EVALUATION REPORT

PRELIMINARY DECISION ON PROPOSED PERMIT ISSUANCE

FOR

AMERESCO CRAZY HORSE LLC
350 CRAZY HORSE CANYON ROAD
SALINAS, CALIFORNIA

APPLICATION NUMBERS 14860 - 14862 & TV56-01

PREPARED BY

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AUTHORIZED FOR RELEASE ON: January 14, 2011

APPROVED BY: _____ Greg Chee, Supervising Air Quality Engineer

DATE: JAN - 7 2011

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EVALUATION DATA

Company: Ameresco Crazy Horse LLC
Address: 111 Speen Street
Farmington, MA 01701

Contact Person: Dean Robinson
District Engineer: Mike Sewell
Start: 11/2/10
Finish: 12/15/10

Site Location: Crazy Horse Landfill
350 Crazy Horse Canyon Road
Salinas, California

Appl #s: 14680 - 14682 & TV56-01
UTM Coordinates:
Horizontal: 623.8
Vertical: 4073.7

SIC Code: 4911
SCC Code: 2-01-008-02

I. PROJECT DESCRIPTION

Ameresco Crazy Horse LLC (Ameresco) has submitted applications to permit a Landfill Gas-To-Energy Facility at the Crazy Horse Landfill which is owned and operated by the Salinas Valley Solid Waste Authority. The applications are for two landfill gas fired engine generator sets, a small enclosed ground flare, and an application for a federal Operating (Title V) Permit for the facility.

II. APPLICABLE REQUIREMENTS

200 Permits Required
203 Application
205 Provision Of Sampling And Testing Facilities
206 Standards For Issuing Authorities to Construct and Permits to Operate
207 Review Of New Or Modified Sources
214 Breakdown Conditions
218 Title V: Federal Operating Permits
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424 National Emission Standards For Hazardous Air Pollutants (NESHAPS)
426 Architectural Coatings
1000 Toxic New Source Review
1003 Air Toxics Emissions Inventory And Risk Assessments

III. EQUIPMENT LIST

APPLICATION 14860 - INTERNAL COMBUSTION LANDFILL GAS ENGINE-GENERATOR SET #1:

GE Jenbacher Model JGS 616 GS-L.L, Spark Ignited Lean-Burn Engine, 3,012 BHp @ 1,500 RPM, Turbocharged And Intercooled; And GE Jenbacher Generator, 2,175 KW Output.

APPLICATION 14861 - INTERNAL COMBUSTION LANDFILL GAS ENGINE-GENERATOR SET #2:

GE Jenbacher Model JGS 616 GS-L.L, Spark Ignited Lean-Burn Engine, 3,012 BHp @ 1,500 RPM, Turbocharged And Intercooled; And GE Jenbacher Generator, 2,175 KW Output.

APPLICATION 14862 - LANDFILL GAS ENCLOSED FLARE:

ABUTEC Landfill Gas Fired Enclosed Flare, 4.44 MMBtu/Hr Maximum Heat Input.

IV. DESIGN REVIEW

The GE Jenbacher engine-generator sets each have a maximum horsepower rating of 3,012 BHp @ 1,500 RPM with an electrical generating capacity of 2,175 kW. Each engine will consume 18.0 MMBtu/Hr at full load or approximately 942 SCFM of landfill gas based upon 319 Btu/SCF LHV. This engine is equipped with GE Jenbacher's state-of-the-art Engine Management System which controls the air to fuel ratio required for optimum performance. The following emission factors are proposed by the applicant for the engines:

	Emission Factors	
Pollutant	Grams/Bhp-Hr	ppmv @ 15% O_2
NO_x	0.6	
SO_x		452.5
CO	3.6	
VOC		362
PM_{10}	0.1	

The ABUTEC Enclosed Flare has a maximum heat input rating of 4.44 MMBtu/hr. The following emission factors are proposed by the applicant for the flare:

Pollutant	Emission Factors lbs/MMBtu	ppmv @ 15% O_2
NO_x	0.06	
SO_x		452.5
CO	0.2	
VOC		362
PM_{10}	0.2	

V. EMISSIONS CALCULATIONS

Rule 207 Review of New or Modified Sources
Emission calculations for each engine and the flare are based upon operations 24 hours per day at the equipment's maximum rating and the emission factors proposed by the applicant. Therefore, maximum daily emissions equate to:

	Emissions in Pounds/Day				
	NO_x	SO_x	CO	VOC	PM_{10}
Gen Set #1	95.6	33.9	573.7	24.2	15.9
Gen-Set #2	95.6	33.9	573.7	24.2	15.9
Flare	6.4	4.4	21.3	21.9	18.8
Totals	197.6	72.2	1,168.7	70.3	50.6

VI. CONCLUSIONS

Compliance Check

200 Permits Required
Ameresco has applied for and will be issued permits for this equipment. Therefore, the facility is in compliance with this Rule.

