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**Submitted via US Mail and http://www.ahs.dep.pa.gov/RegComments**
Environmental Quality Board
P.O. Box 8477
Harrisburg, PA 17105-8477

**Re: Additional RACT Requirements for Major Sources of NOx and VOCs**
**Proposed Rulemaking (44 Pa. B. 2392)**
**Presumptive NOx RACT for Landfill Gas-Fired Internal Combustion Engines**

Dear Environmental Quality Board ("EQB") Members:

The Pennsylvania Waste Industries Association ("PWIA") appreciates this opportunity to provide comment on the proposed Additional RACT Requirements for Major Sources of NOx and VOCs regulations published in the April 19, 2014 Pennsylvania Bulletin. PWIA recognizes and fully supports the goals of the proposed regulations and, in particular, finds the use of "presumptive RACT requirements" to be an effective and efficient method to fulfill the requirements of the re-analysis required by US EPA. More specifically, PWIA endorses the presumptive RACT for municipal waste landfills that are proposed as 25 Pa. Code §129.97(e), supports the presumptive RACT for natural gas and other noncommercial gaseous fuels for turbines as proposed as 25 Pa. Code §129.97(g)(2)(i) and (iii), and requests that landfill gas-fired internal combustion engines (LFG-fired IC Engines) be included in the presumptive NOx limits that are currently proposed for natural gas-fired IC engines as set forth in 25 Pa. Code §129.97 (g)(3)(i)(A) and (iii)(A).

PWIA is the Pennsylvania chapter of the National Waste and Recycling Association, a non-profit organization that represents the interests of the North American waste and recycling service industry. PWIA members include both privately-held and publically-traded companies that own and operate numerous commercial solid waste and recycling facilities throughout the Commonwealth. In addition to solid waste landfills, our members operate resource recovery facilities, recycling facilities, transfer stations and collection operations. PWIA's primary missions are to advance the safe, efficient and environmentally responsible management of solid

waste, and to promote sound public policy in rulemaking that affects the management of solid waste.

According to the U.S. Environmental Protection Agency (US EPA), forty renewable gas-to-energy projects are located at Pennsylvania landfills, the second highest number of any state (trailing only California), and we are proud that nine Pennsylvania gas-to-energy projects have been honored with national awards from the US EPA. Most of the forty projects in the Commonwealth generate electricity from landfill gas, and that our industry supplies almost 200 MWh of baseload renewable electricity from the beneficial use of landfill gas, primarily through use of LFG-fired IC engines. This accomplishment is particularly noteworthy in that these projects face very challenging economic conditions due to the low wholesale price of electricity, due in part to the availability of low-cost natural gas. All of the electricity we generate is classified as a Tier I resource under the Commonwealth's Alternative Energy Portfolio Standards Act.

These comments are submitted in furtherance of our primary missions, particularly advancing environmentally responsible management of solid waste through sound public policy.

Comment 1: PWIA Supports Proposed 25 Pa. Code §129.97(e).

PWIA strongly endorses the issuance of the presumptive RACT for municipal waste landfills that are proposed as 25 Pa. Code §129.97(e). The additional level of control imposed under proposed 25 Pa. Code §129.97(e) is appropriate and achievable within the cost-effectiveness parameters set forth by the Board. Establishing these presumptive RACT requirements is consistent with existing state and federal rules regarding landfill operations, and performing individual case-by-case RACT analyses for these sources would be a costly endeavor that would not identify any emission reducing controls or actions as there are no such additional controls demonstrated as technically feasible, regardless of cost-effectiveness.

Comment 2: Technical Information Relevant to the Rulemaking.

Natural gas and landfill gas are often used to fuel very similar equipment, including turbines and internal combustion engines. Generally, natural gas is more homogenous and has approximately twice the heat content of landfill gas. As a result of trace elements found in landfill gas, it is a well-established fact that controls that are technically available for reducing NOx emissions from natural gas-fired devices are not technically feasible when those devices are fueled by landfill gas[1].

[1] The fact that controls are not technically feasible for landfill gas-fired sources is well documented in Department and US EPA policies, regulations and technical documents, all of which apply more stringent tests for controls than RACT. See the Department's *Best Available Technology and Other Permitting Criteria for Municipal Solid Waste Landfills,* Document No. 275-2101-007, "BAT for the reduction of nitrogen oxides from an internal combustion engine is...Lean-burn technology". The preamble to 40 CFR Part 60, Subpart JJJJ ("Engine NSPS") and Part 63,

In the simplest terms, it is more difficult to control emissions from landfill gas-fired devices controls compared to natural gas-fired devices, and when controls are technically feasible for landfill gas-fired devices, those controls typically have higher operating costs. As a result, any emission limit chosen as an expression of RACT for a class of natural gas-fired devices will always be equally or more restrictive than an emission limit chosen as an expression of RACT for a class of landfill gas-fired devices. In other words, applying a natural gas emission limit to a landfill gas-fired device will always result in a level of controls that is at least as stringent as RACT, if not more stringent.

