

**MARYLAND DEPARTMENT OF ENVIRONMENT  
AIR AND RADIATION MANAGEMENT ADMINISTRATION  
1800 Washington Blvd  
Baltimore, MD 21230**

**PERMIT TO CONSTRUCT, FACT SHEET  
AND FINAL DETERMINATION**

**FREDERICK/CARROLL COUNTY  
RENEWABLE WASTE-TO-ENERGY FACILITY**

## **I. INTRODUCTION**

The Maryland Department of the Environment, Air and Radiation Management Administration (MDE-ARMA) received an application from the Northeast Maryland Waste Disposal Authority (NEA) on February 15, 2011 and amendments received on August 25, and September 15, 2011, and March 29 and May 23, 2012 for a Permit to Construct two (2) 750 tons per day waterwall municipal waste combustors with associated control equipment, and one (1) 305 brake-horsepower (bhp) emergency firewater pump diesel engine. The permit application was officially deemed complete on September 28, 2011. The proposed municipal waste combustors will be located at the McKinney Industrial Park, 4548 Metropolitan Court, Frederick, Maryland, 21701.

A notice was placed in the Frederick News-Post on October 18, and October 25, 2011 announcing a scheduled informational meeting to discuss the permit to construct application. The informational meeting was held on Tuesday, November 1, 2011 at 7:00 p.m., at the Ballenger Creek Elementary School Cafeteria, located at 5250 Kingsbrook Drive, Frederick MD.

MDE-ARMA has reviewed the application and has made a tentative determination that the proposed facility is expected to comply with all applicable air quality regulations. A public hearing has been scheduled for January 30, 2013 at 6:00 pm at Tuscarora High School Auditorium, 5312 Ballenger Creek Pike, Frederick, MD 21703 to provide interested parties an opportunity to comment on MDE-ARMA's tentative determination and draft permit conditions, and/or to present other pertinent concerns about the proposed facility. Notices concerning the date, time and location of the public hearing will be published in the legal section of a newspaper with circulation in general area of the proposed facility. Interested parties may also submit written comments.

If MDE-ARMA does not receive any comments that are adverse to the tentative determination, the tentative determination will automatically become a final determination. If adverse comments are received, MDE-ARMA will review the comments, and will then make a final determination with regard to issuance or denial of the permit. A notice of final determination will be published in a newspaper of general circulation in the affected area. The final determination may be subject to judicial review pursuant to Section 1-601 of the Environment Article, Annotated Code of Maryland.

## II. PROPOSED INSTALLATION

Wheelabrator Technologies, Inc. (WTI) has entered into a contract with the Northeast Maryland Waste Disposal Authority (NEA) to develop, construct and operate a nominal 1,500 ton per day Frederick/Carroll County Renewable Waste-to-Energy Facility (FCCRWTE) in Frederick County. The project will be located on an 11-acre site in the McKinney Industrial Park (near the intersection of English Muffin Way and Buckeystown Pike) in Frederick County, Maryland and will serve the long term solid waste disposal needs of both Frederick and Carroll Counties (the Counties). The FCCRWTE project will consist of two (2) nominal 750 ton per day (tpd) municipal solid waste combustors. The combustion gases will be sent to the vertical convection pass boilers, which produce steam for the steam turbine generator which is capable of producing approximately 51 megawatts (MW) gross (45 MW net) of electricity. FCCRWTE will also combust a small amount of wastewater treatment sludge (i.e., sewage sludge) and tires. Combustor burners will fire pipeline quality natural gas during startup, shutdown, and to maintain minimum temperatures in the combustors.

The major air pollutant-emitting equipment and operations of the FCCRWTE consist of the following: two (2) water-walled combustors feeding two vertical convection four-pass boilers; gas-fired startup/auxiliary burners integral to the combustors; reagent material-handling systems; fly and bottom ash-handling and metals recovery systems; one (1) wet mechanical draft cooling tower; and one (1) emergency firewater pump diesel engine.