203 Application
Ameresco supplied separate applications for each permit unit and utilized the District's permit application form as required by this Rule.

205 Provision Of Sampling And Testing Facilities
The permits will include conditions establishing sampling facilities as required by this Rule.

206 Standards For Issuing Authorities to Construct and Permits to Operate
The facility is in compliance with the requirements of this Rule.

207 NSR
Best Available Control Technology (BACT)
The BACT thresholds from Sections 4.1.1 and 5.2 of the rule, the proposed project's maximum daily emissions, the facilities' "new emissions increase" and the determination as to whether BACT is required are shown in the following tables.

State BACT Determination

Pollutant	BACT Emission Threshold (Lbs/day)	Proposed Project Emissions (Lbs/day)		BACT Required?	
		Engine	Flare	Engine	Flare
NO_x as NO_2	25	95.6	6.4	**Yes**	No
VOC	25	24.2	21.9	No	No
CO	550	573.7	21.3	**Yes**	No
SO_x as SO_2	150	33.9	4.4	No	No
TSP	150	15.9	18.8	No	No
PM_{10}	82	15.9	18.8	No	No

Federal BACT Determination

Pollutant	BACT Emission Threshold (Lbs/day)	New Emissions Increase (Lbs/day)	BACT Required?
NO_x as NO_2	150	197.6	**Yes**
VOC	150	70.3	No
CO	550	1,168.7	**Yes**
SO_x as SO_2	150	72.2	No
TSP	150	50.6	No
PM_{10}	82	50.6	No

As can be seen in the tables above, this project requires BACT for NO_x and CO.

For the engines, the applicant has proposed the following as BACT for NO_x and CO.

Engine BACT Proposals

Pollutant	Applicant's Proposal	BACT as Identified In ARB's June 2001 "Guidance for the Permitting of Electrical Generation Technologies	Additional Discussion Required?
NO_x as NO_2	0.6 grams/bhp-hr	Same	No
CO	3.6 grams/bhp-hr	2.5 grams/bhp-hr	Yes

Additional discussion -
The applicant has proposed a CO emission rate of 3.6 g/bhp-hr. The applicant is confident that the engine will meet CARB's Guidelines For The Permitting Of Electrical Generation Technologies of 2.5 g/bhp-hr at start-up. However, they are concerned about the effects of siloxane on future CO emissions. GE Jenbacher has provided the applicant a guarantee to meet the 3.6 g/bhp-hr emission level for CO and that this level will be achievable throughout the life of the project with reasonable maintenance. The establishment of this higher CO value as BACT is in agreement with the BAAQMD's February 26, 2009 White Paper Revisiting BACT for Lean Burn Landfill Gas Fired Internal Combustion Engines which suggests that 3.6 g/bhp-hr is BACT for CO.

Offsets
Rule 207 provides an exemption from offsetting emission increases if the increases result from the installation of control equipment necessary for compliance with a District, State, or federal emission control requirement. Since this project involves the installation of equipment to control landfill gas emissions as required by the federal New Source Performance Standard for Municipal Solid Waste Landfills, this applications qualifies for the exemption from offsets.

Specifically, District Rule 207, Subsection 1.3.2.1 mandates the following: "The requirements of Sections 4.2 and 5.3 *(federal and State offsetting requirements)* shall not apply for any emissions increase that is less than the threshold for a federal major modification at a source that results from the installation, operation, or other implementation of any emission control device or technique used to comply with a District, State, or federal emission control requirement, including, but not limited to, requirements for the use of reasonable control technology or best retrofit control technology, unless there is a modification that results in an increase in the capacity of the unit being controlled."

Except for the exemption addressed above, offsets would have been required for an emissions increase of 197.6 lbs/day of NO_x.

Because the CO emissions exceed the federal major modification threshold, the exemption contained in Subsection 1.3.2.1 can not be utilized for this project. However, based upon the allowance contained in Subsection 4.2.3, the applicant included modeling in their application which demonstrates that the CO emission increases will not violate, nor cause or contribute to a violation of, the ambient air quality standards.

Therefore, based upon the above - no offsets are required for this project..

Air Quality Impact Analysis

In their application, Ameresco did not provide an Air Quality Impact Analysis for all the pollutants; although an analysis of the Cumulative Impacts versus the Ambient Air Quality Standards for Carbon Monoxide was provided. Screen was run for each of the sources to determine maximum concentrations to perform an Air Quality Impact Analysis (AQIA). Although the points of maximum concentrations for each of the sources were different locations, each of the maximum concentrations were combined to be conservative.

