ADDENDUM A
SUMMARY OF PUBLIC COMMENTS RECEIVED
ON THE PROPOSED CHANGES TO THE DRAFT AIR PERMIT FOR
HU HONUA BIOENERGY, LLC
BIOENERGY FACILITY
LOCATED AT: 28-283 SUGAR MILL ROAD, PEPEEKEO, HAWAII
Comment Period: February 17, 2011 to March 21, 2011

I. OVERVIEW

Pursuant to Hawaii Administrative Rules, Chapter 11-60.1, a public comment period was held from February 17, 2011 to March 21, 2011 to solicit public comments on the proposed changes to the draft air permit to be issued to Hu Honua Bioenergy, LLC.

An earlier public comment period was held from August 13, 2010 to October 12, 2010 and a public hearing was held on September 15, 2010 on the original draft air permit. The summary of public comments received from this public participation proceedings are addressed in a separate document. This document addresses the comments received during the February 17, 2011 to March 21, 2011 comment period on the proposed changes to the draft air permit.

During the public comment period, the Department of Health (hereinafter referred to as "DOH" or the "Department") received comments from 11 commenters. One commenter provided comments after March 21, 2011. The Department also received several requests for a public hearing on the draft permit. The Department has determined that a public hearing on the proposed changes to the draft permit would not aid the Department in making a final decision on the draft permit. A public hearing was held on the original draft permit and the proposed changes impose additional and more stringent requirements.

Section II of this document describes the changes made to the draft air permit as provided for in the February 17, 2011 to March 21, 2011 public comment period as a result of the public comments received. Section III of this document presents the public comments and the Department's responses. Section IV presents comments that are considered outside of the scope of the air permit review process and the Department's responses.

II. REVISIONS TO THE DRAFT PERMIT

The following revisions were made to the draft air permit as provided for in the public comment period from February 17, 2011 to March 21, 2011. For further details on the basis for the revisions, see Section III, Response to Comments.

The revisions to the **DRAFT AIR PERMIT** include:

1. The addition of baghouse specifications in **Section A – Equipment Description**.

   Attachment II, Special Condition No. A.1.a is revised as follows:

   1. This permit encompasses the following equipment and associated appurtenances:

      a. One (1) 407 MMBtu/hr Babcock and Wilcox Boiler, model no. BW 23523, equipped with the following:

i. Electrostatic Precipitator and Baghouse (B & W Pulse Jet Fabric Filter or equivalent);
ii. Nalco Rotating Opposed Fire Air (ROFA) System or equivalent;
iii. Nalco Rotating Mix (ROTAMIX) Urea Injection System or equivalent; and
iv. Trona or limestone injection system or equivalent.

2. The addition of SO_2 emission limits and CO emission limits (3-hr) in **Section C – Emission Limits**.

Attachment II, Special Condition No. C.1 is revised as follows:

1. Boiler Emission Limits

Emissions for the boiler shall not exceed the limits as shown in the table below:

Boiler Emission Limits		
Pollutant	**Emission Limit (lb/hour)**	**Emission Limit (lb/MMBtu)**
CO	69.2 [1]	0.17 [1]
CO	71.6 [2]	0.176 [2]
NO_x	61.1 [2]	0.15 [2]
SO_2	11.4 [2]	0.028 [2]
PM	9.8 [2]	0.024 [2]
PM_{10}	9.8 [2]	0.024 [2]
PM_{10} (filterable)	4.9 [2]	0.012 [2]
VOC	11.4 [2]	0.028 [2]
Hydrogen Chloride (HCl)	1.6 [2]	0.004 [2]

[1] Based on a 30-day rolling average
[2] Based on a 3-hour average

Attachment II, Special Condition No. C.2 is revised as follows:

2. Boiler CO, NO_x, VOC and HCl Emissions

The NO_x, VOC and HCl emission limits shall be complied with at all times, except during boiler startup and shutdown. The CO emission limit shall be based on a thirty-day (30-day) rolling average when monitored by the CO continuous emissions monitoring system required in Attachment II, Special Condition No. E.8 and shall be complied with at all times, except during boiler startup and shutdown. The CO emission limit shall be based on a 3-hour average when conducting the performance test required in Attachment II, Special Condition No. G.1.a.

