COMMONWEALTH OF PENNSYLVANIA **MEMO**
Department of Environmental Protection
Southwest Regional Office

RE Comment and Response Document
Robinson Power Company, LLC
Beech Hollow Project / Combined Cycle Gas Turbine Electric Generating Facility
Permit Decision: Approved
Robinson Township, Washington County
Public Comment Period: June 10, 2017 – July 22, 2017
Public Meeting and Hearing: July 12, 2017
APS # 893311, Auth # 1111919, PF # 650405

DATE October 27, 2017

TO Air Quality Permit File PA-63-00922D

FROM Alan A. Binder, P.E. AAB
Environmental Engineer Manager
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Air Quality Modeling Section
Division of Air Resource Management

THROUGH Mark R. Gorog, P.E.
Regional Manager MRG
Air Quality Program

BACKGROUND

The Hillcrest Group, LLC ("Hillcrest") has submitted a plan approval application on behalf of Robinson Power Company, LLC ("Robinson Power") for the construction of a natural gas-fired combined cycle power plant to be located in Robinson Township, Washington County. The Department of Environmental Protection's ("Department's") review of the submitted application has been completed and the public comment period has expired. This memo documents activity that has taken place since the Department's review memo was finalized.

Notice of intent to issue was provided to the applicant on June 2, 2017, and the applicant fulfilled the requirement to publish the notice within 10 days of receipt, in accordance with the requirements of 25 Pa. Code §127.44(c). Proof of publication was provided to the Department on June 19, 2017; fulfilling the requirement to provide proof within one week of publication, also in accordance with the requirements of 25 Pa. Code §127.44(c). A copy of the proposed plan approval and review memorandum were provided to the Department's operations staff, Air Quality Specialist, Melissa Baggam, and District Supervisor, Elizabeth Speicher, on June 23, 2017.

Notice of intent to issue the plan approval (and to hold a public hearing) was published in the *Pennsylvania Bulletin* on June 10, 2017; published in the *Observer-Reporter* on June 7-9, 2017; and sent to United States Environmental Protection Agency ("EPA"), WV DEP, and OH EPA on June 9, 2017, in accordance with the requirements of 25 Pa. Code §§127.44-127.46. Notice was also provided to the National Park Service and Forest Service on June 9, 2017. All required methods of public notice were fulfilled as of June 10, 2017, and the regulatory 30-day public comment period would have ended at the close of business on July 10, 2017. The public

comment period was extended until July 22, 2017, because the record remained open for 10 days after the public hearing held on July 12, 2017.

Received comments are substantively addressed in this document below the list of commentators. Comments have been identified, summarized, and categorized where possible. Numbers in parentheses following each comment identify to which commentators the comment applies.

LIST OF COMMENTATORS

1. Marc Slaughter

2. Joseph Otis Minott, Esq.
   Executive Director, Clean Air Council

3. Karl Koener
   Engineering/Technical Coordinator, Clean Air Council

4. Ned Mulachy
   Staff Attorney, Group Against Smog and Pollution

5. Tom McMaster
   Resident, Washington County, PA

6. Lisa Widawsky Hallowell
   Senior Attorney, Environmental Integrity Project

7. Lisa Graves Marcucci
   PA Coordinator Community Outreach, Environmental Integrity Project

8. Cathy Lodge
   Resident, Washington County, PA; Residents Against the Power Plant

9. Chris Lodge
   Resident, Washington County, PA

10. Put Foley
    Resident, Washington County, PA

11. Justin Wasser
    Consultant, Clean Air Council

12. Rodger Kendall
    Resident, Washington County, PA

13. Himanshu Vyas
    Environmental Engineer, U.S. EPA, Region III

Air Dispersion Modeling

1. **Comment:** DEP should review Robinson's $PM_{2.5}$ modeling to ensure it follows recent United States Environmental Protection Agency (EPA) guidelines. Specifically, the EPA recently released a draft version of "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program": https://www3.epa.gov/ttn/scram/guidance/guide/EPA-454_R-16-006.pdf This guidance / demonstration tool for ozone and $PM_{2.5}$ is called "Modeled Emission Rates for Precursors (MERPs)." While offsets are needed for ozone (NO_x), the modeling of $PM_{2.5}$ (including the project's condensable emissions) should be reviewed with this demonstration in mind. (2, 3, 11)

   Response: The Department received Robinson Power's Plan Approval Application on March 14, 2016, and determined that it was administratively complete on April 22, 2016, well before the U.S. Environmental Protection Agency (EPA) released the draft "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program" (EPA-454/R-16-006, December 2016) on December 2, 2016, for public review and comment. Nonetheless, the Department has applied the draft MERPs guidance to Robinson Power's proposed emissions of primary PM-2.5 and precursors of PM-2.5, oxides of nitrogen (NO_X) and sulfur dioxide (SO_2), in response to this comment.

   According to the EPA's draft MERPs guidance, MERPs could be used as part of a "first tier" demonstration to conclude that projected increases in PM-2.5 precursor emissions, if less than the calculated MERPs, would not cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS) or Prevention of Significant Deterioration (PSD) increments for PM-2.5. In the draft MERPs guidance, the EPA presents hypothetical single-source impacts on downwind secondary PM-2.5 based on photochemical modeling for 78 hypothetical sources of multiple sizes (based on emissions) and release types across the continental United States. A MERP is derived from the following formula:

   > MERP = Critical air quality threshold (CAQT) × [Modeled emission rate of hypothetical source ÷ Modeled impact of hypothetical source].

   Table 7.1 of the draft MERPs guidance lists the lowest, most conservative illustrative MERP values by precursor, pollutant, and region of the continental United States. These illustrative MERP values are derived from CAQTs that are based on the PM-2.5 draft NAAQS significant impact levels (SIL) provided in the EPA's draft memorandum, "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program," released for public review and comment on August 1, 2016 (revised August 18, 2016).

   Based on the example calculations provided in section 7 of the draft MERPs guidance, the Department calculated Robinson Power's total PM-2.5 impact as a percentage of each CAQT. Robinson Power's primary PM-2.5 impact, represented by the highest concentration at any model receptor determined by Robinson Power's air dispersion

modeling with AERMOD, was expressed as a percentage of the CAQT. To calculate Robinson Power's secondary PM-2.5 impact due to precursor emissions, its NO_X potential to emit (PTE) of 190.44 tons per year (tpy) and SO_2 PTE of 15.42 tpy were each expressed as a percentage of the lowest, most conservative illustrative MERP in the eastern United States (EUS) and then summed to represent a percentage of the CAQT. Finally, Robinson Power's total PM-2.5, expressed as a percentage of the CAQT, was calculated by summing the primary PM-2.5 impact with the secondary PM-2.5 impact. The Department notes that its calculations double count the secondary PM-2.5 impact because the primary PM-2.5 impact was based on Robinson Power's air dispersion modeling with AERMOD which already accounted for secondary PM-2.5 with an upward adjustment of the PM-2.5 emission rates.

The Department calculated Robinson Power's total PM-2.5 impact as a percentage of the following CAQTs: 24-hour PM-2.5 draft NAAQS SIL, annual PM-2.5 draft NAAQS SIL, 24-hour PM-2.5 draft Class I PSD increment SIL, annual PM-2.5 draft Class I PSD increment SIL, 24-hour PM-2.5 Class II PSD increment, and annual PM-2.5 Class II PSD increment. Robinson Power's total PM-2.5 impact was calculated to be less than 100 % of each CAQT, indicating that no CAQTs would be exceeded. The Department's calculations for each CAQT are provided below.

24-hour PM-2.5 Draft NAAQS SIL

The CAQT is the 24-hour PM-2.5 draft NAAQS SIL of 1.2 micrograms per cubic meter ($\mu g/m^3$).

