,345	138,369	138,393	138,417	138,441	138,465	138,489	138,513	138,537		
Engine 3	133,241	133,265	133,289	133,313	133,337	133,361	133,385	133,409	133,433	133,457	133,481	133,505	133,529	133,553	133,577		
Engine 4	12%	11%	10%	10%	9%	9%	9%	8%	8%	8%	7%	7%	7%	7%	6%		
Cumulative availability, %	88%	89%	89%	90%	90%	91%	92%	92%	92%	92%	93%	93%	93%	93%	94%		
Engine 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Engine 4	14,025	14,850	15,675	16,500	17,325	18,150	18,975	19,800	20,625	21,450	22,275	23,100	23,925	24,750	25,575		
Engine 1	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428	2,428		
Engine 2	12,891	13,675	14,464	15,296	16,107	16,919	17,730	18,541	19,353	20,164	20,975	21,787	22,598	23,408	24,219		
Engine 3	13,583	14,361	15,134	15,929	16,715	17,480	18,229	18,995	19,747	20,545	21,354	22,165	22,976	23,785	24,574		
Engine 4	13,673	14,453	15,236	16,045	16,854	17,664	18,473	19,282	20,092	20,901	21,710	22,519	23,328	24,136	24,945		
Cumulative capacity factor, %	17%	16%	15%	15%	14%	13%	13%	12%	12%	11%	11%	11%	10%	10%	9%		
Engine 1	92%	92%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%		
Engine 2	97%	97%	97%	97%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%		
Engine 3	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%		
Engine 4																	

Commonwealth New Bedford Energy LLC
New Bedford/Dartmouth, Massachusetts

DECEMBER 2023

	Sunday 12/17/2023	Monday 12/18/2023	Tuesday 12/19/2023	Wednesday 12/20/2023	Thursday 12/21/2023	Friday 12/22/2023	Saturday 12/23/2023	Sunday 12/24/2023	Monday 12/25/2023	Tuesday 12/26/2023	Wednesday 12/27/2023	Thursday 12/28/2023	Friday 12/29/2023	Saturday 12/30/2023	Sunday 12/31/2023	TOTAL
Cumulative by Facility in month																
Max cumulative available engine run time, %	1,632	1,728	1,824	1,920	2,016	2,112	2,208	2,304	2,400	2,496	2,592	2,688	2,784	2,880	2,976	
Actual cumulative engine run time, %	1,223	1,295	1,367	1,439	1,511	1,583	1,655	1,727	1,799	1,871	1,943	2,015	2,087	2,159	2,231	
Cumulative Availability, %	74.9%	74.9%	74.9%	74.9%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	
Max cumulative gross output, kWh	1,349,700	1,428,900	1,508,100	1,587,300	1,666,500	1,745,700	1,824,900	1,904,100	1,983,300	2,062,500	2,141,700	2,220,900	2,300,100	2,379,300	2,458,500	
Actual cumulative gross output, kWh	982,452	1,038,623	1,095,298	1,153,221	1,210,974	1,268,255	1,325,179	1,382,473	1,439,492	1,497,574	1,555,918	1,614,330	1,672,744	1,731,029	1,788,897	
Cumulative Capacity Factor	72.8%	72.7%	72.6%	72.7%	72.7%	72.7%	72.6%	72.6%	72.6%	72.6%	72.6%	72.7%	72.7%	72.8%	72.8%	
Cumulative fuel input, MMBtu	13,139	13,905	14,671	15,438	16,198	16,965	17,724	18,493	19,257	20,017	20,782	21,561	22,325	23,104	23,864	
Cumulative gross output, kWh	982,452	1,038,623	1,095,298	1,153,221	1,210,974	1,268,255	1,325,179	1,382,473	1,439,492	1,497,574	1,555,918	1,614,330	1,672,744	1,731,029	1,788,897	
Heat Rate																
Daily heat rate, Btu/kWe gross	12,668	12,278	12,168	11,906	11,854	12,051	12,011	12,079	12,054	11,790	11,794	12,002	11,785	12,025	11,819	
Daily heat rate, Btu/kWe net	14,072	13,639	13,517	13,226	13,168	13,387	13,342	13,419	13,390	13,097	13,102	13,333	13,091	13,358	13,130	
Cumulative heat rate, Btu/kWe gross	12,039	12,052	12,058	12,050	12,041	12,041	12,040	12,042	12,042	12,032	12,024	12,023	12,014	12,015	12,008	
Cumulative heat rate, Btu/kWe net	13,374	13,388	13,395	13,386	13,376	13,376	13,375	13,377	13,377	13,366	13,357	13,356	13,346	13,347	13,340	
Cumulative by Facility starting 12/17/2023																
Max cumulative available engine run time, %	33,692	33,788	33,884	33,980	34,076	34,172	34,268	34,364	34,460	34,556	34,652	34,748	34,844	34,940	35,036	
Actual cumulative engine run time, %	25,425	25,497	25,569	25,641	25,713	25,785	25,857	25,929	26,001	26,073	26,145	26,217	26,289	26,361	26,433	
Cumulative Availability, %	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.5%	75.4%	75.4%	75.4%	75.4%	
Max cumulative gross output, kWh	27,638,800	27,918,000	27,997,200	28,076,400	28,155,600	28,234,800	28,314,000	28,393,200	28,472,400	28,551,600	28,630,800	28,710,000	28,789,200	28,868,400	28,947,600	
Actual cumulative gross output, kWh	19,724,121	19,780,292	19,836,967	19,894,890	19,952,643	20,009,924	20,066,848	20,124,142	20,181,161	20,239,243	20,297,587	20,355,999	20,414,413	20,472,698	20,530,566	
Cumulative Capacity Factor	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	70.9%	
Cumulative fuel input, MMBtu	269,936	270,702	271,469	272,235	272,995	273,762	274,521	275,290	276,054	276,814	277,579	278,358	279,122	279,901	280,661	
Cumulative gross output, kWh	19,724,121	19,780,292	19,836,967	19,894,890	19,952,643	20,009,924	20,066,848	20,124,142	20,181,161	20,239,243	20,297,587	20,355,999	20,414,413	20,472,698	20,530,566	
Cumulative heat rate, Btu/kWe gross	12,320	12,320	12,319	12,318	12,317	12,316	12,315	12,314	12,314	12,312	12,311	12,310	12,308	12,307	12,306	
Cumulative heat rate, Btu/kWe net	13,686	13,685	13,685	13,684	13,682	13,681	13,680	13,680	13,679	13,677	13,675	13,674	13,673	13,672	13,670	
Service																
Engine 1																
Engine 2																
Engine 3																
Engine 4																
Oil - oil and filter change																
Service - plugs, air filter, valve insp																
Precipitation																
NSTAR Power Reports																
Date	Sunday 12/17/2023	Monday 12/18/2023	Tuesday 12/19/2023	Wednesday 12/20/2023	Thursday 12/21/2023	Friday 12/22/2023	Saturday 12/23/2023	Sunday 12/24/2023	Monday 12/25/2023	Tuesday 12/26/2023	Wednesday 12/27/2023	Thursday 12/28/2023	Friday 12/29/2023	Saturday 12/30/2023	Sunday 12/31/2023	TOTAL
Hour																
1	2,232	2,359	2,288	2,292	2,353	2,357	2,296	2,359	2,297	2,360	2,359	2,360	2,364	2,363	2,359	
2	2,233	2,358	2,288	2,291	2,354	2,358	2,297	2,359	2,297	2,359	2,358	2,360	2,364	2,363	2,361	
3	2,232	2,359	2,288	2,338	2,354	2,358	2,297	2,359	2,297	2,359	2,357	2,361	2,364	2,364	2,360	
4	2,233	2,360	2,249	2,353	2,354	2,358	2,297	2,358	2,297	2,359	2,357	2,361	2,365	2,363	2,361	
5	2,233	2,360	2,228	2,353	2,354	2,357	2,297	2,358	2,297	2,359	2,359	2,362	2,364	2,364	2,360	
6	2,285	2,360	2,228	2,353	2,354	2,358	2,296	2,358	2,296	2,359	2,360	2,362	2,364	2,364	2,360	
7	2,295	2,360	2,228	2,353	2,355	2,340	2,297	2,359	2,297	2,359	2,360	2,363	2,363	2,364	2,360	
8	2,295	1,834	2,215	2,350	2,350	2,296	2,297	2,331	2,297	2,358	2,358	2,359	2,360	2,364	2,360	
9	2,296	2,107	2,209	2,348	2,333	2,296	2,297	2,297	2,298	2,353	2,353	2,356	2,357	2,363	2,360	
10	2,295	2,351	2,208	2,301	2,287	2,296	2,297	2,297	2,297	2,352	2,353	2,356	2,357	2,363	2,323	
11	2,295	1,356	2,210	2,287	2,288	2,296	2,297	2,299	2,298	2,334	2,353	2,357	2,359	2,364	2,299	
12	2,296	2,242	2,223	2,288	2,289	2,297	2,298	2,298	2,298	2,292	2,353	2,357	2,359	2,363	2,300	
13	2,296	2,352	2,223	2,297	2,314	2,296	2,298	2,299	2,298	2,291	2,353	2,359	2,360	2,364	2,317	
14	2,297	2,353	2,281	2,348	2,351	2,297	2,299	2,299	2,297	2,290	2,313	2,359	2,360	2,363	2,361	
15	2,325	2,356	2,349	2,347	2,355	2,297	2,299	2,298	2,297	2,291	2,341	2,361	2,364	2,362	2,361	
16	2,356	2,358	2,356	2,353	2,357	2,297	2,298	2,298	2,299	2,314	2,360	2,364	2,362	2,363	2,360	
17	2,357	2,357	2,354	2,355	2,355	2,295	2,298	2,299	2,299	2,360	2,360	2,364	2,363	2,362	2,359	
18	2,356	2,356	2,354	2,355	2,310	2,296	2,298	2,298	2,298	2,360	2,360	2,364	2,362	2,362	2,358	
19	2,356	2,354	2,353	2,354	2,294	2,295	2,297	2,297	2,298	2,359	2,360	2,363	2,361	2,361	2,357	
20	2,356	2,353	2,352	2,355	2,295	2,296	2,297	2,297	2,298	2,359	2,359	2,363	2,362	2,361	2,303	
21	2,356	2,334	2,352	2,354	2,295	2,296	2,297	2,297	2,298	2,359	2,359	2,363	2,361	2,360	2,296	
22	2,358	2,291	2,351	2,354	2,296	2,296	2,297	2,297	2,298	2,357	2,359	2,363	2,361	2,360	2,296	
23	2,357	2,289	2,352	2,353	2,305	2,296	2,297	2,297	2,343	2,358	2,360	2,362	2,362	2,360	2,297	
24	2,359	2,289	2,304	2,354	2,357	2,296	2,334	2,297	2,360	2,358	2,361	2,364	2,363	2,360	2,297	
TOTAL	55,349	54,448	54,843	56,086	55,909	55,520	55,172	55,605	55,249	56,259	56,525	56,663	56,681	56,700	56,125	
Cumulative Output Sold, kWh	952,947	1,007,395	1,062,238	1,118,324	1,174,233	1,229,753	1,284,925	1,340,530	1,395,779	1,452,038	1,508,563	1,565,226	1,621,907	1,678,607	1,734,732	
Transformer and line efficiency	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%	99.8%	99.8%	99.8%	99.8%	99.8%	100.0%	99.9%	
Hourly average	2,306	2,269	2,285	2,337	2,330	2,313	2,299	2,317	2,302	2,344	2,355	2,361	2,362	2,363	2,339	

**EVERSOURCE OUTAGE IMPACT ON GREATER NEW BEDFORD LANDFILL GAS TO ENERGY FACILITY
OWNED AND OPERATED BY COMMONWEALTH NEW BEDFORD ENERGY LLC
300 SAMUEL BARNET BLVD, NEW BEDFORD/DARTMOUTH MASSACHUSETTS
107 LINE**

HOURS OF PRODUCTION LOST DUE TO EVERSOURCE OUTAGES

TOTAL	<u>2023</u>
October	0
November	23
December	0
TOTAL	23

HOURS LOST DUE TO PLANNED OUTAGES

	<u>2023</u>
October	0
November	0
December	0
TOTAL	-

HOURS LOST DUE TO UNPLANNED OUTAGES

	<u>2023</u>
October	0
November	23
December	0
TOTAL	23

EMERGENCY GENERATOR LOG SHEET

PRIOR TO RUNNING

AFTER SHUTTING DOWN

DATE	TIME	RUN HRS	DATE	TIME	RUN HRS	REASON
10-Jan-23	8:06	659.3	10-Jan-23	13:36	664.9	Stepdown Trans. Service [EESCO]
7-Feb-23	14:15	664.9	8-Feb-23	5:10	679.3	Eversource Work
9-May-23	7:25	679.3	11-May-23	13:20	733.2	Eversource Work
16-May-23	7:30	733.2	17-May-23	12:48	762.6	Eversource Work
6-Aug-23	20:30	762.6	7-Aug-23	16:14	782.4	Eversource Trip
8-Nov-23	18:35	782.4	9-Nov-23	15:00	802.2	Communications Loss
8-Dec-23	10:16	802.2	12-Dec-23	10:46	802.7	Test Run
7-Jan-24	14:30	802.7	8-Jan-24	8:00	819	Winter Storm
13-Feb-24	12:54	819	13-Feb-24	15:10	821.3	Winter Storm
					20.3	Total run hours Oct 1 - Dec 31, 2023

TYPE A39SM
REG TYPE A34GV

Pkh _____ VTR _____ :1
Mult. by _____ CTR _____ :5



SERIAL # 08128229 Honeywell

9S

Cell W/KYZ
Multifunction

CL20



KZG08128229UBC33

CL20, 120 TO 480V, 4W, 60Hz

Kh 1.8

FM 9S Watthour Meter

ZD3213M10LL-81

P/R 24

R3.05.01-2010QM-038681

TA 2.5A

FCC ID: R7LE910SV
This device complies with Part 15 of the FCC Rules

RESET

ALT

Usage History

Select an Account :

27461920012(CNBE)

▼

300 SAMUEL-BARNET BLV CGN, NEW BEDFRD MA 02745

 Download my secure data with Green Button

 Email My Data

View Data From :

13 months

▼

 Usage Data

 Usage Graph

Read Date	Usage (kWh)	Number of Days	Usage Per Day	Cost Per Day	Total Charge	Average Temp(°F)
05/16/2024	0	29	0	\$0.52	\$15.00	52.0
04/17/2024	0	30	0	\$0.50	\$15.00	46.0
03/18/2024	0	32	0	\$0.47	\$15.00	40.0
02/15/2024	0	28	0	\$0.54	\$15.00	34.0
01/18/2024	0	33	0	\$0.45	\$15.00	37.0
12/16/2023	0	30	0	\$0.50	\$15.00	41.0
11/16/2023	0	29	0	\$0.52	\$15.00	50.0
10/18/2023	0	30	0	\$0.50	\$15.00	59.0
09/18/2023	0	32	0	\$0.47	\$15.00	70.0

Exhibit 6:

Calibration of the LFG, composition meter, other instrumentation for the periods.

