
Renewable Natural Gas Request for Information

Responses to Questions Received

Friday, February 17, 2023 (*Updated Tuesday, February 21, 2023*)

PURPOSE: Provide responses to questions asked regarding the [Renewable Natural Gas \(RNG\) Request for Information \(RFI\)](#), issued by the Philadelphia Energy Authority (PEA) on behalf of the Philadelphia Water Department (PWD). Questions for this RFI were due on Friday, January 27th, 2023, and answers to these questions are due (to be posted on PEA's website) by February 20, 2023.

QUESTIONS

1. *What location or locations are available for the project/facility?*
A: PWD is open to considering options for the Northeast Water Pollution Control Plant (NEWPCP) (3899 Richmond St, Philadelphia, PA 19137) and/or the Southwest Water Pollution Control Plant (SWWPCP) (8200 Enterprise Ave, Philadelphia, PA 19153).
 2. *What is the footprint available at each location(s) for the project/facility? How much acreage is available for additional renewable energy-generating equipment such as photovoltaic solar panels?*
A: The NEWPCP and SWWPCP have over 50 and 100 acres (respectively) of land available onsite. It is important to note that some of this land can be more readily developed than other sections (as much of this land is retired lagoon area that would need to be remediated prior to development), and that PWD will need to work through larger planning efforts regarding the uses of the land.
 3. *Is the City looking for a project developer for a City managed project, a public private partnership, or a lease of land for development?*
A: PWD is open to a variety of mechanisms for a potential project at this time.
 4. *Does the City plan on taking any of the produced RNG or have a preference on management of the off take?*
A: PWD is open to a variety of opportunities, depending on the process requirements, product quality, among other factors. PWD is seeking to learn more – from this RFI – about the potential options that exist.
 5. *Will the project be limited to water pollution control plans or are there other feedstocks available? Is PWD willing to consider the potential for co-digestion with other organic feedstocks?*
A: At this time, PWD is primarily focused on the water pollution control plants and currently accepts deicing fluid from the PHL Airport as an organic feedstock (at the SWWPCP). However, PWD is interested in learning more about mechanisms, processes, etc. that use other feedstocks.
 6. *Is there a gas pipeline near or on the proposed site?*
A: Yes, there are PGW gas pipelines located onsite at both NEWPCP and SWWPCP.
 7. *Will Philadelphia Gas Works (PGW) accept RNG into their system? What is the gas specification for injection into the PGW system? What is the fee for PGW to take the gas? Where is the closest injection point for each plant?*
-

A: PWD understands that PGW is one possible offtake, and PWD is open to exploring this pathway with PGW, but – at this time – PWD is unsure as to the requirements, fee structures, specs, etc. and would need to coordinate with other parties (including PGW) after obtaining pertinent information.

8. *Who is responsible for the connection to the injection point (ownership, design, construction, cost)?*

A: At this time, the responsible parties for these elements are unclear. Through this RFI, PWD is seeking to learn more about the potential structures, roles, and responsibilities that could exist.

9. *What are the Current Gas constituents (including % siloxanes, VOC etc.) prior to any treatment?*

A: PWD has some data from routine PGW digester gas analyses as well as recent internal studies completed for the system. A snapshot of the data (for FY2022 – i.e., 7/1/2021 – 6/30/2022) is presented in the tables below.

Table 1: NEWPCP and SWWPCP Digester Gas Characteristics - FY2022

	H ₂ S (ppm)	Total Sulfur (ppm)	Methane (mol%)	Carbon Dioxide (mol%)	Nitrogen (mol%)	Oxygen (mol%)	HHV (BTU/ft ³)	LHV (BTU/ft ³)
NE Avg*	ND	ND	63.09	36.67	0.23	0	644	578
NE Min*	ND	ND	61.83	33.76	0.15	0	628	565
NE Max*	ND	ND	66.03	37.85	0.46	0	671	604
SW Avg	1.64	1.87	65.35	34.28	0.38	0	664	597
SW Min	1.04	1.23	63.69	30.83	0.18	0	647	582
SW Max	3.95	4.49	68.78	36.13	0.53	0	698	629

*Note: NE digester gas samples are collected prior to the Cogeneration Facility but are logged as “partially treated”.

Table 2: NEWPCP Siloxane Data (based on sampling conducted 2019 - 2021)¹

	NEWPCP Siloxanes - Raw Gas (ppmv)	NEWPCP Siloxanes – Treated Biogas (ppmv)
Avg	1.96	0.86
Min	1.12	0.21
Max	3.2	2.23

10. *What existing gas treatment exists ahead of the Cogeneration Plant and/or boilers/dryers? What biogas conditioning is performed prior to those listed uses?*

A: At SWWPCP, the only biogas conditioning that exists is the removal of moisture and particles via condensate and sediment traps (otherwise, there is no existing gas treatment ahead of the boilers and/or dryers). At the NEWPCP Cogeneration Facility, there exists a Hydrogen Sulfide Removal System prior to the compressor, and following the compressor exist a Condensate Vault and Siloxane Removal System (schematic shown in Figure 1 below).