Calculation of Primary PM-2.5 Impact

[1.07189 $\mu g/m^3$ (Robinson impact) ÷ 1.2 $\mu g/m^3$ (CAQT)] × 100 %
= 89.32 % (of CAQT)

Calculation of Secondary PM-2.5 Impact

[190.44 tpy NO_X (Robinson PTE) ÷ 2,467 tpy NO_X (24-hour PM-2.5 EUS MERP)]
+ [15.42 tpy SO_2 (Robinson PTE) ÷ 675 tpy SO_2 (24-hour PM-2.5 EUS MERP)]
= 0.0772 (NO_X) + 0.0228 (SO_2) = 0.1000 × 100 % = 10.00 % (of CAQT)

Calculation of Total PM-2.5 Impact

89.32 % (primary PM-2.5) + 10.00 % (secondary PM-2.5) = 99.32 % (of CAQT)

Annual PM-2.5 Draft NAAQS SIL

The CAQT is the annual draft PM-2.5 NAAQS SIL of 0.2 $\mu g/m^3$.

Calculation of Primary PM-2.5 Impact

[0.05281 $\mu g/m^3$ (Robinson impact) ÷ 0.2 $\mu g/m^3$ (CAQT)] × 100 %
= 26.41 % (of CAQT)

Calculation of Secondary PM-2.5 Impact

[190.44 tpy NO_X (Robinson PTE) ÷ 10,037 tpy NO_X (annual PM-2.5 EUS MERP)]
+ [15.42 tpy SO_2 (Robinson PTE) ÷ 4,013 tpy SO_2 (annual PM-2.5 EUS MERP)]
= 0.0190 (NO_X) + 0.0038 (SO_2) = 0.0228 × 100 % = 2.28 % (of CAQT)

Calculation of Total PM-2.5 Impact

26.41 % (primary PM-2.5) + 2.28 % (secondary PM-2.5) = 28.69 % (of CAQT)

24-hour PM-2.5 Draft Class I PSD Increment SIL

The CAQT is the 24-hour PM-2.5 draft Class I PSD increment SIL of 0.27 $\mu g/m^3$.

Calculation of Primary PM-2.5 Impact

[0.02055 $\mu g/m^3$ (Robinson impact) ÷ 0.27 $\mu g/m^3$ (CAQT)] × 100 %
= 7.61 % (of CAQT)

Calculation of Secondary PM-2.5 Impact

2,467 tpy NO_X (24-hour PM-2.5 EUS MERP for NO_X for CAQT of 1.2 $\mu g/m^3$)
× 0.27 $\mu g/m^3$ (CAQT) ÷ 1.2 $\mu g/m^3$ (CAQT)
= 555 tpy (24-hour PM-2.5 EUS MERP for NO_X for CAQT of 0.27 $\mu g/m^3$)

675 tpy SO_2 (24-hour PM-2.5 EUS MERP for SO_2 for CAQT of 1.2 $\mu g/m^3$)
× 0.27 $\mu g/m^3$ (CAQT) ÷ 1.2 $\mu g/m^3$ (CAQT)
= 152 tpy (24-hour PM-2.5 EUS MERP for SO_2 for CAQT of 0.27 $\mu g/m^3$)

[190.44 tpy NO_X (Robinson PTE) ÷ 555 tpy NO_X (24-hour PM-2.5 EUS MERP)]
+ [15.42 tpy SO_2 (Robinson PTE) ÷ 152 tpy SO_2 (24-hour PM-2.5 EUS MERP)]
= 0.3431 (NO_X) + 0.1014 (SO_2) = 0.4446 × 100 % = 44.46 % (of CAQT)

Calculation of Total PM-2.5 Impact

7.61 % (primary PM-2.5) + 44.46 % (secondary PM-2.5) = 52.07 % (of CAQT)

Annual PM-2.5 Draft Class I PSD Increment SIL

The CAQT is the annual PM-2.5 draft Class I PSD increment SIL of 0.05 $\mu g/m^3$.

Calculation of Primary PM-2.5 Impact

[0.00107 $\mu g/m^3$ (Robinson impact) ÷ 0.05 $\mu g/m^3$ (CAQT)] × 100 %
= 2.14 % (of CAQT)

Calculation of Secondary PM-2.5 Impact

10,037 tpy NO_X (annual PM-2.5 EUS MERP for NO_X for CAQT of 0.2 $\mu g/m^3$)
× 0.05 $\mu g/m^3$ (CAQT) ÷ 0.2 $\mu g/m^3$ (CAQT)
= 2,509 tpy (annual PM-2.5 EUS MERP for NO_X for CAQT of 0.05 $\mu g/m^3$)

4,013 tpy SO_2 (annual PM-2.5 EUS MERP for SO_2 for CAQT of 0.2 $\mu g/m^3$)
× 0.05 $\mu g/m^3$ (CAQT) ÷ 0.2 $\mu g/m^3$ (CAQT)
= 1,003 tpy (annual PM-2.5 EUS MERP for SO_2 for CAQT of 0.05 $\mu g/m^3$)

[190.44 tpy NO_X (Robinson PTE) ÷ 2,509 tpy NO_X (annual PM-2.5 EUS MERP)]
+ [15.42 tpy SO_2 (Robinson PTE) ÷ 1,003 tpy SO_2 (annual PM-2.5 EUS MERP)]
= 0.0759 (NO_X) + 0.0154 (SO_2) = 0.0913 × 100 % = 9.13 % (of CAQT)

Calculation of Total PM-2.5 Impact

2.14 % (primary PM-2.5) + 9.13 % (secondary PM-2.5) = 11.27 % (of CAQT)

24-hour PM-2.5 Class II PSD Increment

The CAQT is the 24-hour PM-2.5 Class II PSD increment of 9 $\mu g/m^3$.

Calculation of Primary PM-2.5 Impact

[1.06542 $\mu g/m^3$ (Robinson impact) ÷ 9 $\mu g/m^3$ (CAQT)] × 100 %
= 11.84 % (of CAQT)

Calculation of Secondary PM-2.5 Impact

2,467 tpy NO_X (24-hour PM-2.5 EUS MERP for NO_X for CAQT of 1.2 $\mu g/m^3$)
× 9 $\mu g/m^3$ (CAQT) ÷ 1.2 $\mu g/m^3$ (CAQT)
= 18,503 tpy (24-hour PM-2.5 EUS MERP for NO_X for CAQT of 9 $\mu g/m^3$)

675 tpy SO_2 (24-hour PM-2.5 EUS MERP for SO_2 for CAQT of 1.2 $\mu g/m^3$)
× 9 $\mu g/m^3$ (CAQT) ÷ 1.2 $\mu g/m^3$ (CAQT)
= 5,063 tpy (24-hour PM-2.5 EUS MERP for SO_2 for CAQT of 9 $\mu g/m^3$)

[190.44 tpy NO_X (Robinson PTE) ÷ 18,503 tpy NO_X (24-hour PM-2.5 EUS MERP)]
+ [15.42 tpy SO_2 (Robinson PTE) ÷ 5,063 tpy SO_2 (24-hour PM-2.5 EUS MERP)]
= 0.0103 (NO_X) + 0.0030 (SO_2) = 0.0133 × 100 % = 1.33 % (of CAQT)

Calculation of Total PM-2.5 Impact

11.84 % (primary PM-2.5) + 1.33 % (secondary PM-2.5) = 13.17 % (of CAQT)

Annual PM-2.5 Class II PSD Increment

The CAQT is the annual PM-2.5 Class II PSD increment of 4 $\mu g/m^3$.