Landfill Gas Flow Calculation					
Crapo Hill Landfill, New Bedford/Dartmouth, Massachusetts					
Note: Calculation of volumetric flow of LFG through a pipe using a pitot tube and man					
		Engine 1, kW	-	812	-
		Engine 2, kW	815	-	815
		Engine 3, kW	810	810	815
		Engine 4, kW	810	810	810
		Gross, kW	2,435	2,432	2,440
MEASURING INSTRUMENT:		Pitot Tube:	160	160	160
		Manometer:	Dwyer Mark II	Dwyer Mark II	Dwyer Mark II
DATE OF MEASUREMENT:			4-Oct-23	14-Nov-23	8-Dec-23
TIME OF MEASUREMENT:			14:00	12:40	12:30
PARAMETERS		UNITS	VALUES	VALUES	VALUES
Pipe dimensions					
Inside Diameter		inches	10.420	10.420	10.420
Area of cross section		square feet	0.5922	0.5922	0.5922
Flow Calculation					
Kp	pitot tube constant	ft/sec[(lb/lb-mole)(in. Hg)/(R)(in H2O)]^1/2	85.49	85.49	85.49
Cp	Pitot tube coefficient	dimensionless	1.00	1.00	1.00
dP	Average velocity pressure of stack gas	in H2O	0.203	0.218	0.218
Blower Inlet					
Ts	Stack temperature	Degrees Fahrenheit	81	74	70
		Degrees Rankine	541	534	530
Pg	Stack static pressure	inch H2O	-56	-57	-57
		inch Hg	(4.12)	(4.19)	(4.19)
Ps	Absolute stack gas pressure	inch Hg	26.04	25.99	25.94
Blower Outlet					
Ts	Stack temperature	Degrees Fahrenheit	110	109.2	109.2
		Degrees Rankine	570	569.2	569.2
Pg	Stack static pressure	inch H2O	66.4	65.0	64.8
		inch Hg	4.89	4.78	4.76
		psig	2.40	2.35	2.34
Pbar	Barometric pressure	inch Hg	30.16	30.18	30.13
Ps	Absolute stack gas pressure	inch Hg	35.05	34.96	34.89
Ms	Molecular weight of stack gas, wet	lb/lb-mole	27.06	27.16	27.28
Vs	Average stack gas velocity	feet per second	33.8	34.7	34.5
Qact	Volumetric Flow	actual cubic feet per minute	1,200	1,233	1,227
Qstd	Volumetric Flow at actual methane content	standard cubic feet per minute *	1,019	1,059	1,059
Qstd corr	Volumetric Flow at 50% methane	standard cubic feet per minute **	1,168	1,165	1,131
Ht HHV	Heat input	MMBtu per hour HHV	35.47	35.36	34.33
Ht LHV	Heat input	MMBtu per hour LHV	31.93	31.83	30.91
	Methane Content	%, vol/vol wet	57.30%	55.00%	53.37%
Diff. between pitot tube and orifice reading:			-1.2%	0.7%	0.9%
FACILITY ORIFICE FLOW METER:					
dP	Delta pressure across orifice plate	inches H2O	7.50	7.80	7.80
Qact	Volumetric Flow	acfm	950	970	970
Qstd	Volumetric Flow at actual methane content	standard cubic feet per minute *	1,031	1,051	1,050
Qstd	Volumetric Flow at 50% methane	standard cubic feet per minute **	1,182	1,157	1,120
Ht HHV	Heat input	MMBtu per hour HHV	35.88	35.11	34.02
Ht LHV	Heat input	MMBtu per hour LHV	32.30	31.61	30.62
* Standard conditions are corrected to 68 degrees F and 29.92 in Hg at actual methane content.					
** Standard conditions corrected to 50 % methane content.					
Input values are in blue or bold.					
Calculated output values are in black or not bold.					
Calculation Formulas:					
Vs = Kp*Cp*(sqrt dP) * sqrt (Ts/(Ps*Ms))					
Qact = Vs * A * 60					
Qstd = Qact * Tstd/ Ts * Ps/Pstd					
Flow, ACFM = 96.3221*SQRT(dP)*SQRT((460+Temperature)/(2.703*(Pressure +14.7)))					
Conversions and constants					
13.5958 in H2O/in Hg					
1 PSI = 2.036 in HG					
1 PSI = 27.68 in WG					
Tstd = 528 degrees R					
Pstd = 29.92 in Hg					
Methane heat content = 1,012 BTU per scf HHV					
Methane heat content = 911 BTU per scf LHV					
			Page 076		

Landfill Gas Flow Measurements			
Crapo Hill Landfill, New Bedford/Dartmouth			
Measurements by	TY, EN	TY, EN	TY, EN
Date	4-Oct-23	14-Nov-23	8-Dec-23
Time	14:00	12:40	12:30
Flow valve			
Pipe inside diameter, inches	10.42	10.42	10.42
Ambient Temperature, F	66	41	30
Barometric Pressure, In Hg	30.16	30.18	30.13
Blower Inlet Temperature, F	81	74	70
Outlet Temperature, F	110	109.2	109.2
Blower Inlet Pressure (SP), In H2O	-56	-57	-57
Blower Outlet Pressure, PSIG	2.40	2.35	2.34
Blower Outlet Pressure, In H2O	66.43	65.05	64.77
Measurement			
Manometer			
Pitot Tube			
Velocity Pressure (dP)			
Point			
1	0.18	0.20	0.20
2	0.20	0.21	0.21
3	0.21	0.22	0.22
4	0.21	0.23	0.23
5	0.21	0.23	0.23
6	0.21	0.23	0.23
7	0.21	0.22	0.22
8	0.21	0.22	0.22
9	0.19	0.20	0.20
Average	0.203	0.218	0.218
Gas Composition			
Compound, %v/v			
Methane (CH4)	57.3%	55.0%	53.4%
Carbon dioxide (CO2)	39.3%	37.8%	37.0%
Oxygen (O2)	0.20%	0.25%	0.61%
Balance gas	3.20%	6.90%	9.00%
Total	100.0%	100.0%	100.0%
Moisture (H2O) (included in balance gas)	3.6%	2.8%	2.5%
Molecular weight, lb/lb-mole wet	27.06	27.16	27.28
H2S, PPMV			
Pre-calibration LFG flow, scfm			
Post-calibration LFG flow, scfm			

Measurement confirmation/calibration for pressure and temperature					
Measurements by					
Date			TY, EN 4-Oct-23	TY, EN 14-Nov-23	TY, EN 8-Dec-23
Time			14:00	12:40	12:30
Pressure and Temperature Measurements					
<u>Facility Flow Measurement Point</u>					
Facility Pressure monitor, inches WG			2.40	2.35	2.34
Measurement Type		Gauge			
Independent Pressure monitor, inches WG			2.40	2.33	2.35
Measurement Type		Manometer			
Difference in Pressure, %			0.0%	-0.9%	0.4%
Adjusted Pressure, in WG			2.40	2.35	2.34
Facility Temperature monitor, F					
Facility Temperature monitor, R			110	109.2	109.2
Measurement Type		Gauge	570	569.2	569.2
Independent Temperature monitor, F			110	110	110
Facility Temperature monitor, R			570	570	570
Measurement Type		Thermometer			
Difference in Temperature, %			0.0%	0.1%	0.1%
Adjusted Temperature, F			110	110	110
<u>Calibration Flow Measurement Point</u>					
Facility Pressure monitor, inches WG			-56	-57	-57
Measurement Type		Transducer			
Independent Pressure monitor, inches WG			-56	-57	-57
Measurement Type		Manometer			
Difference in Pressure, %			0.0%	0.0%	0.0%
Adjusted Pressure, in WG			-56	-57	-57
Facility Temperature monitor, F					
Facility Temperature monitor, R			81	74	70
Measurement Type		Gauge	541	534	530
Independent Temperature monitor, F			80	75	70
Facility Temperature monitor, R			540	535	530
Measurement Type		thermometer			
Difference in Temperature, %			-0.2%	0.2%	0.0%
Adjusted Temperature, F			81	74	70

CommonWealth New Bedford Energy, LLC
 Greater New Bedford LFG Utilization Project
 300 Samuel Barnett Blvd.
 New Bedford, Massachusetts
 (508) 985-0923

'California Analytical' Analyzer Calibration Results
California Analytical Instrument, Model 602P NDIR, Serial #S07002

Month: Oct-23		Methane (% v/v) measurements							Oxygen (% v/v) measurements				CO2 (% v/v) measurements			
Week	Date	LFG Temp @ blower inlet	Cal Gas dry	Cal Gas wet	Pre-calibration	Zero gas	Span gas	Post-calibration	Pre-calibration	Zero gas	Span gas	Post-calibration	Pre-calibration	Zero gas	Span gas	Post-calibration
10/2/23	10/6/23	74 F	54.6%	54.04%	56.29%	0.01%	52.42%	56.39%	0.41%	0.00%	8.97%	0.40%	38.80%	0.02%	54.06%	38.97%
10/9/23	10/13/23	72 F	54.6%	54.08%	55.92%	0.03%	52.56%	56.02%	0.54%	0.01%	8.92%	0.50%	38.82%	0.05%	53.58%	39.04%
10/16/23	10/20/23	72 F	54.6%	54.08%	56.24%	-0.03%	55.93%	56.17%	0.34%	-0.01%	9.32%	0.34%	39.18%	-0.04%	56.53%	39.03%
10/23/23	10/27/23	71 F	54.6%	54.09%	55.30%	-0.01%	54.96%	55.37%	0.42%	0.00%	9.13%	0.42%	38.43%	0.00%	55.32%	38.46%

CommonWealth New Bedford Energy, LLC
 Greater New Bedford LFG Utilization Project
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 (508) 985-0923

'California Analytical' Analyzer Calibration Results
California Analytical Instrument, Model 602P NDIR, Serial #S07002

Month: Nov-23		Methane (% v/v) measurements							Oxygen (% v/v) measurements				CO2 (% v/v) measurements			
Week	Date	LFG Temp @ blower inlet	Cal Gas dry	Cal Gas wet	Pre-calibration	Zero gas	Span gas	Post-calibration	Pre-calibration	Zero gas	Span gas	Post-calibration	Pre-calibration	Zero gas	Span gas	Post-calibration
10/30/23	11/3/23	70 F	54.6%	54.11%	55.61%	0.03%	53.84%	55.57%	0.36%	-0.01%	9.15%	0.35%	38.66%	0.01%	55.38%	38.68%
11/6/23	11/10/23	68 F	54.6%	54.14%	55.21%	0.02%	55.07%	54.97%	0.28%	-0.01%	9.18%	0.26%	38.62%	0.00%	55.70%	38.55%
11/13/23	11/17/23	70 F	54.6%	54.11%	54.74%	0.00%	52.02%	55.10%	0.49%	0.01%	8.88%	0.48%	37.81%	0.04%	53.30%	38.30%
11/20/23	11/27/23	68 F	54.6%	54.14%	54.61%	-0.01%	54.55%	54.55%	0.44%	0.00%	9.16%	0.45%	38.25%	-0.02%	55.19%	38.16%

CommonWealth New Bedford Energy, LLC
 Greater New Bedford LFG Utilization Project
 300 Samuel Barnett Blvd.
 New Bedford, Massachusetts
 (508) 985-0923

'California Analytical' Analyzer Calibration Results
California Analytical Instrument, Model 602P NDIR, Serial #S07002

Month: Dec-23		Methane (% v/v) measurements							Oxygen (% v/v) measurements				CO2 (% v/v) measurements			
Week	Date	LFG Temp @ blower inlet	Cal Gas dry	Cal Gas wet	Pre-calibration	Zero gas	Span gas	Post-calibration	Pre-calibration	Zero gas	Span gas	Post-calibration	Pre-calibration	Zero gas	Span gas	Post-calibration
11/27/23	12/1/23	67 F	54.6%	54.15%	54.80%	0.00%	54.97%	54.74%	0.52%	0.00%	9.14%	0.51%	38.33%	-0.05%	55.62%	38.03%
12/4/23	12/8/23	66 F	54.6%	54.17%	55.27%	-0.02%	53.88%	55.26%	0.37%	0.00%	9.09%	0.36%	38.48%	-0.03%	54.98%	38.44%
12/11/23	12/15/23	66 F	54.6%	54.17%	54.23%	0.00%	54.20%	54.38%	0.46%	0.01%	9.10%	0.44%	38.55%	-0.02%	55.70%	38.50%
12/18/23	12/22/23	62 F	54.6%	54.22%	51.75%	0.01%	56.33%	51.84%	1.11%	-0.01%	9.33%	1.08%	36.02%	-0.01%	56.85%	35.93%
12/25/23	12/29/23															

Exhibit 7:
Attestation Statement

Attestation Statement

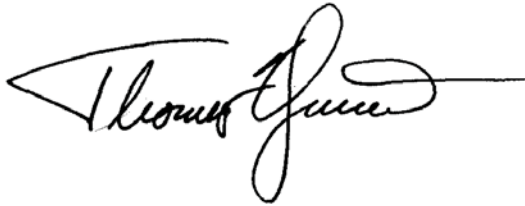
As an officer of Commonwealth New Bedford Energy LLC (CNBE) I hereby certify that the verified carbon units (VCUs) verified under the verified carbon standard (VCS) for the period October 1, 2023 through December 31, 2023 from the Project Activity will be registered on the VERRA Registry only.

Thomas Yeransian

Name

Principal of Commonwealth Resource Management Corporation,
Member of Commonwealth New Bedford Energy LLC

Title

A handwritten signature in black ink, appearing to read "Thomas Yeransian", with a long horizontal flourish extending to the right.

Signature

Date: August 29, 2024

Exhibit 8:

Permits and Other Regulatory Documentation

1. Amended Final Air Quality Operation Permit (Renewal) Issued August 3, 2022.
2. NMOC Emission Rate Report, September 7, 2023. The NMOC Emission Report demonstrates that the NMOCs emissions continue to be below the NSPS applicability threshold and therefore the Crapo Hill Landfill is not subject to the requirements of NSPS.



Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Bethany A. Card
Secretary

Martin Suuberg
Commissioner

AMENDED FINAL AIR QUALITY OPERATING PERMIT

Issued by the Massachusetts Department of Environmental Protection ("Department" or "MassDEP") pursuant to its authority under M.G.L. c. 111, §142B and §142D, 310 CMR 7.00 et seq., and in accordance with the provisions of 310 CMR 7.00: Appendix C.

ISSUED TO ["the Permittee"]:

CommonWealth New Bedford Energy, LLC
1 Bornheimer Place
Scarborough, ME 04074

INFORMATION RELIED UPON:

Application No. 17-AQ14/12-000003-APP
Application No. 4B04015
Approval No. SE-13-020
Application No. 22-AQ11-0002-AMD
ePlace Authorization No.: AQ-14-0000105

FACILITY LOCATION:

CommonWealth New Bedford Energy, LLC
300 Samuel Barnet Boulevard
Dartmouth, MA

FACILITY IDENTIFYING NUMBERS:

AQ ID: 1200624
FMF FAC No.: 402936
FMF RO No.: 402937

NATURE OF BUSINESS:

Electric Power Generation

Standard Industrial Classification (SIC): 4911
North American Industrial Classification System (NAICS): 221117

RESPONSIBLE OFFICIAL:

Name: Mr. Thomas Yeransian
Title: Principal of CommonWealth Resource Management Corporation, Managing Member of CommonWealth New Bedford Energy

FACILITY CONTACT PERSON:

Name: Mr. Thomas Yeransian
Title: Principal
Phone: (508) 339-3074
Email: tyeransian@crmcx.com
Fax: (508) 339-1326

This Operating Permit shall expire on July 23, 2025.

For the Department of Environmental Protection

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

Permit Chief, Bureau of Air and Waste

August 3, 2022

Date

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SPECIAL CONDITIONS FOR OPERATING PERMIT

1. PERMITTED ACTIVITIES

In accordance with the provisions of 310 CMR 7.00:Appendix C and applicable rules and regulations, the Permittee is authorized to operate air emission units as shown in Table 1 and exempt, and insignificant activities as described in 310 CMR 7.00:Appendix C(5)(h) and (i). The units described in Table 1 are subject to the terms and conditions shown in Sections 4, 5, and 6 and to other terms and conditions as specified in this Permit. Emissions from the exempt activities shall be included in the total facility emissions for the emission-based portion of the fee calculation described in 310 CMR 4.00 and this Permit.