Comment 3: PWIA Supports Proposed 25 Pa. Code §129.97(g)(2)(i) and (iii).

PWIA supports the presumptive RACT for natural gas and other noncommercial gaseous fuels for turbines as proposed as 25 Pa. Code §129.97(g)(2)(i) and (iii). These two proposed provisions establish presumptive NOx and VOC emission rates that would apply to a variety of types of turbines, including those fired with landfill gas (a form of noncommercial gaseous fuel, as defined in 25 Pa. Code 121.1). Establishing these presumptive RACT requirements is consistent with existing state and federal rules as well as the state of control technology for natural gas-fired turbines as well as some landfill gas-fired turbines. Although we believe that the level of controls established in these provisions for landfill gas-fired turbines are aggressive, we agree that the level of controls would be technically and economically available for most, but not necessarily all, LFG-fired turbines and therefore support their promulgation as presumptive RACT.

Comment 4: PWIA Recommends Including Landfill Gas in Proposed 25 Pa. Code §129.97(g)(3)(i)(A) and (iii)(A).

The rulemaking does not include a proposed presumptive RACT limit for NOx emission from landfill gas-fired internal combustion engines, although it does include such a limitation for

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Subpart ZZZZ ("RICE MACT") explains that control devices are available for natural gas-fired engines but not landfill gas-fired engines notes that "The final rule differentiates between gasoline, LPG, natural gas, and digester and landfill gas" because "landfill and digester gases contain a family of silicon-based gases collectively called siloxanes. Combustion of siloxanes forms compounds that have been known to foul fuel systems, combustion chambers, and post-combustion catalysts." 73 Fed. Reg. 3568, 3570-71 (January 18, 2008). As the preamble to 40 CFR Part 63, Subpart YYYY (Turbine NESHAP) notes, "firing even 10 percent landfill or digester gas will cause fouling that will render the oxidation catalyst inoperable within a short period of time. Pretreatment of exhaust gases to remove siloxanes was investigated. However, no pretreatment systems are in use and their long term effectiveness is unknown. We also considered fuel switching for this subcategory of turbines. Switching to a different fuel such as natural gas or diesel would potentially allow the turbine to apply an oxidation catalyst emission control device. However, fuel switching would defeat the purpose of using this type of fuel which would then either be allowed to escape uncontrolled or would be burned in a flare with no energy recovery." 69 Fed. Reg. 10512, 10532 (March 5, 2004). Recently, US EPA revisited this issue and reaffirmed its position that controls are not appropriate for landfill gas-fired turbines (see proposed revisions to40 CFR Part 60, Subpart KKKK (Turbine NSPS) at 77 Fed. Reg. 52554, 52559 (August 29, 2012)).

natural gas-fired internal combustion engines. PWIA requests that presumptive NOx RACT for landfill gas-fired internal combustion engines be established in this rulemaking at a level equal to that set forth in proposed 25 Pa. Code §129.97(g)(3)(i)(A) and (iii)(A). For the reasons set forth in our Comment 2, establishing a presumptive NOx RACT limit for landfill gas-fired internal combustion engines at this level will result in a level of controls that is at least, if not more, stringent than the emission limits would otherwise be determined using the RACT procedures set forth in the proposed rule's preamble.

As additional support for this presumptive NOx emission limitation can be found in 40 CFR Part 60, Subpart JJJJ. In that relatively recent rulemaking, US EPA established *higher* NOx emission limits for landfill gas-fired internal combustion engines than for the same size engines fired on natural gas, because these emissions are more difficult and costly to control[2]. This is further evidence that setting presumptive NOx RACT limits for landfill gas-fired internal combustion engines at the same level as natural gas-fired engines is at least, if not more, stringent than would be determined by a separate analysis of landfill gas-fired internal combustion engines. Please keep in mind that Subpart JJJJ applies only to new and modified engines, while the RACT rule will apply to existing engines. Retrofitting engines for additional NOx control, as opposed to designing the engine for/with control as an initial matter, is a technically more difficult and economically costly process.

Establishing a presumptive RACT is important to ensure continuation of the generation of renewable energy from landfill gas. It is our understanding that all landfills subject to this rule, as proposed, will be required to perform a "case-by-case" RACT analysis with an expected cost in the neighborhood of $20,000. This level of expense, particularly for a study that will not identify any additional emission reducing controls or actions because no such additional controls are demonstrated as technically feasible, could impact the economic viability of certain projects and result in a reduction of renewable energy generation.