Calculation of Primary PM-2.5 Impact

[0.06611 $\mu g/m^3$ (Robinson impact) ÷ 4 $\mu g/m^3$ (CAQT)] × 100 %
= 1.65 % (of CAQT)

Calculation of Secondary PM-2.5 Impact

10,037 tpy NO_X (annual PM-2.5 EUS MERP for NO_X for CAQT of 0.2 $\mu g/m^3$)
× 4 $\mu g/m^3$ (CAQT) ÷ 0.2 $\mu g/m^3$ (CAQT)
= 200,740 tpy (annual PM-2.5 EUS MERP for NO_X for CAQT of 4 $\mu g/m^3$)

4,013 tpy SO_2 (annual PM-2.5 EUS MERP for SO_2 for CAQT of 0.2 $\mu g/m^3$)
× 4 $\mu g/m^3$ (CAQT) ÷ 0.2 $\mu g/m^3$ (CAQT)
= 80,260 tpy (annual PM-2.5 EUS MERP for SO_2 for CAQT of 4 $\mu g/m^3$)

[190.44 tpy NO_X (Robinson PTE) ÷ 200,740 tpy NO_X (annual PM-2.5 EUS MERP)]
+ [15.42 tpy SO_2 (Robinson PTE) ÷ 80,260 tpy SO_2 (annual PM-2.5 EUS MERP)]
= 0.0009 (NO_X) + 0.0002 (SO_2) = 0.0011 × 100 % = 0.11 % (of CAQT)

Calculation of Total PM-2.5 Impact

1.65 % (primary PM-2.5) + 0.11 % (secondary PM-2.5) = 1.76 % (of CAQT)

2. **Comment:** The proposed stack height may not be appropriate for the project, and may influence modeling results.

The proposed project has stack heights of 270 feet. This is much taller than similar projects, and was likely done to avoid more detailed modeling. For comparison, Tenaska has a proposed stack height of 180 feet in their Westmoreland County plant. While 270 feet may be the Good Engineering Practice (GEP) height, it seems excessive. *See* https://www3.epa.gov/scram001/guidance/guide/gep.pdf. There is not enough detail in the report to confirm building heights and GEP calculations. (2, 3, 11)

Response: The stack height entered in Robinson Power's air dispersion modeling with AERMOD for each combustion turbine stack, i.e., 82.3 meters or 270 feet, satisfies the stack height provisions codified in 40 CFR § 51.118 and is less than the Good Engineering Practice (GEP) stack height. Based on guidance in the U.S. Environmental Protection Agency's (EPA) "Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)" (EPA 450/4-80-023R, June 1985) and the primary output file ("SIL.SUM") of the EPA's Building Profile Input Program for the Plume Rise Model Enhancements algorithm (BPIPPRM), the EPA's refined formula height of each combustion turbine stack is 105.16 meters. According to the "Overall GEP Summary Table" in the BPIPPRM summary file ("SIL.TAB"), the air cooled condenser (ACC) is the controlling structure contributing to the calculation of the GEP refined formula height of each combustion turbine stack. The BPIPPRM primary output file and summary file were included on the electronic data disk with Robinson Power's Plan Approval Application. According to the definition of GEP stack height codified in 40 CFR § 51.100(ii), the GEP stack height of each combustion turbine stack is 105.16 m, or 22.86 m greater than the stack height of each combustion turbine stack entered in AERMOD.

In response to this comment, Robinson Power provided the Department with a detailed site plan which depicts the proposed power plant's site layout. The site plan includes a table which lists the estimated dimensions of the power plant's buildings and structures. The Department has confirmed that the data entered in the BPIPPRM input file, which was included on the electronic data disk with Robinson Power's Plan Approval

Application, are consistent with the information provided in Robinson Power's detailed site plan. Robinson Power's detailed site plan to support this response is available upon request.

3. **Comment:** Surface roughness values are quite different between the airport and project site. The meteorological data should be processed using the project site land characteristics to assure more representative, but conservative results. (2, 3)

   Response: The Department re-processed the Pittsburgh International Airport (KPIT) meteorological dataset with Stage 3 of the AERMOD meteorological preprocessor (AERMET) using estimates of the surface characteristics (albedo, Bowen ratio, and surface roughness length), calculated by AERSURFACE, in the vicinity of Robinson Power's project site. In accordance with subsection 3.1.1 of the U.S. Environmental Protection Agency's (EPA) "AERMOD Implementation Guide" (EPA-454/B-16-013, December 2016), the Department then conducted a sensitivity analysis with AERMOD to quantify, in terms of expected changes in concentration, the significance of the differences in each of the surface characteristics.

   The maximum concentration resulting from the KPIT meteorological dataset processed with the surface characteristics in the vicinity of Robinson Power's project site is either lower or insignificantly higher for each pollutant/averaging period than the maximum concentration resulting from the KPIT meteorological dataset processed with the surface characteristics in the vicinity of the KPIT meteorological measurement site. Moreover, all maximum concentrations are less than the EPA's Class II or Class I significant impact level (SIL), or Class II Prevention of Significant Deterioration (PSD) increment, for each pollutant/averaging period. The results of the Department's sensitivity analysis are summarized in the three tables below. The Department's air dispersion modeling data to support this response are available upon request.

Table 1: Sensitivity of Differences in Surface Characteristics – SIL Analyses for NAAQS and Class II PSD Increment

Pollutant	Averaging Period	SIL ($\mu g/m^3$)	Maximum Modeled Concentration ($\mu g/m^3$)		Concentration Difference ($\mu g/m^3$)
			With KPIT Surface Characteristics	With Robinson Power Surface Characteristics	
CO	1-hour	2,000[A]	232.96742	142.60532	-90.36210
	8-hour	500[A]	11.72469	11.77287	+0.04818
NO_2	1-hour	7.5[A]	6.98721	4.47581	-2.51140
	Annual	1.0[B]	0.07648	0.09962	+0.02314
PM-2.5	24-hour	1.2[A]	1.07189	1.09052	+0.01863
	Annual	0.2[A]	0.05281	0.06919	+0.01638
PM-10	24-hour	5[B]	1.40015	1.34140	-0.05875
	Annual	1.0[B]	0.06227	0.08116	+0.01889

[A] SIL for NAAQS

[B] SIL for NAAQS and Class II PSD increment

Table 2: Sensitivity of Differences in Surface Characteristics – SIL Analyses for Class I PSD Increment

Pollutant	Averaging Period	Class I PSD Increment SIL ($\mu g/m^3$)	Maximum Modeled Concentration ($\mu g/m^3$)		Concentration Difference ($\mu g/m^3$)
			With KPIT Surface Characteristics	With Robinson Power Surface Characteristics	
NO_2	Annual	0.1	0.00124	0.00102	-0.00022
PM-2.5	24-hour	0.27	0.02055	0.01758	-0.00297
	Annual	0.05	0.00107	0.00089	-0.00018
PM-10	24-hour	0.3	0.01844	0.01577	-0.00267
	Annual	0.2	0.00101	0.00084	-0.00017

Table 3: Sensitivity of Differences in Surface Characteristics – Class II PSD Increment Analyses

Pollutant	Averaging Period	Class II PSD Increment ($\mu g/m^3$)	Maximum Modeled Concentration ($\mu g/m^3$)		Concentration Difference ($\mu g/m^3$)
			With KPIT Surface Characteristics	With Robinson Power Surface Characteristics	
PM-2.5	24-hour	9	1.06542	1.18877	+0.12335
	Annual	4	0.06611	0.08615	+0.02004

4. **Comment:** The facility elevation data (for buildings, stacks, fenceline) were taken from site drawings but receptor elevations were taken from National Elevation Data (NED) files. It is uncertain if the facility data actually matches well to the NED data. These discrepancies will affect modeling results. If present, these discrepancies should be corrected. (2, 3)

   Response: The base elevations of Robinson Power's buildings, structures, and stacks entered in BPIPPRM and stacks entered in AERMOD are equal to a proposed re-graded site elevation of 354.2 meters. To determine the appropriateness of this elevation, the Department evaluated the U.S. Geological Survey's (USGS) National Elevation Dataset (NED) within Robinson Power's proposed fence line using ESRI ArcGIS® software. The average elevation of the NED grid cells within Robinson Power's proposed fence line is 355.5 meters, which corresponds well with Robinson Power's proposed re-graded site elevation. The Department's data to support this response are available upon request.