## III. APPLICABLE REGULATIONS

The proposed installation is subject to all applicable Federal and State air quality control regulations, including, but not limited to the following:

- (a) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

For Municipal Waste Combustors Only

- (1) **40 CFR 60, Subparts A and Eb – Standards of Performance for Large Municipal Waste Combustors.** – which states standards of performance, applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements for large municipal waste combustors that commenced construction after September 20, 1994 or for which modification or reconstruction is commenced After June 19, 1996, including the following:

**§60.52b – Standards for Municipal Waste Combustor Metals, Acid Gases, Organics, and Nitrogen Oxides.** – which states emission limits from municipal waste combustors for particulate matter, cadmium, lead,

mercury, acid gases, sulfur dioxide, hydrogen chloride, organics, dioxin/furan, and nitrogen oxides.

**§60.53b** – Standards for Municipal Waste Combustor Operating Practices. – which states operating practices for municipal waste combustors for emissions of carbon monoxide, particulate matter, dioxin/furan, and mercury.

**§60.54b** – Standards for Municipal Waste Combustor Operator Training and Certification. – which requires training practices, and certification requirements for municipal waste combustor operators, the development and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the elements of municipal waste combustor unit operation.

**§60.55b** – Standards for municipal waste combustor fugitive ash emissions. – which requires that no owner or operator of an affected facility shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 percent of the observation period (i.e., 9 minutes per 3-hour period), as determined by EPA Reference Method 22 observations.

A summary of the NSPS Subpart Eb emissions standards applicable to the Frederick/Carroll County Renewable Waste to Energy Facility is in the Table shown below:

<b>Pollutant</b>	<b>Limit</b>
PM	20 mg/dscm @7% O <sub>2</sub> [average of 3 test runs]
Opacity	10% [6-minute average]
NO <sub>x</sub>	During 1-yr: 180 ppmvd @7% O <sub>2</sub> (dry basis); After 1-yr:150 ppmvd @ 7% O <sub>2</sub> (dry basis)
SO <sub>2</sub>	30 ppmvd or 20% potential SO <sub>2</sub> emission conc. (80% reduction by wt or vol) @ 7% O <sub>2</sub> (dry basis), whichever is less stringent
CO	100 ppmvd @7% O <sub>2</sub> (dry basis) [4-hr average]
HCl	25 ppmvd or 5% potential HCl emission conc. (95% reduction by wt or vol) @7% O <sub>2</sub> (dry basis), whichever is less stringent

Pollutant	Limit
Hg	50 µg/dscm or 15% potential Hg emission conc. (85% reduction by wt) @7% O <sub>2</sub> , whichever is less stringent
MWC Organics (Dioxin/Furans)	13 ng/dscm (total mass) @7% O <sub>2</sub>
Cd	10 µg/dscm @7% O <sub>2</sub> [average of 3 test runs or more]
Pb	140 µg/dscm @7% O <sub>2</sub> [average of 3 test runs or more]
Fugitive Ash Emissions to Atmosphere	No visible emission to the atmosphere in excess of 5% of the observation period (i.e., ≤ 9 minutes per 3-hour period), except as provided under 40 CFR 60.55b (b) and (c).

Notes: mg/m<sup>3</sup> = milligrams per cubic meter; ppmvd = parts per million by volume on a dry basis; ug/m<sup>3</sup> = micrograms per dry standard cubic meters.

- (2) For Internal Combustion Engine Only  
**40 CFR Part 60, Subparts A (General Provisions) and Subpart III – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE).** – which states all applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) for the performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE), including the following:

**§60.4202 – What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?**  
– which requires that stationary CI internal combustion engine manufacturers to certify their fire pump stationary CI ICE to the emission standards in table 4 to this subpart, for all pollutants, for the same model year and NFPA nameplate power.

A summary of the NSPS Subpart III, emissions standards applicable to the emergency firewater pump diesel engine at Frederick/Carroll County Renewable Waste to Energy Facility is shown in Table below.

