ATTACHMENT 4

June 2, 2011

Mr. Steven C. Riva, Chief
USEPA Region 2
Permitting Section, Air Programs Branch
290 Broadway
New York, NY 10007-1866

Subject: Response to March 31, 2011 Letter
Arecibo Puerto Rico Renewable Energy Project
Prevention of Significant Deterioration – Air Permit Application

Dear Mr. Riva:

Attached for you review is our response to the permitting questions raised and additional information requested in your March 31, 2011 letter. Under separate cover we will be sending the detailed modeling and related information.

Should you require further information during your review of this material, please contact me at (347) 351-5248.

Sincerely,

ENERGY ANSWERS ARECIBO

Mark J. Green
Vice President

/Attachments

cc: John L. Hanisch – ARCADIS
Kevin R. Scott, PE – ARCADIS

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Responses to EPA Comments to the PSD Air Permit Application

June 2011

The Massachusetts Department of Environmental Protection is well aware of the hydrogen problems associated with Construction and Demolition landfills that accept gypsum board, and issued a policy on the *Control of Odorous Gas at Massachusetts Landfills* in 2007. However, the same department indicates there is no evidence of hydrogen sulfide emissions from the SEMASS ash monofill or, for that matter, from any waste-to-energy ash landfill in the state. (Contact Dan Hall of the department at 413-755-2212 or Daniel.Hall@state.ma.us).

2.17 Discussion on the PSD Applicability for the GHG emissions

EPA Comment:

Since EA's emissions of non-GHG pollutants exceed the statutory threshold of 100 TPY, the proposed source would be a new major stationary source that is subject to PSD regulations for any pollutant emitted at or above its significant level. Furthermore, since it has a potential to emit (PTE) of 293,443 TPY C02e, which is greater than the applicable threshold of 75,000 TPY C02e, it is considered an "anyway source" and consequently PSD also applies to its GHG emissions. However, while EA agrees that non-GHG pollutants may be subject to PSD review for this project, EA has determined that their project is not subject to PSD review for GHG. EA's rationale for non-applicability is that the proposed source's GHG PTE would be less than a landfill GHG PTE, assuming EA were to instead send the waste off site to a hypothetical uncontrolled landfill. Thus, EA asserts that there is a net reduction in GHG emissions.

Pursuant to the PSD regulations and guidance: "Netting must take place at the same stationary source; emission reductions cannot be traded between stationary sources."[4] Thus, the EA's proposed project is not allowed to use emissions reductions from a landfill, unless the proposed project and landfill were shown to belong to the same stationary source. In this case, the landfill does not exist, and no such "single source" demonstration has been made. Consequently, it is EPA's determination that the proposed project is subject to PSD requirements for GHG emissions. Therefore, please address the following:

Response Summary:

- The GHG emissions summary in the application was not intended as a netting analysis. MSW is an unavoidable reality that must be addressed by each

[4] EPA's 1990 "Draft New Source Review Workshop Manual" at A.35: http://www.epa.gov/nsr/gen/wkshpman.pdf

municipality, state government and federal government agencies to protect human health and the environment.

- GHG emissions occur from the gradual spontaneous decomposition chemical and biological mechanisms. Therefore, the formation of GHG will occur with or without the proposed AREP. The proposed AREP results in a net reduction in GHG emissions on the carbon cycle.

<u>Discussion:</u>

Municipal Solid Waste (MSW) is an unavoidable byproduct of living in our society and communities must manage their MSW. In generally, there are three alternatives to managing the MSW:

1. Recycle, including compost,

2. Landfill or

3. Combust to generate electricity.

These three options for managing MSW can be ranked according to their carbon footprint.

- Recycling produces the least amount of GHG, but not all products in the MSW can be recycled.

- WTE produces the lowest carbon footprint for the products that cannot be recycled from the MSW and provides opportunity to recycle additional metals at the back end.

- Land filling the MSW after recycling produces the most CO2e

In practice, only so much of the MSW can actually be recycled, and the remaining portions of the MSW must be either sent to a landfill(s) or used to generate electricity. As discussed in the application dated February 2011, all of the MSW in Puerto Rico that is not recycled is sent to landfills. If this continues, there will be significantly more CO_2e emissions from MSW management in Puerto Rico.

The analysis in the application, therefore, is a conservative representation of the unavoidable landfilling activity of the MSW at unspecified locations. Although the location(s) are unspecified, the GHG emission rate is a real consequence of landfilling and not a hypothetical phenomenon as suggested in the comment. In other words, the MSW is currently being landfilled and will continue to be landfilled until an alternative is provided. The intent in providing these calculations in the application is to quantify the real CO2e inherent with the MSW under the current MSW management method in and around Arecibo, irrespective of its final landfill disposal location or owner.

The proposed AREP is presented as an alternative to landfilling a portion of the MSW. For our analysis of CO2e that are avoided if the MSW is not landfilled, we could have instead calculated the CO2e emissions based on the amount of MSW going to each of the landfills where the waste is actually going under the current MSW management program, but we elected to simplify the calculation and assume it was all going to one landfill. The sum of the emissions from the percentage going to each landfill is likely to be nearly same as the emissions that would occur if it were sent to a single location. The certain difference would be the additional emissions associated with transportation.

The Puerto Rico Solid Waste Management Authority (ADS, for its initials in Spanish), is a government agency created under Law 70 of June 23, 1978, as amended, which has spent considerable amount of time and money studying MSW. The agency has the task of establishing and executing public policy with respect to the technical, administrative and operational aspects of the solid waste management system.

The ADS developed a Dynamic Itinerary for Infrastructure Projects (Itinerary) in 2007. This Itinerary provided strategic guidance to the ADS, so that it can develop the appropriate infrastructure needed to manage the solid waste generated in Puerto Rico for the next 25 years in a technically and environmentally sound manner. The Itinerary went on to become public policy in December 2008. The development of the Itinerary followed prior efforts completed by the ADS:

First in 1995, the Regional Infrastructure Plan for the Recycling and Disposal of Solid Waste was developed. This plan created mandatory disposal regions and suggested an ambitious list of infrastructure projects. Secondly in 2003, the Strategic Plan for Solid Waste Management (PERMS, for its initials in Spanish), was prepared by the agency. This plan considered areas that had been mostly ignored in prior plans such as market development and citizen participation. Appendix B in the initial PSD application is the Material Separation Plan, which provides excerpts of the Itinerary.