   The Department notes that subsection 8.4 of Robinson Power's Plan Approval Application inaccurately states, "[a]ll facility source elevation data (buildings, stacks tanks, and fence line) were manually input to AERMOD based on facility site plans and drawings." The elevation data of the fence line receptors were appropriately determined from the USGS NED using the AERMOD terrain preprocessor (AERMAP). This finding was confirmed by Robinson Power and supported by Robinson Power's AERMOD input files, which were included on the electronic data disk with Robinson Power's Plan Approval Application.

All Others

5. **Comment:** Air pollutants expected from this facility are known to have detrimental impacts on human health. Specific concerns include economic cost to communities, including missed days of work, school, hospitalizations, emergency room visits, and life-years lost; particulate matter linked with air way irritation, difficulty breathing, decreased lung function, nonfatal heart attacks, and premature death; ground-level ozone linked to aggravation of asthma, increased asthma attacks, wheezing, and inflammation of lung linings; disproportionate impacts for especially children; and additional Fort Cherry schoolchildren and family risk considering gas wells and three natural gas compressor stations approved in Robinson Township. (11)

   Response: The Department has evaluated the air contamination aspects of this proposed facility in accordance with the applicable regulations derived from the U.S. Clean Air Act and the Pennsylvania Air Pollution Control Act. This facility has been identified as a major source/facility subject to multiple state and federal regulations.

   The Clean Air Act required EPA to set National Ambient Air Quality Standards ("NAAQS") for pollutants considered harmful to public health and the environment and establishes two levels of national ambient air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Robinson Township, Washington County is designated as an area of attainment for all NAAQS except for 8-hour ozone (1997 and 2008). Additionally, all of the Commonwealth of Pennsylvania is located in the Northeast Ozone Transport Region and is therefore treated like a moderate ozone nonattainment area.

   Pennsylvania currently has a federally-approved State Implementation Plan ("SIP") designed to bring an area of nonattainment with the NAAQS into attainment. Consideration of the attainment status of the region or state as a whole is outside of the scope of this Plan Approval application review. The Department follows nonattainment new source review ("NNSR") requirements for major projects in nonattainment areas. This authorization is not a major source for ozone precursor volatile organic compounds ("VOC"), but is major for ozone precursor oxides of nitrogen ("NO_x"). NNSR requirements have been applied to this project which include obtaining emissions offsets to reduce overall emissions in or affecting the nonattainment area and meeting the Lowest Achievable Emission Rate ("LAER") for NO_x.

   Pennsylvania has adopted the federal Prevention of Significant Deterioration ("PSD") regulations for major projects in attainment (or unclassifiable) areas. This authorization is subject to PSD requirements for emissions of nitrogen dioxide ("NO_2"), carbon monoxide ("CO"), filterable particulate matter ("PM"), particulate matter less than 10 microns in diameter ("PM_{10}"), particulate matter less than 2.5 microns in diameter ("$PM_{2.5}$"), sulfuric acid mist ("H_2SO_4") and greenhouse gas ("GHG") carbon dioxide equivalents[1] ("CO_2e"). PSD requirements have been applied to this project which include conducting an air quality modeling analysis and Best Available Control Technology (BACT) for each attainment pollutant. The use of computer models is the

[1] Each different GHG emission is considered to impact global warming at varying levels. CO_2e emissions are the combined impact of each GHG emission after it is normalized to the impact of CO_2 as a reference.

recognized method for predicting ambient air impact for new and modified sources under the PSD regulations. These models consider background air quality, emissions from nearby sources, and representative meteorological data. Robinson Power's air quality analysis demonstrates that it will not cause or contribute to air pollution in violation of the NAAQS for NO_2, CO, PM_{10}, or $PM_{2.5}$[2].

The merits of each plan approval application are evaluated on a case-by-case basis, considering the project as-proposed which may include an existing facility or other nearby facilities, as appropriate. Regional air quality is monitored by the Department's ambient air monitoring network. Stations in this network measure concentrations of NO_2, CO, PM_{10}, or $PM_{2.5}$ and other pollutants regardless of whether that concentration was generated by a stationary or mobile source. There are currently no ambient monitors statewide operated by the Department with measured NO_2, CO, or PM_{10} concentrations in which the NAAQS are threatened, even in areas with emissions that are greater than the emissions in the area that would be affected by Robinson Power. This finding was used by the Department to conclude that the impacts of Robinson Power's facility emissions of NO_2, CO, and PM_{10} would not cause or contribute to a violation of the NAAQS without conducting cumulative analyses.[3] A representative $PM_{2.5}$ design value based on measured background concentrations of $PM_{2.5}$ was utilized to conclude that the impacts of Robinson Power's facility emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors will not cause or contribute to air pollution in violation of the NAAQS for $PM_{2.5}$ without conducting a cumulative analysis.

6. **Comment:** Determination of combustion turbine (CT) capacity should be further explained, duct burners should be separate units from the CTs.

   Each "Combustion Turbine Unit with Duct Burners" is listed in the permit with a capacity of 5.2 MMCF/HR, however it is unclear how this value was determined. It would appear that each combustion turbine is paired with three duct burners, but that is not described as such in this review or permit. (2, 3, 11)

   Response: Combustion turbine capacity is represented as the maximum heat input to the unit on a lower heating value ("LHV") basis. This capacity has been provided by the turbine manufacturer and included in the submitted plan approval application as the short term maximum case design scenario. Duct burners will be separated from the combustion turbines for clarity and to accurately represent the heat input to each air contamination source. These air contamination sources will remain grouped however because the duct burners will operate within the exhaust duct of the combustion turbines, and will not operate without the accompanying combustion turbine. Capacity for each combustion turbine is 2,433 MMBtu/hr. Capacity for each set of duct burners is 618 MMBtu/hr. Combined capacity is 3,051 MMBtu/hr. Fuel capacity/throughput listed in the proposed plan approval of 5.2 MMCF/HR shall be corrected to be consistent with the heat input capacity of each combustion turbine and set of duct burners.

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[2] There is no NAAQS for "filterable" PM, H_2SO_4, or CO_2e. The PM NAAQS has been redefined as separate PM_{10} and $PM_{2.5}$ NAAQS. Emissions of greenhouse gases or CO_2e are considered on a larger global scale.

[3] See Department's Review Memorandum, Appendix A, Summary of Air Quality Analyses for Prevention of Significant Deterioration, April 24, 2017, p. 4.

