

Minor Modification to a Covered Source Permit
Review Summary

Application No.: 0212-38

Permit No.: 0212-01-C

Applicant: Hawaii Independent Energy, LLC

Facility Title: Petroleum Refinery
Hawaii Independent Energy, LLC
91-325 Komohana Street
Kapolei, Hawaii 96707

Mailing Address: Hawaii Independent Energy, LLC
91-325 Komohana Street
Kapolei, Hawaii 96707

Responsible Official: Mr. Thomas A. Weber
Vice President, Kapolei Refinery
Hawaii Independent Energy, LLC
(808) 547-3940

Point of Contact: Mr. Theodore K. Metrose
Manager, Refinery Environmental Affairs
(808) 479-9886

Application Dates: March 27, 2014

Proposed Project:

SICC 2911 (Petroleum Refining)

The applicant is requesting to construct and operate a new 60,000 bbl (2,520,000 gallon) ethanol tank. State regulations mandate that gasoline be produced by blending in at least 9.2% of ethanol into at least 85% of the gasoline produced by the refinery. Similarly, renewable fuel standards (RFS) set forth under federal regulation (40 CFR 80.1400) mandate that a nearly equivalent amount of renewable fuels (most commonly ethanol) be blended into the gasoline pool. The RFS also mandates that the renewable fuel content of motor fuel be more than doubled by 2022 from levels currently mandated by RFS for 2014.

The new ethanol Tank 518 will be installed in conjunction with a new gasoline load rack (to be submitted in a separate application), which will allow ethanol to be blended with the Conventional Before Oxygenate Blendstock (CBOB) produced by the refinery using more traditional fossil fuels. The ethanol tank and the load rack are needed because Hawaii Independent Energy LLC (HIE) does not own or operate a bulk gasoline load rack on Oahu, nor does the refinery have any available tanks that could be converted to store ethanol. The contractual agreement which allows HIE's Kapolei Refinery to produce CBOB (gasoline) and have ethanol blended in and loaded into tanker trucks by a third-party (Aloha Petroleum) may not be renewed. The permit modification will allow HIE to commence construction of an ethanol

tank, which when coupled with a gasoline load rack, will allow HIE to produce and distribute gasoline that meets the renewable fuel standards set by the State of Hawaii and the EPA.

To comply with 40 CFR Part 60, Subpart Kb (applicable to tanks used to store organic liquids with a TVP > 0.5 psi) the tank will be equipped with an internal floating roof, primary and secondary seals, and covered by a cone roof or geodesic dome, to prevent rain from intruding in the ethanol. The ethanol tank would be considered a Group 2 tank under the refinery MACT Subpart CC standard because it does not meet the definition of a Group 1 tank (new source), i.e., a hazardous air pollutant (HAP) content of greater than 2%. The MACT requirements for Group 1 tanks are meeting the requirements of NSPS Subpart Kb.

Due to the relatively low volatility of ethanol (TVP < 1.3 psi at 80 °F), the amount of VOC emissions associated with the 2,520,000 gallon tank storing ethanol based on EPA's Tanks program are estimated to be 724.00 lbs per year (see Project Emissions section).

To prevent the ethanol from being regulated and treated (and potentially consumed) as an alcohol about 1-3% of denaturing compound, typically a fossil fuel-derived gasoline blendstock, must be mixed into the pure ethanol (typically by the ethanol producer). Although generally referred to as ethanol, the new tank will more precisely be used to store denatured ethanol. As a footnote, the EPA uses the term Denatured Fuel Ethanol (DFE). The most recent fuel specifications issued by the EPA, referred to as the "Tier 3" vehicle and fuel standard, (which are designed to limit emissions from motor vehicles), will also limit the amount of denaturant added to ethanol to no more than 3%. Accordingly, to determine a worst case emissions estimate from an IFR tank storing denatured ethanol, EPA's Tanks program was also run assuming the addition of 3% denaturing compound. Although ethanol producers may use a fairly wide array of gasoline compatible compounds as the denaturant, pentane (one of the most volatile components of gasoline) was used to simulate the effects of the denaturant. The calculations show that even when the effects of a denaturant (pentane) are included, VOC emissions from the tank meeting Kb standards are projected to be 883.87 lbs per year (see Project Emissions section).

This modification is considered a minor modification since it:

- (1) Does not increase the emissions of any air pollutant above the permitted emission limits;
- (2) Does not result in or increase the emissions of any air pollutant not limited by permit to levels equal to or above:
 - (A) 500 pounds per year of a hazardous air pollutant;
 - (B) twenty-five (25) percent of significant amounts of emission as defined in Section 11-60.1-1, paragraph (1) in the definition of "significant";
 - (C) five (5) tons per year of carbon monoxide; or
 - (D) two (2) tons per year of each regulated air pollutant other than carbon monoxide;
- (3) Does not violate any applicable requirement;
- (4) Does not involve significant changes to existing monitoring requirements or any relaxation or significant change to existing reporting or recordkeeping requirements in the permit. Any change to the existing monitoring, reporting, or recordkeeping requirements that reduces the enforceability of the permit is considered a significant change;
- (5) Does not require or change a case-by-case determination of an emission limitation or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;

- (6) Does not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement, and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
 - (A) A federally enforceable emissions cap assumed to avoid classification as a modification pursuant to any provision of Title I of the Act or subchapter 7; and
 - (B) An alternative emissions limit approved pursuant to regulations promulgated pursuant to Section 112(i)(5) of the Act or subchapter 9; and
- (7) Is not a modification pursuant to any provision of Title I of the Act.