Over the last few years, ADS has initiated and completed two additional major studies. One study, the Wehran Characterization Study, consisted of an analysis of the solid waste generation quantities and characteristics. The second study, the Landfill Useful Life Study, provided a detailed analysis of the remaining capacity of all the disposal (landfill) facilities. See Appendix 2 of Appendix B "Material Separation Plan" of the initial application for more details.

In order to successfully implement the strategy of diverting waste from disposal in landfills, the Itinerary includes the development of two thermal processing technology facilities with a total processing capacity of approximately 2,910 tons per day. It includes the development of a 1,350 ton per day facility in the North West Region to become operational in 2012 and a 1,560 ton per day facility in the North East Region to become operational in 2013. See appendix B "Material Separation Plan" of the initial application for more details.

The GHG and CO_2e analysis contained in the application and the remainder of the information provided in this response is based on the projected amount of MSW that would be landfilled in 2013 and beyond as evaluated in the Puerto Rico Dynamic Itinerary. It identifies the landfills that will be used. They exist today and are not hypothetical. As mentioned above, for purposes of calculating the emissions that would occur from the MSW, the model assumed it would all come from one facility. But the results are expected to be nearly the same as if we had placed the appropriate amount of the MSW in each identified landfill. However, the calculations of the transportation impacts from the diversion of waste from transfer stations to either landfills or the EA facility are based on the vehicle miles to the landfills identified in the Dynamic Itinerary.

EA has designed a WTE/Resource Recovery Facility (RRF) that is consistent with the Dynamic Itinerary. The facility will maximize the recycling of waste, maximize the electricity generated from the portion that cannot be recycled, and effectively eliminate the GHG emissions that would otherwise result from landfilling the MSW.

The March 2011 Carbon Dioxide BACT guidance appears to recognize that for bioenergy sources, "Flexibility exists to apply the regulations and policies regarding BACT in ways that take into account the net effects on atmospheric GHG concentration.[5]" Later in that same document, it states ""utilizing mill residue (e.g.

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[5] Guidance for determining Best Available Control Technology for Reducing Carb9on Dioxide Emissions From Bioenergy Production, USEPA, Office of Air and Radiation, March 2011; p9.

sawdust, planar shavings, panel trim) to generate energy, rather than leaving the residue to decompose, likely would not cause emissions over and above that which would have taken place if the energy use did not occur. Given that the material would have decomposed under natural circumstances in a short period of time (e.g. 10-15 years) in the absence of utilization of bioenergy, this conclusion appears credible."[6]

This reasoning appears equally true for MSW. The MSW will degrade over a period of time if it is not used as a fuel, and will in fact have a greater GHG footprint since the emissions will be in the form of methane, which has a 21 times greater CO_2 equivalency. The emissions are unavoidable and the CO_2e emissions will actually be greater.

We understand from your comment letter that EPA does not accept netting unless it is from contemporaneous reductions at the same facility subject to the PSD rules (the exception appearing to be using mill residue for electric generation). We were not attempting to net out of PSD in the traditional manner where you need to add up contemporaneous increases and decreases at an existing major source. We believed and still believe that GHG from MSW is outside the bounds of traditional pollutants at traditional sources and is similar in nature to mill residue. We sincerely hope with time EPA will move towards this understanding. As discussed above, MSW exists and is unavoidable as are the associated GHG emissions. This is unlike a coal powered plant and mining the coal and evaluating incremental emissions from the coal combustion, or gas emissions from a new or repowered power plant. MSW decomposes to produce GHG, and the biological decomposition processes occurs spontaneously. So, rather than an attempt at netting, the CO2e emissions calculations in the application are provided to quantify the real benefit from operating the AREP in the context of current MSW landfilling practices in the project area.

The analysis we provided in the application demonstrated that by far the best way to dispose of the MSW was to recycle what could be recycled and then generate electricity with the remaining MSW. It is in fact consistent with the Puerto Rico Dynamic Itinerary for managing Puerto Rico's MSW.

Understanding the agency's position to view the GHG applicability calculations associated with this project as an attempt to net out of PSD, we have provided below a traditional top down BACT for CO_2 emissions from burning MSW.

EPA Comment

- *Provide the following information concerning the primary fuel (i.e., processed refused fuel) and all possible supplemental fuels (e.g., ASR, TDF, and PUWW): 1) the estimated feed rate (tons per day and tons per year); and 2) the estimated biomass content. Please indicate the basis of the fuels' estimated biomass content.*

Response Summary:

Table 2.17.1 includes the estimated feed rates in t per day and per year and the estimated bionomes content.

Table 2.17.1: Maximum Feed Rate (92% Availability/Yr) and Percentage Biomass Content

	Maximum Feed Rate		Biomass Content	
	Tons/day	tons/yr	Percentage	Basis
Processed Refuse Fuel	2,106	768,690	67.0%	See Table C-1 in Appendix C
Tire Derived Fuel	421	141,439	21.5%	See Note 1 below
Auto Shredder residue	421	141,439	15.8%	See Table C-2 in Appendix C
Urban Wood Waste	1,053	353,597	98.7%	See Table C-3 in Appendix C

Note 1: From *Using used tires as an alternative source of fuel*, Catherine Clauzade, Research & Development Department, Aliapur, July 2009. The Aliapur study used the *ASTM D6866-10 Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis* to determine biogenic fractions; this methodology has been adopted by the US EPA for its Mandatory Reporting of Greenhouse Gases (see, *Mandatory Reporting of Greenhouse Gases*, 75 Fed. Reg. 79092 [Dec. 17, 2010]). Values in the Aliapur report are given as percent by weight only, and are assumed here to be approximately valid for use as percent by heating value as well. A weighted average of auto tires (18.3% by weight biomass) and truck tires (29.1% by weight biomass) was calculated based on an assumed distribution of 70% auto and 30% truck end-of-life tires in Puerto Rico.

Discussion:

Most of the feed will be PRF. The facility design provides for the ability to combust up to 20 percent ASR, 20 percent TDF, and 50 percent PUWW. It is anticipated that when these materials are received, they will be combusted at up to the above ratios until the supply is depleted. The facility would then revert to processing 100 percent PRF. There is limited space available in the storage area to stockpile these materials.

The maximum daily amount of non-MSW fuel would be approximately 421 tons per day (TPD) of ASR, 421 TPD of TDF or 1053 TPD of UWW. Since the actual percentages of the non-MSW fuels is not known at this time the BACT analysis provides information assuming any one of the proposed maximum alternative fuels could be used in any given year. Table 16A provides the maximum feed rate for each fuel and the percentage of the GHG that is biogenic. The annual tons per year are based on the plant being available 92% of the year.