Excerpt from Table 4 to Subpart IIII of Part 60 "NO<sub>x</sub>, NMHC, CO and PM Emission Standards in g/kW-hr (g/Hp-hr) for Emergency Fire Pump Engines

<b>Maximum Engine Power</b>	<b>Model Year</b>	<b>NMHC+NO<sub>x</sub></b>	<b>CO</b>	<b>PM</b>
300≤HP<600				
	2009+	4.0 g/kW-hr (3.0 g/Hp-hr)	3.5 g/kW-hr (2.6 g/Hp-hr)	0.2 g/kW-hr (0.15 g/Hp-hr)

(3) **40 CFR 63, Subparts A (General Provisions) and ZZZZ – Stationary Reciprocating Internal Combustion Engines.** – which states all applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Note: The Permittee must meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart IIII for the emergency generator. No further requirements apply to the emergency generator under 40 CFR, Part 63, Subpart ZZZZ. **[40 CFR §63.6590(c)(1)].**

(b) This source is subject to all applicable federally enforceable state air pollution control requirements including, but not limited to, the following regulations:

- (1) **COMAR 26.11.01.04 – Testing and Monitoring.** – which states the emission testing methods and procedures approved by the Department.
- (2) **COMAR 26.11.01.05-1 – Emission Statements.** – which states the requirements and procedures for submitting emission statement to the Department.
- (3) **COMAR 26.11.01.07 – Malfunctions and Other Temporary Increases of Emissions.** – which states the requirements and procedures regarding the reporting of excess emissions.
- (4) **COMAR 26.11.01.10 – Continuous Opacity Monitoring Requirements.** – which states the requirement and procedures regarding continuous opacity monitors for **municipal waste combustors** with a burning capacity of 35 tons or greater per day.
- (5) **COMAR 26.11.01.11 – Continuous Emission Monitoring Requirements.** – which states the requirements and procedures regarding continuous emission monitors for **municipal waste combustors** with a burning capacity of 35 tons or greater per day.

- (6) **COMAR 26.11.02.04** – Duration of Permits. – which specifies the duration, and expiration of permits to construct, permits to operate, temporary permits, portable emission units, and Part 70 permits.
- (7) **COMAR 26.11.02.09A** – Sources Subject to Permit to Construct and Approvals. – which list source categories subject to permit to construct approvals.
- (8) **COMAR 26.11.02.13A** – Sources Subject to State Permits to Operate. – which states that a person may not operate or cause to be operated any of the following source without first obtaining, and having in current effect, a State permit to operate as required by this regulation: (61) Any other source that the Department determines has the potential to have a significant impact on air quality.”
- (9) **COMAR 26.11.03.02** – Applications for Part 70 Permits. General Requirement. – which states the requirements and procedures for sources subjected to Part 70 permits.
- (10) **COMAR 26.11.06.03D** – Fugitive Particulate Matter from Materials Handling and Construction. – which states that “a person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne.”
- (11) **COMAR 26.11.06.12** – Control of NSPS Source. – which states that “a person may not construct, modify, or operate, or cause to be constructed, modified, or operated, a New Source Performance Standard (NSPS) source as defined in COMAR 26.11.01.01C, which results or will result in violation of the provisions of 40 CFR 60, as amended.”
- (12) **COMAR 26.11.06.14** – Control of PSD Source. – which states that “a person may not construct, modify, or operate, or cause to be constructed, modified, or operated, a Prevention of Significant Deterioration (PSD) source, as defined in COMAR 26.11.01.01B(37), which will result in violation of any provision of 40 CFR §52.21, as published in the 2009 edition, as amended by the “Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule” (75 FR 31514).

For Municipal Waste Combustors Only

- (13) **COMAR 26.11.08.02E – Control of Incinerators. Applicability.**  
– which states that a “MWC with a capacity greater than 250 tons per day for which construction began after September 20, 1994, or modification or reconstruction began after June 19, 1996, is also subject to the requirements of 40 CFR Part 60 Subpart Eb, Standards of Performance for Municipal Waste Combustors, as amended, incorporated by reference at COMAR 26.11.06.12.”
- (14) **COMAR 26.11.08.04 – Visible Emissions Standards.** – which states visible emission standard for the discharge of emission from any incinerator, and provides exceptions during start-up, or adjustments or occasional cleaning of control equipment.
- (15) **COMAR 26.11.08.09 – Incinerator Operator Training.** – which requires incinerator operator training and certification approved by MDE-ARMA.