3. The addition of baghouse operational conditions in **Section D. - Operational Limits**.

   Attachment II, Special Condition No. D.2 is revised as follows:

1. 2. Boiler Electrostatic Precipitator (ESP) and Baghouse

   a. The ESP and baghouse shall be operated at all times during operation of the boiler. The permittee shall not operate the boiler if a problem affecting PM control efficiency of the ESP and/or baghouse is observed or apparent at any time that could cause the ESP and/or baghouse to be operated outside of their respective normal range. The permittee shall investigate and correct the problem(s) before resuming boiler operation.
   b. The ESP operating voltage shall be maintained in accordance with the manufacturer's specifications.
   c. The pressure drop across the baghouse shall be maintained at 1" to 7" H_2O.
   d. The permittee shall follow a regular maintenance schedule to ensure the following items of the baghouse are operated properly:

      1) The filter bags are checked for any leaks, holes, abrasions, and scuffs; and replaced as needed.
      2) The hopper is discharged in a timely manner to prevent excessive particulate buildup which could cause compaction, overflow, or plugging.
      3) The cleaning system is maintained and operated at sufficient intervals to minimize particulate buildup or caking on the filter bags.
      4) Other miscellaneous items/equipment essential for the effective operation of the baghouse are maintained.

4. The addition of a NO_x CEMS in **Section E. – Monitoring and Recordkeeping Requirements**.

   Attachment II, Special Condition No. E.9 is added as follows:

   9. NO_x Continuous Emissions Monitoring System (CEMS)

      a. The permittee shall install, operate, calibrate and maintain a NO_x Continuous Emissions Monitoring System (CEMS). The NO_x CEMS must be in continuous operation whenever the boiler is in operation.
      b. The NO_x CEMS must be installed, operated and maintained according to Performance Specifications (PS) 2 of 40 CFR Part 60, Appendix B.
      c. A performance evaluation of the NO_x CEMS must be conducted according to the requirements in §63.8 and PS 2 of 40 CFR Part 60, Appendix B.

5. The addition of baghouse monitoring and recordkeeping conditions in **Section E. - Monitoring and Recordkeeping Requirements**.

   Attachment II, Special Condition No. E.12 is added as follows:

12. Baghouse

    The permittee shall install, operate and maintain a pressure drop meter on the baghouse to measure the pressure drop across the bags. The permittee shall monitor and record this meter at least once daily during operation.

6. The addition of baghouse pressure drop deviations in **Section F – Notification and Reporting Requirements**.

   Attachment II, Special Condition No. F.6 is revised as follows:

   6. Monitoring Report Forms

      The permittee shall submit **semi-annually** the following reports to the Department of Health. The reports shall be submitted within **sixty (60) days** after the end of each semi-annual calendar period (January 1 - June 30 and July 1 - December 31).

      a. For the **Monitoring Report: Boiler Fuel, ESP and Baghouse**, report on:

         i. The total gallons of biodiesel (S15) fired in the boiler during startup on a monthly and rolling twelve-month (12-month) basis;
         ii. Any instances where treated wood (e.g., painted or chemically treated wood) was fired in the boiler. If no such instances occurred, state so on the report;
         iii. Any instances where ESP operating voltage was below the normal range. If there were no such incidents, state so on the report;
         iv. Any instances where the pressure drop across the baghouse was above the normal range. If there were no such incidents, state so on the report; and
         v. The total heat input of biodiesel (S15) and wood on a monthly and rolling twelve-month (12-month) basis.

7. The addition of the NO_X CEMS in the definition of Excess Emissions in **Section F – Notification and Reporting Requirements**.

