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COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
AIR QUALITY PROGRAM  
GENERAL PLAN APPROVAL AND/OR GENERAL OPERATING PERMIT  
(BAQ-GPA/GP-22)  
Landfill Gas-fired Simple Cycle Turbine(s)

**1. Statutory Authority and General Description:**

In accordance with Section 6.1(f) of the Air Pollution Control Act, 35 P.S. § 4006.1, and 25 *Pa. Code* §§ 127.514 and 127.611, the Department of Environmental Protection (Department) hereby issues this general plan approval and/or general operating permit for Landfill Gas-fired Simple Cycle Turbine(s) (hereinafter referred to as “General Permit”).

**2. Applicability/Source Coverage Limitations:**

Approval herein granted under this General Permit is limited to the construction, operation, and modification of landfill gas-fired turbine(s).

The conditions of this General Permit apply to any owner or operator of a landfill gas-fired turbine(s) authorized by the Department to operate under this General Permit.

This General Permit serves as both a general plan approval and the general operating permit for landfill gas-fired turbine(s). The specific use of the General Permit will depend upon permit status, emission levels and location of the facility as outlined below.

This General Permit has been established in accordance with the provisions described in 25 *Pa. Code* Chapter 127, Subchapter H (relating to general plan approvals and general operating permits). If the landfill gas-fired turbine(s) at the facility cannot be regulated by the requirements of this General Permit, a plan approval and/or an operating permit issued in accordance with 25 *Pa. Code* Chapter 127, Subchapter B (relating to plan approval requirements) and/or Subchapter F (relating to operating permit requirements) will be required. If the facility is a Title V facility, a Title V operating permit will be issued in accordance with 25 *Pa. Code* Chapter 127, Subchapters F and G (relating to Title V Operating Permits) will be required.

**Plan Approval:**

This General Permit authorizes the construction of landfill gas-fired turbine(s) that meet the best available technology (BAT) required under 25 *Pa. Code* §§ 127.1 and 127.12(a)(5). For purposes of this General Permit, BAT for any landfill gas-fired turbine shall include the installation and operation of available control measures that reduce emissions to the limitations described in Condition 7.

**Operating Permit:**

Once authorization to use this General Permit is granted, operation may proceed provided that the permittee notifies the Department in accordance with Condition 6.

Any landfill gas-fired turbine(s) located at a “Title V facility” as defined in 25 *Pa. Code* § 121.1, shall comply with the requirements of 25 *Pa. Code* § 127.514 (relating to general operating permits at Title V facilities).

# DRAFT

**3. Application for Use:**

Any person proposing to operate or construct under this General Permit shall notify the Department using the landfill gas-fired turbine(s) general permit application provided by the Department. The permittee shall receive prior written approval from the Department as required under 25 Pa. Code § 127.621 (relating to application for use of general plan approvals and general operating permits).

**4. Compliance:**

Any applicant authorized to operate a landfill gas-fired turbine(s) under this General Permit must comply with the terms and conditions of the General Permit. The landfill gas-fired turbine(s) shall be:

- a. operated in such a manner as not to cause air pollution;
- b. operated and maintained in a manner consistent with good operating and maintenance practices; and
- c. operated and maintained in accordance with the manufacturer's specifications and the applicable terms and conditions of this general permit.

**5. Permit Modification, Suspension and Revocation:**

Authorization to use this General Permit may be suspended, or revoked if the Department determines that the affected landfill gas-fired turbine(s) cannot be regulated under this General Permit or the permittee fails to comply with the applicable terms and conditions of this General Permit.

The approval granted herein to operate the landfill gas fired turbine(s) under this General Permit shall be suspended, if, at any time, the permittee causes, permits or allows any modification without Department approval (as defined in 25 Pa. Code § 121.1) of the landfill gas-fired turbine(s) covered by this General Permit. Upon suspension of the authorization to use the General Permit, the permittee may not continue to operate or use the landfill gas-fired turbines. If warranted, the Department will require that the landfill gas-fired turbine(s) be permitted under the state operating permit and/or Title V operating permit requirements in 25 Pa. Code Chapter 127.