For Internal Combustion Engine Only

- (16) **COMAR 26.11.09.05E(2) – Visible Emissions.** – which states visible emission requirements during idle mode, and operating mode for the engine, as well as exceptions from the regulation.
- (17) **COMAR 26.11.09.07A(1)(c) – Sulfur Content Limitations for Fuel.** – In Areas I, II, V, and VI. – which states sulfur content limitations for the distillate fuel oils to less than 0.3 percent by weight.” Note: Installations subject to 40 CFR Part 60, Subpart IIII must comply with the fuel standards of §60.4207 which limit the maximum sulfur content of the fuel to 15 ppm.

For the Cooling Tower only

- (18) **COMAR 26.11.06.02C(2) – Visible Emission Standards.**  
“(1) In Areas I, II, V, and VI a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is greater than 20 percent opacity.”  
**COMAR 26.11.06.02A(2) – Exceptions:**  
“The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modifications or adjustments, or occasional cleaning of control equipment, if:  
(a) The visible emissions are not greater than 40 percent opacity; and  
(b) The visible emissions do not occur for more than 6 consecutive minutes in any 60 minute period.”
- (19) **COMAR 26.11.17.03 – Nonattainment Provisions for Major New Sources.** – General Conditions.  
– which states that “a person who proposes to construct or modify and emissions unit subject to this chapter may not commence construction of



the emissions unit without first obtaining all permits and approvals required under this subtitle.”

- (c) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:
- (1) **COMAR 26.11.02.19C & D – Information Required to be Maintained by a Source and Emission Certifications.** – which require that the Permittee submit to MDE-ARMA annual certifications of emissions, and that the Permittee maintain sufficient records to support the emissions information presented in such submittals.
  - (2) **COMAR 26.11.06.08 and 26.11.06.09 – Nuisance and Odors.** – which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.
  - (3) **COMAR 26.11.15.05A – Control Technology Requirements (T-BACT) New or Reconstructed Installations.** – which requires that the Permittee implement “Best Available Control Technology for Toxics” (T – BACT) to control emissions of toxic air pollutants.
  - (4) **COMAR 26.11.15.06A – Ambient Impact Requirements. Requirements for New Installations, Sources, or Premises.** – which prohibits the discharge of toxic air pollutants to the extent that such emissions would unreasonably endanger human health.
- (d) The Permittee is subject to the emission limits and standards specified in the PSD Approval No. PSD-2012-001.
- (e) The Permittee is subject to the emission limits and standards specified in the NSR Approval No. NSR-2014-01

#### **IV. GENERAL AIR QUALITY**

The U.S. Environmental Protection Agency (EPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six (6) criteria pollutants, i.e., sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. The primary standards were established to protect public health, and the secondary standards were developed to protect against non-health effects such as damage to property and vegetation.

MDE-ARMA utilizes a statewide air monitoring network, operated in accordance with EPA guidelines, to measure the concentrations of criteria pollutants in Maryland’s

ambient air. The measurements are used to project statewide ambient air quality, and currently indicate that with the exception of ozone and fine particulate matter equal to or less than 2.5 microns in size (PM<sub>2.5</sub>), Frederick County is in attainment for all other National Ambient Air Quality Standards (NAAQS) criteria pollutants. Therefore, emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter with particle size equal to or less than 10 microns in size (PM<sub>10</sub>), and lead (Pb) must be evaluated subject to Prevention of Significant (PSD) regulations promulgated in 40 CFR 52.21.

Effective April 12, 2010, EPA established a new 1-hour primary and secondary NO<sub>2</sub> NAAQS. EPA set the level of this new 1-hour NO<sub>2</sub> standard at 100 parts per billion (ppb). Final area designations with respect to this new 1-hour NO<sub>2</sub> standard have not been finalized; however, facilities subject to PSD applicability for NO<sub>2</sub> must demonstrate compliance with the 1-hour NO<sub>2</sub> NAAQS.