A. DESCRIPTION OF FACILITY AND OPERATIONS

CommonWealth New Bedford Energy, LLC, (CNBE) operates the Greater New Bedford LFG Utilization Project, a landfill gas (LFG) to energy, electric power generation facility ("Facility") located at the Crapo Hill Landfill in Dartmouth, Massachusetts, with a United States Postal Service mailing address of 300 Samuel Barnet Boulevard, New Bedford MA 02745. The facility is a Major Source, as defined in 310 CMR 7.00: Appendix C, of Carbon Monoxide (CO), and therefore subject to the 310 CMR 7.00: Appendix C: Operating Permit and Compliance Program, and the requirement to obtain an Operating Permit. The approved operation consists of up to five (5) identical LFG-fired reciprocating engine/generator sets. The reciprocating engines are Caterpillar Model 3516 engines. Each engine/generator set has a nominal output rating of approximately 825 kW of electricity, and a maximum output rating of 900 kW of electricity. The engines are housed in a generation building. Each engine has a separate exhaust stack, which discharges through the generation building roof at an exhaust height of 30 feet above ground.

The primary fuel supplied to the Facility is LFG generated from the Crapo Hill Landfill, which is owned and operated by the Greater New Bedford Regional Refuse Management District (District). A small quantity of digester gas supplements the LFG fuel supplied to the Facility. CRMC Bioenergy LLC owns and operates an anaerobic digestion facility that is located adjacent to the Facility and supplies the digester gas to CNBE. The anaerobic digestion facility operates in accordance with MassDEP Air Quality Plan Approval SE-13-020, Transmittal X254662, dated September 26, 2013. Both the Facility and anaerobic digestion facility are located on property leased from the District.

As part of the Operating Permit (OP) renewal process, MassDEP evaluated the relationship between the District and CNBE, to determine if the parties were under common control for purposes of implementing the Title V Operating Permit program. Based on a review of the case-specific facts, factors, and circumstances, and informal guidance documents and determination letters from the United States Environmental Protection Agency, MassDEP determined that the District and CNBE do not meet the criteria for common control, and therefore, the two entities should continue to be considered separate sources.

MassDEP also evaluated the relationship between CRMC Bioenergy LLC and CNBE and has determined that CRMC Bioenergy LLC and CNBE meet the criteria for common control for purposes of implementing the Title V Operating Permit program. This anaerobic digester system is identified as Emission Unit No. 8 (EU-8) in this Operating Permit.

Other equipment associated with Emission Unit Nos. 1 through 5 (EU-1 through EU-5) includes a LFG production system which conditions the LFG with a knockout drum, 2 (redundant) blowers, a

cooler, and a coalescing filter. The condensate from the conditioned LFG drains into the Landfill's leachate collection system for disposal. The engines are serviced by a closed-loop lubricating oil system that consists of a 2,000-gallon virgin oil tank and a 2,000-gallon waste oil tank. Each engine is cooled by a glycol/water mix that is run through a radiator outside of the building.

The key parameters that govern the facility operation are monitored and recorded through a supervisory control and data acquisition (SCADA) system. This electronic operator interface system allows for remote access to facility operations and is the main monitoring/recordkeeping tool. In addition, the operation of the engine-generators is controlled by General Electric Fanuc programmable logic controllers (PLCs) located in the switchgear for each engine. Controls include air-to-fuel ratio control, load control, electric generation controls and protective relays. The operation and control of the motors are by variable frequency drives (VFDs). The VFDs operate motors that drive the LFG blowers, the cooler, the engine room ventilation fans, and the radiators.

The facility also maintains a cold cleaning degreaser-parts washer identified as Emission Unit No. 6 (EU-6). The parts washer is subject to and operated in accordance with 310 CMR 7.03(8) and 310 CMR 7.18(8)(a).

The OP renewal application includes the addition of Emission Unit No. 7 (EU-7). EU7 is an emergency reciprocating internal combustion engine (RICE) which operates an emergency engine generator, fires No.2 fuel oil, and is rated at 150 kilowatts of power generation output. The unit was installed on November 13, 2014, and is subject to the requirements of 310 CMR 7.26(42) *Emergency Engines and Turbines*, 40 CFR 60 Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* and 40 CFR 63 Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*.

CNBE is considered an Area Source for Hazardous Air Pollutants (HAPs). The facility has proposed to restrict facility-wide HAP emissions to less than twenty-five (25) tons per year (aggregate total HAPs) and less than ten (10 tons per year (any Single HAP). The four (4) existing engines (EU-1, EU-2, EU-3, and EU-4) were installed prior to June 12, 2006. EU-1, EU-2, EU-3, EU-4 are subject to requirements for existing, non-emergency, non-black start, LFG-fired, stationary, spark ignited, reciprocating internal combustion engines (RICE) at 40 CFR Part 63, Subpart ZZZZ. The facility is approved for the installation of one (1) additional engine (EU-5). At the time of installation of EU-5, the Permittee shall notify MassDEP, evaluate the installation according to applicable State and Federal regulations (such as, but not limited to 40 CFR Part 63 Subpart ZZZZ, and 40 CFR Part 60 Subpart JJJJ), and propose to modify the Operating Permit as necessary. The facility does not currently have any emission units subject to requirements at 40 CFR Part 64, Compliance Assurance Monitoring (CAM).

A list of any exempt activities shall be maintained as indicated in Section 3, Table 2. Operating Permit Section 4, Tables 3, 4, 5, and 6 list the facility emission limits along with monitoring, testing, record-keeping and reporting requirements. Operating Permit Section 4, Table 7 lists regulations that are not applicable to the facility at this time.

The Permittee is subject to the requirements of Greenhouse Gas Emissions Reporting as defined by MassDEP in 310 CMR 7.71(3)(a).

This Amended Final Air Quality Operating Permit, amends Final Air Quality Operating Permit issued by MassDEP on July 23, 2020, as a result of a change in the Permittee's mailing address.

2. EMISSION UNIT IDENTIFICATION

The following emission units (Table 1) are subject to and regulated by this Operating Permit:

Table 1			
EU	Description of EU	EU Design Capacity	Pollution Control Device (PCD)
EU-1 through EU-5 ^(note 1)	Caterpillar Model No. 3516, Internal Combustion Engine	10.07 MMBtu/hr (maximum energy input) 900 kilowatts (maximum generator output)	None
EU-6	Parts Washer (Cold Cleaning Degreaser)	Meets design specifications at 310 CMR 7.18(8)(a)3.	None
EU-7	Emergency Generator Kohler Model 150REOZJF Date of Installation: 2014	Maximum heat rate input 1.725MMBtu/hr Fuel: No. 2 Fuel Oil	None
EU-8	Anaerobic Digestion System	100,000 gallon digester capacity	None

Table 1 Key:

MMBtu/hr = Million British thermal units per hour
CMR = Code of Massachusetts Regulations

EU = Emission Unit
No. = number

Table 1 Note:

(1) Facility currently consists of four (4) identical Caterpillar Engines which are identified in this Operating Permit as EU-1, EU-2, EU-3 and EU-4. EU-5 has not yet been installed.

3. IDENTIFICATION OF EXEMPT ACTIVITIES

The following are considered exempt activities in accordance with the criteria contained in 310 CMR 7.00: Appendix C(5)(h):

Table 2	
Description of Current Exempt Activities	Reason
The list of current exempt activities is contained in the Operating Permit application and shall be updated by the Permittee to reflect changes at the facility over the Permit term. An up-to-date copy of exempt activities list shall be kept on-site at the facility and a copy shall be submitted to the MassDEP's Regional Office. Emissions from these activities shall be reported on the annual emissions statement pursuant to 310 CMR 7.12.	310 CMR 7.00: Appendix C(5)(h)

Table 2 Key:

MassDEP = Massachusetts Department of Environmental Protection

CMR = Code of Massachusetts Regulations

4. APPLICABLE REQUIREMENTS

A. OPERATIONAL AND/OR PRODUCTION EMISSION LIMITS AND RESTRICTIONS

The Permittee is subject to the limits/restrictions as contained in Table 3 below:

Table 3					
EU	Fuel/Raw Material	Pollutant	Operational and/or Production Limits	Emissions Limits/Standards	Applicable Regulation and/or Approval No.
1,2,3,4,5 (per engine) (Note 2)	Landfill Gas/ Digester Gas	NO _x	N/A	0.166 lb/MMBtu	4B04015 SE-13-020
				0.60 g/bhp-hr	
				0.62 TPM	
				7.32 TPY ^(Note 1)	
		CO	N/A	0.83 lb/MMBtu	
				3.11 TPM	
				36.61 TPY ^(Note 1)	
		NMOC	N/A	0.083 lb/MMBtu	
				0.31 TPM	
				3.66 TPY ^(Note 1)	
		VOC	N/A	0.083 lb/MMBtu	
				0.31 TPM	
				3.66 TPY ^(Note 1)	
		PM/PM ₁₀ /PM _{2.5}	N/A	0.06 lb/MMBtu	
				0.21 TPM	
				2.40 TPY ^(Note 1)	
		SO ₂	LFG H ₂ S ≤ 200 ppm _v	0.064 lb/MMBtu	
				0.24 TPM	
				2.81 TPY ^(Note 1)	
1,2,3,4	Landfill Gas/ Digester Gas	HAP ^(Note 6)	Change oil and filter every 1440 hours of operation or annually ^(Note 3) , whichever comes first; Inspect spark plugs every 1440 hours of operation or annually, whichever comes first; and Inspect all hoses and belts every 1440 hours of operation or annually, whichever comes first, and replace as necessary.	40 CFR Part 63, Subpart ZZZZ §§ 63.6603(a), 63.6625(j) and Table 2d	
			At all times operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for	40 CFR Part 63, Subpart ZZZZ § 63.6605(a) and (b)	

Table 3

Table 3						
EU	Fuel/Raw Material	Pollutant	Operational and/or Production Limits		Emissions Limits/Standards	Applicable Regulation and/or Approval No.
1,2,3,4	Landfill Gas/ Digested Gas	HAP ^(Note 6)	minimizing emissions.			
			i. Operate and maintain the stationary RICE according to the manufacturer’s emission-related operation and maintenance instructions; or ii. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.			40 CFR Part 63, Subpart ZZZZ § 63.6625(e) and Table 6
			Minimize the engine’s time spent at idle during startup and minimize the engine’s startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes.			40 CFR Part 63, Subpart ZZZZ § 63.6625(h) and Table 2d
1,2,3,4,5 (Combined) (Note 4)	Landfill Gas/ Digester Gas	NO _x	See heat input limit below	3.10 TPM	4B04015 SE-13-020	
				36.6 TPY ^(Note 1)		
		CO	See heat input limit below	15.5 TPM		
				183.0 TPY ^(Note 1)		
		VOC	See heat input limit below	1.55 TPM		
				18.3 TPY ^(Note 1)		
		NMOC	See heat input limit below	1.55 TPM		
				18.3 TPY ^(Note 1)		
		NMOC	Operate each EU at all times when the collected LFG is routed to the EU	Each EU shall reduce NMOC emissions by 98% by weight, or reduce the stack NMOC concentration to < 20 ppm _{vd} , as hexane, at 3% O ₂		
		PM/PM ₁₀ /PM _{2.5}	See heat input limit below	1.05 TPM		
				12.2 TPY ^(Note 1)		
SO ₂	See heat input limit below	1.20 TPM				
		14.0 TPY ^(Note 1)				
All	Maximum heat input of LFG/DG shall not exceed 37,460 MMBtu per month	N/A				
		Maximum heat input of LFG/DG shall not exceed 440,925 MMBtu in any consecutive 12 month period	N/A			
1,2,3,4,5	Landfill Gas/ Digester Gas	Visible Emissions	Stack emissions shall not exceed 0% opacity (no visible emissions), with the exception of up to five (5) minutes during startup. During startup visible emissions shall comply with the provisions of 310 CMR 7.06.			4B04015 SE-13-020
6	Non-halogenated solvent	VOC	Solvent consumption < 100 gallons per month per unit	Operating procedures identified at 310 CMR 7.18(8)(e); and design features and specifications identified at 310 CMR		310 CMR 7.03(8) 310 CMR 7.18(8)(a) 310 CMR 7.18(8)(e)

Table 3

EU	Fuel/Raw Material	Pollutant	Operational and/or Production Limits	Emissions Limits/Standards	Applicable Regulation and/or Approval No.
				7.18(8)(a)	
7	No 2. Fuel Oil	All	$\leq$ 100 hours per calendar year for maintenance and testing as recommended by the manufacturer; and As part of the above, $\leq$ 50 hours per calendar year for non-emergency situations; and During an emergency		310 CMR 7.26(42)(d)1.a.
			Affected source must meet the requirements of this part by meeting the requirements of 40 CFR Part 60, Subpart IIII, for compression ignition engines		40 CFR Part 63, Subpart ZZZZ § 63.6590(c) 310 CMR 7.26(42)(d)1.b.
		NMHC + NO _x	As noted below	4.0 g/kW-hr	40 CFR Part 60, Subpart IIII § 60.4211(a) and (c) § 60.4205(b) § 60.4202(a)(2)
		CO	As noted below	3.5 g/kW-hr	
		PM	As noted below	0.20 g/kW-hr	
		Sulfur in fuel	N/A	$\leq$ 0.0015 percent	310 CMR 7.26(42)(c) 310 CMR 7.05(1)(a)1.: Table 1
		All	N/A	Shall comply with applicable Emission limits set by US EPA for non-road engines (40 CFR 89).	310 CMR 7.26(42)(b)
			Operate and maintain engine and control device according to manufacturer's emission-related written instructions. <i>See Table 4, Proviso No. 19</i>		40 CFR Part 60, Subpart IIII § 60.4211(a)(1) and (2)
			Limited to operation as noted at § 60.4211(f) for emergency stationary ICE. <i>See Table 4, Provisos Nos. 16, 17, & 18</i>		40 CFR Part 60 Subpart IIII 310 CMR 7.26(42)(d)1.
		Smoke	N/A	< No. 1 of Chart ⁽¹⁾ , except $\geq$ No. 1 to < No. 2 of Chart for $\leq$ 6 minutes during any one hour, no time to equal or exceed No. 2 of the Chart.	310 CMR 7.26(42)(d)5. 310 CMR 7.06(1)(a)

Table 3					
EU	Fuel/Raw Material	Pollutant	Operational and/or Production Limits	Emissions Limits/Standards	Applicable Regulation and/or Approval No.
7	No 2. Fuel Oil	Opacity	N/A	≤ 20 % except >20% to ≤ 40 % for ≤ 2 minutes during any 1 hour	310 CMR 7.26(42)(d)5. 310 CMR 7.06(1)(b)
		Sound		Constructed, located, operated and maintained to comply with 310 CMR 7.10	310 CMR 7.26(42)(d)2. 310 CMR 7.10 (State Only Requirement)
		All	Limited to stack height and Emission dispersion requirements. <i>See Table 4 Proviso No. 21</i>	N/A	310 CMR 7.26(42)(d)3.a.
8	Digester Gas	N/A	3,000 gallons of feedstock per day based on a 90 day rolling average	N/A	SE-13-020
Facility-wide	All	Greenhouse Gas (Note 5)	N/A	N/A	310 CMR 7.71 (State Only Requirement)
	All	Any Single HAP	N/A	< 10 TPY	17-AQ14/12-000003-APP
		Total HAP		< 25 TPY	

Table 3 Key:

Btu = British thermal units
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Regulations
CO = Carbon Monoxide
DG = Digester Gas
EU = Emission Unit
g/bhp-hr = grams per brake horsepower for one hour (engine output)
g/kW-hr = grams per kilowatt for one hour (engine output)
HAP = Hazardous Air Pollutant as listed in the 1990 Clean Air Act Amendments, Section 112(b)
H₂S = Hydrogen Sulfide
HAP = Hazardous Air Pollutant(s)
ICE = Internal Combustion Engine
lb/MMBtu = pound per Million British thermal units
LFG = Landfill Gas
MMBtu = Million Btu
N/A = Not Applicable
No. = Number
Nos. = Numbers
NMHC = Non-Methane HydroCarbons
NMOC = Non-Methane Organic Compounds

NO_x = Nitrogen Oxides
O₂ = Oxygen
PM = Total Particulate Matter
PM_{2.5} = Particulate Matter less than or equal to 2.5 microns in diameter
PM₁₀ = Particulate Matter less than or equal to 10 microns in diameter
ppm_v = Parts per million, by volume
ppm_{vd} = parts per million, by volume, dry basis
RICE = Reciprocating Internal Combustion Engine
SO₂ = Sulfur Dioxide
TPM = Tons Per Month
TPY = Tons Per consecutive 12-month period ¹
VOC = Volatile Organic Compound
% = Percent
≥ = Greater than or equal to
< = Less than
≤ = Less than or equal to
+ = added to
§ = Section
§§ = Sections

Table 3 Foot Notes:

1. To calculate the amount of a consecutive 12 month rolling period take the current calendar month amount and add it to the previous 11 calendar months total amount.
2. Emission limits listed are for individual emission units.
3. Sources have the option to utilize an oil analysis program as described in § 63.6625(j) in order to extend the specified oil change requirement in Table 2d of this subpart.
4. Emission limits and Heat Input limits represent a combined total for up to five emission units.
5. Greenhouse Gas means any chemical or physical substance that is emitted into the air and that MassDEP may reasonably anticipate will cause or contribute to climate change including, but not limited to: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).
6. Hazardous Air Pollutants are as listed in the 1990 Clean Air Act (CAA) Amendments, Section 112(b).
7. Chart means the Ringelmann Scale for grading the density of smoke, as published by the United States Bureau of Mines and as referred to in the Bureau of Mines Information Circular No. 8333, or any smoke inspection guide approved by the MassDEP.

