ARCADIS
Infrastructure, environment, buildings

Imagine the result

ENERGY ANSWERS ARECIBO, LLC

Renewable Power Generation and Resource Recovery Plant

Arecibo, Puerto Rico

Air Quality Analysis Technical Report

PRELIMINARY EIS

OCTOBER 2010

Air Quality Analysis Technical Report

Preliminary Environmental Impact Statement

Prepared for:

Energy Answers Arecibo, LLC

Prepared by:

ARCADIS G&M of North Carolina, Inc.
801 Corporate Center Drive
Suite 300
Raleigh,
North Carolina 27607-5073
Tel 919 854 1282
Fax 919 854 5448

Our Ref.:

NCENRGY1.0003

Date:

October 2010

Table of Contents

Table of Contents

Table of Contents

Tables

Figures

Attachments

ARCADIS

Executive Summary

Energy Answers is proposing to construct an electric generating facility capable of producing approximately 80 megawatts (MW) of renewable power. The facility will be fueled primarily by Processed Refuse Fuel (PRF), and will have the capability to supplement PRF with Automotive Shredder Residue (ASR), shredded urban wood waste, and tire chips. The proposed facility will be located in Arecibo, Puerto Rico.

Existing air quality in Arecibo is monitored by USEPA and the Puerto Rico Environmental Quality Board (EQB). Based on actual air quality monitoring data and designations by USEPA, this region is attaining the National Ambient Air Quality Standards (NAAQS).

Air quality impacts are assessed for this proposed project qualitatively for construction activities, and quantitatively for the potential emissions when the facility is in operation. Quantitative impacts are assessed by (1) developing air emission rates of regulated air pollutants and (2) executing an atmospheric dispersion model to estimate impact to criteria pollutant concentrations and potential plume visibility from the proposed project. The USEPA's AERMOD modeling system was used for this evaluation.

The construction phase activities would likely impact near-field air quality in an insignificant fashion. Emissions of particulate matter from both the earthmoving activities and construction equipment exhaust are expected to occur intermittently and within the immediate vicinity of the project site. Impacts from PM are expected to be minimal, to be in the immediate vicinity of construction operations, and are expected to dissipate quickly from the area. Impacts would also we very limited in duration, occurring just during construction of the facility.

During the operational phase, emissions from the facility would be expected year round from the sources except during routine shutdown and maintenance activities. The emission sources proposed for construction and operation include: bottom ash processing, fly ash processing, oil-fired boilers, cooling towers, and an emergency generator and fire water pump. Potential maximum emissions were modeled and compared with the Prevention of Significant Deterioration (PSD) Significant Impact Level (SIL) thresholds. Maximum ambient air impacts were found to be below the PSD SIL for all modeled regulated air pollutants except for nitrogen dioxide (NO2) and sulfur dioxide (SO2) impacts averaged on a 1-hour basis. Impacts below the SIL can be considered de minimis. For the 1-hour NO2 and SO2, a limited cumulative air modeling analysis was completed, including other permitted emission sources in the

area that could contribute to potential impacts from the proposed Energy Answers facility. Results for the limited cumulative impact analysis indicate that the potential maximum air impacts are below the National Ambient Air Quality Standards (NAAQS) for NO2 and SO2, averaged on a 1-hour basis.

Visibility impacts were simulated and assessed for the stack plume in the immediate area around the project site and at several distances from the plant site. The visibility impacts are predicted to be insignificant.

ARCADIS

1. Introduction

1.1 Purpose of this Technical Report

This document is a technical appendix to the Preliminary Draft EIS (PDEIS) and assesses, in detail, the impacts of the proposed project on air quality. Impacts to air quality have potential consequences of increasing concentrations of regulated air pollutants, degrading visibility, increasing deposition of acid gases to soils and plants, and stressing ecosystems adversely. Moreover, poor air quality can introduce additional stresses on the lung functions and respiratory systems in humans, especially in small children, the elderly, asthmatics, or those with other respiratory ailments. This report also summarizes the key air regulations that will apply to the project due to the potential emissions and processes proposed for installation.