Effective August 23, 2010, EPA established a new 1-hour primary SO<sub>2</sub> NAAQS that will eventually replace the current 24-hour and annual NAAQS. EPA set the level of this new 1-hour SO<sub>2</sub> standard at 75 ppb. Final area designations with respect to the new 1-hour SO<sub>2</sub> standard have not been finalized; however, facilities subject to PSD applicability for SO<sub>2</sub> must demonstrate compliance with this 1-hour SO<sub>2</sub> NAAQS.

Ground level ozone continues to present a problem for the entire Baltimore-Washington metropolitan area, which is classified as a non-attainment area for ozone. The primary contributors to the formation of ozone are emissions of oxides of nitrogen, primarily from combustion equipment, and emissions of Volatile Organic Compounds (VOC) such as paint solvents and gasoline vapors. Frederick County is included in the non-attainment area for ozone.

Air emission limitations and pollution control requirements are generally more stringent for sources located in areas that do not currently attain a NAAQS for a particular pollutant (known as “non-attainment” areas). The FCCRWTE project is located in Frederick County, which is designated as a moderate non-attainment area for ozone and non-attainment for PM<sub>2.5</sub>. If emissions of NO<sub>x</sub> or VOCs (as ozone precursors) from the project are greater than 25 tons per year (tpy), then NA-NSR is triggered for ozone. Similarly, if direct emissions of PM<sub>2.5</sub> or its precursors (SO<sub>2</sub>) are greater than 100 tpy, the project will trigger non-attainment new source review (NA-NSR) for PM<sub>2.5</sub>.

With regard to toxic air pollutants (TAPs), screening levels (i.e., acceptable ambient concentrations for toxic air pollutants) are generally established at 1/100 of allowed worker exposure levels (TLVs)<sup>1</sup>. MDE-ARMA has also developed additional screening

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<sup>1</sup> TLVs are threshold limit values (exposure limits) established for toxic materials by the American Conference of Governmental Industrial Hygienists (ACGIH). Some TLVs are established for short-term exposure (TLV – STEL), and some are established for longer-term

levels for carcinogenic compounds. The additional screening levels are established such that continuous exposure to the subject TAP at the screening level for a period of 70 years is expected to cause an increase in lifetime cancer risk of no more than 1 in 100,000.

## **V. MERCURY TESTING, MONITORING, AND MITIGATION**

Emissions of mercury were analyzed as part of the PSD pollutant review of MWC Metals which include cadmium (Cd), lead (Pb), and mercury (Hg). (See "Review of Prevention of Significant Deterioration Approval Application"). With respect to Hg, NSPS Subpart Eb sets a numeric emission standard for Hg at 50 ug/dscm corrected to 7% O<sub>2</sub> or 85% removal efficiency, whichever is less stringent. However, this limit is superseded by a PSD BACT limit established at 17 ug/dscm, corrected to 7% O<sub>2</sub>. Compliance with the short term Hg standard shall be demonstrated by using EPA Reference Method 29, except as prescribed in 40 CFR 60.58b(d)(4) and n.

Based on the short term emission rate of 17 ug/dscm, the annual Hg emissions from the facility cannot exceed 92 pounds in any consecutive 12 month rolling period. In the event the Hg mass emissions exceed 92 pounds during any consecutive 12 month period, the Permittee must secure the services of an independent environmental consultant to perform an optimization study of the Hg control technology and prepare a report that includes recommendations for improving the efficiency of the control technology. Upon MDE review and approval of the report, the Permittee is obligated to implement the report recommendations within 60 days unless MDE agrees to an extended implementation schedule.

To demonstrate compliance with the annual mass limit for Hg, the Permittee must install one of the two Hg monitoring options described below:

- a. A continuous emissions monitoring system for Hg on each combustor in accordance with 40 CFR 60.58b(d)(4); or
- b. A sorbent trap Hg CEM installed and operated in accordance with Performance Specification 12B.

Finally, as part of a mercury mitigation project involving public outreach, the Permittee is required to establish a memorandum of understanding (MOU) between MDE-ARMA and the Permittee prior to the commencement of construction. The MOU will include a provision requiring the Permittee to contribute \$30,000 annually for a period of ten years for the purpose of achieving the specific goals established in the MOU.