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to the monitoring/testing, record keeping, and reporting requirements as contained in Tables 4, 5, and 6 below and 310 CMR 7.00 Appendix C (9) and (10) and applicable requirements contained in Table 3:

Table 4	
EU	Monitoring And Testing Requirements
EU-1 EU-2 EU-3 EU-4	1. In accordance with Plan Approval No. 4B04015, one operable oxygen analyzer shall be maintained on-site and record shall be maintained of the stack outlet oxygen (O ₂) levels at least once per week on each engine.
	2. As applicable, and in lieu of oil change required in Table 3, analyze engine oil for Total Acid Number, viscosity, and percent water content as specified at 40 CFR §63.6625(j).
	3. In accordance with Plan Approval No. 4B04015, each engine/generator set shall be continuously monitored for run time and kW produced.
	4. In accordance with Plan Approval No. 4B04015, a LFG flow recorder shall be maintained so that an on-site record of the total volume of LFG (scf) fired by the five (5) engine/generator sets will be available by date and time period.
	5. In accordance with Plan Approval No. 4B04015, the heat input of LFG (Btu) fired in each EU shall be determined by gas chromatograph and/or field measurements for each month and for each consecutive 12-month period.
	6. In accordance with 310 CMR 7.00: Appendix C(9)(b)2., monitor the H ₂ S concentration (ppm _v) of the LFG to be combusted on a monthly basis. The sampling shall be conducted using a protocol and test method(s) that are approved by MassDEP.
	7. In accordance with 310 CMR 7.00: Appendix C(9)(b)2., perform monthly visible emissions observations of each engine exhaust, in accordance with 40 CFR Part 60, Appendix A, Method 22, for a time period no less than fifteen (15) minutes while the engines are in operation.
	8. In accordance with Plan Approval No. 4B04015, the ability of the facility to maintain emission rates at or below approved levels shall be demonstrated to the MassDEP in the future if deemed necessary. Compliance testing, if requested by MassDEP, shall be conducted in accordance with MassDEP's "Guideline for Source Emission Testing" and test methods and procedures contained in 40 CFR Part 60, Appendix A.
EU-5	9. In accordance with Plan Approval No. 4B04015, the facility shall be constructed to accommodate the emission testing requirements contained in 40 CFR Part 60, Appendix A.
	10. In accordance with Plan Approval No. 4B04015, emission testing shall be performed to determine compliance with approved CO, NMOC and NO _x emission limits. Emission testing shall be completed within ninety (90) days from the date the engine commences LFG burning after startup of the facility.
	11. Upon installation the Permittee shall conduct, as applicable, monitoring and performance testing required at 40 CFR Part 60 and 40 CFR Part 63.
	12. In accordance with Plan Approval No. 4B04015, a NO _x /CO optimization/minimization diagnostic emission test program shall be conducted prior to emission testing.

Table 4

EU	Monitoring And Testing Requirements
EU-6	13. In accordance with 310 CMR 7.18(8)(h), Persons subject to 310 CMR 7.18(8) shall, upon request of the MassDEP, perform or have performed test to demonstrate compliance. Testing shall be conducted in accordance with a method approved by the MassDEP and USEPA.
EU-7	14. In accordance with 40 CFR 60.4206, the Permittee must operate and maintain stationary CI ICE that achieve the emission standards as required in 40 CFR 60.4205(b) and 60.4202(a)(2) over the entire life of the engine.
	15. In accordance with 310 CMR 7.26(42)(d)1.c., and 40 CFR 60.4209(a), the Permittee must install a non-turn-back hour counter. The non-turn-back hour counter shall be operated and maintained in good working order.
	16. In accordance with 40 CFR 60.4211(f)(1), the Permittee may operate the emergency stationary ICE for emergency situations with no time limit.
	17. In accordance with 40 CFR 60.4211(f)(2)(i), the Permittee may operate the emergency stationary ICE for any combination of the purposes specified below for a maximum of 100 hours per calendar year. (i) Emergency Stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.
EU-7	18. In accordance with 40 CFR 60.4211(f)(3), the Permittee may operate the Emergency stationary ICE for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in paragraph (f)(2)(i) of this section. Except as provided in paragraph (f)(3)(i) of this section, the 50 hours per year for nonemergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity. (i) The 50 hours per year for nonemergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: <i>A. The Engine is dispatched by the local balancing authority or local transmission and distribution system operator;</i> <i>B. The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.</i> <i>C. The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or Guidelines.</i> <i>D. The power is provided only to the facility itself or to support the local transmission and distribution system.</i> <i>E. The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.</i>

Table 4

EU	Monitoring And Testing Requirements
EU-7	19. In accordance with 310 CMR 7.26(42)(e)2., MassDEP may require emission or other monitoring to assure compliance with the requirements of 310 CMR 7.26(42).
	20. In accordance with 310 CMR 7.26(42)(e)3., any testing when required shall comply with the following: a) Tests to certify compliance with emission limitations must be performed in accordance with EPA reference Methods, California Air Resources Board Methods approved by EPA, or equivalent methods as approved by MassDEP and EPA. b) Particulate matter from liquid fuel reciprocating engines shall be determined using Method 8178 D2 of the International Organization for Standardization. c) MassDEP may require emission or other testing to assure compliance with the emission limitations or fuel requirements.
	21. In accordance with 310 CMR 7.26(42)(d)3.a., the engine shall utilize an exhaust stack that discharges so as to not cause a condition of air pollution (310 CMR 7.01(1)). Exhaust stacks shall be configured to discharge the combustion gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted combustion gases. Any emission impacts of exhaust stacks upon sensitive receptors including, but not limited to, people, windows and doors that open, and building fresh air intakes shall be minimized by employing good air pollution control engineering practices. Such practices include without limitation: i) Avoiding locations that may be subject to downwash of the exhaust; and ii) Installing stack(s) of sufficient height in locations that will prevent and minimize flue gas impacts upon sensitive receptors.
EU-8	22. In accordance with Plan Approval SE-13-020, the Permittee shall continuously monitor the pressure in the Blending and Mixing tank to ensure it is maintained at a negative pressure at all times.
	23. In accordance with Plan Approval SE-13-020, the Permittee shall continuously monitor the biogas production rate of the anaerobic digestion system.
	24. In accordance with Plan Approval SE-13-020, if and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13.
Facility-wide	25. In accordance with Plan Approval No. 4B04015 and 310 CMR 7.12, monitor operations such that information may be compiled for the annual preparation of a Source Registration/Emission Statement.
	26. In accordance with AQ14/12-000003-APP, the Permittee shall monitor so that comprehensive and accurate records are maintained onsite to demonstrate compliance with the facility-wide HAP emission limits contained in Table 3. Monitor so that records are compiled for actual emissions of all HAPs emitted for each calendar month and for each consecutive twelve-month period and compiled no later than the 15 th day following each month.
	27. In accordance with 310 CMR 7.13(1) Any person owning, leasing, operating or controlling a facility for which the MassDEP has determined that stack testing is necessary to ascertain compliance with the MassDEP's regulations or design approval provisos shall cause such stack testing: a) to be conducted by a person knowledgeable in stack testing, b) to be conducted in accordance with procedures contained in a test protocol which has been approved by the MassDEP, c) to be conducted in the presence of a representative of the MassDEP when such is deemed necessary, and d) to be summarized and submitted to the MassDEP with analysis and report within such time as agreed to in the approved test protocol.

Table 4	
EU	Monitoring And Testing Requirements
Facility-wide	28. In accordance with 310 CMR 7.13(2) Any person having control of a facility relative to which the MassDEP determines that stack testing (to ascertain the mass emission rates of air contaminants emitted under various operating conditions) is necessary for the purposes of regulatory enforcement or determination of regulatory compliance shall cooperate with the MassDEP to provide: a) entrance to a location suitable for stack sampling, b) sampling ports at locations where representative samples may be obtained, c) tagging and ladders to support personnel and equipment for performing the tests, d) a suitable power source at the sampling location for the operation of sampling equipment, and e) such other reasonable facilities as may be requested by the MassDEP.
	29. In accordance with 310 CMR 7.00: Appendix C (9)(b), the Permittee shall; a) comply with all emissions monitoring and analysis procedures or test methods required under the applicable requirements, including those promulgated pursuant to 42 U.S.C. 7401, §§ 504(a) and 504(b) or 114(a)(3); b) if the applicable requirement does not require periodic testing or instrumental or non-instrumental monitoring (which may consist of record keeping designed to serve as monitoring), then the Permittee shall perform periodic monitoring sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit. Such monitoring requirements shall assure the use of terms, test methods, units, averaging periods, and other statistical conventions consistent with the applicable requirement. Record keeping provisions may be sufficient to meet the requirements; and c) comply with requirements concerning the use, maintenance and installation of monitoring equipment or methods as the MassDEP deems appropriate.
	30. In accordance with 310 CMR 7.71(1) and Appendix C(9), the Permittee shall establish and maintain data systems or record keeping practices (e.g. fuel use records, SF ₆ usage documentation, Continuous Emissions Monitoring System) for greenhouse gas emissions to ensure compliance with the reporting provisions of M.G.L. c. 21N, the Climate Protection and Green Economy Act, St. 2008, c. 298, § 6. (State Only Requirement)

Table 4 Key:

Btu= British thermal units
c. = chapter
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Regulations
CO = Carbon Monoxide
e.g. = for example
EU = Emission Unit
HAP = Hazardous Air Pollutant, as listed in the 1990 Clean Air Act (CAA) Amendments, Section 112(b)
H₂S = Hydrogen Sulfide
ICE = Internal Combustion Engine
kW = kiloWatt
LFG = Landfill Gas
M.G.L. = Massachusetts General Law
NERC = North American Electric Reliability Corporation
NMOC = Non-Methane Organic Compound
NO_x = Nitrogen Oxides
No. = Number
O₂ = Oxygen
ppm_v = parts per million, by volume
scf = standard cubic foot
SF₆ = Sulfur Hexafluoride
SI = Spark Ignition
U.S.C. = United States Code
USEPA = United States Environmental Protection Agency
§ = Section
§§ = Sections

Table 5	
EU	Record Keeping Requirements
EU-1 EU-2 EU-3 EU-4 EU-5	1. In accordance with Plan Approval No. 4B04015, a record of stack oxygen levels, as determined at least weekly during operation, shall be maintained for each engine.
	2. In accordance with Plan Approval No. 4B04015, a copy of the NO _x /CO optimization/minimization program report for each engine shall be maintained on-site.
	3. In accordance with Plan Approval No. 4B04015, a record of the volume of LFG (scf) fired in each engine/generator set for each month and for each consecutive 12 month period shall be maintained on-site. This record shall take into account the total volume of LFG fired by the combined engine/generator sets, and the individual engine/generator set run time and amount of electricity produced.
	4. In accordance with Plan Approval No. 4B04015, the heat input of LFG (Btu) fired in the engine/generator sets for each month and consecutive 12 month period shall be maintained on-site.
	5. In accordance with Plan Approval No. 4B04015, a record of NO _x , CO, NMOC, VOC, PM, and SO ₂ monthly and consecutive 12 month period emission rate records for each engine/generator set shall be maintained on-site.
	6. In accordance with Plan Approval No. 4B04015, a copy of the Standard Operating and Maintenance Procedures for all subject equipment shall be maintained on-site.
	7. In accordance with Plan Approval No. 4B04015, an operation log, or other record keeping system, shall be maintained on-site at a level of detail sufficient to document that the Operation and Emission Limits in Table 3 are not exceeded.
	8. In accordance with 310 CMR 7.00: Appendix C(10)(b), maintain records of the monthly H ₂ S monitoring results to include H ₂ S concentration (ppm _v) in LFG and the corresponding SO ₂ emission calculations.
	9. In accordance with 310 CMR 7.00: Appendix C(10)(b), maintain records of the monthly visible emissions observations to include date and time period of the observations, the result of observations with respect to visible emissions, and a description of the facility operations at the time of the observation.
	10. In accordance with Plan Approval No. 4B04015, all operating and monitoring records, including emission test reports, shall be maintained for the life of the facility; the five most recent years of data/records shall be maintained on-site.
	11. In accordance with 40 CFR 63.6655(a)(2), maintain records of the occurrence and duration of each malfunction of operation or the air pollution control and monitoring equipment.
	12. In accordance with 40 CFR 63.6655(a)(5), maintain records of actions taken during periods of malfunction to minimize emissions in accordance with § 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.
	13. In accordance with 40 CFR 63.6655(d), maintain records of manufacturer's emission-related operation and maintenance instructions; or the facility maintenance plan, if developed as allowed at 40 CFR 63, Subpart ZZZZ, Table 6.

Table 5	
EU	Record Keeping Requirements
EU-1 EU-2 EU-3 EU-4 EU-5	14. In accordance with 40 CFR 63.6655(d) and (e), maintain records of the maintenance (and monitoring as specified at §63.6625(j), if applicable) conducted on the stationary RICE in order to demonstrate that the RICE was operated and maintained according the requirements of 40 CFR 63, Subpart ZZZZ, Table 2d and Table 6.
EU-6	15. In accordance with 310 CMR 7.03(6) and 7.18(8)(g), prepare and maintain records sufficient to demonstrate continuous compliance as stated in 310 CMR 7.18(8)(f) and with the monthly solvent usage restriction in 310 CMR 7.03(8). Records shall include, but are not limited to: identity, quantity, formulation and density of solvent(s) used and waste solvent(s) generated.
EU-7	16. In accordance with 310 CMR 7.26(42)(f), the Permittee shall maintain records described in 310 CMR 7.26(42)(f)1. through 4. Such records shall be maintained on site or for remote locations, at the closest facility where records can be maintained and shall be made available to MassDEP or its designee upon request. The owner or operator shall certify that records are accurate and true in accordance with 310 CMR 7.01(2)(a) through (c). 1) Information on equipment type, make and model, and rated power output; 2) A log of operations, including date, time and duration of operation and reason for each start per 310 CMR 7.26(42)(d)1., fuel type and supplier; 3) Purchase orders, invoices, and other documents to substantiate information in the log; 4) Copies of certificates and documents from the manufacturer related to certificates.
EU-8	17. In accordance with Plan Approval SE-13-020, the Permittee shall continuously record the pressure in the Blending and Mixing tank to document it is maintained at negative pressure at all times.
	18. In accordance with Plan Approval SE-13-020, the Permittee shall maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. These records shall be compiled no later than the 15 th day following each month.
	19. In accordance with Plan Approval SE-13-020, the Permittee shall maintain records of monitoring and testing as required by Table 4.
	20. In accordance with Plan Approval SE-13-020, the Permittee shall maintain a copy of the most up-to-date SOMP for the EU(s) approved herein on-site.
	21. In accordance with Plan Approval SE-13-020, the Permittee shall maintain a record of routine maintenance activities performed on the approved EU(s) and monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	22. In accordance with Plan Approval SE-13-020, the Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s) and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
Facility-wide	23. In accordance with 310 CMR 7.71 (6) (b) and (c), the Permittee shall keep on site at the facility documents of the methodology and data used to quantify emissions for a period of 5 years from the date the document is created. The Permittee shall make these documents available to MassDEP upon request. (State Only Requirement).