1.2 Project Description

Energy Answers Arecibo, LLC (Energy Answers) is an award-winning[1], international designer, developer, owner and operator of environmentally sound resource recovery systems. Energy Answers is proposing to construct electric generating facility capable of producing approximately 80 MW of renewable power. The plant will be fueled primarily with Processed Refuse Fuel (PRF) and have the capability to be supplemented with Automotive Shredder Residue (ASR), shredded urban wood waste, and tire chips. The facility will be located in Barrio Cambalache, Arecibo Puerto Rico, at the site of the former Global Fibers paper mill. Figures 1-1 and 1-2 illustrate the location of the proposed project site. This project represents a move toward decreasing landfill of waste, reducing the use of fossil fuel and increasing the renewable energy supply on the grid in Puerto Rico.

The facility will have the following air emission sources:

- Two (2) spreader-stoker boilers rated at 500 MMBtu/hr each, equipped with three (3) 167 MMBtu/hr fuel oil-fired burners each;
- Ash handling conveyors
- Three storage silos
- One cooling tower with 4 cells (air-cooled condenser type);

---

1 In 1996, SEMASS was awarded the Ecological Society of America's Corporate Award for Resource Recycling, recognizing its "record of remarkable reduction of waste flow combined with environmental concern, done profitably and on a large regional scale."

ARCADIS

- One (1) diesel-fired emergency generator set; and
- One (1) diesel-fired emergency fire water pump

The site layout is depicted in Figure 1-3. In addition to power production, the facility will pre-process municipal solid waste (MSW) into PRF and will process bottom ash and fly ash on site. PRF processing technology developed by Energy Answers maximizes the recovery of energy and marketable materials from MSW and other non-hazardous commercial and light industrial waste streams. This technology has been implemented at the SEMASS Resource Recovery Facility located in Rochester, Massachusetts. SEMASS has been in commercial operation since January 1989.

The supplementary fuels (ASR, urban wood waste and TDF) to be used in conjunction with the PRF will be pre-processed off site by the suppliers.

The proposed facility will include a system for processing bottom ash. This system is designed to recover ferrous and non-ferrous metals and will produce a granular material known as Boiler Aggregate™ (BA™). Boiler Aggregate can be used as filler for roadway asphalt and in the manufacture of concrete blocks, among many other applications. Energy Answers also proposes to process the fly ash using a separate and independent system that will condition it for reuse as a marketable material.

For the purposes of this study, operations at the facility are assumed to occur continuously, 24 hours per day, 365 days per year although, in actuality, there will be scheduled shutdowns for maintenance.

2. Existing Conditions

2.1 Regional Climate

Puerto Rico is generally affected by easterly trade winds, with a daily land/sea breeze that is found within the wind circulation pattern. Sea breezes tend to blow in an east-southeast direction across the land during the day. At night, the wind pattern changes to blow off-shore (land breezes). Precipitation generally falls in the afternoons as small showers or thunderstorms. Puerto Rico is within the tropical hurricane region of the Caribbean Sea. Consequently, the island is subject to infrequent tropical storms and hurricanes from approximately June through November. Due to its tropical location near the equator, the temperature does not change more than approximately 6°F between winter and summer months, ranging between 76 °F to 79 °F through the course of the year.

2.2 Ambient Air Quality

The Clean Air Act, which was last amended in 1990, regulates air quality by requiring the United States Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) for airborne compounds that have been shown to cause degradation to the quality of ambient air. These compounds are commonly referred to as the “criteria” air pollutants. . The NAAQS are set for various averaging times at levels which are protective of public health and welfare with an adequate margin of safety. The primary standards are intended to protect human health; and the secondary standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as damage to soils, vegetation and wildlife. The criteria air pollutants are carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter with a diameter of 10 microns or less (PM_{10}), particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), ozone (O_3), sulfur dioxide (SO_2), and lead (Pb). In January, 2010 and June, 2010, the EPA established one-hour average standards for NO_2 and SO_2, respectively. . The current NAAQS are presented in Table 2-1.