Information has been extracted from the application and the model, modified to the emission rates contained in this evaluation and the scaling factors to convert a maximum hourly concentration into an annual, 3, 8 and 24 hour concentrations which are tabulated below. The first table addresses the Air Quality Increment in Area E and the second table is a comparison of the project impacts combined with background concentrations versus the ambient air quality standards.

Increment Analysis - Area E

Pollutant	Maximum Modeled Impact Area E (ug/m^3)	Designated Area E (ug/m^3)	Averaging Period	Below Allowable Increment Consumption
Carbon Monoxide (CO)	421.3	12,000	1-hour	yes
Nitrogen Dioxide (NO_2)	6.2	25	annual	yes
TSP	1.5 7.3	19 37	annual 24-hour	yes yes
PM_{10}	2.7 13.5	10.8 21.1	annual 24-hour	yes yes
Sulfur Dioxide (SO_2)	2.6 13.1 29.5	20 91 512	annual 24-hour 3-hour	yes yes yes

The table above indicate that this project does not exceed any air quality increment. Therefore, the project complies with the air quality increment provisions of Rule 207.

Cumulative Impacts Vs. Ambient Air Quality Standards

Pollutant	Avg. Period	Max. Project Impact (ug/m^3)	Bckgnd Conc. (ug/m^3)	Total Impact (ug/m^3)	State Standard (ug/m^3)	Federal Standard (ug/m^3)	Below Applicable Standard(s)
Carbon Monoxide (CO)	1-hour 8-hour	183.9 128.8	2,750 1,222	2,934 1,351	23,000 10,000	40,000 10,000	yes yes
Nitrogen Dioxide (NO_2)	1-hour annual	30.7 2.5	126.0 13.3	156.7 15.8	470 --	-- 100	yes yes
PM_{10}	24-hour annual	13.5 2.7	51 18	66.5 20.7	50 20	150 --	no no
$PM_{2.5}$	24-hour annual	13.5 2.7	13 6.8	26.5 9.5	-- 12	35 15	yes yes
Sulfur Dioxide (SO_2)	1-hour 3-hour 24-hour annual	32.8 29.5 13.1 2.6	26 0 0 0	10.6 16.1 1.8	650 -- --	-- 365 80	yes yes yes

This table above identifies that the project emission concentrations when combined with highest background concentrations from calendar years 2006 - 2009 do not exceed the ambient air quality standards with the exception of the State PM_{10} standard. Although the table identifies an exceedance of the State PM_{10} standard, the District has determined that this project will not cause or contribute to a violation of an ambient air quality standard. The basis for this determination is the fact that existing PM_{10} concentrations at the Moss Landing station already exceed the standard, the fact that the localized emissions from this project will not impact the Moss Landing station and the fact that the District is implementing a PM_{10} Plan that will reduce background emissions to below the State standard. Therefore, the project as proposed complies with the Ambient Air Quality Standard provisions of Rule 207.

Visibility Impacts

A visibility analysis of the project's gaseous emissions is required under Rule 207. The analysis addresses the contributions of gaseous emissions (primarily NO_x) and particulate (PM_{10}) emissions to visibility impairment on the nearest Class A areas, which are the Ventana 1Wilderness Area and the Pinnacles National Monument to the south and southeast, respectively. Although the applicant did not submit this analysis, the District has made the determination that this project will have no visibility impacts based upon the VISCREEN modeling that was provided for the Duke Energy modernization project which had emissions increases an order of magnitude larger than this project. The results from the VISCREEN modeling analysis for the Duke project indicated that the project's visibility impacts would be below the significance criteria for contrast and perception . Therefore, based upon the Duke project modeling, this project's visibility impacts on these Class A areas are considered insignificant.

214 Breakdown Conditions
This is the implementing regulation in which the District has established the criteria for reporting breakdowns. The requirements imposed by this rule will be included on these permits.

218 Title V: Federal Operating Permits
The facility will be issued a Title V permit after public and EPA review.

300 District Fees
The annual renewal fee for each of the engines should be based upon the billable emissions in the 100 to 150 tons/year fee schedule. The annual renewal fee for the flare should be based upon the 5 to 8 ton/year fee schedule.

301 Permit Fee Schedules
Prior to District review of these applications, the appropriate fees pursuant to this Rule were received from Ameresco. Therefore, the facility is in compliance with this Rule.

302 Source Testing And Analyses: Fees And Requirements
The District expects compliance with the provisions of this Rule.

305 Fees For Risk Assessments, Risk Notifications, & Risk Reduction Plans & Reports
The District expects compliance with the provisions of this Rule.

306 Asbestos Investigation Fees
The District expects compliance with the provisions of this Rule.

308 Title V: Federal Operating Permit Fees
This is the District's fee rule for Title V. Appropriate conditions will be included on the facilities' Title V permit to ensure compliance with the fee provisions contained in this rule.