7. **Comment:** The emissions and BACT/BAT analysis were conducted for the combined CT and Duct Burners as one unit. Emissions should be separated and analyzed separately on an emissions unit basis. The CT's can run without the duct burners. (2, 3, 11)

Response: The combustion turbines and duct burners have been evaluated consistent with other plan approvals for similar facilities and the expected operation of the facility. Additionally, Federal New Source Performance Standards ("NSPS") including 40 CFR Part 60 Subparts KKKK and TTTT establish emission limitations and compliance requirements which are applicable to stationary combustion turbines and any associated duct burners combined. However, the Department has determined that a separate emission limit for VOC without duct burning is representative of the application of BAT to the combustion turbines. BAT for control of VOC and HAP has been determined to be installation and operation of oxidation catalysts, good combustion practices, and proper operation and maintenance. The following VOC limits have been determined as representative of the application of BAT in this case:

- 1.0 ppmvd @ 15% O_2 on a 3-hour average, without duct burner firing, excluding startup and shutdown.
- 1.3 ppmvd @ 15% O_2 on a 3-hour average, with duct burner firing, excluding startup and shutdown.
- 45.40 tons from all turbines and duct burners combined in any consecutive 12-month period.

There are no VOC limits contained in any NSPS applicable to turbines. The separate limits of 1.0 ppmvd @ 15% O_2 on a 3-hour average without duct burning and 1.3 ppmvd @ 15% O_2 on a 3-hour average with duct burning are consistent with recent determinations, including draft determinations in EPA's RBLC database for large combined cycle natural gas-fired combustion turbines and recently issued plan approvals for similar sources in Pennsylvania. A VOC emission limit of 1.0 ppm without duct burning is contained within issued plan approvals for similar facilities in Pennsylvania; specifically, CPV Fairview, Lackawanna Energy Center, Moxie Freedom, Sunbury Generation, and Panda Patriot. VOC emissions will be higher during startup and shutdown (when the turbine is transitionally operating below the oxidation catalyst's minimum effective operating temperature) and the combined annual VOC limit represents full time operation with up to 33.8 total hours of startup and shutdown operation. The limit is sufficient to ensure that Robinson Power will be a minor facility with respect to emissions of VOC.

Section E. Group Name: Combustion Turbines Condition #002 on pages 34 and 35 of the proposed plan approval shall be modified as follows:

1) During normal operation, emissions from each combined cycle combustion turbine shall not exceed the following…

[VOC – 1.0 ppmvd @ 15% O_2 without duct firing]
VOC – 1.3 ppmvd @ 15% O_2 **[with duct firing]**…

8. **Comment:** Specific ERC [Emission Reduction Credit] sources should be clarified.

   25 Pa. Code §127.206(d) sets conditions related to ERCs that the operator must fulfill before the Department "may issue a plan approval for the construction" of a new facility. Section 127.206(d)(1) requires a plan approval to "demonstrate that the proposed facility either has or will secure the appropriate ERCs which are suitable for use at the specific facility." This section also states that "ERCs shall be identified in a Department-approved and Federally enforceable permit condition for the ERC generating source."

   The required emission offsets for NO_x have not been secured yet. Some confirmation that these offsets are actually available should be provided before a permit is issued to construct the Project. (2, 3, 11)

   Response: The Department agrees that the truncated version of 25 Pa. Code §127.206(d)(1) contains those quotes. However, 25 Pa. Code §127.206(d)(1) continues to state that "The permit condition will provide that the ERCs are properly generated, certified by the Department and processed through the registry no later than the date approved by the Department for commencement of operation of the proposed new or modified facility." Robinson Power is required to secure 219 tons of NO_x ERCs in accordance with the requirements of 25 Pa. Code Chapter 127 Subchapter E and Section C. Condition #027 on page 17 of the proposed plan approval. As such, Robinson Power is required to secure the appropriate number of ERCs by regulatory and plan approval requirement.

   Available ERCs may be found in the Department's ERC Registry System found on the Department's website.[4] There are approximately 6,542.78 tons of certified NOx ERCs available in the ERC Registry System which have been generated in Washington County alone. Robinson Power has informed the Department that it is close to securing the necessary ERCs to satisfy offsetting requirements for this facility.

9. **Comment:** Potential to emit (PTE) calculations should provide more detail.

   It is unclear whether or not 33.8 hours of emissions for startup/shutdown are included in the PTE numbers for the Project. If the current 190.26 tpy PTE for NO_x does not include startup/shutdown emissions, they should be included. It is stated that emissions are minimal, but values are not provided in the review. (2, 3, 11)

   Response: Footnote c of Table 7 on page 30 of the Department's review memorandum indicates that combined annual emission rates include startup and shutdown emissions. Footnote d of Table 7 on page 30 of the review memorandum indicates that a worst case annual startup and shutdown operation of 33.8 hours has been applied. Startup and shutdown NO_x emissions account for 6.4 tpy of the 190.26 tpy combined total.

10. **Comment:** Potential to emit (PTE) calculations should provide more detail.

    PTE for the fire pump engine should be calculated at 500 hours per year, not 100 hours per year (page 32, Table 9). There is no related Plan Approval limit of 100 hours per

[4] See http://www.dep.pa.gov/Business/Air/BAQ/Permits/Pages/EmissionCredit.aspx

year, similar to the auxiliary boiler limit of 80 hours per year. The permit should clarify that the fire pump engine must be Tier 3 certified if new. (2, 3, 11)

Response: The diesel-fired fire pump engine is subject to NSPS from 40 CFR Part 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE). Per 40 CFR § 60.4211(f)(1), "There is no time limit on the use of emergency stationary ICE in emergency situations." It is therefore not appropriate to place an operational hours restriction on a unit which is to be used to emergency situations. However, per 40 CFR § 60.4211(f)(2), "You may operate your emergency stationary ICE for any combination of the purposes specified in paragraphs (f)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year." All non-emergency situation operation is limited not to exceed 100 hours per year. These requirements are incorporated under Section D. Source ID: 301 Condition #010 of the proposed plan approval.

11. **Comment:** Multiple comments received express support of the project. Reasons run from potentially increasing value of natural gas-related leases and community spending, additional electricity production to support air conditioning, dangers of nuclear power generation, burning natural gas as clean, and a local user of the area's natural gas production. (1, 5, 10, 12)

    Response: The Department acknowledges all those who have submitted comments in support of the project.

12. **Comment:** The review memo mentions hexane emissions but the permit itself does not make any mention or it, or its control. I believe that may be in error and either the reference to hexane emissions should be removed in the review memo, or the permit should be revised to address hexane emissions.

    Mention of hexene and pyrolysis fuel oil storage tanks in the review memo should be removed or addressed in the permit. (2, 3, 13)

    Response: There is no mention of hexane emissions in the Department's review memorandum. Hexane is an organic HAP which will be controlled by good combustion practices to achieve complete combustion and also by an oxidation catalyst.

    References to hexene and pyrolysis fuel oil storage tanks in the Department's review memo are incorrect and unrelated to this project. Those references shall be removed.

13. **Comment:** The review memo and permit mentions the ozone season. Please note that under the 2008 NAAQS, Pennsylvania's definition of ozone season should reflect the additional months in the annual ozone season which now runs from March 1 to October 31. (13)

    Response: The Department's review memo mentions ozone in the context of the 8-hour standard of the ozone NAAQS, the (now replaced) Clean Air Interstate Rule ("CAIR") NO_x Ozone Season Trading Program, and the Cross State Air Pollution Rule ("CSAPR") NO_x Ozone Season Group 1 Trading Program. The proposed plan approval also mentions ozone in the context of the CSAPR NO_x Ozone Season Group 1 Trading Program.

The Department acknowledges that the ozone season for the entire Commonwealth of Pennsylvania is federally defined under 40 CFR 51.1100 by reference to 40 CFR Part 58 Subpart G Appendix D Table D-3 as beginning March 1st and ending October 31st.