Table 2-1 National Ambient Air Quality Standards (NAAQS)

Pollutant	Type of Standard	Averaging Time	Concentration ($\mu g/m^3$)	Concentration (ppm)
Carbon Monoxide (CO)	Primary	8-hour (1)	10,000	9
	Primary	1-hour (1)	40,000	35
Nitrogen Dioxide (NO_2)	Primary and Secondary	Annual Arithmetic Mean	100	0.053
	Primary	1-hour (2)	188	0.1
Ozone (O_3)	Primary and Secondary	1-hour (3)	235	0.12
		8-hour (1997 std) (4)	156	0.08
		8-hour (2008 std) (4)	147	0.075
Particulate Matter (PM_{10})	Primary and Secondary	24-hour (5)	150	-
Particulate Matter ($PM_{2.5}$)	Primary and Secondary	Annual (Arithmetic Mean)	15.0	-
	Primary and Secondary	24 hour	35	-
Sulfur Dioxide (SO_2)	Primary	Annual Arithmetic Mean	80	0.03
	Primary	24-hour (1)	365	0.14
	Primary	1-hour (6)	195	0.075
	Secondary	3-hour	1,300	0.5
Lead (Pb)	Primary and Secondary	Quarterly Average	1.5	-
	Primary and Secondary	Rolling 3-Month Average	0.15	

$\mu g/m^3$ micrograms per cubic meter

ppm parts per million

(1) Not to be exceeded more than once per year

(2) 3-year average of the 98th percentile of the daily maximum 1-hour average

(3) Applies only in Early Action Compact Areas

(4) 3-year average of the fourth-highest daily maximum 8-hour average

(5) Not to be exceeded more than once per year on average over 3 years

(6) 3-year average of the 99th percentile of the daily maximum 1-hour average

The origination and potential effects of each of the criteria pollutants are briefly described below.

Carbon monoxide (CO) is a colorless gas that can interfere with the body's ability to carry and transfer oxygen through the blood to vital organs. CO is predominately emitted to the atmosphere from combustion sources such as motorized vehicles, industrial boilers and power plants that are fueled by fossil fuels. Exposure to high levels of CO can cause headaches, drowsiness, loss of equilibrium, and put stress on the heart. Typically, the highest concentrations of CO can be observed near congested intersections, in parking garages, along high-volume roadways, and in urban areas where buildings and other features can inhibit natural dispersion.

Nitrogen dioxide (NO2) is a brownish gas that, like CO, is predominately emitted as a product of combustion. Nitrogen in combustion air and fuel is oxidized to nitrogen dioxide and other oxides of nitrogen (NOx) that subsequently convert to NO2 in the atmosphere. NOx formation has been found to be largely a function of the combustion temperatures where the greater the temperature, the more NOx emitted. Atmospheric NO2 has been found to be a major contributor to the formation of ozone. It can also be a significant source of nitrogen deposited in streams, ponds, lakes and soils where it can affect acidity, plant growth and dissolved oxygen levels in water.

Particulate matter (PM) emissions, classified as PM10 and PM2.5, originate from many types of industrial processes and from fossil fuel combustion, including diesel powered motor vehicles. Roadway construction activities also produce PM10 and PM2.5 emissions, although PM2.5 emissions are primarily formed from diesel engines rather than in dust generated from earthwork cut-and-fill activity. PM2.5 can also form from secondary atmospheric reactions of organic and inorganic compounds. Generally, particulate matter is a category made up of a combination of solid particles, aerosols and condensable compounds. Examples include dust, soot, smoke, metal fume, acid fume, ammonium sulfate and other carbonaceous matter. When inhaled, these materials can stress the respiratory system and heart. Particulate matter suspended in the atmosphere can also have a light-scattering effect that reduces visibility and can cause a visible haze.

Ozone (O3) is a secondary pollutant formed by atmospheric reactions involving volatile organic compounds (VOC) and NOx. Its formation is a complex process that depends on the intensity and spectral distribution of sunlight, atmospheric mixing and other atmospheric processes as well as the concentrations of NOx and VOC in ambient air. Ozone is highly reactive gas that can irritate and damage lung tissue, oxidize plant

tissue, stunt plant growth and reduce agricultural crop yield. Since ozone formation occurs as a function of secondary reactions in the atmosphere, ozone is understood to be a pollutant that is monitored and controlled on a regional scale. Given the multitude of sources of NOx and VOC emissions throughout the project study area and throughout the region, and the inherent variability of sunlight and meteorological factors that contribute to ozone formation, it is beyond the scope of this evaluation to attempt to quantify the potential effects that this project could have on ozone concentrations in the study area.