EPA Comment:

- *Provide a revised project PTE of GHG that should include the GHG emissions (i.e., both CO_2 and non-CO_2 GHG) from all type of fuels proposed to be combusted by the project's emitting sources. Furthermore, since some of the fuels proposed to be combusted by the municipal solid waste combustors may have a higher potential of GHG emissions, please calculate a "worst case scenario" of GHG emissions. Please provide the calculations and the basis of the GHG emission factors.*

Response Summary:

Energy Answers proposes to burn up to 20% tire derived fuel (TDF), 20% automobile shredded waste (ASW) and 50% processed urban wood waste (PUWW) we have calculated our worst case non biogenic and biogenic emissions for various mixes of these fuels to determine the worst case CO_2e.

As shown in **Table 2.17.2**, all of the fuel sources have some biogenic and some non biogenic GHG emissions. In all cases, the biogenic portion is greater than 50% of the emissions. The most biogenic emissions (90%) occur with the 50% PRF and 50% PUWW scenario and the least biogenic (50%) occurs with 80% PRF and 20% TDF. Therefore, even if the biogenic portion of PRF and/or PUWW were treated the same as mill residue, from 9.6% to 50% of the material burned is non biogenic. Since the substitution of alternative fuels is not expected to occur on a continuous basis, the percentages in Table 2 provide a conservative estimate of emissions for each supplemental fuel mix.

Table 2.17.2: GHG - Worst Case Various Maximum Fuel Mixes (92% Availability; Including Fuel Oil)

Scenario	Biogenic		Non Biogenic		Total
	%	Tons GHG	%	Tons GHG	Tons GHG
100% PRF	67.0%	513,035	33.0%	254,823	767,858
80% PRF 20% TDF	50.1%	487,698	49.9%	486,411	974,109
80% PRF 20% ASR	53.1%	445,893	46.9%	393,284	839,177
50% PRF 50% UWW	90.4%	1,350,634	9.6%	142,890	1,493,524

Source of information:

The emission factors for GHG emissions for each fuel type are shown in **Table 2.17.3** below:

Table 2.17.3 GHG Emission Factors for Supplemental Fuels

Fuel	Emission factor GHG (lbs/ton)	Source of Information
PRF	NA	See Tables in Appendix C
TDF:	5,082	40 CFR Part 98 Table C-1 CO_2 = 85.97 kg CO2/MMBTU
ASR: (as plastics)	3,174	40 CFR Part 98 Table C-1 CO_2 = 75.00 kg CO2/MMBTU As Plastics
PUWW:	6,270	40 CFR Part 98 Table C-1 CO_2 = 93.8 kg CO2/MMBTU

<u>EPA Comment:</u>

Provide a BACT analysis for the project's GHG emissions, similar to the top-down analysis provided for the non-GHG emissions from the project. EPA recommends that the GHG BACT analysis be conducted following the guidance provided in the following EPA documents: "PSD and Title V Permitting Guidance for GHG", "Guidance for Determining Best Available Control Technology for Reducing Carbon Dioxide Emissions from Bioenergy Production, March 11,2011", EPA's technical white papers[7], and 1990 Draft New Source Review Workshop Manual. Since EA proposes to combine biomass fuels with other fuel types, based on the March 11,2011 guidance, the utilization of the biomass fuel should be included in the list of BACT options (i.e., *Step 1 of the BACT analysis). Additionally, the fact that the project would generate energy from combusting the municipal solid waste, which may be used to meet the energy demand in Puerto Rico, might be used by EA to justify their GHG BACT selection based on the project's energy and economic impacts (see March 11, 2011 guidance at pages 40-44, which describes considerations of these impacts as they relate to the Step 4 of the GHG BACT Analysis). Also, because the project may enable reduction of methane emissions by displacing landfills, it might also be used by EA to justify their GHG BACT selection based on the project's environmental impact.*

Response Summary:

Discussed below is a traditional 5 Step BACT analysis

2.17.1 STEP 1: Identify Control Options

There are three options to reduce GHG emissions from MSW. These are:

1. Recycling as much as possible
2. Utilization of Biomass Fuel
3. Using Carbon Capture and Sequestration to remove the GHG
4. Minimizing production of GHG by maximizing energy efficiency while burning the MSW at WTE facility

2.17.2 STEP 2: Eliminate Technically Infeasible Options

2.17.2.1 Recycling

The first option is to recycle as much as practicable. Energy Answers is working with established local recycling firms to design a robust program to recycle as much material as possible before the waste arrives at the facility. Recycling is a technically feasible option that Energy Answers will be engaged in as part of the proposed AREP. However, because the materials recovered will be replaced by additional non-recyclable materials, recycling will not lower the GHG emissions from the proposed facility

2.17.2.2 Utilization of Biomass Fuel (Burning WTE to Generate Electricity)

The second option is to use the MSW as a fuel to generate electricity. This option is technically feasible. There are many MSW electric generating sources throughout the United States, and the developer of this project has shown they can successfully permit and construct a project burning Processed Refuse Fuel. They were the developers and original operators of the SEMASS facility in Massachusetts, and recently received permitting approval for a facility in Baltimore, Maryland.

Recent EPA guidance on determining BACT for reducing CO2 emissions from bioenergy production, such as the proposed AREP, indicates that that utilization of biomass fuel can have energy and economic benefits that should be taken into account when evaluating BACT alternatives. Certain biomass feedstocks may be composed of residue that would otherwise decompose in a 10-15 year time frame to yield a negligible net impact on the carbon cycle. In the case of the proposed AREP, there will be a net benefit to the carbon cycle when contrasting the current alternative of landfilling the biomass which, in an anaerobic landfill, produces methane that is 21 times more potent than CO2. Utilization of biomass fuel is technically feasible for the proposed AREP.

2.17.2.3 Carbon Capture and Sequestration

The third option for GHG emission reduction is to use carbon capture and sequestration (CCS). CCS requires three distinct processes:

1. Isolation of the GHG (typically CO_2, the largest component of GHG by mass) from the waste gas stream;

2. Transportation of the captured CO_2 to a suitable storage location; and

3. Storage of the captured and delivered CO_2.

If any one of these three processes is not feasible, then CCS as a whole is not feasible.

2.17.2.3.1 CO_2 Capture

There are two pre-combustion CO_2 capture techniques: indirect use of oxygen and direct use of oxygen.