14. **Comment:** BACT limits are generally applicable on a unit-by-unit basis. The permit and the review memo describe the GHG BACT as being a combined limit of 813 lb/MWh and an annual 2,930,740 tons of CO_2e from all turbines and duct burners combined. Since even the turbines to be used have not been selected yet, this limit should be explained in how it is derived. Also, the limit is based on "gross energy output" but much of the application only provides "net generation" or "net output" values (2, 3, 13)

    Response: GHG are generally treated differently than criteria pollutants because the GHG impact on the environment is cumulative and there is no established NAAQS. BACT has been applied for GHG in this case and represented by both an energy efficiency based emission limit (lb/MWh basis) and total annual mass emission limit (tpy basis). The Department agrees that BACT limits are generally applicable on a unit-by-unit basis. The energy efficiency based emission limit of 813 lb/MWh has in fact been applied on a unit-specific basis in the proposed plan approval. Section E. Group Name: Combustion Turbines Condition #002 on pages 34 and 35 of the proposed plan approval applies the CO_2 emission limit to each combined cycle combustion turbine. Combining multiple units into an annual mass emission limit is consistent with other plan approvals for similar sources and the combined annual limit of 2,930,740 tons of CO_2e will remain as proposed in Section E. Group Name: Combustion Turbines Condition #003 on page 35 of the proposed plan approval.

    Robinson Power utilized a CO_2 emission factor of 119.31 lb/MMBtu (HHV) to calculate CO_2 emissions from the combustion turbines and duct burners. This is generally consistent with, but more conservative than the natural gas combustion CO_2 emission factor of 117.0 lb/MMBtu (HHV) from Table C-1 to Subpart C of Part 98. A higher fuel conversion to CO_2 is represented resulting a higher and more conservative emission rate. Robinson Power has proposed to install two combined cycle combustion turbines which will each combust approximately 2,945 MMBtu/hr (HHV) on an annual average and output 432 MW of net generation on an annual average. The energy efficiency based emission limit of 813 lb/MWh is derived from these values. A gross energy basis was applied by the Department to be consistent with and comparable to the form of the applicable 40 CFR Part 60 Subpart TTTT limit of 1,000 lb/MWh (gross energy output). Applying the limit in the form of gross energy output eliminates the variability of plant-specific loads and their impact on net energy output.

15. **Comment:** The Department incorrectly applied a Prevention of Significant Deterioration ("PSD") analysis to Beech Hollow's $PM_{2.5}$ emissions. Specifically, this facility will have an impact on the Allegheny County $PM_{2.5}$ nonattainment area, and is therefore subject to NNSR review for $PM_{2.5}$. (4)

    Response: The Department has correctly applied a PSD analysis to Beech Hollow's $PM_{2.5}$ emissions. Per 25 Pa. Code §127.203(a), "This subchapter applies to the construction of a new major facility or modification at an existing major facility located

in a nonattainment area, an ozone transport region or an attainment or unclassifiable area which impacts a nonattainment area in excess of the following significance levels:

Pollutant	*Averaging time*				
	Annual	*24 (hours)*	*8 (hours)*	*3 (hours)*	*1 (hours)*
SO_2	1.0 μg/m^3	5 μg/m^3	-	25 μg/m^3	-
PM-10	1.0 μg/m^3	5 μg/m^3	-	-	-
CO	-	-	0.5 mg/m^3	-	2 mg/m^3
Lead	-	0.1 μg/m^3	-	-	-

Considering $PM_{2.5}$, this facility will be a new major facility located in an attainment or unclassifiable area.[5] NNSR review only applies if a pollutant ($PM_{2.5}$) impacts a nonattainment area (Allegheny County) in excess of a significance level. $PM_{2.5}$ is not a listed pollutant under 25 Pa. Code §127.203(a). In the absence of a listed pollutant, the Department defers to Appendix S to 40 CFR Part 51 – *Emission Offset Interpretive Ruling*, III. *Source Locating in Designated Clean or Unclassifiable Areas Which Would Cause or Contribute to a Violation of a National Ambient Air Quality Standard.* Per 40 CFR Part 51 Appendix S III. A., "This section applies only to major sources or major modifications which would locate in an area designated in 40 CFR 81.300 *et seq.* as attainment or unclassifiable in a State where EPA has not yet approved the State preconstruction review program required by 40 CFR 51.165(b), if the source or modification would exceed the following significance levels at any locality that does not meet the NAAQS:

Pollutant	**Annual**	**Averaging time (hours)**			
		24	**8**	**3**	**1**
SO_2	1.0 μg/m^3	5 μg/m^3		25 μg/m^3	
PM_{10}	1.0 μg/m^3	5 μg/m^3			
$PM_{2.5}$	0.3 μg/m^3	1.2 μg/m^3			
NO_2	1.0 μg/m^3				
CO			0.5 mg/m^3		2 mg/m^3

It is practical and necessary to adopt a non-zero significance level, or otherwise any non-zero modeled impact would trigger NNSR requirements. Air dispersion modeling can calculate non-zero values great distances from a proposed emission point, but this does not make the value significant to air quality. Modeled $PM_{2.5}$ impacts from this facility

[5] See https://www.ecfr.gov/cgi-bin/text-idx?SID=cc9bf3f7889754760b8d1735b9d31a7f&node=40:18.0.1.1.1.3.1.41&rgn=div8 ,

are compared to the relevant significance levels in the table below. Modeled impacts do not exceed the significance level and therefore NNSR does not apply to $PM_{2.5}$.

Table 4: $PM_{2.5}$ Nonattainment Area Modeled Impacts and Significance

Averaging Period	Significance Level ($\mu g/m^3$)	Modeled Impact ($\mu g/m^3$)	Impact > Significance Level?
Annual	0.3	0.05	No
24-hour	1.2	1.07	No

16. **Comment:** Beech Hollow will be a major source of hexane, a HAP, is will therefore be subject to 40 CFR Part 63 Subpart DDDDD. Specifically, AP-42 factor calculations indicate that Beech Hollow will emit more than 10 tons of hexane per year. (4)

Response: Beech Hollow will not be a major source of hexane, nor subject to 40 CFR Part 63 Subpart DDDDD.

National Emission Standards for Hazardous Air Pollutants ("NESHAPS") for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters from 40 CFR Part 63 Subpart DDDDD will not apply to the combustion turbines or duct burners at this facility. Per 40 CFR §63.7480, "This subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP…" The combustion turbines and duct burners will be located at an area source of HAP emissions and will therefore not be subject to 40 CFR Part 63 Subpart DDDDD.

The combustion turbines do not meet the definition of *Boiler* or *Process heater* as defined under 40 CFR §63.7575 because they do not have the primary purpose of recovering thermal energy in the form of steam or hot water (in the case of *Boiler*) or the primary purpose to transfer heat indirectly to a process material or to a heat transfer material (in the case of *Process heater*). The combustion turbines will therefore not be subject to 40 CFR Part 63 Subpart DDDDD.

Per 40 CFR §63.7491, "The types of boilers and process heaters listed in paragraphs (a) through (n) of this section are not subject to this subpart. (a) An electric utility steam generating unit (EGU) covered by subpart UUUUU of this part or a natural gas-fired EGU as defined in subpart UUUUU of this part firing at least 85 percent natural gas on an annual heat input basis." The duct burners will be a natural gas-fired EGU as defined in 40 CFR Part 63 Subpart UUUUU firing 100% natural gas. The duct burners will therefore not be subject to 40 CFR Part 63 Subpart DDDDD.