**6. Notice Requirements:**

The applications and notifications required by 25 Pa. Code § 127.621 shall be submitted to the appropriate Regional Office responsible for issuing general permits in the county in which the landfill gas-fired turbine(s) is, or will be, located. As required under § 127.621(b), the application shall be either hand delivered or transmitted by certified mail return receipt requested.

The permittee shall not construct a new source under the General Permit until and unless the appropriate Regional Office is notified that construction is to be conducted and written authorization to construct is received. The fees described in Condition 15 shall accompany the notification of construction.

The permittee shall notify the Department, in writing, within 24 hours of the discovery of any malfunction during a business day or by 5:00 p.m. on the first business day after a weekend or holiday of any malfunction of the landfill gas-fired turbine(s) which results in, or may result in, the emission of air contaminants in excess of the limitations specified in, or established

pursuant to, any applicable rule or regulation contained in 25 *Pa. Code*, Subpart C, Article III (relating to air resources).

In the event that the “turbine core” (combustor with, or without, associated compressor and turbine section) needs to be replaced, a new authorization must be obtained from the Department. If this request occurs within five (5) years after the initial authorization to use this General Permit, and the Department has not established any new or more restrictive BAT standards for landfill gas fired turbines, the Department will act on this request within seven (7) days of receipt of a complete application. In order to receive an expedited authorization to install the new “turbine core”, the application must not request an increase the turbine capacity and must not result in any increase in air emission rates. In the event the Department has established new BAT requirements, the application to install a new “turbine core” must demonstrate that the source will comply with the new BAT requirements of the General Permit. Alternatively, an application for the new “turbine core” may be submitted for approval as a standard plan approval application which meets the 25 *Pa. Code*, Chapter 127, Subchapter B.

## 7. Emissions Limits for Landfill Gas-fired Turbines:

The following emission limitations for landfill gas-fired turbines for which construction commenced on or after July 1, 1972 and where BAT requirements have not been previously established shall apply:

- a. In accordance with 25 *Pa. Code* § 127.12b, the permittee shall limit the emissions from each turbine to the following:
  - i. Oxides of Nitrogen (NO<sub>x</sub>) – 35 ppmvd corrected at 15% oxygen;
  - ii. Carbon Monoxide (CO) – 100 ppmvd corrected at 15% oxygen;
  - iii. Volatile Organic Compounds (VOC) – 20 ppmvd corrected at 3% oxygen as hexane;
  - iv. Sulfur Dioxide (SO<sub>2</sub>) – 30 ppmvd corrected at 15% oxygen; and
  - v. Particulate Matter (PM) – 0.0232 lb/MMBtu.
- b. In accordance with 25 *Pa. Code* § 127.12b, the permittee shall limit the emissions of non-methane organic compounds (NMOC) from the turbine to 98 percent by weight less than the amount entering the turbine or 20 ppmvd as hexane corrected at 3% oxygen.
- c. In accordance with 25 *Pa. Code* § 127.12b, any landfill gas-fired turbine(s) operated under this General Permit may not, at any time, result in emissions in excess of following:
  - i. Normal operation: 10 percent
  - ii. Start-up or shut-down:
    - Equal to or greater than 20 percent for a period or periods aggregating more than three (3) minutes in any one hour.
    - Equal to or greater than 60 percent at any time.
- d. National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines specified at 40 CFR Part 63, Subpart YYYY do not apply to a landfill gas-fired combustion turbine located at an area source of hazardous air pollutants (HAPs). An area source is any source that does not meet the applicability thresholds for a “major source” of HAP emissions. A major source of HAP emissions is

# DRAFT

any air contamination source or facility located on a contiguous site under common control that emits or has the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAPs at a rate of 25 tons or more per year. HAP emissions from the landfill gas-fired turbines located at this facility shall be less than 10 tons for any single HAP and 25 tons aggregate for any combination of HAPs during any consecutive rolling 12-month period.