Table 5	
EU	Record Keeping Requirements
Facility-wide	24. In accordance with AQ14/12-000003-APP, the Permittee shall maintain comprehensive and accurate records onsite to demonstrate compliance with the facility-wide HAP emission limits contained in Table 3. A record of all HAPs emitted for each calendar month and for each consecutive twelve-month period shall be maintained on-site. These records shall be compiled no later than the 15 th day following each month.
	25. In accordance with Plan Approval No. 4B04015, a record keeping system shall be established and maintained on-site. All records shall be maintained up-to-date such that the year-to-date information is readily available for MassDEP examination. Record keeping shall, at a minimum, include: a) a record of routine maintenance activities performed on emission unit control and monitoring equipment including, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed; and b) a record of all malfunctions on emission unit control and monitoring equipment shall include, at a minimum: the date and time the malfunctions occurred; a description of the malfunctions and the corrective actions taken; the date and time corrective actions were initiated; and the date and time corrective actions were completed and the emission unit returned to compliance. All records shall be kept on-site for five (5) years and shall be made available to MassDEP personnel upon request.
	26. In accordance with 310 CMR 7.12, maintain records to facilitate compilation of data for the required Source Registration submittal.
	27. In accordance with 310 CMR 7.12(3)(c), copies of Source Registration and other information supplied to MassDEP, to comply with 310 CMR 7.12, shall be retained by the facility owner/operator for five years from the date of submittal.
	28. In accordance with Plan Approval SE-13-020, the Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

Table 5 Key:

Btu = British thermal units
CFR= Code of Federal Regulations
CMR = Code of Massachusetts Regulations
CO = Carbon Monoxide
EU = Emission Unit
HAP = Hazardous air pollutant, as listed in the 1990 Clean Air Act (CAA) Amendments, Section 112(b)
H₂S = Hydrogen Sulfide
LFG = Landfill Gas
MassDEP = Massachusetts Department of Environmental Protection
NMOC = Non-Methane organic compounds
NO_x = Nitrogen Oxides
No.= Number
PM = Particulate Matter
ppm_v = parts per million, by volume
RICE = Reciprocating Internal Combustion Engine
scf = standard cubic foot
SO₂ = Sulfur Dioxide
VOC = Volatile Organic Compounds
§= Section

Table 6	
EU	Reporting Requirements
EU-1	1. In accordance with Plan Approval No. 4B04015, revisions to the Final Standard Operating and Maintenance Procedures shall be submitted to the MassDEP within seven (7) days from their initial use.
EU-2	2. In accordance with Plan Approval No. 4B04015, the MassDEP's Permit Chief for the Bureau of Air and Waste at this office must be notified by telephone or electronic mail within 24 hours, and with written notification within ten (10) days, after occurrence of any upsets or malfunctions to the facility equipment, air pollution control equipment, or monitoring equipment which result in an excess emission to the air and/or a condition of air pollution.
EU-3	
EU-4	
EU-5	
EU-5	3. In accordance with Plan Approval No. 4B04015, notification to the MassDEP, in writing, shall be made within 10 days from the date that EU-5 commences LFG or digester gas burning.
Facility-wide	4. In accordance with Plan Approval 4B04015 and 310 CMR 7.12, the Permittee shall submit a Source Registration/Emission Statement Form to MassDEP on an annual basis.
	5. In accordance with Plan Approval No. 4B04015, a stack test protocol shall be submitted to the MassDEP at least 30 days prior to the commencing of compliance testing. The final emission report shall be submitted to the MassDEP within 30 days from completion of on-site testing.
	6. In accordance with 310 CMR 7.13(1) and 7.13(2), if determined by MassDEP that stack testing is necessary to ascertain compliance with the Department's regulations or design approval provisos, the Permittee shall cause such stack testing to be summarized and submitted to MassDEP as prescribed in the agreed to pretest protocol.
	7. In accordance with 310 CMR 7.00: Appendix C(10)(c)., the Permittee shall report a summary of all monitoring data and related supporting information to MassDEP at least every six months (January 30 and July 30 of each calendar year).
	8. In accordance with General Condition 10 of this Permit, the Permittee shall submit the Annual Compliance report to MassDEP and USEPA by January 30 of each year.
	9. In accordance with 310 CMR 7.00: Appendix C (10)(f), the Permittee shall promptly report to the MassDEP all instances of deviations from permit requirements. This report shall include the deviation itself, including those attributable to upset conditions as defined in the permit, the probable cause of the deviation, and any corrective actions or preventative measures taken.
	10. Submit Annual Compliance report to MassDEP and USEPA by January 30 of each year and as required by General Condition 10 of this Permit.
	11. In accordance with 310 CMR 7.00: Appendix C (10)(h), all required reports must be certified by a responsible official consistent with 310 CMR 7.00: Appendix C (5)(c).
	12. Unless otherwise noted ^(Note 1) , all notifications and reporting required by this Operating Permit shall be sent to:
	Department of Environmental Protection Bureau of Air and Waste Southeast Regional Office 20 Riverside Drive Lakeville, MA 02347 ATTN: Chief, Air Permitting Telephone: (508) 946-2770 Electronic mail address: sero.air@mass.gov
	13. In accordance with 310 CMR 7.71(5), the Permittee shall electronically submit and certify by April 15 th of each year a greenhouse gas emissions report to MassDEP. (State Only Requirement).

Table 6 Key:

EU = Emission Unit
CMR = CMR = Code of Massachusetts Regulations
MassDEP = Massachusetts Department of Environmental Protection
USEPA = United States Environmental Protection Agency
No. = Number
LFG = Landfill Gas

Table 6 Note:

(1) The annual Source Registration/Emission Statement shall be submitted to the MassDEP office specified in the instructions.

C. GENERAL APPLICABLE REQUIREMENTS

The Permittee shall comply with all generally applicable requirements contained in 310 CMR 7.00 et seq. and 310 CMR 8.00 et. seq., when subject.

D. REQUIREMENTS NOT CURRENTLY APPLICABLE

The Permittee is currently not subject to the following requirements:

Table 7	
Regulation	Reason
310 CMR 7.16: Reduction of Single Occupant Commuter Vehicle Use	Facility is below employee threshold.
40 CFR Part 64: Compliance Assurance Monitoring	Facility has no subject emission units

Table 7 Key:

CFR = Code of Federal Regulations

CMR = Code of Massachusetts Regulations

5. SPECIAL TERMS AND CONDITIONS

The Permittee is subject to and shall comply with the following special terms and conditions that are not contained in Table 3, 4, 5, and 6:

Table 8	
EU	Special Terms and Conditions
EU-5	1. In accordance with AQ14/12-000003-APP, at the time of installation of EU-5, the Permittee shall notify MassDEP, evaluate the installation according to applicable State and Federal regulations (such as, but not limited to 40 CFR Part 63 Subpart ZZZZ, and 40 CFR Part 60 Subpart JJJJ), and propose to modify the Operating Permit as necessary.
EU-7	2. In accordance with 310 CMR 7.26(42)(b)3., the Permittee shall obtain from the supplier a statement that a certificate of conformity has been obtained from the USEPA. Pursuant to 40 CFR 89.105 as in effect October 23, 1998, any engine certified under the USEPA non-road standards is automatically certified to operate as an emergency engine pursuant to 310 CMR 7.26(42).
EU-8	3. In accordance with Plan Approval SE-13-020, in the event that the engines at the facility are not operational, all digested gas from the anaerobic digester system shall be routed to the flare.
Facility-wide	4. Emission Units EU-1 through EU-5 construction shall be consistent with the Equipment and Design Schedule in Plan Approval Nos. 4B04015 and SE-13-020 as follows: <u>Engine/Electric Generator Sets</u> Manufacturer Caterpillar (or equiv.) Model No. 3516 (or equiv.) Max. Heat Input 10.07 MMBtu/hr/engine @ 900 kW Fuel Landfill Gas / Digester Gas Maximum Output 900 kW/generator Nominal Output 825 kW/generator Max. Stack Exit Temperature 960 °F Stack Material Steel Stack Height 30 feet above ground Stack Exit Diameter 12 inches Silencer Manufacturer EM Products (or equiv.) Silencer Model No. JCS12-X2608 (or equiv.) <u>Approximate Facility Location</u> UTM Coordinates 334925 East, 4620880 North (Zone 19) Latitude/Longitude North 41° 43' 28", West 70° 59'
	5. Emission units EU-1 through EU-4 are subject to the requirements of 40 CFR 63.1-15, Subpart A, "General Provisions" [as indicated in Table"8" to Subpart ZZZZ of 40 CFR 63] except §§ 63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), 63.9(g) and 63.9(h) as specified at § 63.6645(a)(5). Compliance with all applicable provisions therein is required.
	6. In accordance with Plan Approval No. 4B04015, there shall be no direct release or bypass of landfill gas from the facility to the ambient air.
	7. In accordance with Plan Approval No. 4B04015, sound impacts shall not exceed 10 dB(A) above background and shall not cause a puretone condition as defined in the MassDEP's DAQC Policy No. 90-001. (State Only Requirement)

Table 8	
EU	Special Terms and Conditions
Facility-wide	8. In accordance with Plan Approval No. 4B04015, MassDEP personnel shall be provided immediate access to the plant site, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
	9. In accordance with Plan Approval No. 4B04015, if any nuisance condition(s) should be generated by the operation of this facility, immediate appropriate steps shall be taken to abate the nuisance condition(s).

Table 8 Key:

CFR = Code of Federal Regulations
dB(A) = decibels weighted for the “A” scale
hr = hour
MMBtu = Million British Thermal Units
° = degrees
' = minutes
“ = seconds
°F = degrees Fahrenheit
@ = at
equiv. = equivalent

DAQC = Division of Air Quality Control
EU = Emission Unit
kW = kilowatt
No. = Number
UTM = Universal Transverse Mercator
§ = Section
§§ = Sections
USEPA = United States Environmental Protection Agency
CMR = Code of Massachusetts Regulations
max. = maximum

6. ALTERNATIVE OPERATING SCENARIOS

The Permittee did not request alternative operating scenarios in its Operating Permit application.

7. EMISSIONS TRADING

A. INTRA-FACILITY EMISSION TRADING

The Permittee did not request intra-facility emissions trading in its Operating Permit application.

B. INTER-FACILITY EMISSION TRADING

The Permittee did not request inter-facility emissions trading in its Operating Permit application.

8. COMPLIANCE SCHEDULE

The Permittee has indicated that the Facility is in compliance and shall remain in compliance with the applicable requirements contained in Sections 4 and 5.

In addition, the Permittee shall comply with any applicable requirements that become effective during the Permit term.

GENERAL CONDITIONS FOR OPERATING PERMIT

9. FEES

The Permittee has paid the permit application processing fee and shall pay the annual compliance fee in accordance with the fee schedule pursuant to 310 CMR 4.00.

10. COMPLIANCE CERTIFICATION

All documents submitted to the MassDEP shall contain certification by the responsible official of truth, accuracy, and completeness. Such certification shall be in compliance with 310 CMR 7.01(2) and contain the following language:

"I certify that I have personally examined the foregoing and am familiar with the information contained in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment."

The "Operating Permit Reporting Kit" contains instructions and the Annual Compliance Report and Certification and the Semi-Annual Monitoring Summary Report and Certification. The "Operating Permit Reporting Kit" is available to the Permittee via the MassDEP's web site, <http://www.mass.gov/dep/air/approvals/aqforms.htm#op>.

A. Annual Compliance Report and Certification

The Responsible Official shall certify, annually for the calendar year, that the facility is in compliance with the requirements of this Operating Permit. The report shall be postmarked or delivered by January 30 to the MassDEP and to the Air Compliance Clerk, U.S. Environmental Protection Agency - New England Region. The report shall be submitted in compliance with the submission requirements below.

The compliance certification and report shall describe:

- 1) the terms and conditions of the Permit that are the basis of the certification;
- 2) the current compliance status and whether compliance was continuous or intermittent during the reporting period;
- 3) the methods used for determining compliance, including a description of the monitoring, record keeping, and reporting requirements and test methods; and
- 4) any additional information required by the MassDEP to determine the compliance status of the source.

B. Semi-Annual Monitoring Summary Report and Certification

The Responsible Official shall certify, semi-annually on the calendar year, that the Facility is in compliance with the requirements of this Permit. The report shall be postmarked or delivered by January 30 and July 30 to MassDEP. The report shall be submitted in compliance with the submission requirements below.

The compliance certification and report shall describe:

- 1) the terms and conditions of the Permit that are the basis of the certification;
- 2) the current compliance status during the reporting period;
- 3) the methods used for determining compliance, including a description of the monitoring, record keeping, and reporting requirements and test methods;
- 4) whether there were any deviations during the reporting period;
- 5) if there are any outstanding deviations at the time of reporting, and the Corrective Action Plan to remedy said deviation;
- 6) whether deviations in the reporting period were previously reported;
- 7) if there are any outstanding deviations at the time of reporting, the proposed date of return to compliance;
- 8) if the deviations in the reporting period have returned to compliance and date of such return to compliance; and
- 9) any additional information required by the MassDEP to determine the compliance status of the source.

11. NONCOMPLIANCE

Any noncompliance with a permit condition constitutes a violation of 310 CMR 7.00: Appendix C and the Clean Air Act, and is grounds for enforcement action, for Permit termination or revocation, or for denial of an Operating Permit renewal application by the MassDEP and/or EPA. Noncompliance may also be grounds for assessment of administrative or civil penalties under M.G.L. c.21A, §16 and 310 CMR 5.00; and civil penalties under M.G.L. c.111, §142A and 142B. This Permit does not relieve the Permittee from the obligation to comply with any other provisions of 310 CMR 7.00 or the Act, or to obtain any other necessary authorizations from other governmental agencies, or to comply with all other applicable Federal, State, or Local rules and regulations, not addressed in this Permit.

12. PERMIT SHIELD

- A. This Facility has a permit shield provided that it operates in compliance with the terms and conditions of this Permit. Compliance with the terms and conditions of this Permit shall be deemed compliance with all applicable requirements specifically identified in Sections 4, 5, 6, and 7, for the emission units as described in the Permittee's application and as identified in this Permit.

Where there is a conflict between the terms and conditions of this Permit and any earlier approval or Permit, the terms and conditions of this Permit control.

- B. The MassDEP has determined that the Permittee is not currently subject to the requirements listed in Section 4, Table 7.
- C. Nothing in this Permit shall alter or affect the following:
 - 1) the liability of the source for any violation of applicable requirements prior to or at the time of Permit issuance.
 - 2) the applicable requirements of the Acid Rain Program, consistent with 42 U.S.C. §7401, §408(a); or
 - 3) the ability of EPA to obtain information under 42 U.S.C. §7401, §114 or §303 of the Act.