   Attachment II, Special Condition No. F.8.b.i. and F.8.d. are revised as follows:

   b. For the purposes of this permit, excess emissions and monitor downtimes shall be defined as follows:

      i. Excess Emissions

         (1) Any opacity measurements, as measured by the continuous opacity monitoring system, exceeding the opacity limits set forth Attachment II, Special Condition No. C.4;
         (2) Any rolling thirty-day (30-day) period during which the average emissions of CO, as measured by the continuous emissions monitoring system, exceed the emission limits set forth in Attachment II, Special Condition No. C.1;
         (3) Any three-hour (3-hour) period during which the average emissions of HCl, as measured by the continuous emissions monitoring system, exceed the emission limits set forth in Attachment II, Special Condition No. C.1; and

(4) Any three-hour (3-hour) period during which the average emissions of NO_x, as measured by the continuous emissions monitoring system, exceed the emission limits set forth in Attachment II, Special Condition No. C.1.

d. Excess opacity indicated by the continuous opacity monitoring system shall be considered violations of the applicable opacity limits for the purposes of this permit. Excess emissions indicated by the continuous emissions monitoring systems (HCl, CO and NO_x CEMS) shall be considered violations of the applicable emission limits for the purposes of the permit.

8. The addition of SO_2 testing and their associated test methods in **Section G – Testing Requirements**.

Attachment II, Special Conditions Nos. G.1.a.and G.2. are revised as follows:

1. Boiler Performance Testing

   a. CO, NO_x (as NO_2), SO_2, VOC, PM, Opacity of Visible Emissions, and NH_3

      Within **sixty (60) days** after achieving the maximum production rate of the boiler, but not later than **one hundred eighty (180) days** after initial start-up of the boiler, and **annually** thereafter, the permittee shall conduct, or cause to be conducted, performance tests on the boiler to determine the emission rates of CO, NO_x (as NO_2), SO_2, VOC, PM, opacity of visible emissions, and NH_3 for the purpose of determining compliance with the emission limits provided for under Attachment II, Special Condition Nos. C.1 and C.4.

      The permittee shall not conduct performance tests during periods of startup, shutdown, or malfunction.

2. Boiler Test Methods

   Performance tests for CO, NO_x, SO_2, VOC, PM, HCl, opacity of visible emissions, and NH_3 shall be conducted and the results reported in accordance with test methods set forth in 40 CFR §60.8 and 40 CFR Part 60, Appendix A. The performance tests shall be conducted at the maximum expected capacity of the boiler. The following test methods or U.S. EPA approved equivalent methods or other methods with prior written consent from the Department of Health shall be used.

   a. Performance tests for CO emissions shall be conducted using EPA Methods 1-4, 10 and 19;
   b. Performance tests for NO_x emissions shall be conducted using EPA Methods 1-4, 7E and 19;
   c. Performance tests for SO_2 emissions shall be conducted using EPA Methods 1-4, and 6 or 6C;
   d. Performance tests for VOC emissions shall be conducted using EPA Methods 1-4 and 25;
   e. Performance tests for PM emissions shall be conducted as provided under Attachment II, Special Condition No. G.3;
   f. Performance tests for HCl emissions shall be conducted using EPA Methods 1-4, and Method 26 or 26A;

g. During the initial performance test, compliance with the opacity standard of Attachment II, Special Condition No. C.4, shall be determined in accordance with 40 CFR §60.46b(d)(7) and §63.11224(e)(2). The permittee shall record COMS data produced during the initial performance test and shall furnish the Department of Health a written report of the monitoring results along with the Method 9 and 40 CFR §60.8 and §63.7 performance test results;
h. During the annual performance tests, compliance with the opacity standard of Attachment II, Special Condition No. C.4 shall be determined with COMS data collection in accordance with 40 CFR §60.11(e)(5);
i. Performance tests for NH_3 emissions shall be conducted using EPA Conditional Test Method 027 (CTM-027); and
j. The performance tests shall consist of three (3) separate runs for each pollutant using the applicable test method. For the purpose of determining compliance with an applicable regulation, the arithmetic mean of the results from the three (3) runs shall apply.

9. The addition of 40 CFR Part 63, Subpart JJJJJJ (National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers) as an applicable requirement in **Attachment II, Section B – Applicable Federal Requirements** as this MACT has been finalized.