Sulfur dioxide (SO2) emissions originate primarily from fossil fuel combustion at electrical utilities, industrial plants and, to a smaller extent, in diesel powered motor vehicles including locomotives. At combustion sources, SO2 emissions occur as a direct function of the sulfur present in the fuel, where sulfur is oxidized in the combustion process to SO2. When vented to the atmosphere, SO2 emissions can react with water to form sulfuric acid and sulfate that eventually gets deposited to soils and waterways as particles or droplets. Similar to nitrogen deposition, sulfur deposition can increase the acidity of soils and water which has the effects of depleting nutrients and reducing viability. In addition, SO2 concentrations in ambient air have been found to cause acute respiratory symptoms and diminished ventilator function, especially in children.

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from motor vehicles dramatically declined in the last two decades. Today, the highest levels of lead in air are usually found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

In humans, Pb gets distributed throughout the body in the blood and accumulates in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system (e.g., high blood pressure and heart disease). Lead exposure also affects the oxygen carrying capacity of the blood. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits and lowered IQ.

2.3 Methodology for Assessing Existing Conditions

Existing air quality conditions were evaluated primarily on the basis of actual monitoring data collected for criteria air pollutants. Depending on whether monitoring data indicate that the ambient concentrations of the criteria pollutants meet the NAAQS, EPA designates geographical areas as "attainment," "non-attainment," or "unclassifiable" for each criteria pollutant. An attainment designation indicates that the area or region has ambient concentrations that are below the NAAQS, whereas a designation of "non-attainment" is given for areas that violate or have contributed to violations of the NAAQS. "Unclassifiable" areas are those where a positive designation cannot be made due to insufficient monitoring data.

2.3.1 NAAQS Attainment Status for the Project Site

The USEPA has classified the Municipality of Arecibo and the surrounding area as being in compliance with the NAAQS (attainment) for each criteria pollutant. The USEPA and Puerto Rico Environmental Quality Board maintain air quality monitoring stations that measure actual ambient air concentrations of the criteria pollutants. Based on the recorded data collected at the ambient air monitors for Puerto Rico, the following table lists the actual recent monitored values recorded for the area as reported by the USEPA AirData database.

Table 2-2 Actual Ambient Air Quality Measurements

Monitor ID	Year	Municipality	Pollutant	Averaging Period	Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
721270003	2008	San Juan	PM10	24-hour	78	150
720010002	2008	Adjuntas	PM2.5	24-hour Annual	10.5 5.21	35 15
720170003	2005	Barceloneta	SO_2	1-hour 3-hour 24-hour Annual	86.5(1) 39.3 15.7 7.86	195 1300 365 80
720330008	2006	Catano	NO_2	1-hour Annual	72(2) 18.9	188 100
721270003	2008	San Juan	CO	1-hour 8-hour	4255 2645	40,000 10,000
721270003	2008	San Juan	Pb	3-month average	0.05	0.15

(1) Value represents the maximum recorded concentration in 2005, however, the NAAQS is the 3-year average of the annual 99th percentile of daily maximum 1-hour measurements. The 1 hour SO2 standard was recently finalized by USEPA in 2010. Official ambient monitoring values for the 1 hour SO2 standard have not yet been published.

(2) Value represents the maximum recorded concentration in 2006, however, the NAAQS is the 3-year average of the annual 98th percentile of daily maximum 1-hour measurements. The 1-hour NO2 standard was recently finalized by USEPA in 2010. Official ambient monitoring values for the 1-hour NO2 standard have not yet been published.

2.3.2 Hazardous Air Pollutants

In addition to the criteria air pollutants, the Clean Air Act identified 188 chemical compounds or groups of compounds as being toxic to human health or the environment referred to as hazardous air pollutants (HAP). Several of these compounds are predicted to be present in the exhaust from the proposed facility; however, there are no ambient air quality standards for these compounds except for lead. EPA has taken a technology-based approach for regulating HAPs. Standards for HAP are issued under the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) under which Maximum Achievable Control Technology (MACT) standards are imposed on qualifying specific emission source categories that emit HAP. Energy Answers proposes to install an air quality control system that will meet or exceed the applicable MACT standards for HAP compounds.