- e. Each landfill gas-fired turbine is subject to the applicable requirements of 40 CFR Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines.
- f. The permittee of landfill gas-fired turbine(s) is not subject to new source performance standards (NSPS), Subpart WWW, Emission Guidelines Subpart Cc, or the NESHAP for municipal solid waste landfills (40 CFR Part 63, Subpart AAAA) requirements if it uses treated landfill gas in accordance with § 60.752(b)(2)(iii)(C). The EPA has determined that compression, de-watering, and filtering the landfill gas down to at least 10 microns is considered as “treatment” under NSPS Subpart WWW, § 60.752(b)(2)(iii)(C). If the landfill gas is not qualified as a treated gas, the permittee shall comply with NSPS, Subpart WWW and in turn NESHAP, Subpart AAAA.

If the permittee treats the landfill gas and combusts the gas in the turbine, the turbine is not subject to NSPS Subpart WWW and NESHAP Subpart AAAA requirements. Notwithstanding this exception, the emissions from any atmospheric vent from the treatment system shall be subject to the NSPS requirements of 40 CFR § 60.752(b)(2)(iii)(A) and (B), as well as the NESHAP.

- g. The owner and operator of landfill gas-fired turbine(s) shall comply with all applicable requirements of 40 CFR Part 63, Subpart AAAA.
- h. In accordance with 40 CFR Part 60, Standards of Performance for New Stationary Source § 40 CFR 60.333, Subpart GG, the permittee shall limit the sulfur content of the landfill gas fired in the gas turbine to 0.8 percent or less by weight.

## 8. Performance Testing:

- a. For a new landfill gas-fired turbine installed in accordance with Conditions 2 and 7 within sixty (60) days after achieving the maximum production rate at which the facility will be operated, but not later than one hundred and eighty (180) days after initial startup of the facility, the permittee shall perform a source test on the each turbine covered by this General Permit. Each turbine shall be stack tested for NO<sub>x</sub> (oxides of nitrogen), CO (carbon monoxide), VOC (volatile organic compounds), HAPs (Hazardous Air Pollutants), SO<sub>2</sub> if required, and visible emissions as established in Condition 7. Stack testing shall be performed in accordance with methods defined in Section 60.335 of the NSPS, Subpart GG, for NO<sub>x</sub>, and in accordance with 25 *Pa Code*, Chapter 139 for NO<sub>x</sub>, CO, VOC, HAPs, and visible emissions.
- b. For a landfill gas-fired turbine replaced with a new “turbine core” in accordance with Condition #6, within 30 days after achieving the maximum production rate at which the facility will be operated, the permittee shall perform NO<sub>x</sub> and CO emissions testing using a portable gas analyzer or a stack test approved by the Department.

The Department reserves the right to require a stack test in accordance with EPA reference methods should the data from the portable analyzer warrant.

- c. At least 60 days prior to the stack test as per Condition 8.a. or stack test using portable gas analyzer as per Condition 8.b., a test protocol, including procedures and a sketch with dimensions indicating the location of sampling ports and other data to ensure the collection of representative samples, shall be submitted to the Department.

# DRAFT

- d. At least two (2) weeks prior to the stack test or a test using portable gas analyzer, the Department shall be informed of the date and time of the test.
- e. Within sixty (60) days after completion of the stack test, two (2) copies of the complete test report, including all operating conditions, shall be submitted to the Department for approval.

## 9. Monitoring Requirements:

In accordance with Subpart GG, §40 CFR 60.334, Standards of Performance for Stationary Gas Turbines, the permittee shall daily sample the landfill gas being fired for nitrogen and sulfur content. The permittee may submit to the Department and EPA for approval an alternative plan for sampling of the above compounds. The submission shall be in accordance to 40 CFR Part 60.