13. ENFORCEMENT

The following regulations found at 310 CMR 7.02(8)(h) Table 6 for wood fuel, 7.04(9), 7.05(8), 7.09 (odor), 7.10 (noise), 7.18(1)(b), 7.70, 7.71, 7.72, 7.74, 7.75 and any condition(s) designated as "state only" are not federally enforceable because they are not required under the Act or under any of its applicable requirements. These regulations and conditions are not enforceable by the EPA. Citizens may seek equitable or declaratory relief to enforce these regulations and conditions pursuant to Massachusetts General Law Chapter 214, Section 7A

All other terms and conditions contained in this Permit, including any provisions designed to limit a facility's potential to emit, are enforceable by the MassDEP, EPA and citizens as defined under the Act.

A Permittee shall not claim as a defense in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit.

14. PERMIT TERM

This Permit shall expire on the date specified on the cover page of this Permit, which shall not be later than the date 5 years after issuance of this Permit.

Permit expiration terminates the Permittee's right to operate the facility's emission units, control equipment or associated equipment covered by this Permit, unless a timely and complete renewal application is submitted at least 6 months before the expiration date.

15. PERMIT RENEWAL

Upon the MassDEP's receipt of a complete and timely application for renewal, this Facility may continue to operate subject to final action by the MassDEP on the renewal application.

In the event the MassDEP has not taken final action on the Operating Permit renewal application prior to this Permit's expiration date, this Permit shall remain in effect until the MassDEP takes final action on the renewal application, provided that a timely and complete renewal application has been submitted in accordance with 310 CMR 7.00: Appendix C(13).

16. REOPENING FOR CAUSE

This Permit may be modified, revoked, reopened, and reissued, or terminated for cause by the MassDEP and/or EPA. The responsible official of the Facility may request that the MassDEP terminate the facility's Operating Permit for cause. The MassDEP will reopen and amend this Permit in accordance with the conditions and procedures under 310 CMR 7.00: Appendix C(14).

The filing of a request by the Permittee for an Operating Permit revision, revocation and reissuance, or termination, or a notification of a planned change or anticipated noncompliance does not stay any Operating Permit condition.

17. DUTY TO PROVIDE INFORMATION

Upon the MassDEP's written request, the Permittee shall furnish, within a reasonable time, any information necessary for determining whether cause exists for modifying, revoking and reissuing, or terminating the Permit, or to determine compliance with the Permit. Upon request, the Permittee shall furnish to the MassDEP copies of records that the Permittee is required to retain by this Permit.

18. DUTY TO SUPPLEMENT

The Permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information. The Permittee shall also provide additional information as necessary to address any requirements that become applicable to the Facility after the date a complete renewal application was submitted but prior to release of a draft permit.

The Permittee shall promptly, on discovery, report to the MassDEP a material error or omission in any records, reports, plans, or other documents previously provided to the MassDEP.

19. TRANSFER OF OWNERSHIP OR OPERATION

This Permit is not transferable by the Permittee unless done in accordance with 310 CMR 7.00: Appendix C(8)(a). A change in ownership or operation control is considered an administrative permit amendment if no other change in the Permit is necessary and provided that a written agreement containing a specific date for transfer of Permit responsibility, coverage and liability between current and new Permittee, has been submitted to the MassDEP.

20. PROPERTY RIGHTS

This Permit does not convey any property rights of any sort, or any exclusive privilege.

21. INSPECTION AND ENTRY

Upon presentation of credentials and other documents as may be required by law, the Permittee shall allow authorized representatives of the MassDEP, and EPA to perform the following:

- A. Enter upon the Permittee's premises where an operating permit source activity is located or emissions-related activity is conducted, or where records must be kept under the conditions of this Permit;
- B. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;
- C. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- D. Sample or monitor at reasonable times any substances or parameters for the purpose of assuring compliance with the Operating Permit or applicable requirements as per 310 CMR 7.00 Appendix C(3)(g)(12).

22. PERMIT AVAILABILITY

The Permittee shall have available at the Facility, at all times, a copy of the materials listed under 310 CMR 7.00: Appendix C(10)(e) and shall provide a copy of the Operating Permit, including any amendments or attachments thereto, upon request by the MassDEP or EPA.

23. SEVERABILITY CLAUSE

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit, shall not be affected thereby.

24. EMERGENCY CONDITIONS

The Permittee shall be shielded from enforcement action brought for noncompliance with technology based¹ emission limitations specified in this Permit as a result of an emergency². In order to use emergency as an affirmative defense to an action brought for noncompliance, the Permittee shall demonstrate the affirmative defense through properly signed, contemporaneous operating logs, or other relevant evidence that:

- A. an emergency occurred and that the Permittee can identify the cause(s) of the emergency;
- B. the permitted Facility was at the time being properly operated;
- C. during the period of the emergency, the Permittee took all reasonable steps as expeditiously as possible, to minimize levels of emissions that exceeded the emissions standards, or other requirements in this Permit; and
- D. the Permittee submitted notice of the emergency to the MassDEP within two (2) business days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

If an emergency episode requires immediate notification to the Bureau of Waste Site Cleanup/Emergency Response, immediate notification to the appropriate parties should be made as required by law.

25. PERMIT DEVIATION

Deviations are instances where any permit condition is violated and not reported as an emergency pursuant to section 24 of this Permit. Reporting a permit deviation is not an affirmative defense for action brought for noncompliance. Any reporting requirements listed in Table 6 of this Operating Permit shall supersede the following deviation reporting requirements, if applicable.

The Permittee shall report to the MassDEP's Regional Bureau of Air and Waste the following deviations from permit requirements, by telephone, by fax or by electronic mail (e-mail), within three (3) days of discovery of such deviation:

- A. Unpermitted pollutant releases, excess emissions or opacity exceedances measured directly by CEMS/COMS, by EPA reference methods or by other credible evidence, which are ten percent (10%) or more above the emission limit.

¹ Technology based emission limits are those established on the basis of emission reductions achievable with various control measures or process changes (e.g., a new source performance standard) rather than those established to attain health based air quality standards.

² An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation would require immediate corrective action to restore normal operation, and that causes the source to exceed a technology based limitation under the Permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operations, operator error or decision to keep operating despite knowledge of any of these things.

- B. Exceedances of parameter limits established by this Operating Permit or other approvals, where the parameter limit is identified by the Permit or approval as surrogate for an emission limit.
- C. Exceedances of Permit operational limitations directly correlated to excess emissions.
- D. Failure to capture valid emissions or opacity monitoring data or to maintain monitoring equipment as required by statutes, regulations, this Operating Permit, or other approvals.
- E. Failure to perform QA/QC measures as required by this Operating Permit or other approvals for instruments that directly monitor compliance.

For all other deviations, three (3) day notification is waived and is satisfied by the documentation required in the subsequent Semi-Annual Monitoring Summary and Certification. Instructions and forms for reporting deviations are found in the MassDEP Bureau of Air and Waste Air Operating Permit Reporting Kit, which is available to the Permittee via the MassDEP's web site,

<http://www.mass.gov/dep/air/approvals/aqforms.htm#op>.

This report shall include the deviation, including those attributable to upset conditions as defined in the Permit, the probable cause of such deviations, and the corrective actions or preventative measures taken.

Deviations that were reported by telephone, fax or electronic mail (e-mail) within 3 days of discovery, said deviations shall also be submitted in writing via the Operating Permit Deviation Report to the regional Bureau of Air and Waste within ten (10) days of discovery. For deviations, which do not require 3-day verbal notification, follow-up reporting requirements are satisfied by the documentation required in the aforementioned Semi-Annual Monitoring Summary and Certification.

26. OPERATIONAL FLEXIBILITY

The Permittee is allowed to make changes at the Facility consistent with 42 U.S.C. §7401, §502(b)(10) not specifically prohibited by the Permit and in compliance with all applicable requirements provided the Permittee gives the EPA and the MassDEP written notice fifteen (15) days prior to said change; notification is not required for exempt activities listed at 310 CMR 7.00: Appendix C(5)(h) and (i). The notice shall comply with the requirements stated at 310 CMR 7.00: Appendix C(7)(a) and will be appended to the Facility's Permit. The permit shield allowed for at 310 CMR 7.00: Appendix C(12) shall not apply to these changes.

27. MODIFICATIONS

- A. Administrative Amendments - The Permittee may make changes at the Facility which are considered administrative amendments pursuant to 310 CMR 7.00: Appendix C(8)(a)1., provided they comply with the requirements established at 310 CMR 7.00: Appendix C(8)(b).
- B. Minor Modifications - The Permittee may make changes at the Facility which are considered minor modifications pursuant to 310 CMR 7.00: Appendix C(8)(a)2., provided they comply with the requirements established at 310 CMR 7.00: Appendix C(8)(d).

- C. Significant Modifications - The Permittee may make changes at the Facility which are considered significant modifications pursuant to 310 CMR 7.00: Appendix C(8)(a)3., provided they comply with the requirements established at 310 CMR 7.00: Appendix C(8)(c).
- D. No permit revision shall be required, under any approved economic incentives program, marketable permits program, emission trading program and other similar programs or processes, for changes that are provided in this Operating Permit. A revision to the Permit is not required for increases in emissions that are authorized by allowances acquired pursuant to the Acid Rain Program under Title IV of the Act, provided that such increases do not require an Operating Permit revision under any other applicable requirement.

28. OZONE DEPLETING SUBSTANCES

This section contains air pollution control requirements that are applicable to this Facility, and the United States Environmental Protection Agency enforces these requirements.

- A. The Permittee shall comply with the standards for labeling of products using ozone-depleting substances pursuant to 40 CFR Part 82, Subpart E:
 - 1) All containers containing a class I or class II substance that is stored or transported, all products containing a class I substance, and all products directly manufactured with a class I substance must bear the required warning statement if it is being introduced into interstate commerce pursuant to 40 CFR 82.106.
 - 2) The placement of the required warning statement must comply with the requirements of 40 CFR 82.108.
 - 3) The form of the label bearing the required warning statement must comply with the requirements of 40 CFR 82.110.
 - 4) No person may modify, remove or interfere with the required warning statement except as described in 40 CFR 82.112.
- B. The Permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F, except as provided for motor vehicle air conditioners (MVAC) in Subpart B:
 - 1) Persons opening appliances for maintenance, service, repair or disposal must comply with the required practices of 40 CFR 82.156.
 - 2) Equipment used during the maintenance, service, repair or disposal of appliances must comply with the standards for recycling and recovery equipment of 40 CFR 82.158.
 - 3) Persons performing maintenance, service, repair or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.
 - 4) Persons disposing of small appliances, MVACs and MVAC-like appliances (as defined in 40 CFR 82.152) must comply with recordkeeping requirements of 40 CFR 82.166.
 - 5) Persons owning commercial or industrial process refrigeration equipment must comply with the

leak repair equipment requirements of 40 CFR 82.156.

- 6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.
- C. If the Permittee manufactures, transforms, imports or exports a class I or class II substance, the Permittee is subject to all the requirements as specified in 40 CFR Part 82, Subpart A, "Production and Consumption Controls".
- D. If the Permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the Permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, "Servicing of Motor Vehicle Air Conditioners". The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo or system used on passenger buses using HCFC-22 refrigerant.
- E. The Permittee shall be allowed to switch from any ozone-depleting substance to any alternative that is listed in the Significant New Alternatives Program (SNAP) promulgated pursuant to 40 CFR Part 82, Subpart G, "Significant New Alternatives Policy Program".

29. PREVENTION OF ACCIDENTAL RELEASES

This section contains air pollution control requirements that are applicable to this Facility and the United States Environmental Protection Agency enforces these requirements.

This Facility is subject to the requirements of the General Duty Clause, under 112(r)(1) of the CAA Amendments of 1990. This clause specifies that owners or operators of stationary sources producing, processing, handling or storing a chemical in any quantity listed in 40 CFR Part 68 or any other extremely hazardous substance have a general duty to identify hazards associated with these substances and to design, operate and maintain a safe facility, in order to prevent releases and to minimize the consequences of accidental releases which may occur.

APPEAL CONDITIONS FOR OPERATING PERMIT

This Permit is an action of the MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing within 21 days of issuance of this Permit. In addition, any person who participates in any public participation process required by the Federal Clean Air Act, 42 U.S.C. §7401, §502(b)(6) or under 310 CMR 7.00: Appendix C(6), with respect to the MassDEP's final action on operating permits governing air emissions, and who has standing to sue with respect to the matter pursuant to federal constitutional law, may initiate an adjudicatory hearing pursuant to Chapter 30A, and may obtain judicial review, pursuant to Chapter 30A, of a final decision therein.

If an adjudicatory hearing is requested, the Facility must continue to comply with all existing federal and state applicable requirements to which the Facility is currently subject, until a final decision is issued in the case or the appeal is withdrawn. During this period, the application shield shall remain in effect, and the Facility shall not be in violation of the Act for operating without a Permit.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts which are the grounds for the request, and the relief sought. Additionally, the request must state why the Permit is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to The Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

The Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver as described below.

The filing fee is not required if the appellant is a city or town (or municipal agency) county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

The MassDEP may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

September 7, 2023



Mr. Patrick Bird
Director, Air Branch
USEPA Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: NMOC Emission Rate Report for 2022
Crapo Hill Landfill, Dartmouth, Massachusetts
MassDEP Regulated Object Account #172448

Dear Mr. Bird:

On behalf of the Greater New Bedford Regional Refuse Management District (the District), Brown and Caldwell (BC) submits this letter report in accordance with the New Source Performance Standards (NSPS) for municipal solid waste (MSW) landfills contained in 40 CFR Part 60, Subpart XXX. Specifically, this letter report provides the uncontrolled emission rate of non-methane organic compounds (NMOCs) from the Crapo Hill Landfill for calendar year of 2022.

The NMOCs emission rate was determined in accordance with the methodology contained in 40 CFR Part 60, Subpart XXX. These NSPS regulations require calculation of the annual uncontrolled NMOCs emission rate for landfills that have a maximum landfill design capacity for waste disposal of greater than or equal to 2.5 million megagrams (Mg). The Crapo Hill Landfill triggered this threshold as shown in the design report submitted to USEPA and MassDEP by BC on behalf of the District dated March 26, 2019, provided as Attachment 1. The NSPS provides a three-tiered procedure for calculating uncontrolled NMOC emission rates. If the landfill is calculated to generate less than 34 Mg per year of uncontrolled NMOCs under any of the tiered procedures, then the landfill is not subject to the control, monitoring and most reporting requirements under the NSPS. Both Tier 1 and Tier 2 procedures were followed as described below.

In accordance with the Tier 1 methodology, the uncontrolled NMOC emission rate is calculated using a first order decay equation with default parameters, combined with site-specific waste acceptance rates, to estimate uncontrolled or pre-control NMOC emissions from the landfill. BC used the model developed by the USEPA called "Landfill Gas Emissions Model" (LandGEM), which incorporates the decay equation and default parameters with site-specific waste acceptance values input by the user. The default value for NMOCs concentration contained in landfill gas corrected to 50% methane content is 4,000 ppmv as hexane. Using the default value, the result of the Tier 1 procedure indicated uncontrolled NMOCs greater than the 34 Mg threshold. Based upon the Tier 1 result, the Tier 2 calculation that allows for measured site-specific NMOC concentrations to be input to the LandGEM model to estimate the landfill's emissions was performed.

In accordance with the Tier 2 methodology under 40 CFR Part 60, Subpart XXX, the following was performed.