2.3.3 Regional Haze and Visibility

Regional haze is a reduction in visibility caused by the combined effect of particles and gases in the atmosphere that scatter and absorb light over a wide geographic area. The reduction in visual clarity that results (haziness) is technically referred to as “light extinction.” Evaluations of both particles and gases indicate that the presence of fine particles (PM2.5) in the atmosphere is the primary cause of regional haze. These particles consist of ammonium sulfate, organic carbon, elemental carbon, ammonium nitrate, and soil and can be present as a result of natural processes or human activity.

Under the Clean Air Act Regional Haze Program, visual air quality in 156 Class I areas across the country is being monitored. The states with Federal Class I areas are required to establish a baseline visibility value 2000-2004 from which future improvements will be gauged. Since visibility conditions are not constant, but rather vary with changing natural processes that can lead to high short-term impacts, the rate of improvement in visual quality is measured over a long-term averaging period (5 years). Specifically, visual quality is measured in terms of the 20 percent clearest (best) days and the 20 percent haziest (worst) days over a 5-year period. The ultimate goal of the Regional Haze Program is to restore visual clarity to the level defined as the “natural visibility conditions” for the 20 percent haziest days and prevent the 20 percent best days from getting worse. Natural visibility conditions represent the long-term degree of visibility that is estimated to exist in the absence of human-caused effects.

Visibility conditions, progress goals, and changes in natural visibility conditions are expressed in terms of deciview (dv) units, per 40 CFR 51.308(d)(1). The deciview is a

unit of measurement of haze that indicates changes in perception of haziness (derived from light extinction). The approved methodology for calculating visibility in Federal Class I areas was established by the Interagency Monitoring of Protected Visual Environments (IMPROVE). Concentrations of particulate matter species are summed in conjunction with the relative humidity averages for a given area.

States are required to establish baseline values using visibility data collected from 2000-2004 to develop strategies for improving visibility in the Federal Class I areas, and to implement these strategies in a State Implementation Plan (SIP) for Regional Haze. The SIP submittals were due no later than 2008. Because regional haze is due to a wide number of influencing human activities and air currents that do not recognize state boundaries, many states are working together in regional partnerships to establish policies and goals for regional haze improvements (e.g., VISTAS).

The closest designated PSD Class I area is Virgin Islands National Park, located on the island of St. John, approximately 170 km east of the proposed site. Given the relatively large distance, visibility modeling would not yield reliable or meaningful results. Therefore, no further analysis for potential Regional Haze impacts was completed.

3. Air Quality Impacts

3.1 Air Impact Criteria

Impacts to air quality from construction or operation would require mitigation if one of the following occurred:

- Emissions from the proposed project are predicted to result in a violation of federal or Puerto Rico Environmental Quality Board air quality standards
- Emissions from the proposed project qualifying as a major source of air pollution
- Emissions from the proposed project predicted to contribute to a violation or worsen an existing violation of the NAAQS
- Emissions from the proposed project predicted to cause incremental increases of air quality pollutants exceeding the allowable limit under the Prevention of Significant Deterioration (PSD) regulations for Class I and II areas

An air quality analysis, including completion of an inventory of potential emissions and conducting dispersion modeling, serves as the basis for evaluating the potential air quality impacts from the proposed facility.

3.2 Applicable Air Regulations and Limitations

The proposed project will be subject to both federal and Puerto Rico air quality control regulations and emission limits. Emissions from the proposed facility will be limited to comply with regulations under the following programs:

- Federal New Source Review PSD regulations for major new sources including:
  - Site-specific Best Available Control Technology (BACT) emission limits
  - Air Dispersion Modeling Impact Analysis to quantify the potential change in ambient air quality from the proposed facility
- Federal New Source Performance Standards (NSPS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)

- Puerto Rico preconstruction approvals
- Puerto Rico emission standards

A description of these applicable requirements is given below.