400 Visible Emissions
The equipment is fired on landfill gas, and therefore should easily comply with the 20% opacity standard from this Rule. Appropriate conditions will be included on the permits to ensure compliance with the requirements of this Rule.

402 Nuisances
With the equipment being fired on landfill gas, nuisance type problems are not expected from this operation. However, appropriate conditions will be included on the permits to ensure compliance with the requirements of this Rule.

403 Particulate Matter
Internal combustion engines are exempt from the requirements of this rule.

404 Sulfur Compounds & Nitrogen Oxides
This rule limits sulfur emissions (SO_2) to 0.2% by volume (2000 ppmv) and NO_x emissions to less than 140 lbs/hr per piece of equipment used in the production of *power or heat.*

Compliance with the 0.2% by volume (2000 ppmv) limit for SO_2 is assumed due to the following calculation based upon a fuel sample from the landfill and the assumption that all sulfur is converted to SO_2, the emission factor would equate to 0.15 Lbs SO_2/MMBtu heat input. Utilizing this emission factor and the F factor of 9,333 from the fuel sample, the SO_2 concentration for this engine firing this landfill gas would equate to 95.0 ppmv [(0.15 Lbs SO_2/MMBtu)*((MM lbmoles air)/(64.1 lbmole SO_2))*((379 Ft3 Air)/(lbmole air))/(9,333 SDCFM) = 95.0 ppmv] This value is well below the 2000 ppmv SO_2 allowed in this rule.

Compliance with the 140 lbs NO_x/hr is verified by the emission calculations which identify that the entire facilities potential to emit NO_x is less than 9 lbs/hour.

412 Sulfur Content of Fuels
This rule limits the maximum sulfur content of any gaseous fuel consumed to no more than 50 grains per 100 cubic feet. Typical landfill gas compositions are below 5 grains of hydrogen sulfide per 100 cubic feet.

415 Circumvention
The facility is in compliance with the provisions of this Rule.

421 Violations And Determination Of Compliance
This Rule provides standards for compliance determinations required by, or derived from federal law. The facility is in compliance with the requirements of this Rule.

423 New Source Performance Standards (NSPS)
40 CFR Part 60, Subpart A - General Provisions
Since the engines are subject to Subpart JJJJ, the facility is also subject to the requirements of this subpart. Appropriate conditions will be included on the permits to ensure compliance.

40 CFR Part 60, Subpart WWW - NSPS for Municipal Solid Waste Landfills
The requirements of this part do not apply to this equipment, as the gas is treated prior to it be combusted in the equipment.

40 CFR Part 60, Subpart JJJJ - NSPS for Stationary Spark Ignited Internal Combustion Engines
The engines are subject to the requirements of this regulation. The emission limits imposed by this regulation are 3.0 grams/Hp-hr for NO_x, 5.0 grams/Hp-hr for CO, and 1.0 grams/Hp-hr for VOCs. Compliance with this limits will be assured by the limits proposed by the applicant of 0.6 grames/Hp-hr for NO_x, 3.6 grams/Hp-hr for CO, and 0.15 grams/Hp-hr for VOCs (20 ppm @ 3% O_2). The notification, testing, record keeping and reporting requirements from this part and the General Provisions will be included on the permit for the equipment.

424 National Emission Standards For Hazardous Air Pollutants (NESHAPS)
40 CFR Part 61, Subpart M - National Emission Standard For Asbestos
The facility on occasion may be subject to the requirements of 61.145 - 61.147 (Standards for Demolition and Renovation). Compliance is expected.

40 CFR Part 63, Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines
Section 63.6590(c)(1) states that a new stationary ICE located at an area source for HAP emissions that meets the requirements of 40 CFR Part 60, Subpart JJJJ is in compliance with this NESHAP, and no further requirements are imposed by this subpart.

426 Architectural Coatings
This rule is applicable to all applications of architectural coatings and limits the VOC content of these coatings. Historically, the facility has been in compliance with this Rule and continued compliance is expected.

1000 Toxics New Source Review
In their application, Ameresco included a Screening Risk Analysis which verified that this toxic emissions from this equipment will not exceed the thresholds of this rule.

1003 Air Toxics Emissions Inventory And Risk Assessments
The District fully expects compliance with the provisions of this Rule.

Conclusions
These proposed equipment has the capability of operating in compliance with all applicable rules of the District.

VII. RECOMMENDATION

Issue a public notice on the preliminary permit decision and release the proposed permits for the required 30 day public comment period. Forward the proposed Title V permit to EPA for their 45-day review. Review and respond to comments prior to issuance of the permits as final documents.

VIII. PROPOSED PERMITS

The proposed permits are attached.