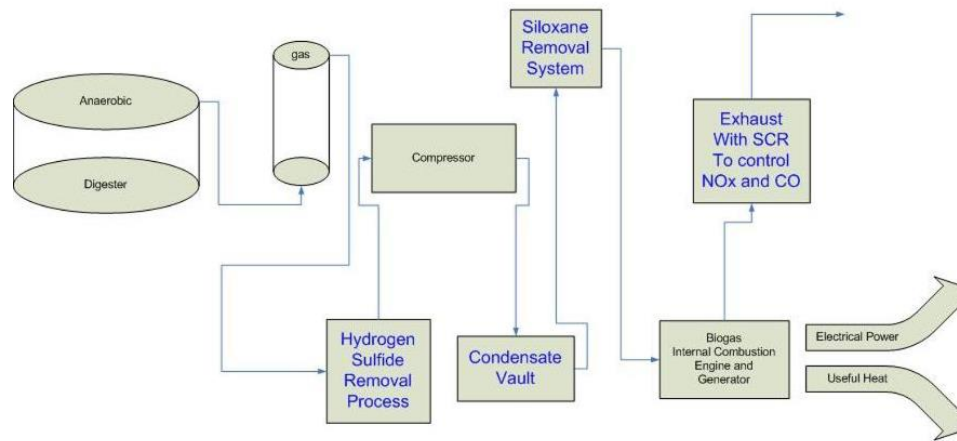


Figure 1: Schematic of NEWPCP Gas Treatment prior to the Cogeneration Facility

11. *What is the existing capacity (SCFM) of Biogas Piping from each digester?*
A: At the NEWPCP and SWWPCP, based on Basis of Design criteria, the piping from each digester can handle approximately 180 SCFM. Based on observed data for the SWWPCP, the piping from each digester handles between 70 CFM to 120 CFM, and it is understood that the rate can fluctuate throughout a given day.
12. *Please provide current individual digester capacities.*
A: At the SWWPCP, the North Digesters (four total) each have a capacity of approximately 2 million gallons (MG) and the South Digesters (eight total) each have a capacity of approximately 2.48 MG. At the NEWPCP (eight total), each digester has the capacity of approximately 2.2 MG.
13. *What is the estimated excess liquid side treatment capacity for Nutrients?*
A: PWD's WPCPs were not designed for nutrient treatment, and PWD is currently evaluating infrastructure to increase the WPCP treatment capacities for this purpose.
14. *Please provide the current nutrient discharge permit limits.*
A: PWD does not currently have nutrient discharge permit limits. However, it is important to note that effluent limits on ammonia-nitrogen are impending, though the exact value has not been determined yet. *For more information on impending ammonia-nitrogen limits, see the Delaware River Basin Commission's landing page for developments related to Aquatic Life Designated Use in the Delaware Estuary (<https://www.nj.gov/drbc/programs/quality/designated-use.html>).
15. *Is backup power already installed at PWD's facilities? Would a solution focused on backup generation fit for PWD?*
A: The focus of this RFI is not related to backup power generation for the plants.
16. *The RFI states in Section III that information provided by Respondents may help to develop a potential future contract opportunity. What is the timeframe for the PWD to develop the contract opportunity?*
A: PWD is interested in using the information gathered as part of this RFI to further develop a potential opportunity. PWD is open to a multi-phased approach and is not necessarily committed to a specific timeline.

-
17. *What percentage of total biogas production at each facility would be dedicated to RNG production?*
A: At this time, PWD is open to a variety of possibilities, including up to 100% of biogas production dedicated to RNG production.
18. *Has the PWD determined that sufficient pipeline capacity exists for RNG delivery?*
A: At this time, no; however, PWD recognizes that this may be a future step if this is the path determined.
19. *The RFI states in Section IV that the PWD seeks to understand potential structures that will maximize the economic and environmental benefits of biogas produced at PWD WPCPs. Are there any drivers including regulatory pressures that would compel the PWD to change from its current practice?*
A: There are a variety of drivers that are compelling PWD to consider alternatives to the current practices regarding biogas and – in a larger sense – biosolids. These drivers include greenhouse gas reduction, energy intensity reduction, aging infrastructure, available technologies, and the changing regulatory landscape on biosolids/solids management (which has an impact on biogas).
20. *Is the PWD willing to buy electricity from the grid and sell renewable energy?*
A: Yes, and it is important to note that this is a current practice that PWD is engaged in. The City of Philadelphia would be interested in buying the Renewable Energy Credits (RECs), facilitated by the City of Philadelphia’s Municipal Energy Office.
21. *Is odor control/reduction a goal of this project?*
A: While PWD strives to minimize and control odors at our facilities, and considers odor control in project development, any reduction of odors would be beyond the expectations of the desired project outcome and would be a welcomed addition to the project.
22. *Is a site visit for RFI respondents planned or considered? No.*
A: No, we will not be hosting a site visit for RFI respondents.
23. *RFI states Sulphur levels which seem low. Does site have pre-treatment H₂S removal? Please clarify, are these correct? Please confirm units of measure.*
A: The NEWPCP employs H₂S scrubbing ahead of the Cogeneration Facility. Refer to Table 1 for sulfur data and units of measure. Note that in the reports that PWD has available from PGW digester gas analyses, this is logged as “partially treated”.
24. *In respect to Southwest site, can we clarify the flowrate that the budgetary RNG solution should be based on? If undetermined, which of the current utilization outlets (Boiler, Bio-solids drying, Flare, etc.) does PWD plan to retain? Same question for Northeast site, can we clarify the flowrate that the budgetary RNG solution should be based on? If this is currently undetermined, we can plan our submission around standard sized solutions.*
A: At this time, PWD is open to considering a variety of options, and has therefore not determined a flow rate for this. However, it is important to note that PWD seeks to minimize biogas flaring at both the NEWPCP and SWWPCP.
25. *How old is the existing Cogen plant (5.6Mwe), who is the engine manufacturer? How many units are installed on site?*
A: The NEWPCP Cogeneration Facility was installed in 2014. There are four 1.4MW GE Jenbacher engines onsite that can run entirely on digester gas, entirely on natural gas, or any mixture of the two. The total engine efficiency is ~60% with any combination of fuel input.
-