3.2.1 Federal PSD Permitting

Based on the size of the facility, and in accordance with Puerto Rico and federal regulations, Energy Answers must obtain a Prevention of Significant Deterioration (PSD) air permit prior to beginning construction, in accordance with permitting procedures per 40 CFR Part 52.21 and PR Rule 203. This permit application will be submitted to the United States Environmental Protection Agency Region 2 for approval to construct and operate the proposed facility. The proposed project area location is currently designated as in attainment of National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. The attainment status for the area is an important factor in determining the necessary review procedures for the proposed project.

The USEPA adopted PSD regulations (40 CFR 51) pursuant to the CAA Amendments of 1977 that outlined a detailed PSD program. The objectives of the PSD permit program regulations are (1) to ensure that economic growth will occur in harmony with the preservation of existing clean air resources; (2) to protect ambient air quality from degrading as a result of increased emissions from new major stationary sources or from expanding existing emission sources; and (3) to preserve air quality in special areas such as national parks and wilderness areas. The primary provisions of the PSD regulations require new major stationary sources and major modifications to be examined prior to construction to ensure compliance with the NAAQS and applicable PSD air quality allowable “increments”. The PSD program also requires new major projects to install the best available control technology (BACT) to reduce its emissions.

A new source of air pollution is subject to the PSD regulations if it is proposed to be located in an attainment area and it qualifies as a major stationary source. A major stationary source is any source included on a list of 28 specified categories which has the potential to emit 100 tons per year (tpy) or more of any pollutant regulated under the CAA and any unlisted sources with emissions of a regulated pollutant of greater than 250 tons per year (tpy). The proposed Energy Answers facility falls within a PSD Source Category and is subject to the 100 tons per year major source threshold. Based on the proposed facility’s potential to emit, it will be a PSD major source subject to the PSD preconstruction review and permitting procedures for several criteria pollutants and other regulated air pollutants. Table 3-1 summarizes the PSD applicability by emission rate.

Table 3-1 PSD Applicability

Pollutant	PSD Major Source [1] (tons/year)	Potential Emission Rate[2] (tons/year)	PSD Review Required
Carbon Monoxide	100	702	Yes
Nitrogen Oxides	100	347	Yes
Sulfur Dioxide	100	256	Yes
Particulate Matter (PM)	100	46.1	No
Particulate Matter < 10 microns (PM10)	100	45.1	No
Particulate Matter < 2.5 microns (PM2.5)	100	24	No
Volatile Organic Compounds	100	63	No
Lead	0.6	0.25	No
Asbestos	0.007	N/A	No
Beryllium	0.0004	0.003	Yes
Fluorides (as HF)	3	13	Yes
Mercury	0.1	0.06	No
Sulfuric Acid Mist	7	55	Yes
Hydrogen sulfide (H2S)	10	N/A	No
Total Reduced Sulfur Compounds	10	N/A	No
Vinyl chloride	1	N/A	No
Municipal Waste Combustor Organics (measured as total tetra-thru octa-chlorinated dibenzo-p-dioxins and dibenzofurans)	3.5E-6	4.5E-5	Yes

(1) Source: 40 CFR 52.21
(2) Estimated maximum annual emission rates assume both boilers operate at a heat input rate of 500 MMBTU/hr for 8760 hours

The EPA Region 2 office is responsible for issuing the PSD permit for Energy Answers and other major sources in Puerto Rico. As part of the PSD permitting program, Energy Answers must evaluate air pollution control technologies that are available for each pollutant that will potentially be emitted in “significant” quantities. A “top-down” evaluation must be completed to determine which emissions control technology is the Best Available Control Technology (BACT) for each pollutant. In addition to the BACT analysis, Energy Answers is required to complete an air quality impacts analysis and secondary impacts analysis as part of the PSD application process. The analyses require that the applicant use USEPA-approved air dispersion modeling methods to predict the maximum ambient air impacts of the regulated air pollutants.