AP-42 emission factors for stationary gas turbines do not include hexane in the compilation of HAP emission factors. HAP emissions are lower for gas turbines than for other combustion sources. Higher combustion temperatures oxidize and break down more organic HAPs. Formaldehyde is the primary HAP constituent, followed by polycyclic aromatic hydrocarbons, benzene, toluene, xylenes, and then others.[6]

[6] See AP-42 Section 3.1.3.5 HAP Emissions, https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s01.pdf

AP-42 emission factors for natural gas combustion (external combustion sources) do include hexane in the compilation of HAP emission factors at a rate of 1.8 lb/MMscf (or 0.0018 lb/MMBtu @ 1,020 Btu/scf). Following a similar methodology to that of the commentator (for the duct burners only), the combined maximum rating for both sets of duct burners is 618 + 618 = 1,236 MMBtu/hr resulting in maximum short- and long-term total emission rates for hexane of 2.18 lb/hr and 9.55 tpy respectively. However, this does not account for multiple differentiating factors between the duct burners and the AP-42 natural gas combustion sources in general and hexane emission factor in particular.

- Duct burners will not operate without the combustion turbines in operation and will therefore only be firing into an already hot exhaust stream from the combustion turbines. Combustion temperatures are expected to be higher than an identical unit firing using relatively cold or warm combustion air and therefore expected to oxidize more organic HAP.
- The cited emission factor does not take into account the presence of an oxidation catalyst control device. CO is the primary pollutant to be controlled by the oxidation catalyst but additional control is expected for VOC and organic HAP including hexane.
- The AP-42 emission factor for hexane from Table 1.4-3 has been designated an emission factor rating of "E" and is derived from two A-rated source tests. E-rated emission factors are generally considered to be poor. The first source test was conducted in 1990 on a 28 MMBtu/hr boiler and the second was conducted in 1992 on a 2.2 MMBtu/hr boiler.[7] Both of these combustion units are not comparable in size to the proposed duct burners.

Hexane is the HAP with the highest AP-42 emission factor for natural gas combustion (external combustion sources), although it is not directly comparable to the duct burners as stated above. Robinson Power will be required conduct performance testing for the presence of hexane in the combined cycle turbine exhaust stream, with the duct burners in operation, to demonstrate that this facility is not a major source of HAP. This will also generate a more accurate source-specific emission factor for annual emission reporting purposes.

Section E. Group Name: Combustion Turbines Condition #004 on page 36 of the proposed plan approval shall be modified as follows:

1) The Owner/Operator shall perform NO_x, CO, VOC, PM, PM_{10}, $PM_{2.5}$, HCHO, **[hexane,]** and NH_3 emission testing upon each of the two combustion turbines with duct burners according to the requirements of 25 Pa. Code Chapter 139. Initial performance testing is required within 180 days of startup of the turbines or on an alternative schedule as approved by the Department. Subsequent performance testing is required at minimum of once every 5 years thereafter. Extension to the initial and subsequent performance testing deadlines may be granted by the Department in writing in response to a written request from the Owner/Operator and upon a satisfactory showing that an extension is justified. EPA Reference Method performance testing shall be conducted for the initial and subsequent performance tests

[7] See AP-42 Chapter 1.4, Related Information, https://www3.epa.gov/ttn/chief/ap42/ch01/index.html

17. **Comment:** Ammonia slip impacts should be addressed.

Ammonia slip emissions are limited to 5 ppmvd @ 15% O_2. It would be beneficial for the air quality analysis to address the offsite impact of ammonia and potential odors. (2, 3)

Response: Ammonia slip emissions from each combined cycle turbine are limited not to exceed 5 ppmvd @ 15% O_2. This emission rate has been determined to be representative of the application of BAT to this source category. Robinson power is required to comply with this limitation at all times, and each combined cycle turbine stack will be equipped with a continuous emission monitoring system for verification. Additional analysis of potential offsite impacts and odors is not required by regulation and not necessary for this source category and air contaminant. Considering acute and chronic reference concentrations for ammonia of 600 $\mu g/m^3$ (STEL/40, ACGIH) and 100 $\mu g/m^3$ (IRIS) respectively, stack heights and dispersion characteristics, and ammonia slip rates; concentrations and resultant impacts are not expected to exceed the Department's risk benchmarks.

Malodors are prohibited from leaving the property in accordance with 25 Pa. Code §123.31, and Robinson Power is required to conduct daily facility-wide inspections for the presence of potentially objectionable odors and take corrective action in the event that any are apparent. Records of each inspection are required to be maintained on site and available to the Department for verification of compliance. Additionally, the Department currently has no documented instances of tracing odor complaints to ammonia slip emissions and none are expected due to ammonia slip at this facility.

18. **Comment:** Stack testing results and NSPS/NESHAP testing should be electronically submitted.

DEP should confirm whether stack test results must be submitted electronically through CEDRI online. Most NSPS/NEHSAP testing results must also be submitted to USEPA electronically. (2, 3)

Response: Robinson Power is to use the Compliance and Emissions Data Reporting Interface ("CEDRI") to submit Federal Subpart-related information to U.S. EPA where it is available to do so. Section C. Condition #018 on pages 15 and 16 of the proposed plan approval shall be clarified as follows:

1) The Facility is subject to New Source Performance Standards from 40 CFR Part 60 Subparts Dc, IIII, KKKK, and TTTT. In accordance with 40 CFR §§60.4; copies of all requests, reports, applications, submittals and other communications regarding affected sources shall be forwarded to ~~both EPA and~~ the Department at the addresses listed below unless otherwise noted.

   PADEP
   Air Quality Program
   400 Waterfront Drive
   Pittsburgh, PA 15222-4745

[Copies of all requests, reports, applications, submittals, and other communications shall also be submitted to U.S. EPA via the Compliance and Emissions Data Reporting Interface (CEDRI) accessible at https://cdx.epa.gov/ **unless electronic reporting is not available, in which case a copy shall be sent to the following address:]**

~~Associated~~ Director
~~Office of Air Enforcement and Compliance Assistance~~ **[Air Protection Division Mail Code 3AP00]** ~~(3AP20)~~
~~U.S. EPA, Region III~~
1650 Arch Street
Philadelphia, PA 19103-2029

Region III e-mail box for electronic compliance certifications:
R3_APD_Permits@epa.gov

~~NSPS and MACT reports that are submitted electronically to U.S. EPA's Central Data Exchange: **https://cdx.epa.gov/**~~

Section C. Condition #019 on page 16 of the proposed plan approval shall be clarified as follows:

2) The Facility is subject to National Emission Standards for Hazardous Air Pollutants from 40 CFR Part 63 Subparts YYYY and ZZZZ. In accordance with 40 CFR §§60.13; copies of all requests, reports, applications, submittals and other communications regarding affected sources shall be forwarded to ~~both EPA and~~ the Department at the addresses listed below unless otherwise noted.

PADEP
Air Quality Program
400 Waterfront Drive
Pittsburgh, PA 15222-4745

[Copies of all requests, reports, applications, submittals, and other communications shall also be submitted to U.S. EPA via the Compliance and Emissions Data Reporting Interface (CEDRI) accessible at https://cdx.epa.gov/ **unless electronic reporting is not available, in which case a copy shall be sent to the following address:]**

~~Associated~~ Director
~~Office of Air Enforcement and Compliance Assistance~~ **[Air Protection Division Mail Code 3AP00]** ~~(3AP20)~~
~~U.S. EPA, Region III~~
1650 Arch Street
Philadelphia, PA 19103-2029

Region III e-mail box for electronic compliance certifications:
R3_APD_Permits@epa.gov

~~NSPS and MACT reports that are submitted electronically to U.S. EPA's Central Data Exchange: **https://cdx.epa.gov/**~~

19. **Comment:** It is unclear if a Risk Management Plan is required.

    There is not enough information to determine if a Risk Management Plant (RMP) under 40 CFR Part 68 is required. (2, 3)

    Response: A RMP is not expected to be required for this facility. Ammonia is the only 40 CFR Part 68 regulated toxic substance to be stored on site. Table 1 to 40 CFR §68.130 lists threshold quantities for ammonia (anhydrous) and ammonia (concentration 20% or greater). Robinson Power is expected to store 19% aqueous ammonia on site and therefore not be required to submit a RMP.