- **Sampling:** In accordance with EPA Methods 3C and 25C, three samples of landfill gas were collected on September 18, 2019 from the landfill gas (LFG) collection system. The collection site is located prior to control, upstream of the flare station and LFG power generating facility. Three six-liter Summa canisters each at an initial vacuum of 25 inches of mercury were connected to a sampling port in the main LFG header. LFG samples were extracted at a flow rate of approximately 350 milliliters per minute over a 5-minute period. The Summa canisters were sent to Atmospheric Analysis & Consulting, Inc. (AAC) in Ventura, California for laboratory analysis. Results for the three samples were previously submitted in the October 2019 Tier 2 Report.
- **Analyses:** AAC conducted EPA method 3C analysis to determine the concentration of fixed gases including hydrogen, oxygen, nitrogen, carbon monoxide, carbon dioxide, and methane, and EPA Method 25C analysis to determine NMOCs (as carbon) concentration contained in the LFG prior to control.
- **Calculations:**
 - The site specific NMOC concentration results from EPA Method 25C were converted from carbon to hexane basis in accordance with 40 CFR Part 60.764 – “Test methods and procedures”. The average of three samples show uncontrolled NMOCs concentration is 83 ppmv, as hexane, corrected to 50-percent methane content in LFG. The fixed gases were used to correct the concentrations of NMOCs to 50-percent methane content in LFG. The uncorrected NMOC and fixed gases for each of the three samples are shown in the analytical laboratory report provided by AAC, which was previously provided in the October 2019 Tier 2 Report.
 - The site-specific NMOC concentration results reported in the October 2019 Tier 2 Report were used in the LandGEM Model, together with the USEPA recommended input values to calculate uncontrolled NMOC quantities contained in LFG in 2022. The USEPA recommended input values included waste input rates from 1995 through 2022, methane generation rate (k) of 0.05 year⁻¹, potential methane generation capacity (L₀) of 170 cubic meters of methane per Mg waste, and the site specific NMOC concentrations in landfill gas of 83 ppmv as hexane, and a methane content of LFG of 50%.
- The results of the calculations indicate the uncontrolled **NMOC emissions of 6.96 Mg for calendar year 2022** (see LandGEM report provided as Attachment 2).

As noted previously, because the uncontrolled NMOC emissions are below the 34 Mg per year threshold as calculated by the Tier 2 methodology, the Crapo Hill Landfill is not subject to the controls, monitoring and most of the reporting requirements under the NSPS for MSW landfills contained in 40 CFR Part 60, Subpart XXX. However, the District is subject to the requirement under the NSPS to recalculate and report the uncontrolled NMOC mass emission rate annually as provided in §60.767(b)(1) and retest the site-specific uncontrolled NMOC concentration every 5 years as required thereafter.

The site-specific uncontrolled NMOC concentration is scheduled to be re-determined through sampling of the LFG in 2024.

Please contact me directly at (978) 566-3885 with any questions.

Very truly yours,

Brown and Caldwell



Robert S. Magnusson, P.E.
Senior Principal Engineer

cc: Scott Alfonse, Executive Director, Greater New Bedford Regional Refuse
Management District
Thomas Yeransian, Commonwealth Resource Management Corporation
Mark Dakers, MassDEP Solid Waste
Thomas Cushing, MassDEP Air Quality

Attachments

1. March 2019 NSPS Design Report
2. USEPA LandGEM Report and Calculations

Attachment 1

March 26, 2019 NSPS Design Report

101 Industrial Park Road, Suite 205
Taunton, MA 02780
T: 508.923.0879

March 26, 2019



Director, Office of Ecosystem Protection
U. S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: Amended Design Capacity Report, Crapo Hill Landfill, Dartmouth, MA
40 CFR Part 60, Subparts WWW and XXX

Dear Sir or Madam:

The Greater New Bedford Regional Refuse Management District has recently received an operating permit (Authorization to Operate) from the Massachusetts Department of Environmental Protection that increases the design capacity of the Crapo Hill Sanitary Landfill. Identifying information is as follows:

Name and address of Landfill:

Crapo Hill Sanitary Landfill
300 Samuel Barnet Boulevard
New Bedford, MA 02745
508-998-5674

(Note: Landfill is located in Dartmouth, MA but the mail address is New Bedford, MA)

Name and address of Landfill owner and operator:

Greater New Bedford Regional Refuse Management District
300 Samuel Barnet Boulevard
New Bedford, MA 02745
508-763-5924
Scott Alfonse, Executive Director

Permits issued by the Massachusetts Department of Environmental Protection for the construction and operation of the Crapo Hill Landfill include the following:

- Solid Waste Facility Permit and Authorization to Construct Phase 1, January 26, 1993, approving 69.8 acres of sanitary landfill and specifically authorizing construction of 18.6 acre Phase 1.
- Authorization to Operate Phase 1, December 28, 1994.
- Landfill Major Modification, Phase 1 Grades, February 3, 2000, authorizing a re-configuration of the Phase 1 final elevations.
- Authorization to Construct New Phase of Permitted Landfill, July 12, 2000, authorizing construction of 10 acre Phase 2, Cells #1 and #2.
- Authorization to Operate Phase 2 Cells #1 and #2, April 22, 2002.
- Authorization to Construct New Phase of Permitted Landfill, December 15, 2006, authorizing construction of 9.5 acre Phase 2, Cells #3 and #4.
- Authorization to Operate Phase 2 Cells #3 and #4, September 8, 2008.

- Renewal of Authorization to Operate Phase 2, Cells #3 and #4, June 18, 2013
- Authorization to Construct New Phase of Permitted Landfill, October 23, 2014, authorizing construction of 12.13 acre Phase 2, Cells #5 and #6.
- Authorization to Operate Phase 2 Cell #5, March 8, 2016
- Authorization to Operate Phase 2 Cell #6, February 12, 2019

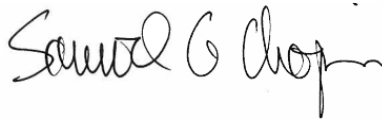
The total permitted waste disposal capacity of the landfill is 2,809,271 cubic meters. A calculation of this permitted capacity is attached. Also attached is a site locus map.

The Crapo Hill Landfill is currently provided with an active landfill gas collection and control system comprising 64 vertical extraction wells, approximately 30,000 feet of horizontal gas collectors, a 2,000 scfm open flare, and a landfill gas-fueled electric power generating plant. In addition, passive vent flares are used on the Landfill to provide localized landfill gas control. The landfill gas collection and control system is fully permitted by the Massachusetts Department of Environmental Protection.

Please contact Scott Alfonse, Executive Director, Greater New Bedford Regional Refuse Management District, or me at 508-819-1431 if you have any questions.

Very truly yours,

Brown and Caldwell



Samuel G. Chapin, P.E.
Managing Engineer

SGC

cc: Greater New Bedford Regional Refuse Management District

Attachments:
Site Locus Map
Design Capacity Calculation

Crapo Hill Landfill					
Dartmouth, MA					
Design Capacity					
Landfill Area	Volumes in cubic yards	Notes/Data Source			
Phase 1					
Gross Volume	1,286,000	Camp, Dresser & McKee Permit Documents			
Final Cover	63,243	2 foot thick over 19.6 acre slope area			
Net Usable Volume	1,222,757				
Daily and Intermediate Cover	330,144	Average 27% by volume over life of landfill			
Net Waste Volume	892,613				
Phase 1 Permit Modification					
Gross Volume	275,000	CGK Environmental calculation			
Final Cover		no increase in final cover			
Net Usable Volume	275,000				
Daily and Intermediate Cover	74,250	Average 27% by volume over life of landfill			
Net Waste Volume	200,750				
Phase 2 Cells #1 and #2					
Gross Volume	977,638	Brown and Caldwell digital modeling			
Final Cover	33,880	2 foot thick over 10.5 acre slope area			
Net Usable Volume	943,758				
Daily and Intermediate Cover	254,815	Average 27% by volume over life of landfill			
Net Waste Volume	688,943				
Phase 2 Cells #3 and #4					
Gross Volume	971,500	Brown and Caldwell digital modeling			
Final Cover	32,423	2 foot thick over 10.0 acre slope area			
Net Usable Volume	939,077				
Daily and Intermediate Cover	253,551	Average 27% by volume over life of landfill			
Net Waste Volume	685,526				
Phase 2 Cell #5					
Gross Volume	455,587	Brown and Caldwell digital modeling			
Final Cover	27,689	2 foot thick over 8.58 acre slope area			
Net Usable Volume	427,898				
Daily and Intermediate Cover	106,975	Average 25% by volume over life of landfill			
Net Waste Volume	320,924				
Phase 2 Cell #6					
Gross Volume	1,198,713	Brown and Caldwell digital modeling			
Final Cover	18,160	2 foot thick over 5.63 acre slope area			
Net Usable Volume	1,180,553				
Daily and Intermediate Cover	295,138	Average 25% by volume over life of landfill			
Net Waste Volume	885,415				
Total Waste Volume					
(Design Capacity)	3,674,170				
Waste Volume in cubic meters					
(Design Capacity)	2,809,271	1 cu. yd. = 0.7646 cu. meter			
Gross Volume, cubic yards	5,164,438				
Gross Volume, cubic meters	3,948,729				



BROWN AND CALDWELL

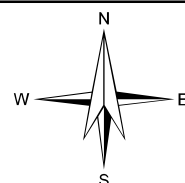
101 Industrial Park Road, Suite 205
Taunton, Massachusetts, 02780
Tel. (508) 923-0879 Fax. (508) 923-0894

Note: USGS Quad Maps obtained from MassGIS scanned 5-CDset, dated July 1996. All other data from MassGIS Data Viewer software, updated May 2009.

FIGURE 1 SITE LOCATION MAP

Crape Hill Sanitary Landfill
Dartmouth, Massachusetts

Prepared for:
Greater New Bedford Regional
Refuse Management District



0 500 1,000 2,000
Feet

Date: 05/2014

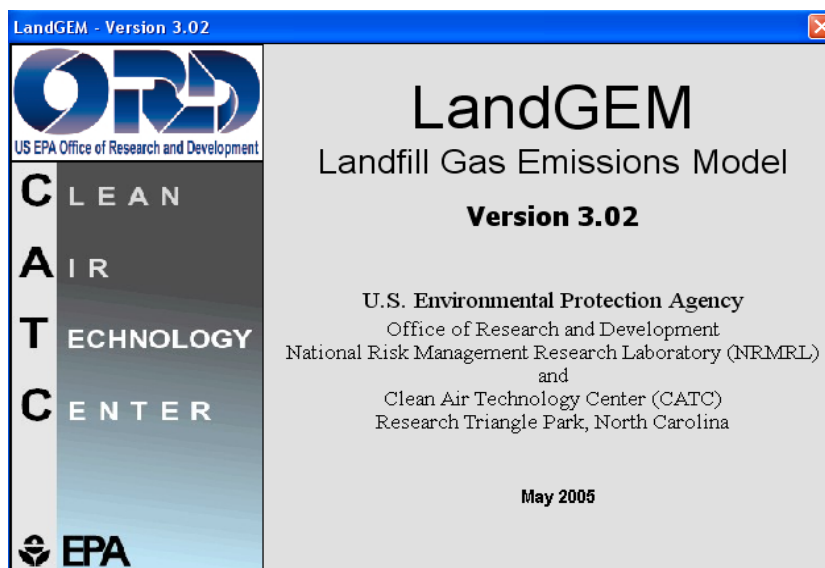
Project: 144674

Scale: 1" = 2000'

File: Site locus

Attachment 2

USEPA LandGEM Report and Calculations



Summary Report

Landfill Name or Identifier: Crapo Hill Landfill

Date: Thursday, August 24, 2023

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 k L_o \left(\frac{M_i}{10} \right) e^{-k t_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (decimal years, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review**LANDFILL CHARACTERISTICS**

Landfill Open Year **1995**
 Landfill Closure Year (with 80-year limit) **2022**
 Actual Closure Year (without limit) **2022**
 Have Model Calculate Closure Year? **No**
 Waste Design Capacity **2,628,523** *megagrams*

MODEL PARAMETERS

Methane Generation Rate, k **0.050** *year⁻¹*
 Potential Methane Generation Capacity, L₀ **170** *m³/Mg*
 NMOC Concentration **83** *ppmv as hexane*
 Methane Content **50** *% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1: **NMOC**
 Gas / Pollutant #2:
 Gas / Pollutant #3:
 Gas / Pollutant #4:

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1995	86,851	95,536	0	0
1996	99,742	109,716	86,851	95,536
1997	100,430	110,472	186,593	205,252
1998	104,169	114,585	287,022	315,724
1999	98,743	108,617	391,191	430,310
2000	105,423	115,966	489,934	538,927
2001	102,923	113,216	595,357	654,893
2002	104,326	114,758	698,280	768,108
2003	101,223	111,345	802,606	882,867
2004	103,152	113,467	903,829	994,212
2005	103,715	114,087	1,006,981	1,107,679
2006	96,234	105,858	1,110,696	1,221,766
2007	92,011	101,212	1,206,931	1,327,624
2008	85,929	94,522	1,298,942	1,428,836
2009	85,157	93,672	1,384,870	1,523,357
2010	89,291	98,220	1,470,027	1,617,030
2011	71,357	78,493	1,559,318	1,715,249
2012	90,124	99,136	1,630,674	1,793,742
2013	88,383	97,221	1,720,798	1,892,878
2014	84,675	93,143	1,809,181	1,990,099
2015	96,915	106,607	1,893,856	2,083,242
2016	92,629	101,892	1,990,772	2,189,849
2017	96,735	106,409	2,083,401	2,291,741
2018	95,786	105,365	2,180,136	2,398,150
2019	90,538	99,592	2,275,922	2,503,514
2020	89,306	98,237	2,366,460	2,603,106
2021	89,596	98,556	2,455,766	2,701,343
2022	83,161	91,477	2,545,362	2,799,898
2023	0	0	2,628,523	2,891,375
2024	0	0	2,628,523	2,891,375
2025	0	0	2,628,523	2,891,375
2026	0	0	2,628,523	2,891,375
2027	0	0	2,628,523	2,891,375
2028	0	0	2,628,523	2,891,375
2029	0	0	2,628,523	2,891,375
2030	0	0	2,628,523	2,891,375
2031	0	0	2,628,523	2,891,375
2032	0	0	2,628,523	2,891,375
2033	0	0	2,628,523	2,891,375
2034	0	0	2,628,523	2,891,375