## 10. Recordkeeping Requirements:

- a. The permittee shall record the following:
  - i. Monthly amount of landfill gas fired in each turbine;
  - ii. 12-month rolling total amount of landfill gas fired in each turbine;
  - iii. Monthly hours of operation;
  - iv. Monthly emissions of Particulate, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, and HAPs; and
  - v. 12-month rolling total emissions of Particulate, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, and HAPs.
- b. The permittee shall calculate the emissions from the turbine(s) as proposed in the application or in another manner approved by the Department. These methods of calculating the emissions shall be reviewed after the results of the required testing are approved.
- c. The permittee shall install and maintain a device that measures and records the flow of landfill gas to the turbine(s).
- d. The permittee shall maintain a permanently bound logbook or other method approved by the Department. This log shall, at a minimum, contain the following information:
  - i. The date of the tuning procedures and/or routine maintenance;
  - ii. The name of the Service Company and technicians;
  - iii. The final operating rate or load;
  - iv. The final NO<sub>x</sub> and CO emission rates;
  - v. The final excess oxygen rate; and
  - vi. Any other information required by this General Permit.
- e. The permittee shall record each start-up, shut down, and malfunction of the turbine. The record shall include the date, time, duration and type of event.
- f. If the landfill gas fired turbine is subject to Subpart WWW, § 40 CFR 60.757, Standards of Performance for Municipal Solid Waste Landfills, or Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills in Subpart Cc of 40 CFR Part 60,

the permittee shall record the monthly and 12-month rolling total emission of NMOCs from the turbine.

- g. These records shall be retained for a minimum of five (5) years and shall be made available to the Department upon request. The Department reserves the right to expand the list contained in this condition as it may reasonably prescribe pursuant to the provisions of Section 4 of the Pennsylvania Air Pollution Control Act (35 P. S. §§ 4001-4015), and as it may deem necessary to determine compliance with any conditions contained herein.

## 11. Reporting Requirements:

- a. At least five (5) working days prior to the completion of construction of the source(s) authorized under this General Plan Approval, the owner/operator shall provide written notice to the Department of the completion of the construction and its intent to commence operation. The notice shall specify when the construction will be completed and when the facility owner or operator expects to commence operation.
- b. Any time the sulfur content of the landfill gas exceeds 0.8 percent by weight, the Department shall be notified.

## 12. Work Practice Requirements:

- a. The permittee, at a minimum, shall conduct leak checks on the landfill gas handling and processing equipment.
- b. The Permittee shall perform an annual adjustment and/or tune-up on each unit which shall include the following:
  - i. Inspection, adjustment, cleaning or replacement of fuel-burning equipment, including the burners and moving parts necessary for proper operation as specified by the manufacturer;
  - ii. Inspection of flame pattern of characteristics and adjustments necessary to minimize emissions of NO<sub>x</sub>, and to the extent practicable minimize emissions of CO;
  - iii. Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation as specified by the manufacturer; and
  - iv. Sampling of the final NO<sub>x</sub> and CO emission rates. This sampling shall be conducted with portable metering equipment in accordance with applicable manufacturers' calibration and operating procedures.

## 13. Additional Requirements:

- a. The landfill gas-fired turbine is subject to Subpart GG of the Standards of Performance for New Stationary Sources and the permittee shall comply with all applicable requirements of this Subpart. Pursuant to 40 CFR Section 60.4, the submission of copies of all requests, reports, applications, submittals and other communications shall be provided to both EPA and the Department.
- b. If the landfill gas-fired turbine is subject to 40 CFR 60 Standards of Performance for New Stationary Sources, Subpart WWW or Emission Guidelines Subpart Cc, the permittee shall comply with all applicable requirements of this Subpart. Pursuant to 40 CFR Section 60.4, the submission of copies of all requests, reports, applications, submittals and other communications shall be provided to both EPA and the Department.