20. **Comment:** The proposed Beech Hollow Plant will be a major source of volatile organic chemical ("VOC") emissions and must be required to achieve the lowest achievable emission rate ("LAER"). Specifically, Robinson Power and DEP should have relied on 100% capacity, not 95% capacity, to determine potential to emit. Also, Robinson Power and DEP should have relied on maximum, not average emissions to determine the potential to emit. (6-9)

    Response: The proposed Beech Hollow plant will not be a major source of VOC emissions and therefore not be subject to LAER for VOC. VOC emissions from the combustion turbines and duct burners combined have been limited not to exceed 45.40 tons in any consecutive 12-month period. Compliance with this limitation will be determined through EPA Method stack testing followed by correlation with CO CEMS data.

    Also, see response to Comment #7

    The Department has determined that a combined heat input limitation on the combustion turbines with duct burners is necessary to limit annual PTE for those pollutants without CEMS or CEMS correlation. This includes PM (total), PM_{10}, $PM_{2.5}$, SO_2, and H_2SO_4. Total Particulate Matter (filterable plus condensable) is limited not to exceed 0.0054 lb/MMBtu and 112.82 tpy (112.51 excluding periods of startup and shutdown) from both combined cycle combustion turbine in accordance with Section E. Group Name: Combustion Turbines Conditions #002 and #003 on pages 34 and 35 of the proposed plan approval. This corresponds to a combined annual heat input limit of 41,670,370 MMBtu/yr, and will ensure compliance with combined annual emission limitations for all other referenced pollutants. The combined annual heat input limit also has the secondary effect of providing further assurance that this facility will not trigger NNSR and LAER requirements for VOC.

    The following special condition shall be added under Section E. Group Name: Combustion Turbines of the final plan approval:

    1) **Heat input to both combined cycle combustion turbines, excluding during periods of startup and shutdown, shall not exceed 41,670,370 MMBtu on a 12-month rolling sum basis [25 Pa. Code §127.12b].**

Section E. Group Name: Combustion Turbines Condition #007 on page 36 of the proposed plan approval shall be modified as follows:

2) The Owner/Operator shall maintain the following comprehensive and accurate records:
   a. Hours of operation of each combustion turbine and duct burner on a 12-month rolling sum basis.
   b. Hours of operation of each combustion turbine operating in startup or shutdown on a 12-month rolling sum basis including the date, time, type (cold, warm, hot), and duration of each event.
   c. Fuel type and consumption (expressed in MMscf) of each combustion turbine and duct burner on a 12-month rolling sum basis.
   d. [Heat input (expressed in MMBtu) to both combustion turbines and duct burners combined, excluding during startup and shutdown, on a 12-month rolling sum basis.]...

21. **Comment:** Robinson Power failed to provide details regarding its boiler. (6-9)

Response: Robinson Power has proposed to install a natural gas-fired auxiliary boiler rated at 30 MMBtu/hr. Operation of the auxiliary boiler is limited not to exceed 80 hours in any consecutive 12-month period in accordance with Section D. Source ID: 033 Condition #003 of the proposed plan approval. This boiler is subject to the requirements of NSPS from 40 CFR Part 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Small natural gas combustion units are well understood and sufficient information has been provided to perform a thorough evaluation of the air contamination aspects of the source. Heat input to the proposed boiler, in combination with the limited capacity factor of less than 1%, will limit emissions of all criteria pollutants or precursors to fractions less than 0.1 tpy each and less than or equal to 2.4% of all applicable de minimis levels.

22. **Comment:** DEP should revise and reissue the public notice for this plant to reflect maximum capacity emissions anticipated from the proposed Beech Hollow Plant. (6-9)

Response: The Department has published the public notice for this plant consistent with the requirements of 25 Pa. Code §127.45(b), including the type and quantity of air contaminants being emitted. The notice reflects maximum allowable emissions from the proposed Beech Hollow Plant. Emissions from the proposed Beech Hollow Plant are limited under Section E. Group Name: Combustion Turbines Conditions #002 and #003 of the proposed plan approval. Robinson Power is required to comply with these emission limitations at all times, including periods of startup and shutdown for annual emissions.

23. **Comment:** Rather than employing cooling towers, the proposed Beech Hollow Plant will use an air-cooled condenser. However, has this type of cooling structure ever been used for a facility this large before? Can DEP or Robinson Power provide specifications or information regarding the efficacy or potential problems of using this equipment at a 1,000 megawatt or similarly large facility? (6-9)

Response: Air-cooled condensers have been used for a facility this large before and may be employed on a facility of any size.[8] One example in Pennsylvania is the Panda Liberty Power Plant ("Panda Liberty") authorized under PA-08-00045B in Bradford County, PA. Panda Liberty will have a maximum electrical output greater than 900 MW and be equipped with air-cooled condensers. Air-cooled condensers have the benefit of minimizing water usage at the plant, eliminating a visible condensation plume, and eliminating a source of particulate matter emissions. Air-cooled condensers are overall less efficient and take up more space than an equivalent-sized water-cooled system because air is a less effective heat transfer medium than water. However, if properly designed and operated, air-cooled condensers can be an effective cooling system.

24. **Comment:** DEP and/or Robinson Power stated in the July 12, 2017, public hearing that nearby pig operations would be conveying natural gas to and from the Beech Hollow Power Plant. This raises several questions that Commenters hope DEP will address in their response to comments:

    - Has Robinson Power provided, or does DEP otherwise have, any modeling or emission calculations for pigging operations associated with this plant?
    - Are pigging operations be necessary in order to move the gas from well pads to the gas plant?
    - How many pig launchers and receivers will be part of the operations for Beech Hollow Power Plant?
    - What are the anticipated emissions from each? (6-9)

    Response: Natural gas will be conveyed to the Beech Hollow Power Plant from nearby interstate natural gas transmission pipelines. No pigging of the natural gas fuel lines for this facility is anticipated or proposed as part of this plan approval application. Pigging operations are more typical in the natural gas production and midstream segments where pipeline liquids are likely to exist and accumulate, than in transmission or distribution segments where most of the water and heavier hydrocarbons have already been removed. Any upstream pig operations will be evaluated on their own merits, which may include an existing facility or other nearby facilities as appropriate.

25. **Comment:** Robinson Power or its successors in interest must not be permitted to burn waste coal at the proposed power plant. (6-9)

    Response: Robinson Power is not permitted to burn waste coal at this proposed power plant. The combustion turbines, duct burners, and auxiliary boiler are designed to be fired with natural gas while the fire pump engine is designed to be fired with diesel fuel. As such, they cannot combust waste coal without modification which is subject to review and approval by the Department. The merits of each plan approval application are evaluated on a case-by-case basis, considering the project as-proposed which may include multiple air contamination sources and fuel types.

26. **Comment:** DEP must not approve the transfer of this permit without an aggregation analysis and public comment. (6-9)

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[8] http://www.enexio.com/fileadmin/user_upload/media/Competence_brochure/16_04_29_ENEXIO_Competence_BRO_A4_low_locked_EN.pdf

Response: A single source analysis shall be conducted upon any change of ownership of a facility. The Department will process plan approval transfers in accordance with 25 Pa. Code §127.32 and the Change of Ownership Form (2700-PM-AQ0011) and instructions.

RECOMMENDATION

All public comments have been considered and responded to where appropriate, and any changes to the proposed plan approval have been identified within this memorandum. I recommend issuance of PA-63-00922D to Robinson Power Company, LLC for a period of 3 years for the construction of a natural gas-fired combined cycle power plant to be located in Robinson Township, Washington County.