   Attachment II, Special Condition No. B.1.c and B.1.d are added as follows:

   c. 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart A, General Provisions; and
   d. 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers.

10. The addition of 40 CFR Part 63, Subpart JJJJJJ, requirements in **Attachment II, Section D – Operational Limits**.

    Attachment II, Special Condition No. D.1.d.ii. is added to the Boiler Startup and Shutdown conditions as follows:

    ii. Minimize startup and shutdown periods per manufacturer's recommendations.

    Attachment II, Special Condition No. D.6 is added as follows:

    6. Boiler Tune-ups

       Upon startup and **biennially** thereafter, the permittee shall conduct or cause to be conducted, a tune-up of the boiler in accordance with the requirements of 40 CFR §63.11223. Each biennial tune-up must be conducted no more than twenty-five (25) months after the previous tune-up.

11. The addition of 40 CFR Part 63, Subpart JJJJJJ, requirements in **Attachment II, Section E – Monitoring and Recordkeeping Requirements**.

    Attachment II, Special Condition No. E.2.e. is added as follows:

e. Boiler Tune-ups

The permittee shall maintain records identifying the boiler, date of tune-up, the procedures followed for a tune-up, and the manufacturer's specifications to which the boiler was tuned.

Attachment II, Special Condition No. E.2.f is added as follows:

f. Monthly Fuel Records

The permittee shall maintain records documenting the fuel type(s) used monthly.

Attachment II, Special Condition No. E.3.c is added to the ESP Voltages conditions as follows:

c. Maintain records of the occurrence and duration of each malfunction of the ESP and of any corrective actions taken to minimize emissions or restore the ESP to normal operating order.

Attachment II, Special Condition No. E.5.d is added to the Boiler Continuous Opacity Monitoring System (COMS) conditions as follows:

d. The permittee shall maintain records of the occurrence and duration of each malfunction of the COMS and of any corrective actions taken to minimize emissions or restore the COMS to normal operating order.

Attachment II, Special Condition No. E.9.c is added to the Boiler Startup, Shutdown, and Malfunction Plan conditions as follows:

c. The permittee shall maintain records of the occurrence and duration of each malfunction of the boiler.

12. The addition of 40 CFR Part 63, Subpart JJJJJJ, requirements in **Attachment II, Section F – Notification and Reporting Requirements**.

Attachment II, Special Condition No. F.5.b is added to the Performance Specification Testing as follows:

b. As of January 1, 2012 and within **sixty (60) days** after the date of completing each performance test, the permittee shall submit relative accuracy test audit data and performance test data, except opacity data, electronically to EPA's Central Data Exchange (CDX) by using the Electronic Reporting Tool (ERT) or other compatible electronic spreadsheet. Only data collected using test methods compatible with ERT are subject to this requirement.

Attachment II, Special Condition No. F.10 is added as follows:

10. Annual Compliance Report

    By March 1 of each year, the permittee shall submit to the Department of Health and U.S. EPA, Region 9, an annual compliance report for the previous calendar year containing the following information in accordance with 40 CFR §63.11225:

    a. Company name and address;
    b. Statement by a responsible official certifying the truth, accuracy and completeness of the notification;
    c. Descriptions of all deviations occurring during the reporting period; and
    d. The total fuel used and EPA non-waste determination.

13. The addition of 40 CFR Part 63, Subpart JJJJJJ, requirements in **Attachment II, Section G – Testing Requirements**.

    Attachment II, Special Condition No. G.3.h is added to the Boiler PM Performance Tests conditions as follows:

    h. For each run, the PM concentration shall be converted to pounds/MMBtu using the F-factor methodology of Method 19.

    Attachment II, Special Condition No. G.6 is revised as follows:

    6. Test Scheduling

       In the event the initially scheduled performance test is unable to be conducted due to unforeseeable circumstances beyond the permittee's control, the permittee shall submit a notice to the Department of Health as soon as practicable and without delay prior to the scheduled performance test data and specify the date when the performance test is rescheduled.