**DRAFT**

Copies of all documents provided to EPA shall be sent to:

Director of Air Protection Division  
U.S. EPA, Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029

- c. Copies of all documents provided to the Department shall be sent to the appropriate DEP Regional Office.

**14. Term of Permit:**

Authority to operate under this General Permit is granted for a fixed term of five (5) years. The Department will notify each applicant, in writing, when authority to operating under this General Permit is granted.

**15. Permit Fees:**

The General Permit establishes the following application and renewal fees payable every five (5) years if no equipment changes occur:

One thousand dollars.

An additional plan approval application fee as indicated above is required each time the permittee installs or modifies a landfill gas-fired turbine. The installation or modification of a landfill gas-fired turbine(s) must be conducted according to the terms and conditions of this General Permit. Two (2) or more landfill gas-fired turbines may be installed under a single plan approval fee.

**16. Expiration and Renewal of Permit:**

The permittee's right to operate under this General Permit terminates on the date of expiration of the authorization to operate under this permit unless a timely and complete renewal application is submitted to the Department thirty (30) days prior to the permit expiration date.

Upon receipt of a complete and timely application for renewal, the landfill gas-fired turbine(s) may continue to operate subject to final action by the Department on the renewal application. This protection shall cease to exist if, subsequent to a completeness determination, the applicant fails to submit by the deadline specified in writing by the Department any additional information required by the Department to process the renewal application.

The General Permit application for renewal shall include: the identity of the owner or operator; location of the landfill gas-fired turbine(s); current permit number; description of the turbine(s) and equipment located at the facility; information regarding previously imposed limitations; the appropriate renewal fee listed in Condition 15; and, any other information requested by the Department. At a minimum, the permit renewal fee shall be submitted to the Department at least thirty (30) days prior to the expiration of the General Permit.

**17. Applicable Laws:**

Nothing in this General Permit relieves the permittee from its obligation to comply with all applicable Federal, state, and local laws and regulations.

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**18. Prohibited Use:**

Any stationary air contamination source that is subject to the requirements of 25 Pa. Code Chapter 127, Subchapter D (relating to prevention of significant deterioration), 25 Pa. Code Chapter 127, Subchapter E (relating to new source review), 25 Pa. Code Chapter 127, Subchapter G (relating to Title V operating permits), or 25 Pa. Code § 129.91 (relating to control of major sources of NO<sub>x</sub> and VOCs) may not operate a landfill gas-fired turbine(s) under this General Permit. Title V facilities may use this General Permit as a plan approval when the major new source review and prevention of significant deterioration review requirements are not applicable.

**19. Transfer of Ownership or Operation:**

The permittee may not transfer the authorization to operate under this General Permit. New owners or operators shall submit a new application and fees as described in Condition 15.

**20. Start-up and Shutdown Exclusion:**

The emission limitations stated in Condition 7 shall apply at all times except during periods of start-up and shutdown, provided, however, that the duration of start-up and shut-down do not exceed one hour per occurrence.

**21. Emission Limitations and/or Operating Requirements Previously Established Pursuant to Best Available Technology and/or Imposed to Give Synthetic Minor Status:**

This General Permit cannot be used to vacate or reestablish BAT or other emission limitations or requirements established through the air quality permitting process. The Department reserves the right to make a determination whether a source that received a BAT determination from the Department through a previously issued plan approval can use this General Permit.

**22. Requirements Small Sources of NO<sub>x</sub>:**

Each landfill gas-fired turbine rated at greater than 100 mmBtu/hr and located in Philadelphia, Bucks, Chester, Delaware, or Montgomery Counties shall comply with small sources of NO<sub>x</sub> requirements as established in 25 Pa. Code §§ 129.201 through 129.205.

Approved by: \_\_\_\_\_

Joyce E. Epps  
Director  
Bureau of Air Quality

Date Approved: \_\_\_\_\_