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exposure (TLV – TWA), where TWA is an acronym for time-weight average.

## VI. COMPLIANCE DEMONSTRATION AND ANALYSIS

The proposed installation must comply with all State imposed emissions limitations and screening levels, as well as the NAAQS. MDE-ARMA has conducted an engineering and air quality review of the application. The emissions were projected based on vendor data, manufacturer's emission guarantees, and published emission factors for similar sources. A comprehensive dispersion modeling protocol was conducted to assess the FCCRWTE air quality impacts in accordance with the methodology described in Section 6.0 of the air quality construction application. The applicant assessed and provided results of the air quality assessment with respect to PSD Class II area impacts. The applicant also assessed and presented results of air quality impacts at the distant PSD Class I areas resulting from long-range transport.

The proposed project was evaluated to determine whether potential emissions of regulated pollutants will be above the PSD major source thresholds for this type of source. Results are presented in Table 1-A of MDE-ARMA's review and tentative determination of the FCCRWTE PSD application.

Municipal incinerators capable of charging more than 250 tons per day of refuse are one of the listed 28 source categories that trigger PSD at the 100 ton per year (tpy) threshold. If the potential annual emission of any criteria pollutant exceeds 100 tpy, then the project is deemed to be a major stationary source subject to PSD. In the case of the FCCRWTE project, both NO<sub>x</sub> and CO exceeded the emission threshold. Additionally, any other regulated pollutant with a potential to emit that exceeds applicable PSD Significant Emission Rates (SERs) are also subject to PSD review. A summary of PSD Applicability Analysis for Proposed Project, including the PSD SERs, can be found in Table 2 of MDE-ARMA's PSD review. As indicated in Table 2, potential emissions of NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, PM<sub>10</sub>, total fluorides, sulfuric acid mist (SAM), MWC acid gases, MWC metals, MWC organics, and GHGs exceed the significance thresholds, and are therefore subject to PSD review.

Potential emissions from new sources in non-attainment areas are also evaluated through the Non-Attainment New Source Review (NA-NSR) permitting program under Code of Maryland Regulations (COMAR) 26.11.17. The proposed project at FCCRWTE is subject to NA-NSR review for NO<sub>x</sub> emissions. A technical review of the proposed project was conducted and results were summarized in MDE-ARMA's "Review of Non-Attainment New Source Review Approval Application (NSR Approval NSR-2014-01)". Table 2 of the NA-NSR review document lists the potential annual emissions of VOCs, NO<sub>x</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>, and their respective NA-NSR applicability thresholds. It was determined that only NO<sub>x</sub> emissions would exceed the applicable NA-NSR threshold and therefore be subject to NA-NSR review.

The FCCRWTE will be located in Frederick County, which is designated as a moderate non-attainment area for ozone and non-attainment for PM<sub>2.5</sub>. If emissions of NO<sub>x</sub> or VOCs (as ozone precursors) from the project are greater than 25 tons per year

(tpy), then NA-NSR is triggered for ozone. Similarly, if direct emissions of PM<sub>2.5</sub> or its precursors (SO<sub>2</sub>) are greater than 100 tpy, the project will trigger NA-NSR for PM<sub>2.5</sub> and/or SO<sub>2</sub>. Note- NO<sub>x</sub> is also a precursor for PM<sub>2.5</sub> but no additional requirements are triggered for NO<sub>x</sub> as a PM<sub>2.5</sub> precursor than already imposed by NO<sub>x</sub> as a precursor to ozone. NO<sub>x</sub> emissions from the FCCRWTE will exceed 25 tons per year and trigger NA-NSR review. Because the permit to construct the FCCRWTE imposes enforceable limits on the annual SO<sub>2</sub> emissions from the FCCRWTE below the NA-NSR threshold of 100 tpy, no NA-NSR review of PM<sub>2.5</sub> or its precursors (SO<sub>2</sub>) is required.