2.17.2.3.2 Indirect Use of Oxygen

The indirect approach involves the partial combustion of the RDF with oxygen and steam to produce a synthesis gas ("syngas") composed of carbon monoxide (CO) and hydrogen (H2). This process is known as waste gasification. The CO generated by this process is reacted with steam in a catalytic reactor to yield CO_2 and additional H2. The CO_2 is then separated, usually by a physical or chemical absorption process (options for this separation are discussed below under post-combustion CO_2 capture technologies), resulting in a hydrogen-rich fuel which can be combusted to generate energy.

Waste gasification technology is still in its developmental stage for units on the scale proposed by Energy Answers. Only one operating waste gasification facility could be identified in North America (Ottawa, Canada). This facility is rated for 100 tons per day of waste. Several others are in the development stage in Hawaii, Massachusetts and the Bahamas. However, these proposed projects will operate at feed rates of 150, 10 and 400 tons per day, respectively – much smaller than the approximate 2,000 tons per day feed rate for the proposed Energy Answers facility. Based on the limited number and size of operating facilities, waste gasification has not been demonstrated at the scale required for the proposed Energy Answers facility and is considered not commercially available and therefore, not technically feasible.

2.17.2.3.3 Direct Use of Oxygen

The direct approach to pre-combustion CO_2 separation involves substituting oxygen for air during the combustion process (i.e., oxy-firing). This approach produces a higher concentration of CO_2 in the exhaust gas than combustion in air because the approximately 80 percent of gas volume due to nitrogen in air has been removed.

No commercially proven equipment approaching the design requirements for the proposed Energy Answers facility are available. Accordingly, direct, pre-combustion CO_2 separation, oxy-firing, is not technically feasible.

2.17.2.3.4 Chemical absorption

This is the most common post combustion method for CO2 capture. Monoethanolamine ("MEA") solvent has the advantage of fast reaction with CO2 at low partial pressure (i.e., gas streams with dilute CO2 concentration). The primary concerns with MEA and other amine solvents are corrosion in the presence of O2 and other impurities, high solvent degradation rates due to reactions with SO2 and NOX, and the large amount of energy required for solvent regeneration. These difficulties can be overcome, and this capture method is technically feasible.

2.17.2.3.5 Physical absorption (e.g., Selexol®)

These post combustion absorption processes, which are commonly used for CO2 rejection from natural gas, operate at high pressure and low temperature. Use of physical absorption for CO2 capture from combustion exhaust gas would entail a significant amount of gas compression capacity and a significant energy penalty. These difficulties can be overcome and this capture method is considered technically feasible for this project.

2.17.2.3.6 Calcium cycle separation

This is a quicklime-based capture method that yields limestone. When heated, the limestone releases CO_2, producing quicklime again for recycling. Work is still required on sorbent stability after regeneration, therefore this capture method is considered not technically feasible.

2.17.2.3.7 Cryogenic separation

This capture method is based on solidifying the CO_2 component of the exhaust stream by frosting it to separate it out. The low concentration of CO_2 in the exhaust gas from Energy Answers' combustion process renders this technology not feasible for this application.

2.17.2.3.8 Membrane separation

This method is commonly used for CO_2 removal from natural gas at high pressure and high CO_2 concentration. Membrane technology is not fully developed for low CO_2 concentrations and gas flow at the scale required for the proposed Energy Answers facility. Therefore this separation technology is considered not technically feasible.

2.17.2.3.9 Adsorption

This separation method involves feeding the exhaust gas through a bed of solid material with high surface areas, such as zeolites or activated carbon. These materials adsorb CO_2 while allowing nitrogen and other gases to pass through. The bed can be regenerated (desorbed) by exposure to low pressure, high temperature, or by applying a low electric voltage. Adsorption requires either a high degree of compression or multiple separation steps to produce high CO_2 concentration from exhaust gas. This capture method is presumed for the purposes of this analysis to be technically feasible.

2.17.2.3.10 Transportation

As discussed below under Storage, carbon storage is possible only in a very limited number of sites – none are nearby the site of the proposed Energy Answers facility. Accordingly, to remain a viable control technology captured CO_2 would have to be transported to a suitable storage site in order to achieve any environmental benefit. Pipelines are the most common method for transporting large quantities of CO_2 over long distances. However, despite there being approximately 3,600 miles of CO_2 pipeline in the United States, none are in or around Puerto Rico. Therefore, transporting captured CO_2 via pipeline is not technically feasible.

Natural gas and other commercial gases are routinely compressed and shipped by cargo vessel. This transportation option is technically feasible.

2.17.2.3.11 Storage

There are several options being explored and employed for permanent storage of CO_2. These options include gaseous storage in various deep geological formations (including saline formations, exhausted oil and gas fields, and unmineable coal seams), liquid storage in the ocean, and solid storage by reaction of CO_2 with metal oxides to produce stable carbonates, terrestrial sequestration and ocean storage. Not all of these possible storage options are technically feasible, as discussed below.

2.17.2.3.12 Geologic Formations

Geologic formations considered appropriate for CO_2 storage are layers of porous rock deep underground that are "capped" by a layer or multiple layers of non-porous rock above them. In this application pressurized CO_2 is injected into a well drilled into the porous rock below the cap which prevents upward migration and escape of the CO_2.

There are several types of geologic formations in which CO_2 can be stored, and each has different opportunities and challenges as briefly described below:

2.17.2.3.13 Depleted oil and gas reservoirs

In general, these formations are characterized by a layer of porous rock with a layer of non-porous rock which forms a dome. This dome offers great potential to trap CO_2 and makes these formations excellent sequestration opportunities.

As a value-added benefit, CO_2 injected into a depleting oil reservoir can enable recovery of additional oil and gas. When injected into a depleted oil bearing formation, the CO_2 dissolves in the trapped oil which reduces the oil's viscosity. This improves the ability of the oil to move through the pores in the rock and flow with a pressure differential toward a recovery well. A CO_2 flood typically enables recovery of an additional 10 to 15 percent of the original oil in place. Enhanced oil recovery (EOR) and enhanced gas recovery are commercial processes and in demand recently with high commodity prices. It is estimated that 50 to 90 billion metric tons of sequestration potential exists in mature oil and gas reservoirs in the United States. However, there are no known oil or gas reservoirs providing CO_2 sequestration opportunities within the immediate vicinity Puerto Rico, but there are oil fields in the Gulf of Mexico that provide EOR CO_2 injection opportunity. These oil fields provide a technically feasible sequestration opportunity for the proposed Energy Answers facility.