14. The replacement of the wood's lower heating value with the wood's high heating value in Attachment II, Special Conditions Nos. E.2.c.ii, E.2.c.iii(1), F.4 and F.6.b. Also, the deletion of the term "(lower heating value)" in Attachment II, Special Condition No. G.1.b.ii.(2).

III. RESPONSE TO COMMENTS

The public comments were reviewed and categorized in Section III as follows:

PSD Applicability/PTE/Limit on Operations
Wood Fuel Moisture Content
Control of CO Emissions and Variations in Operations
Startup, Shutdown, and Malfunction
Hazardous Air Pollutants Impacts
Biodiesel Information
Wood Biomass Fuel Consumption Rate
Effect of ESP on Formation of Dioxins and Furans
CEMs and Pollutant Monitoring
HCl, Dioxins and Furans and Impacts from Salt on Trees
PM_{10} and $PM_{2.5}$ Emissions and Impact Assessment

SO_2, VOC Emissions
Criteria Pollutant Modeling Methodologies and Results
Representativeness of Hilo Meteorological Data
Boiler MACT for Area Sources
VOG
HCl Control Efficiency/Ash Waste
Baghouse Information
Boiler Operations
BACT for VOCs and SO_2
BACT for $PM_{2.5}$
BACT for Greenhouse Gases
WHO Standards
NH_3 Emissions
Fugitive PM Emissions from Trucks
HCl Emission Rate
Biodiesel Use
Public Comment Period/Public Hearing
Grandfathered Sources
Calibrating Source and Emissions Tests
Compliance with BACT Limit for PM
CAM Requirements
Classification Terminology
Part 70 Issues
Heat Input of Biodiesel
NAAQS/SAAQS
Truck Emissions
Biodiesel Only Usage
New Source Classification
Stack Height
Biodiesel Emission Factors
Purpose and Duty of DOH

PSD Applicability/PTE/Limit on Operations

- If the EPA has set a limit of 40 tons/year for VOC and SO_2 emissions it is precisely because higher emissions are clearly unhealthy for the environment and the surrounding population. The calculated emissions of 39.2 tons/year are only 2% below the BACT trigger and must not be accepted by the DOH. If the DOH goes along with this manipulation of the data, you will have to explain your position. The same problem applies to the calculated yearly emissions of carbon monoxide which comes in about 1.5% below the PSD trigger.

- The draft permit does not follow EPA regulations for determining “potential to emit.” The draft permit improperly concludes that the facility is exempt from PSD permitting, because the procedure for determining “potential to emit” has been misapplied. Although the Hu Honua facility plans to operate a 407 mmbtu boiler, which if operated at capacity would require 3,565,320 mmbtu of heat input per year, the pollutant emissions have been calculated on the basis of a heat input of only 2,800,000 mmbtu/yr.

- The calculation of “potential to emit” thus clearly requires multiplying the maximal capacity of the boiler by the number of hours in a year. Rare exceptions to this are allowed under

two conditions, both of which must be met: that operational limitations that constrain a source's potential to emit be federally enforceable, and that they be practically enforceable. Constraining Hu Honua's operation to 2,800,000 mmbtu/year meets neither of these criteria,

- The permit does not contain practically enforceable restrictions that will limit operations to the capacity stated. The power plant is a baseload facility, meaning demand for power may increase and so may hours and capacity of plant operation. The application states that the facility will operate at maximum capacity 14 hours a day, and minimal capacity 10 hours a day, but this limit is not justified with any analysis; instead, it appears the purported restrictions were chosen to avoid major source Prevention of Significant Deterioration permitting. There is no practical means of federal enforcement of the conditions of operation that can limit the operation of the facility – indeed, the conditions stated in the application as justification for a boiler heat input of 2,800,000 mmbtu/yr are not stated in the permit

- The applicant appears to have modeled emissions using constraints and limitations which do not appear in the permit. Nowhere in the permit is to be found a condition limiting operation of the facility to 8,040 hours per year. The permit application and the permit itself are inconsistent with regard to actual means of limiting heat input to the boiler to 2,800,000 mmBtu/yr.