The NSR Approval 2014-01, also details information regarding major NA-NSR requirements to control NO<sub>x</sub> emissions from the proposed project which include the implementation of lowest achievable emission rate (LAER) for pollution control (summarized in Table 3); obtaining emissions reductions (offsets) for significant pollutants; certifying that all other sources in Maryland owned by NEA are in compliance with all applicable requirements of the Clean Air Act; and in accordance with COMAR 26.11.17.03B(6), conduct “an analysis of alternative sites, sizes, production processes, and environmental control techniques that demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction or modification.”

Assessments of TAPs air quality impacts from the facility were conducted using the AERMOD dispersion model and following proper modeling procedures, meteorology, and receptor grids, as described in Section 6.0 of the permit application submitted by NEA. Table II summarizes the refined AERMOD TAP results for the FCCRWTE combustors. This table shows the combustor TAP emission rates for the 110 and 60 percent maximum continuous rating (MCR) operating cases, merged flue stack parameters for each MCR operating case, and nominal 1.0 g/s and individual TAP maximum air quality impacts for each averaging period. Table II shows that maximum TAP air quality impacts were found to be below the MDE screening levels.

## **VII. FINAL DETERMINATION**

Based on the above information, MDE-ARMA has concluded that the proposed installation will comply with all applicable Federal and State air quality control requirements. In accordance with the Administrative Procedure Act, Department has made a tentative determination to issue the Permit to Construct.

Enclosed with the final determination is a copy of the Permit to Construct.

**TABLE I  
PROJECTED MAXIMUM EMISSIONS FROM THE PROPOSED INSTALLATION**

POLLUTANT	PROJECTED MAXIMUM EMISSIONS FROM PROPOSED INSTALLATION <sup>1</sup>	
	(lb/hr)	(tons/year)
Nitrogen Dioxide (NO <sub>2</sub> )	52.47	229.8
Sulfur Dioxide (SO <sub>2</sub> )	22.69	99.4
Carbon Monoxide (CO)	70.94	248.3
Volatile Organic Compounds (VOC)	2.69	11.8
Particulate Matter (PM <sub>10</sub> )	15.55	68.1

Note<sup>1</sup>: at 100 percent load

**TABLE II  
PREDICTED MAXIMUM OFF-SITE AMBIENT CONCENTRATIONS FOR TOXIC AIR POLLUTANTS EMITTED FROM THE PROPOSED INSTALLATION**

TOXIC AIR POLLUTANTS	CAS	PROJECTED WORST-CASE FACILITY-WIDE EMISSIONS (lbs/hr)	PREDICTED MAXIMUM OFF-SITE GROUND LEVEL CONCENTRATIONS (µg/m <sup>3</sup> )	SCREENING LEVELS (µg/m <sup>3</sup> )
Ammonia (NH <sub>3</sub> )	7664-41-7	9.48	1-hour→ 6.62 8-hour→ 1.90 Annual→ None	1-hour→ 243.78 8-hour→ 174.13 Annual→ None
Antimony (Sb)	7440-6-0	0.00544	1-hour→ None 8-hour→ 0.00380 Annual→ None	1-hour→ None 8-hour→ 5.00 Annual→ None
Arsenic (As)	7440-38-2	0.000517	1-hour→ None 8-hour→ 0.000104 Annual→ 0.00000315	1-hour→ None 8-hour→ 0.1 Annual→ 0.00120
Beryllium (Be)	7440-41-7	0.0000289	1-hour→ None 8-hour→ 0.00000579 Annual→ 0.000000176	1-hour→ None 8-hour→ 0.0005 Annual→ 0.0024
Cadmium (Cd)	7440-43-9	0.00672	1-hour→ None 8-hour→ 0.00135 Annual→ 0.0000409	1-hour→ None 8-hour→ 0.02 Annual→ 0.0036