2.17.2.3.14 Unmineable coal seams

Unmineable coal seams are those that are too deep or too thin to be profitably mined. All coals have varying amounts of methane adsorbed onto pore surfaces, and wells can be drilled into unmineable coal beds to recover this coal bed methane ("CBM"). Initial CBM recovery methods, dewatering and depressurization, leave an appreciable amount of CBM in the reservoir. Additional CBM recovery can be achieved by sweeping the coal bed with nitrogen or CO_2, which preferentially adsorbs onto the surface of the coal, releasing the methane. Two or three molecules of CO_2 are adsorbed for each molecule of methane released, thereby providing an excellent storage sink for CO_2. No available coal seams are known to exist in the vicinity of the Puerto Rico. As such, CO_2 sequestration in unmineable coal seams is considered not technically feasible for this analysis.

2.17.2.3.15 Saline formations

Saline formations are layers of porous rock that are saturated with brine. They are much more commonplace than coal seams or oil and gas bearing rock, and represent an enormous potential for CO_2 storage capacity. Estimates range from 3,300 to 12,000 billion metric tons of sequestration potential exist in saline formations. However, much less is known about saline formations than is known about crude oil reservoirs and coal seams and there is a greater amount of uncertainty associated with their ability to store CO_2. Saline formations contain minerals that could react with injected CO_2 to form solid carbonates. The carbonate reactions have the potential to be both a positive and a negative. They can increase permanence but they also may plug up the formation in the immediate vicinity of an injection well. Additional research is required to better understand these potential obstacles and how best to overcome them. Saline formations are known to exist in and around Puerto Rico, but this technology is much less developed or proven compared to EOR. As such, CO_2 sequestration in saline formations will not be considered further in this analysis based on its limited development.

2.17.2.3.16 Basalt formations

Basalts are geologic formations of solidified lava. Basalt formations have a unique chemical makeup that could potentially convert injected CO_2 to a solid mineral form, permanently keeping it from the atmosphere. Current research is focused on enhancing and utilizing the mineralization reactions and increasing CO_2 flow within a basalt formation. Although oil and gas-rich organic shale and basalt research is in its infancy, these formations may, in the future, prove to be optimal storage sites for sequestering CO_2 emissions. This CO_2 sequestration technique is considered not technically feasible for the Energy Answers facility due to its limited development, and it will not be considered further in this analysis.

2.17.2.3.17 Terrestrial Ecosystems

Terrestrial sequestration is the enhancement of CO_2 uptake by plants that grow on land and in freshwater and importantly, the enhancement of carbon storage in soils where it may remain more permanently stored. Terrestrial sequestration provides an opportunity for low-cost CO_2 emissions offsets. Early efforts include tree-plantings, no-till farming, and forest preservation. To date, there are no applications that would be large enough to handle over 2 million tons per year of CO_2. Therefore, this storage technique is considered not technically feasible for this project.

2.17.2.3.18 Ocean storage

Another proposed form of carbon storage is in the oceans. Several concepts have been proposed:

- Dissolution – injects CO_2 by ship or pipeline into the water column at depths greater than 1000 meters where the CO_2 subsequently dissolves;
- Lake – deposits CO_2 directly onto the sea floor at depths greater than 3000 meters, where CO_2 is denser than water and is expected to form a 'lake' that would delay release of CO_2 into the environment;
- Conversion of CO_2 to bicarbonates using limestone; and
- Storing the CO_2 in solid clathrate hydrates already existing on the ocean floor, or growing more solid clathrate.

The environmental effects of ocean storage are generally negative, and poorly understood. Three key problems have been identified:

- Large concentrations of CO_2 can kill ocean organisms;
- Dissolved CO_2 would eventually equilibrate with the atmosphere, so the storage would not be permanent; and
- As CO_2 reacts with the water, it forms carbonic acid which also can kill ocean life.

Even though life appears to be sparse in deep ocean basins, energy and chemical effects in these deep basins are not fully understood. More work is needed to explore the use of these techniques before they are ready for use. Therefore, ocean storage is considered not technically feasible for this project.

2.17.2.4 Energy Efficiency

The fourth option for GHG emission reduction from the proposed Energy Answers facility is pollution prevention. A highly efficient combustion process requires less fuel to generate the same amount of energy, which directly impacts the amount of GHG produced. This option is technically feasible. In fact as discussed below, EA has designed one of the most energy efficient units for combusting MSW.

The proposed Energy Answers facility has a design heat input capacity of 1,000 million Btu per hour (mmBtu/hr) and a design net energy output of 77 megawatts (MW). This establishes the facility's design heat rate as 12.99 mmBtu/MWh (megawatt-hour).

In addition, due to Energy Answers preprocessing of MSW prior to combustion, the PRF that will be combusted by this facility will have a higher heating value than the MSW combusted by many other waste to energy facilities. Based on its design capacity of 2,106 tons per day of PRF, the Energy Answers facility will consume 1.14 tons of PRF to generate one MWh of electricity.

Based on 2008 information provided by the US Department of Energy, Energy Information Agency, and electricity producing facilities that burn MSW and their energy performance criteria are listed in **Table 2.17.4**.

The information provided in Table 3 shows that the proposed Energy Answers facility will use less fuel per MWh than any other of the waste to energy facilities in the United States. Therefore, on an energy efficiency basis, the proposed AREP will be one of the best performing waste to energy facility in the country.