On the other hand, if the rule includes a presumptive NOx RACT limit for landfill gas-fired internal combustion engines, then those landfills that can meet the presumptive limit can do so and avoid the case-by-case expenses, while those landfills that cannot meet the presumptive limit are in the same position they would otherwise be—they would still have the case-by-case RACT analysis option available to them.

PWIA requests that presumptive NOx limits be established in the regulation for landfill gas-fired internal combustion engines, and respectfully suggests that the following changes would accomplish this goal:

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[2] Generally, natural gas-fired engines have emission limits of either 1 or 2 g/bhp-hr, depending on engine size and installation date, whereas landfill gas-fired engines have emission limits of either 2 or 3 g/bhp-hr, again depending on engine size and installation date. See Table 1 to 40 CFR Part 60, Subpart JJJJ.

**25 Pa. Code §129.97(g)(3)**

(i): For a lean burn stationary internal combustion engine with a rating equal to or greater than 500 bhp fired with:

(A) Natural gas or a noncommercial gaseous fuel, 3.0 grams NOx/bhp-hr.

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**25 Pa. Code §129.97(g)(3)**

(iii) For a rich burn stationary internal combustion engine with a rating equal to or greater than 500 bhp fired with:

(A) Natural gas or a noncommercial gaseous fuel, 2.0 grams NOx/bhp-hr.

The addition of the phrase "or a noncommercial gaseous fuel" makes these provisions consistent with the language and scope of the presumptive NOx limits for turbines (see proposed 25 Pa. Code §129.97(g)(2)(i)(A) and (iii)(A)). In the alternative, the phrase "landfill gas" could be used in place of "noncommercial gaseous fuel".

Conclusion

PWIA appreciates your consideration of these comments, and supports both the overall approach taken by the Department and EQB in developing the RACT proposed regulations, as well as the specific rulemaking proposal itself. PWIA believes that the inclusion presumptive NOx emission limits for landfill gas-fired internal combustion engines will increase the efficacy of the regulation, and hopes that you agree with us.

Very truly yours,

Mark C. Pedersen/MCH

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President

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**Summary of Pennsylvania Waste Industries Association ("PWIA") Comments on the Additional RACT Requirements for Major Sources of NOx and VOCs Proposed Rulemaking (44 Pa. B. 2392).**

This document summarizes the four comments submitted by PWIA in our letter of June 30, 2014 ("Comment Letter"), and has been prepared in submitted in accordance with Section J. Public Comments in the Proposed Rulemaking's preamble. As set forth in our Comment 4 below, PWIA strongly recommends inclusion of presumptive NOx RACT emission limits for landfill gas-fired internal combustion engines.

Comment 1: PWIA strongly endorses the issuance of the presumptive RACT for municipal waste landfills that are proposed as 25 Pa. Code §129.97(e) for the reasons set forth in our Comment Letter.

Comment 2: Technical and regulatory information explaining differences between natural gas and landfill gas, and the availability of emissions controls of each, are discussed in detail in our Comment Letter.

Comment 3: PWIA supports the presumptive RACT for natural gas and other noncommercial gaseous fuels for turbines as proposed as 25 Pa. Code §129.97(g)(2)(i) and (iii) for the reasons set forth in our Comment Letter.

Comment 4: PWIA **strongly recommends** inclusion of a presumptive NOx emission for landfill gas-fired internal combustion engines in proposed 25 Pa. Code §129.97(g)(3)(i)(A) and (iii)(A). The current lack of a presumptive RACT limit for NOx emission from landfill gas-fired internal combustion engines will result in unnecessary expense, with no additional emission controls or any environmental benefit, for landfills required to conduct "case-by-case" RACT analyses for these sources. PWIA specifically requests that presumptive NOx RACT for landfill gas-fired internal combustion engines be established in this rulemaking at a level equal to that set forth in 25 Pa. Code §129.97(g)(3)(i)(A) and (iii)(A), which will result in a level of control that is at least, if not more, stringent than the NOx emission limits would otherwise be determined using the RACT procedures set forth in the proposed rule's preamble. PWIA recommends additions of the clause "or a noncommercial gaseous fuel" as follows:

**25 Pa. Code §129.97(g)(3)**(i)(A) Natural gas ***or a noncommercial gaseous fuel,*** 3.0 grams NOx/bhp-hr.

**25 Pa. Code §129.97(g)(3)**(iii)(A) Natural gas ***or a noncommercial gaseous fuel,*** 2.0 grams NOx/bhp-hr.