<b>TOXIC AIR POLLUTANTS</b>	<b>CAS</b>	<b>PROJECTED WORST-CASE FACILITY-WIDE EMISSIONS (lbs/hr)</b>	<b>PREDICTED MAXIMUM OFF-SITE GROUND LEVEL CONCENTRATIONS (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>SCREENING LEVELS (<math>\mu\text{g}/\text{m}^3</math>)</b>
Chromium (Cr)	7440-47-3	0.00393	1-hour→ None 8-hour→ 0.000941 Annual→ None	1-hour→ None 8-hour→ 5.0 Annual→ None
Hexavalent Chromium ( $\text{Cr}^{+6}$ )	18540-29-9	0.000524	1-hour→ None 8-hour→ 0.000105 Annual→ 0.00000319	1-hour→ None 8-hour→ 0.1 Annual→ 0.00048
Cobalt (Co)	7440-48-4	0.000679	1-hour→ None 8-hour→ 0.000136 Annual→ None	1-hour→ None 8-hour→ 0.20 Annual→ None
Copper (Cu)	7440-50-8	0.00381	1-hour→ None 8-hour→ 0.000764 Annual→ None	1-hour→ None 8-hour→ 0.20 Annual→ None
Dioxin (2,3,7,8-TCDD)	1746-01-6	$3.00 \times 10^{-8}$	1-hour→ None 8-hour→ $6.01 \times 10^{-9}$ Annual→ $1.82 \times 10^{-10}$	1-hour→ None 8-hour→ 0.0008 Annual→ $1.98 \times 10^{-10}$
Formaldehyde ( $\text{CH}_2\text{O}$ )	50-00-0	0.000861	1-hour→ 0.000601 8-hour→ 0.000173 Annual→ 0.00000524	1-hour→ 3.68 8-hour→ 20.3 Annual→ 0.48
Hydrogen Chloride (HCl)	7647-01-0	25.4	1-hour→ 17.71 8-hour→ 5.09 Annual→ 0.15	1-hour→ 29.83 8-hour→ 165.27 Annual→ 4.20
Hydrogen Fluoride (HF)	7664-39-3	2.39	1-hour→ 1.67 8-hour→ 0.48 Annual→ None	1-hour→ 16.4 8-hour→ 4.1 Annual→ None
Lead (Pb)	7439-92-1	0.0504	1-hour→ None 8-hour→ 0.010 Annual→ None	1-hour→ None 8-hour→ 0.50 Annual→ None
Mercury (Hg)	7439-97-6	0.0114	1-hour→ 0.00797 8-hour→ 0.00229 Annual→ None	1-hour→ 0.3 8-hour→ 0.1 Annual→ None
Nickel (Ni)	7440-02-0	0.00360	1-hour→ None 8-hour→ 0.000721 Annual→ None	1-hour→ None 8-hour→ 1.0 Annual→ None
Polychlorinated Biphenyls (PCBs)	1336-36-3	0.0000141	1-hour→ None 8-hour→ 0.00000283 Annual→ 0.0000000859	1-hour→ None 8-hour→ 26.6 Annual→ 0.06

<b>TOXIC AIR POLLUTANTS</b>	<b>CAS</b>	<b>PROJECTED WORST-CASE FACILITY-WIDE EMISSIONS (lbs/hr)</b>	<b>PREDICTED MAXIMUM OFF-SITE GROUND LEVEL CONCENTRATIONS (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>SCREENING LEVELS (<math>\mu\text{g}/\text{m}^3</math>)</b>
Selenium (Se)	7782-49-2	0.00429	1-hour→ None 8-hour→ 0.000861 Annual→ None	1-hour→ None 8-hour→ 2.0 Annual→ None
Sulfuric Acid Mist ( $\text{H}_2\text{SO}_4$ mist)	7664-93-9	9.83	1-hour→ None 8-hour→ 1.97 Annual→ None	1-hour→ None 8-hour→ 2.0 Annual→ None
Zinc (Zn)	7440-66-6	0.0166	1-hour→ 0.0116 8-hour→ 0.00332 Annual→ None	1-hour→ 1,000 8-hour→ 500 Annual→ None

Note: The values represent maximum facility-wide emissions of toxic air pollutants during any 1-hour period of facility operation. The values are based on worst-case emissions from the proposed facility and were predicted by AERMOD dispersion model, which provides conservative estimations concerning the impact of pollutants on ambient air quality.