Table 2.17.4: Energy Efficiency for US Waste to Energy Facilities

Plant ID Number	Source Name	Total Nameplate (MW)	2008 Generation (MWh)	2008 Fuel (tons MSW)	2008 Heat Input (mmBtu)	2008 Heat Rate (mmBtu/MWh)	Tons MSW/MWh
---	**Proposed Energy Answers (Design Values)**	**77.0**	**674,520**	**768,690**	**8,760,000**	**12.99**	**1.14**
	Permitted WPB Facility	**96.2**	**788,000**	**1,095,000**	**10,950,000**	**13.896**	**1.390**
10643	Covanta Essex Company	69.8	478,096	919,976	5,785,872	12.102	1.924
51038	MacArthur Waste to Energy Facility	12.5	54,536	162,442	730,977	13.404	2.979
10090	Commerce Refuse To Energy	12.0	71,346	124,512	1,070,290	15.001	1.745
50271	New Hanover County WASTEC	10.5	24,678	95,307	376,474	15.255	3.862
54746	Wheelabrator Falls	53.3	350,553	524,035	5,449,794	15.546	1.495
50878	Wheelabrator Millbury Facility	47.6	321,045	481,756	5,010,117	15.606	1.501
10334	H Power	63.7	329,887	506,840	5,439,222	16.488	1.536
50661	Covanta Haverhill	46.0	322,060	595,328	5,476,433	17.004	1.849
54758	Wheelabrator Lisbon	14.6	115,871	189,829	1,974,226	17.038	1.638
10642	Covanta Hempstead	78.6	566,701	969,401	9,674,838	17.072	1.711
10012	Covanta Warren Energy	13.5	83,965	149,072	1,442,952	17.185	1.775
50051	Penobscot Energy Recovery	25.3	162,458	255,212	2,792,696	17.190	1.571
50662	Onondaga County Resource Recovery	39.5	219,491	348,271	3,787,726	17.257	1.587
50656	Huntington Resource Recovery Facility	28.0	189,082	331,512	3,315,025	17.532	1.753
50960	Union County Resource Recovery	45.0	302,543	550,733	5,308,505	17.546	1.820
10013	Covanta Hennepin Energy	39.5	218,546	365,021	3,835,835	17.552	1.670
50657	Montgomery County Resource Recovery	67.8	331,056	591,268	5,917,208	17.874	1.786
50071	North County Regional Resource	62.3	356,800	583,709	6,377,472	17.874	1.636
52010	Lee County Solid Waste Energy	59.0	283,680	543,257	5,070,669	17.875	1.915
50666	Pasco Cnty Solid Waste Resource Recovery	31.2	184,690	335,119	3,351,128	18.145	1.814
50858	Hillsborough County Resource Recovery	29.0	194,770	351,409	3,576,296	18.362	1.804
50658	Covanta Fairfax Energy	124.0	588,723	1,028,434	10,900,384	18.515	1.747
50887	Wheelabrator South Broward	66.0	452,196	807,046	8,393,003	18.561	1.785
4005	French Island	30.4	67,846	91,274	1,263,249	18.619	1.345
54033	Wheelabrator North Broward	67.6	458,400	825,756	8,587,610	18.734	1.801
50880	Wheelabrator Saugus	53.7	239,478	432,053	4,493,225	18.763	1.804
54625	Montenay Montgomery LP	32.1	199,800	409,215	3,761,906	18.828	2.048
50290	SEMASS Resource Recovery	98.5	590,437	1,125,283	11,131,910	18.854	1.906
50632	Covanta Stanislaus Energy	24.0	119,548	237,426	2,291,341	19.167	1.986
54945	Covanta Mid-Connecticut Energy	90.0	372,601	617,871	7,146,591	19.180	1.658
10746	American Ref-Fuel of Delaware Valley	90.0	591,963	1,220,242	11,444,381	19.333	2.061
10338	Maine Energy Recovery	22.0	122,719	255,322	2,387,530	19.455	2.081
50630	Covanta Marion Inc	13.1	86,154	183,085	1,681,270	19.515	2.125

Plant ID Number	Source Name	Total Nameplate (MW)	2008 Generation (MWh)	2008 Fuel (tons MSW)	2008 Heat Input (mmBtu)	2008 Heat Rate (mmBtu/MWh)	Tons MSW/MWh
50629	Covanta Lake County Energy	15.5	84,327	168,007	1,655,882	19.636	1.992
50877	Wheelabrator North Andover	40.3	236,611	449,624	4,675,929	19.762	1.900
50215	York County Resource Recovery	36.5	224,273	447,491	4,433,917	19.770	1.995
50663	Covanta Alexandria/Arlington Energy	29.0	172,551	352,216	3,491,633	20.235	2.041
10435	Camden Resource Recovery Facility	35.0	170,596	360,177	3,457,648	20.268	2.111
50886	Wheelabrator Spokane	26.0	128,131	251,531	2,615,879	20.416	1.963
1934	Wilmarth	25.0	97,023	168,868	1,984,820	20.457	1.740
10646	American Ref-Fuel of SE CT	16.9	126,576	261,463	2,600,837	20.548	2.066
50885	Wheelabrator Gloucester LP	14.0	93,197	189,581	1,971,547	21.155	2.034
50648	Covanta Bristol Energy	16.3	99,783	193,960	2,122,019	21.266	1.944
10503	Wheelabrator Hudson Falls	14.4	82,584	171,003	1,778,357	21.534	2.071
50649	Covanta Babylon Inc	17.0	101,976	219,738	2,197,238	21.547	2.155
1926	Red Wing	23.0	99,907	177,812	2,167,596	21.696	1.780
2039	Elk River	38.8	158,529	281,465	3,474,265	21.916	1.775
50837	Southeast Resource Recovery	35.6	222,761	678,270	4,971,818	22.319	3.045
10629	Wheelabrator Baltimore Refuse	64.5	319,447	688,634	7,161,530	22.419	2.156
50225	Regional Waste Systems	13.3	72,509	161,484	1,679,350	23.161	2.227
10062	Miami Dade County Resource Recovery Fac	77.0	317,459	837,682	8,041,951	25.332	2.639
50664	Covanta Wallingford Energy	11.0	59,297	153,208	1,526,193	25.738	2.584
50859	Lancaster County Resource Recovery	35.7	218,679	542,289	6,065,122	27.735	2.480
54998	SPSA Waste To Energy Power Plant	60.0	185,399	584,249	5,439,222	29.338	3.151
50875	McKay Bay Facility	14.0	101,948	313,278	3,258,004	31.958	3.073
10344	Charleston Resource Recovery Facility	13.0	59,484	207,608	2,059,430	34.622	3.490
10033	Greater Detroit Resource Recovery	68.4	214,216	663,099	7,812,105	36.468	3.095
50472	American Ref-Fuel of Niagara	50.0	217,344	862,329	7,945,076	36.555	3.968
10118	Harrisburg Facility	24.1	52,991	222,109	2,139,752	40.380	4.191
10250	Bay Resource Management Center	13.6	11,849	122,690	1,425,247	120.284	10.354

2.17.3 STEP 3: Rank Remaining Control Technologies

Four technically feasible control technologies have been identified: Carbon Capture and Sequestration (CCS), Recycling, Utilization of Biomass Fuel, and Energy Efficiency.