Results

Year	NMOC					
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1995	0	0	0	0	0	0
1996	4.295E-01	1.198E+02	8.051E-03	0.000E+00	0.000E+00	0.000E+00
1997	9.019E-01	2.516E+02	1.691E-02	0.000E+00	0.000E+00	0.000E+00
1998	1.355E+00	3.779E+02	2.539E-02	0.000E+00	0.000E+00	0.000E+00
1999	1.804E+00	5.032E+02	3.381E-02	0.000E+00	0.000E+00	0.000E+00
2000	2.204E+00	6.149E+02	4.131E-02	0.000E+00	0.000E+00	0.000E+00
2001	2.618E+00	7.304E+02	4.907E-02	0.000E+00	0.000E+00	0.000E+00
2002	2.999E+00	8.368E+02	5.622E-02	0.000E+00	0.000E+00	0.000E+00
2003	3.369E+00	9.399E+02	6.315E-02	0.000E+00	0.000E+00	0.000E+00
2004	3.705E+00	1.034E+03	6.946E-02	0.000E+00	0.000E+00	0.000E+00
2005	4.035E+00	1.126E+03	7.563E-02	0.000E+00	0.000E+00	0.000E+00
2006	4.351E+00	1.214E+03	8.156E-02	0.000E+00	0.000E+00	0.000E+00
2007	4.615E+00	1.287E+03	8.650E-02	0.000E+00	0.000E+00	0.000E+00
2008	4.845E+00	1.352E+03	9.081E-02	0.000E+00	0.000E+00	0.000E+00
2009	5.033E+00	1.404E+03	9.435E-02	0.000E+00	0.000E+00	0.000E+00
2010	5.209E+00	1.453E+03	9.764E-02	0.000E+00	0.000E+00	0.000E+00
2011	5.397E+00	1.506E+03	1.012E-01	0.000E+00	0.000E+00	0.000E+00
2012	5.486E+00	1.531E+03	1.028E-01	0.000E+00	0.000E+00	0.000E+00
2013	5.664E+00	1.580E+03	1.062E-01	0.000E+00	0.000E+00	0.000E+00
2014	5.825E+00	1.625E+03	1.092E-01	0.000E+00	0.000E+00	0.000E+00
2015	5.960E+00	1.663E+03	1.117E-01	0.000E+00	0.000E+00	0.000E+00
2016	6.149E+00	1.715E+03	1.153E-01	0.000E+00	0.000E+00	0.000E+00
2017	6.307E+00	1.759E+03	1.182E-01	0.000E+00	0.000E+00	0.000E+00
2018	6.478E+00	1.807E+03	1.214E-01	0.000E+00	0.000E+00	0.000E+00
2019	6.635E+00	1.851E+03	1.244E-01	0.000E+00	0.000E+00	0.000E+00
2020	6.760E+00	1.886E+03	1.267E-01	0.000E+00	0.000E+00	0.000E+00
2021	6.873E+00	1.917E+03	1.288E-01	0.000E+00	0.000E+00	0.000E+00
2022	6.980E+00	1.947E+03	1.308E-01	0.000E+00	0.000E+00	0.000E+00
2023	7.054E+00	1.967E+03	1.322E-01	0.000E+00	0.000E+00	0.000E+00
2024	6.707E+00	1.871E+03	1.257E-01	0.000E+00	0.000E+00	0.000E+00
2025	6.380E+00	1.780E+03	1.196E-01	0.000E+00	0.000E+00	0.000E+00
2026	6.068E+00	1.693E+03	1.138E-01	0.000E+00	0.000E+00	0.000E+00
2027	5.772E+00	1.610E+03	1.082E-01	0.000E+00	0.000E+00	0.000E+00
2028	5.491E+00	1.532E+03	1.029E-01	0.000E+00	0.000E+00	0.000E+00
2029	5.223E+00	1.457E+03	9.791E-02	0.000E+00	0.000E+00	0.000E+00
2030	4.968E+00	1.386E+03	9.313E-02	0.000E+00	0.000E+00	0.000E+00
2031	4.726E+00	1.318E+03	8.859E-02	0.000E+00	0.000E+00	0.000E+00
2032	4.496E+00	1.254E+03	8.427E-02	0.000E+00	0.000E+00	0.000E+00
2033	4.276E+00	1.193E+03	8.016E-02	0.000E+00	0.000E+00	0.000E+00
2034	4.068E+00	1.135E+03	7.625E-02	0.000E+00	0.000E+00	0.000E+00
2035	3.869E+00	1.079E+03	7.253E-02	0.000E+00	0.000E+00	0.000E+00
2036	3.681E+00	1.027E+03	6.899E-02	0.000E+00	0.000E+00	0.000E+00
2037	3.501E+00	9.768E+02	6.563E-02	0.000E+00	0.000E+00	0.000E+00
2038	3.330E+00	9.291E+02	6.243E-02	0.000E+00	0.000E+00	0.000E+00
2039	3.168E+00	8.838E+02	5.938E-02	0.000E+00	0.000E+00	0.000E+00
2040	3.013E+00	8.407E+02	5.649E-02	0.000E+00	0.000E+00	0.000E+00
2041	2.867E+00	7.997E+02	5.373E-02	0.000E+00	0.000E+00	0.000E+00
2042	2.727E+00	7.607E+02	5.111E-02	0.000E+00	0.000E+00	0.000E+00
2043	2.594E+00	7.236E+02	4.862E-02	0.000E+00	0.000E+00	0.000E+00
2044	2.467E+00	6.883E+02	4.625E-02	0.000E+00	0.000E+00	0.000E+00

NMOC Results
2022 6.96 Mg/yr

Exhibit 9:
RECs Agreements

This Confirmation Letter describes a transaction between Buyer and Seller for the sale, purchase and Delivery of Renewable Energy Certificates (“**RECs**”) pursuant to and in accordance with the terms of the Renewable Energy Certificate Purchase and Sale Agreement between the Parties dated December 4, 2019 (the “**Agreement**”) and constitutes part of and is subject to the terms and provisions of the Agreement. Provided, that, to the extent there is a conflict between a provision of the Agreement and this Confirmation Letter, the terms of this Confirmation Letter shall control for the purposes of this transaction.

Initially capitalized terms used and not otherwise defined herein are defined in the Agreement.

Basic Commercial Terms:

Trade Date:	June 22, 2023
Transaction Reference:	30839
Seller:	CommonWealth New Bedford Energy LLC
Buyer:	[REDACTED]
Facility:	Seller's choice
Eligible Renewable Resource Type:	Seller's choice
Geography:	Seller's choice
Minimum Online Date:	On or after January 1, 1998
Period Type [Generation, Reporting]:	Generation
Time Period:	January 01, 2023 - December 31, 2023
Product Quantity (REC):	750
Contract Price (\$/REC):	[REDACTED]

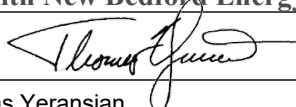
Product Specific Terms:

Applicable Standard(s):	MA Class I as defined in 225 CMR 14.00 (Class I)
Environmental Attributes retained by Seller, if any:	None except Seller shall retain full title to, interest, rights and claim over all environmental attributes associated with the destruction, by the Facility, of methane contained in the landfill gas or biogas.
Media Rights Conferred [yes, no]	No

Delivery Terms:

Delivery Date:	On or before June 1, 2024
Delivery Obligation [Firm, Unit Contingent, Project Contingent]:	Firm
Applicable Tracking System:	NEPOOL GIS
Buyer Tracking Account Name:	[REDACTED]
Attestation Form:	None - Tracking System only
Buyer Delivery Contact [Name, Email]:	Trade Operations, Settlements@[REDACTED]
Seller Delivery Contact [Name, Email]:	Thomas Yeransian, tyeransian@crmcx.com

The Parties agree to the transaction set forth herein and each Party represents that the person signing this Confirmation Letter on its behalf is authorized to execute on behalf of the Party for whom they sign.

[REDACTED]	CommonWealth New Bedford Energy LLC
Signature	Signature 
Name	Thomas Yeransian
	Managing Member
	July 5, 2023

Confirmation Letter #3

This Confirmation Letter describes a transaction between Buyer and Seller for the sale, purchase and Delivery of Renewable Energy Certificates (“**RECs**”) pursuant to and in accordance with the terms of the Renewable Energy Certificate Purchase and Sale Agreement between the Parties dated December 4, 2019 (the “**Agreement**”) and constitutes part of and is subject to the terms and provisions of the Agreement. Provided, that, to the extent there is a conflict between a provision of the Agreement and this Confirmation Letter, the terms of this Confirmation Letter shall control for the purposes of this transaction.

Initially capitalized terms used and not otherwise defined herein are defined in the Agreement.

Basic Commercial Terms:

Trade Date:	December 15, 2020
Transaction Reference:	16899
Seller:	CommonWealth New Bedford Energy LLC
Buyer:	[REDACTED]
Facility:	Seller's choice
Eligible Renewable Resource Type:	Seller's choice
Geography:	Seller's choice
Period Type [Generation, Reporting]:	Generation
Time Period:	January 01, 2023 - December 31, 2023
Product Quantity (REC):	2,500
Contract Price (\$/REC):	[REDACTED]

Product Specific Terms:

Applicable Standard(s):	Class III as defined in N.H. Rev. Stat. Ann. Sec. 362-F:1 et seq.; Class I as defined in Conn. Gen. Stat. § 16-245a et seq.; MA Class I as defined in 225 CMR 14.00 (Class I); Maine Class I as defined in CMR 65-407-311; Maine Class IA as defined in CMR 65-407-311
Environmental Attributes retained by Seller, if any:	None except Seller shall retain full title to, interest, rights and claim over all environmental attributes associated with the destruction, by the Facility, of methane contained in the landfill gas or biogas.
Media Rights Conferred [yes, no]	No

Delivery Terms:

Delivery Date:	On or before June 1, 2024
Delivery Obligation [Firm, Unit Contingent, Project Contingent]:	Firm
Applicable Tracking System:	NEPOOL GIS
Buyer Tracking Account Name:	[REDACTED]
Attestation Form:	None - Tracking System only
Buyer Delivery Contact [Name, Email]:	Trade Operations, Settlements@[REDACTED]
Seller Delivery Contact [Name, Email]:	Thomas Yeransian, tyeransian@crmex.com

The Parties agree to the transaction set forth herein and each Party represents that the person signing this Confirmation Letter on its behalf is authorized to execute on behalf of the Party for whom they sign.

[REDACTED]		CommonWealth New Bedford Energy LLC
Signature	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

REC CONFIRMATION

The purchase and sale (the “**Transaction**”) confirmed by this Confirmation is subject to the Terms and Conditions for the Sale and Purchase of Renewable Energy Credits, attached hereto as Exhibit A. Capitalized terms are defined in the Definitions section. *If you accept the terms of this Transaction, please sign below indicating your acceptance and send this Confirmation back to Sol Systems.*

Transaction

Transaction Date	April 17, 2023
Buyer	
Seller	CommonWealth New Bedford Energy, LLC
RECs	Renewable Energy Certificates that qualify for MA Class 1 & CT Class 1. (“ RECs ”).
Renewable Portfolio Standard(s)	The Connecticut Renewable Energy Standard as defined in Conn. Gen. Stat. § 16-245a et seq., as amended, including by amended by Public Act 13-303 and Conn. Gen Stat. § 16-1(a)(20), and all associated orders, rules, and regulations promulgated with respect thereto, as in effect on the date of this Transaction; The Massachusetts Renewable Energy Portfolio Standard as defined in M. G. L. ch 25A § 11F, as amended, and all associated orders, rules, and regulations promulgated with respect thereto, including 225 CMR 14.00 et seq. and 225 CMR 16.00 et seq., as in effect on the date of this Transaction. (“ RPS ”)
Vintage(s) (or Reporting Year(s))	2023
REC Quantity	10,000 Firm and 5,000 Unit Contingent
Contract Price	
System Location(s)	All systems identified herein will be part of the portfolio (the “ Systems ”): Not Applicable For avoidance of doubt, the specified volume of RECs must be produced from the specific Systems identified in the System Location(s) section of this Confirmation.
Delivery Date (or Annual Delivery Date)	On or before June 1, 2024
Delivery Obligation	Firm. With respect to Seller’s delivery obligation under this Confirmation, the term “ Firm ” means that Seller guarantees that it shall deliver the specified fixed volume of RECs for each applicable Reporting Year indicated to Buyer without excuse. Force Majeure shall not excuse performance of Seller’s Firm delivery obligation under the Transaction; and the term “ Unit Contingent ” means Sellers obligation to deliver the RECs shall be excused for any reason, including without

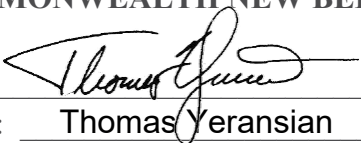
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	limitation, limited availability of landfill gas quantities supplied to the landfill gas-to-energy facility, disruptions in the availability of necessary operating equipment or supplies, and/or operating failures or other shutdowns of the local electric grid.
Delivery Method	The RECs shall be delivered via NEPOOL-GIS (" <i>Applicable Tracking System</i> ").
Notices to [REDACTED]	[REDACTED]
Notices to counterparty	CommonWealth New Bedford Energy, LLC (CNBE) Thomas Yeransian Principal, CommonWealth Resource Management Corporation Managing Member of CNBE 1 Bornheimer Place Scarborough, Maine 04074 Email: tyeransian@crmex.com Phone: (508) 339-3074

Upon receipt of this Confirmation, please ensure that the details are correct and that you accept this Transaction.

Accepted this [24] day of [April 2023] by:

COMMONWEALTH NEW BEDFORD ENERGY, LLC

By: 
Name: Thomas Yeransian
Title: Principal, CommonWealth Resource Management Corporation, Managing Member of CNBE

Ratified this [____] day of [____] by:

[REDACTED]
[REDACTED]
[REDACTED]

April 21, 2023

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EXHIBIT A
TERMS AND CONDITIONS FOR THE SALE AND PURCHASE
OF RENEWABLE ENERGY CREDITS

I. Transaction

- 1.1 Single Agreement. These terms and conditions ("***Terms and Conditions***") for the sale and purchase of RECs and the REC Confirmation to which these Terms and Conditions are attached (the "***Confirmation***") shall constitute a single integrated agreement between the Parties (the "***Agreement***").
- 1.2 Procedure. Subject to the Confirmation(s) and these Terms and Conditions, Seller shall sell to Buyer and Buyer shall purchase from Seller the specified RECs at the Contract Price ("***Purchased RECs***").
- 1.3 Confirmation and Binding Agreement. No Confirmation will be binding unless signed by both Parties.
- 1.4 Priority. In the event of any inconsistency between these Terms and Conditions and the Confirmation, the Confirmation will prevail for the purposes of the relevant Confirmation.

II. Transfer

- 2.1 Transfer of Purchased RECs and Title. Seller shall sell, transfer, convey and assign to Buyer all of Seller's right, title and interest to all Purchased RECs defined by the respective RPS, including the right to report the generation attribute of electrical energy output authorized under the RPS. Seller shall transfer the Purchased RECs to Buyer via the Applicable Tracking System, so that all rights, title to and interest in the Purchased RECs shall transfer from Seller to Buyer, free and clear of any claim of title or interest by any other person. Title and interest in the Purchased RECs shall transfer upon delivery to the Buyer's Account. Seller shall retain full title to, and interest, rights and claim over all environmental attributes associated with the destruction by the Commonwealth New Bedford Energy LLC landfill gas to energy facility, of methane contained in the landfill gas or biogas.
- 2.2 Annual Delivery Shortfall. On or before each Annual Delivery Date during the term of Seller's delivery obligations under this Agreement, Seller shall deliver to Buyer a number of RECs in an amount that is no less than the Firm volume quantity applicable for each Reporting Year. In the event that the Purchased RECs in any Reporting Year fail to reach the Firm volume quantity for such Reporting Year (the amount by which the Firm volume quantity exceeded the Purchased RECs, a "***Shortfall***"), then, within ten (10) business days of each Annual Delivery Date, Seller shall deliver to Buyer a quantity of RECs equal in type, character and amount, and which meet all other requirements pursuant to the RPS and this Agreement, as the Shortfall ("***Substitute RECs***"), and upon such delivery of Substitute RECs in full, Seller shall be deemed to have satisfied the Firm volume quantity requirement for the applicable Reporting Year. If Seller fails to deliver Substitute RECs within 15 business days, then Seller shall be obligated to pay to Buyer damages as set forth in Section 5.2(iv)(a).
- 2.3 Cooperation. In all cases, the Parties will cooperate and execute such documentation as is reasonably necessary to carry out the provisions of this Agreement and to allow Buyer to transact within the Applicable Tracking System for all Purchased RECs and other related procedural matters handled by the Applicable Tracking System. Without limiting the generality of the foregoing, Seller shall take all actions and execute and deliver all documents reasonably requested by Buyer to effectuate delivery of the Purchased RECs to Buyer or, if directed by Buyer, any designee of Buyer, including, if requested, the execution of a transfer certificate or certification. Seller further agrees to take any actions and execute and deliver any documents reasonably requested by Buyer to comply with the requirements of the RPS and the Applicable Tracking System, and any associated regulatory or administration obligations relating to the registration, verification, or certification of any Purchased RECs, and the transfer of the ownership of Purchased RECs from Seller