- The Hu Honua facility is a major source and must go through PSD permitting. If calculated correctly using potential to emit, the emissions of carbon monoxide at the Hu Honua facility would be 314 tons per year, triggering PSD permitting requirements. If emissions were calculated correctly, the applicant would be compelled to reduce CO emissions at the facility. Currently, the facility's 0.176 lb/mmbtu emission rate for carbon monoxide is considerably higher than the rate found in contemporary biomass plant permits.

- The emission rate of 0.028 lb/mmbtu for VOCs is possible only because the heat input to the burner has been artificially constrained by the applicant's air modeling and does not reflect the actual potential hours and capacity of boiler operation. Potential to emit for both SO_2 and VOCs, if calculated correctly, would be 407 mmbtu/hr x 0.028 lb/mmbtu x 8760 hrs, which comes to 49.9 tons per year for both pollutants.

- Nitrogen oxide emissions do not represent BACT. The air permit application estimates that nitrogen dioxide emissions at the Hu Honua facility will be 210 tons per year. If calculated correctly using EPA's procedure for potential to emit, NO_2 emissions would be around 278 tons, making the source eligible for PSD permitting. The Department of Health must recalculate the emissions correctly. Further, the 0.15 lb/mmbtu NO_2 emissions rate does not represent BACT.

- The emission rate permitted for the Hu Honua plant is representative of outdated plants that lack modern emissions controls, and is not representative of emissions that can be achieved using modern control technologies.

- Given the inconsistencies in the permit about the actual mmbtu of heat input to the burner and the actual hours of operation in a year, the actual volume of wood to be used to generate the amount of electricity promised to the grid is vague and difficult to determine.

- The Source's PTE is very close to applicable thresholds, and certain source emissions are omitted. SO_2 emissions are higher than reported due to the omission and underreporting of certain aspects of the facility.

Response:
The primary criterion for determining whether a source is subject to PSD permitting is whether the source is a major stationary source or a modification that would constitute a major stationary source by itself. A non-fossil fuel-fired boiler is a major stationary source if it has the potential to emit any criteria pollutant exceeding 250 tons per year.

The facility at Pepeekeo previously operated under a covered source permit (CSP 0229-02-C), but was never a PSD major stationary source. The former CSP was relinquished by Hu Honua on September 16, 2010. Hu Honua proposes to permit the facility as a new source that will operate with emission controls such that it's potential to emit criteria pollutants will remain below 250 tons per year. Since the facility never was a PSD major stationary source and its emissions will remain below the 250 tons per year threshold, it is neither a new PSD major stationary source nor a modification that is a major stationary source by itself.

The U.S. Environmental Protection Agency (EPA) defines potential to emit as the facility's capability at maximum design capacity to emit a pollutant, except as constrained by federally enforceable conditions, which include the effect of installed air pollution control equipment and restrictions on the hours of operation, or the type or amount of fuel combusted. Defining an emission limit below a regulatory threshold and constraining operations, restricting hours of use or limiting fuel use through enforceable permit conditions is a very common permitting practice. Hu Honua will accept a fuel consumption limit of 2,800,000 MMBtu/yr to ensure that plant utilization does not exceed the stated emission levels in the permit application and PSD thresholds are not exceeded. Emission calculations made to determine the plant's potential emissions at 2,800,000 MMBtu/hr are conservative and actual emissions would likely be below the calculated values.

In particular, CO emissions would require an enforceable permit condition limiting utilization of the facility to less than its design operation for the plant to remain below the PSD threshold of 250 tons per year. While the draft permit included provisions for annual testing of CO, Hu Honua has agreed to install a continuous emission monitor for CO which will demonstrate that the PSD threshold will not be exceeded.

Also, the boiler will be modified to increase efficiency at the lower steam output levels by, among other actions, reducing the grate size. In addition, the turbine extraction point that fed steam to the no longer existing sugar processing load will be closed off. In fact, the steam line and the condensate return line that formerly served the sugar operation are no longer in existence. The modifications to the boiler will reduce the physical capacity of the boiler from its original design.

Ultimately, the MMbtu/yr has a more direct relationship with emissions than the hours per year (the MMBtu/yr was derived using the hours per year).