Of these four technologies, Recycling will result in the least amount of generated GHG. CCS is the most effective at reducing GHG emissions from the non biogenic portion of the MSW. It is estimated that approximately 90 percent of uncontrolled GHG can be achieved using CCS. Combusting the biogenic waste coupled with burning the remaining waste results in lower emissions than would occur if the waste was not combusted.

Burning MSW to generate electricity without add on controls is the next best option (Utilization of Biomass Fuel).

Since MSW contains both biogenic and non biogenic emissions, and since Energy Answers also proposes to burn automotive shredded residue, processed urban wood waste and tire derived fuel, each of which has a biogenic and non biogenic component, as suggested in the Guidance for determining BACT for reducing Carbon Dioxide Emissions from Bioenergy Production, the technologies are evaluated for each component.

2.17.4 STEP 4: Energy, Environmental and Economic Impacts

2.17.4.1 Recycling

Recycling is a viable option for a portion of the MSW. Energy Answers proposes to work with established recycling firms to design a robust program to recycle as much material as possible before the waste arrives at the facility. Recycling does cause some energy, environmental and economic impacts including the energy to transport recycled material to its ultimate destination. However, the benefits of recycling those components that are easily separated and recycled far exceeds the costs

2.17.4.2 Burning MSW to Generate Electricity

Burning MSW to generate electricity is a viable option from an energy, environmental and economic impact.

2.17.4.3 Energy

From an energy perspective, burning MSW as a fuel produces electricity. Therefore there is an energy benefit from burning MSW

2.17.4.4 Environmental

There are environmental benefits of burning MSW. Since the project plans to burn fuels that contain both biogenic and non biogenic GHG, this discussion is divided into two parts.

2.17.4.5 Biogenic Component

Depending on the amount of supplemental fuel, the biogenic component of the fuel is between 50% and 90%. When burning PRF, the emissions are 67% biogenic emissions. These biogenic emissions are part of the net carbon cycle and will be replenished in a 10 to 15 year cycle. There is therefore no environmental impact from these emissions. In fact, if the biogenic component is not burned to generate electricity, there will be significantly more emissions since the only alternative would be to landfill the waste, which will cause increased CO_2e as described in responses above.

2.17.4.6 Non biogenic Component

The non biogenic component of the fuel is between 10% and 50%. When burning only PRF the non biogenic emissions are 33%. It is not economically feasible to remove these non biogenic sources from the fuel stream. Although these emissions will cause an increase in non biogenic CO_2 emissions they are more than offset by the CO_2e emissions that would occur if the MSW is sent to landfills. Additionally, these emissions will be displacing emissions at some other unit that would have generated electricity using fuel oil. **Table 2.17.5** below shows that there will be a net decrease in CO2e from the burning of the MSW.

Table 2.17.5: GHG Emissions Summary (tons/yr)

Emissions Source	Total GHG	TOTAL CO_2e Uncontrolled Landfill
ENERGY ANSWERS FACILITY	767,858	767,858
Transportation emissions to EA Facility	1,187	1,187
DISPLACED from existing Landfill disposal	- 208,015	-1,319,354
Displaced Oil-fired power plant emissions	- 697,673	-697,706
Transportation emissions to existing landfills	- 1,722	-1,722
Change In Emissions	-138,365	-1,249,737

Note: This table updates information in the original application and includes displaced oil-fired power plant emissions which were not included in the discussion on why GHG BACT should not apply to this facility.

Additionally, Puerto Rico does not currently have large diverse sources of fuel. Burning PRF, rather than burning oil reduces the carbon footprint from electric generation and also reduces Puerto Rico's dependence on foreign oil. In 2010 the Puerto Rico Electric Power Authority (PREPA) reported that power production was generated from 68% petroleum, 8% carbon, 23% natural gas and 1% renewal fuel sources. The agency seeks to produce 10% of its electricity from renewable energy sources by the year 2014, clearly indicating the demand for the development of new and expanded renewable energy generation sources.

Another component of the BACT analysis is public and agency acceptance of the project. As discussed above in response to the initial EPA question on the GHG analysis, a Waste to Energy facility is part of the Dynamic Itinerary developed by Puerto Rico to manage its solid waste. Additionally, the following agencies have endorsed or have no objections to the AEP (See Appendix D for copies of the letters).

Agencies Letters and Endorsements

1. U.S. Fish and Wildlife Concurrence Letter
2. Environmental Quality Board
3. PR Electric Power Authority
4. Solid Waste Management Authority
5. State Historic Preservation Office
6. Department of Transportation & Public Works
7. PR Industrial Development Company
8. PR Aqueduct and Sewer Authority
9. Department of Natural and Environmental Resources
10. Federal Aviation Administration
11. Institute of Puerto Rican Culture
12. PR Labor Department
13. Department of Agriculture
14. PR Planning Board
15. Land Authority

Staff and Consultants representing the Energy Answers' Arecibo Resource Recovery Project have made numerous presentations starting in July 2010 and have hosted Q&A sessions at various locations throughout Arecibo. In addition, the local radio stations have aired commentaries about the project and have had weekly call-in shows when residents can ask questions and express opinions.

At each community presentation, Energy Answers technical staff introduces the project and provides a description of the technology and details of the project development in Arecibo. A video of the SEMASS Project (in Spanish) is shown for reference purposes and Q&A follows. The following is a list of some of these events. **Table 2.17.6**, below provides a list of the public outreach. (See **Appendix D** for more information on each of the meetings)

Table 2.17.6: Summary of Pubic Outreach

Date	Description	
July 12, 2010	Public Hearing at Arecibo Municipal Assembly	1
August 27, 2010	Community Meeting at Hotel Maracayo in Hatillo	2
September 9, 2010	Meeting at Arecibo Country Club with Project EPC Contractor SNC Lavelin and local business leaders	3
September 17, 2010	Presentation of Project at Catholic University (Universidad Pontificia) in Arecibo	4
October 19, 2010	Tour of SEMASS Resource Recovery Project in Massachusetts by Puerto Rico News Media (El Vocero, Periódico Pulso and El Norte)	5
October 20, 2010	Energy Answers Vice President visits residents of Arecibo	6
October 15, 2010	Community Meeting held at El Mesón de Cheo Restaurant in Arecibo	7
October 21, 2010	Presentation at Arecibo Lions Club	8
October 27, 2010	Community Meeting held at La Unión Restaurant in Arecibo	9
October 27, 2010	EIS Public Hearing at College of Engineers and Land Surveyors in Arecibo	10
November 1,2010	Presentation and meeting with the Arecibo Business Association	11
November 4, 2010	Community Meeting at the Business of Moncho Sánchez in Arecibo	12
November 5, 2010	Meeting at the Community Center in Barrio Factor #2, Arecibo	13
November 11, 2010	Presentation and meeting at the Arecibo Country Club	14
November 15, 2010	Meeting at the Community Center in Abra de San Francisco, Arecibo	15
November 17, 2010	Community meeting in Barrio Miraflores, Arecibo	16
November 30, 2010	Tour of SEMASS Resource Recovery Project in Massachusetts by members of the Arecibo Municipal Assembly	17