A permit modification application fee of \$200.00 for a minor modification was submitted by the applicant and processed.

Equipment:

One (1) – 2,520,000 gallon (nominal) internal floating roof storage tank identified as Tank 518 storing denatured ethanol.

Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 59	Ambient Air Quality Standards
Title 11, Chapter 60.1	Air Pollution Control
Subchapter 1	General Requirements
Subchapter 2	General Prohibition
HAR 11-60.1-31	Applicability
HAR 11-60.1-39	Storage of Volatile Organic Compounds
Subchapter 5	Covered Sources
Subchapter 6	Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
HAR 11-60.1-111	Definitions
HAR 11-60.1-112	General Fee Provisions for Covered Sources
HAR 11-60.1-113	Application Fees for Covered Sources
HAR 11-60.1-114	Annual Fees for Covered Sources
HAR 11-60.1-115	Basis of Annual Fees for Covered Sources
Subchapter 8	Standards of Performance for Stationary Sources
Subchapter 9	Hazardous Air Pollutant Sources

Federal Requirements

40 Code of Federal Regulations (CFR) Part 60 – Standards of Performance for New Stationary Sources (NSPS)

 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which construction or modification commenced after July 13, 1984.

40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technologies (MACT) Standards)

 Subpart CC - National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

Non-Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 60.1 Air Pollution Control
 Subchapter 7 Prevention of Significant Deterioration Review

Federal Requirements

40 CFR Part 52.21 – Prevention of Significant Deterioration of Air Quality

Best Available Control Technology (BACT):

A BACT analysis is applicable only to new covered sources and significant modifications to covered sources that have the potential to emit or a net emissions increase above significant levels as defined in HAR §11-60.1-1. A BACT analysis is not applicable since there are no significant net emission increases.

Prevention of Significant Deterioration (PSD):

A PSD major modification is defined as a project at an existing major stationary source that will result in a significant emissions increase and a significant net emissions increase of any pollutant subject to regulations approved pursuant to the Clean Air Act as defined in 40 CFR §52.21. Since there are no significant emission increases for these modifications, PSD is not triggered.

Air Emissions Reporting Requirements (AERR):

No change from Covered Source Permit No. 0212-01-C.

Compliance Assurance Monitoring (CAM):

No change from Covered Source Permit No. 0212-01-C. This facility is not subject to CAM.

Synthetic Minor Source:

No change from Covered Source Permit No. 0212-01-C. This facility is not a synthetic minor.

Insignificant Activities:

No change from Covered Source Permit No. 0212-01-C.

Alternate Operating Scenarios:

No change from Covered Source Permit No. 0212-01-C.

Project Emissions:

Tank 518			
Tank Type	Service	Total VOC (lbs/yr)	HAPs (lbs/yr)
Internal Floating Roof	Ethanol	724.00 (< 2 tpy)	
Internal Floating Roof	Ethanol/Pentane ¹ (97% / 3% mixture)	883.87 (< 2 tpy)	26.5 (< 500) ²

¹ Pentane used to illustrate effects of a denaturant. Pentane is one of the most volatile components of gasoline. Only natural gasoline, gasoline blendstocks, or gasoline may be used as denaturants for Denatured Fuel Ethanol (DFE). The DFE Tier 3 limit for denaturant added to ethanol is 3% by volume.
² Assuming pure pentane as a denaturant and a HAP content of 3% as a worst case scenario.

Ambient Air Quality Assessment:

The only emissions are fugitive VOCs from the petroleum storage tanks and any HAPs associated with these VOCs. An ambient air quality impact assessment was not performed for the following reasons: 1) VOCs do not have an ambient air quality standard, and 2) the Department of Health air modeling guidance generally exempts an applicant from performing an ambient air quality impact assessment for fugitive sources (storage tanks, pipe leaks, etc.).

Significant Permit Conditions:

Proposed additions are underlined and proposed deletions are struck through.

1. Added Special Condition No. A.1.e. of Attachment II(M)

A.1.e. One (1) Denatured Ethanol Tank

One (1) - 2,520,000 gallon (nominal) internal floating roof storage tank identified as Tank 518.

2. Revised Special Condition No. B.3 of Attachment II(M)

B.3. Petroleum storage tanks 107, 109, 110, 111, 518, 610, 611, 3520, 3522, and 3526 are subject to the provisions of the following federal regulations:

- a. 40 CFR Part 60, New Source Performance Standards (NSPS)
 - i. Subpart A, General Provisions; and
 - ii. Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984.

The permittee shall comply with all applicable requirements of these standards, including all emission limits, notification, reporting, monitoring, testing, and recordkeeping requirements. The major requirements of these standards are detailed in the special conditions of this permit.

3. Added Special Condition No. C.5 of Attachment II(M)

- C.5. The petroleum storage tank identified in Special Condition No. A.1.e of this Attachment shall only store denatured ethanol with a true vapor pressure of 1.5 psia or less.

Conclusion and Recommendations:

Recommend issuance of the minor modification to existing Covered Source Permit No. 0212-01-C based on the significant permit conditions shown above. The Denatured Ethanol Tank 518 has very low emissions of VOCs and HAPs. Compliance with all State and Federal regulations will be maintained. A forty-five-day (45-day) EPA review period is also required before issuance of the permit modification.

Reviewer: Darin Lum
Date: 5/2014