3.2.2 New Source Performance Standard (NSPS) Requirements

The New Source Performance Standards (NSPS), codified under 40 CFR Part 60, specify the minimal performance requirements for certain new or modified air emission sources. The proposed Energy Answers facility will be subject to the following NSPS under 40 CFR Part 60:

- Subpart A – General Provisions
- Subpart Da – Electric Utility Steam Generating Units
- Subpart Eb – Large Municipal Waste Combustors
- Subpart IIII – Stationary Compression Ignition Internal Combustion Engines

A summary of the requirements of each of these rules to the proposed facility is given below:

3.2.2.1 Subpart A – General Provisions

Certain provisions of 40 CFR Part 60 Subpart A (General Provisions) apply to the owner or operator of any stationary source subject to a NSPS. Based on the proposed plant design and equipment specifications, the facility will be subject to NSPS Subparts Da, Eb and IIII. The specific requirements of each of these rules are described in further detail in the subsections below. In addition to the emission limits and operating requirements provided within each individual NSPS, Energy Answers is required to comply with General Provisions of Subpart A. The applicable General Provisions include *§60.7 (Initial notification and recordkeeping); §60.8 (Performance Tests); §60.11 (Compliance with standards and maintenance requirements); §60.13 (Monitoring requirements); and, §60.19 (General notification and reporting requirements)*.

3.2.2.2 Subpart Da – Standards of Performance for Electric Utility Steam Generating Units

Subpart Da regulations apply to (fossil-fuel fired) electric utility steam generating units for which construction, modification, or reconstruction commenced after September 18, 1978, and which have a heat input capacity of greater than 250 MMBtu/hour. Since the fuel oil burners will collectively have a heat input greater than 250 MMBtu/hr (each is rated at 167 MMBtu/hr) and meet the “steam generating unit” definition, they will be subject to NSPS Subpart Da. Subpart Da specifies emission limitations, monitoring, recordkeeping and reporting requirements for PM, NO_x, SO_2, and opacity.

Table 3-2 NSPS Subpart Da Emission Limits

Parameter	Subpart Da Limit	Operating Scenario	Averaging Period
Particulate Emissions	0.14 lb/MWh or 0.015 lb/MMBtu or 0.03 lb/MMBtu and 99.9% reduction or 99.8% reduction	Any Fuel	Continuous
Opacity	20 % CEMS for PM	Any Fuel	6-minute average
SO2	1.2 lb/MMBtu	Solid Fuel	30 day rolling average
	0.54 lb/MMBtu	Liquid or gaseous Fuel	
NOx	1.0 lb/MWh	Any Fuel	30 day rolling average

3.2.2.3 Subpart Eb – Standards of Performance for Large Municipal Waste Combustors

NSPS Subpart Eb applies to individual Municipal Waste Combustor (MWC) units with capacities greater than 225 mega grams per day (approximately 250 tons/day). Under 40 CFR 60.51b, municipal solid waste is defined to include "refuse-derived fuel." Since the proposed facility will use an average of 2,100 tons per day (1,050 tons per day per boiler) of processed refuse fuel, the provisions of Subpart Eb will apply. Emission standards are given for metals, opacity, acid gases, dioxins and furans, NOx, and fugitive emissions from ash handling. Each of the emission limits are listed in Table 3-3. Subpart Eb also provides requirements that the owner or operator implement Good Combustion Practices for minimizing emissions of CO, dioxins and furans, and particulate matter. Additionally, Subpart Eb specifies requirements for siting the facility, implementing management planning, preparing a materials separation plan, and conducting operator training.

Table 3-3 NSPS Subpart Eb Limits

Parameter	Subpart Eb Limit	Units	Averaging Period
Particulate Matter	20	mg/dscm	
NOx	150	Ppmvd	daily 24-hour arithmetic average
CO	150	Ppmvd	
SO2	30	Ppmvd	daily 24-hour geometric mean
	80	% reduction	
Cadmium	10	ug/dscm	
HCl	25	Ppmvd	
	95	% reduction	
Lead	140	ug/dscm	
Mercury	28	ug/dscm	
Total Dioxons / Furans	13	ng/dscm	
Opacity	10	Percent	6-minute average
Fugitive Emissions from Ash Handling	5	Percent	3 hour observation period
Load Level	110	percent of maximum load during dioxin/furan test	4-hour block average
PM Control Device Inlet Temperature	17	degrees Centigrade above maximum temp during dioxin/furan test	4-hour block average