December 2, 2010	Meeting of neighbors at the home of Arecibo residents Sra López and Domingo García	18
December 7, 2010	Meeting at the Community Center in Barrio Bajadero, Arecibo	19
December 15, 2010	Meeting at Restaurant Lenel to discuss Host Community Agreement	20
December 16, 2010	Presentation to El Nuevo Día Editorial Board	21
December 21, 2010	Presentation at Public School in Barrio Factor #5, Arecibo	22
December 21, 2010	Sponsorship of Community Day in Arecibo with Q&A by Energy Answers team	23
December, 2010	Sponsorship of Holiday lights in Arecibo Town Square with Energy Answers team at opening night for Q&A	24
December 22, 2010	Community Meeting held at El Mesón de Cheo Restaurant in Arecibo	25
December 30, 2010	Energy Answers presents trophies to Bajadero Baseball team	26
January 4, 2011	Meeting of neighbors at the home of Arecibo residents Heriberto Lopez in Barrio Sabana Hoyos	27
January 9, 2011	Community Meeting held at Lechonera Restaurant in Barrio Islote, Arecibo	28
January 11, 2011	Tour of SEMASS Resource Recovery Project in Massachusetts by Puerto Rico News Media, Arecibo Business Association Representative and Arecibo Resident	29
January 13, 2011	Meeting at the Community Center in the Housing Community of San Felipe, Arecibo	30
January 25, 2011	Arecibo Mayor Soto presents the project and related economic opportunities to approx 50 community leaders	31
February 15, 2011	Presentation of Project at EPA Sponsored Community Participation Session at Interamerican University in Arecibo	32
March 10, 2011	Meeting at the Community Center in the barrio of Garrochales, Arecibo	33
March 15, 2010	Presentation to a group of students, professors, and members of the academic community at the Arecibo Campus of the Catholic University as part of the Science Week Celebration organized by the College of Science.	34
March 18, 2011	Meeting of neighbors and presentation of project at the home of Arecibo resident Adolfo Martínez in Víctor Rojas	35
March 23, 2010	Meeting of neighbors and presentation of project at the home of Arecibo resident Sra. Hilda Reyes in Cercadillo, Arecibo	36
March 31, 2010	Meeting of neighbors and presentation of the Project at the home of Rosa	37

	Portalatín in barrio Sabana Hoyos, Arecibo	
April 6, 2011	Meeting of neighbors and presentation of the Project at the home of Verónica González in Barrio Arrozal, Arecibo.	38
April 9, 2011	Public hearing held by the Health Commission of the House of Representatives in Arecibo's City Hall.	39
April 14, 2011	Meeting and presentation of the Project to College Students from the National University College in Arecibo	40
April 14, 2011	Meeting of neighbors and presentation of the Project at the home of Sr. Jelly Román in Sector Carreras #2, Bajadero, Arecibo	41

Therefore generating electricity with the MSW is a viable BACT alternative for this project.

2.17.4.7 CCS

While CCS is technically feasible, it is costly to implement. The costs to redesign the Energy Answers facility to accommodate any of the absorption or adsorption capture technologies will be significant. In its 2005 report on CCS[1], the IPCC estimated the costs for carbon capture at $53/ton. While these costs were for traditional fossil fuel fired power generators, this represents the only information available on costs.

In addition, according to a report by the US Department of Energy[2], the facility would have to absorb a large parasitic energy load in order to compress the captured CO_2 to the pressures needed for transportation. To raise the pressure of the CO_2 to transportation levels (around 2,000 PSI), would require approximately 2.4 MWh or around 4 percent of the facility's capacity. Also, according to a study performed by researchers at the University of Houston[3], the costs to deliver compressed CO_2 using ships designed to transport compressed natural gas (CNG) would generate costs ranging from $15 to $65 per ton of CO_2 (i.e., $32,970,162/yr to $142,161,665/yr). According to the 2005 IPCC report, ship transportation costs would range from $10/ton to $28/ton. Averaging the mid-points of the two transportation cost ranges yields a control cost of $29.50/ton.

The IPCC special report on CCS indicates an economic benefit ranging from $10/ton to $16/ton. However, this credit does not factor in long-term monitoring and maintenance costs. Ignoring the long-term costs, the lower end $10/ton is used to reduce the overall control cost for the CCS option.

Altogether, CCS will cost this project $72.5/ton ($53 for capture, $29.5 for transportation, $10 savings for storage). Finally, in the "Guidance for determining BACT for reducing Carbon Dioxide Emissions from Bioenergy Production" published in March 2011, EPA states: "EPA recognizes that at present add-on controls for CO_2 are generally expensive technologies, largely because of the costs associated with CO_2 capture and storage. As with other electric generating facilities, these direct costs will generally make the price of electricity from bioenergy used in conjunction with add-on control technologies for CO_2 uncompetitive with compared to electricity from plants with other GHG controls, such as bioenergy alone."

Therefore, CCS is not BACT for this project based on cost.

2.17.4.8 Energy Efficiency

As discussed under the technical feasibility section, producing as much electricity as possible per ton of MSW reduces the energy, environmental and economic impact of the project. In doing so, the proposed AREP will be one of the most efficient for generating electrical power per ton of MSW. Additionally, there are economic benefits including 150 new jobs.

Therefore, maximizing energy efficiency is a viable option for BACT.

2.17.5 STEP 5: Select BACT

Three control options have been evaluated, recycling, burning MSW to generate electricity, CCS and energy efficiency. CCS is not cost effective. Therefore, working with recycling firms to design a robust program to recycle as much material as possible before the waste arrives at the facility, burning MSW to generate electricity and maximizing energy efficiency is selected as BACT for this project.

3. Endangered Species Act

Comment:

We understand that you are evaluating impacts on Endangered Species under the EIS. However, we still request a letter from the local Federal Land Manager as part of the application that states that you have met all of the requirements under the Endangered Species Act.