The VOC and SO_2 annual emissions of 39.2 tons/yr are based on an annual Btu limit of 2,800,000 MMBtu/yr when using an emission factor of 0.028 lb/MMBtu.

A detailed BACT analysis was prepared for NO_x, CO, and PM_{10} (December 2010) documenting the basis for the selected BACT emission levels.

The MMbtur/yr has a more direct relationship with emissions than the hours per year (the MMBtu/yr was derived using the hours per year).

Wood Fuel Moisture Content

- There is no improvement as to eliminating moisture cause by rain.

- No correction has been made or test results taken as to moisture content of the wood to be used.

- Hu Honua presented no documentation as to where their value of 45% came from (Page 10 of the original application. I must note that I did not have a copy of Appendix C). This percentage should have been discussed in the body of the application; most likely because of the humidity level in Hawaii, the moisture content on ANY wood is higher in Hawaii than on the Mainland.

Response:
Hu Honua had research done on the drying time for eucalyptus and determined that after four (4) weeks of drying time, a 45% moisture content was attained. Hu Honua has incorporated into its fuel supply contracts a requirement for four (4) weeks of field drying time as well as the right to reject any delivery to the plant of fuel containing over 45% moisture. Moisture content of each load of wood received at the plant will be tested twice. It will be field tested with hand-held meters either at the pick-up point or at the receiving station. Each load will also be sampled and tested in the on-site laboratory. Chipped wood would be stored under cover, protected from rain.

Control of CO Emissions and Variation in Operation

- The calculations for CO is too close to 250 TPY and a variation in wood moisture from the "expected" moisture content used in the calculations would trigger PSD.

- Given that the Hu Honua facility proposes to burn wetfuel, and apparently intends to cycle from low to high load on a daily basis, it is not appropriate to set a simple 30-day average for CO emissions that is representative of poor firing conditions at the plant. The permit should specify at a minimum a one-hour block average coupled with one or two longer term averages that are considerably lower.

- The final permit should set CO emissions limits that are based on hourly block averages to ensure that spiking CO emissions are controlled. Biomass use will be higher than has been represented. We note that although in the past, Hu Honua has been represented as consuming about 260,000 tons per y ear of biomass, the current draft air permit contains no limitations on the amount of wood that will be burned at the plant. In fact, if biodiesel use is truly limited to three startups a year, and the plant is to be otherwise fueled solely by wood, then more than 260,000 tons per year will be needed to deliver net 21 MW to the grid.

- Given that the Hu Honua facility proposes to burn wetfuel, and apparently intends to cycle from low to high load on a daily basis, it is not appropriate to set a simple 30-day average for CO emissions that is representative of poor firing conditions at the plant. The permit should specify at a minimum a one-hour block average coupled with one or two longer term averages that are considerably lower.

- The CO BACT analysis fails to properly establish BACT. CO BACT is a lower 30 day number than the same as the 3 hour emissions limits. While the 3 hour standard appears appropriate, the 30-day standard, averaged over that longer period, is appropriately less.

Response:
Hu Honua will limit wood and biodiesel usage so that total heat input will be no more than 2,800,000 MMBtu per year, that will ensure the facility does not exceed the 250 tons per year PSD threshold. As this is an annual limit, the intermittent variation in wood moisture from the expected moisture content would not likely have a significant impact on the annual emissions, particularly considering that Hu Honua will manage its operations over the course of the year to stay within the annual BTU limit. In addition, a CO continuous emissions monitor (CEM) would be installed to ensure emissions do not exceed the allowed CO emission limits.

Hu Honua will be required to meet a limit of 0.176 lb/MMBtu on a short-term basis (3-hour average) and a limit of 0.17 lb/MMBtu on a long-term basis (30-day rolling average). To account for the short-term variability of burning biomass at nonpeak loads, the CO limit of 0.17 lb/MMbtu must be met on a thirty-day (30-day) rolling average basis, as monitored by a CO CEMs. During the annual stack testing which would be done at peak load, Hu Honua will be demonstrating compliance with the 0.176 lb/MMBtu CO limit but based on short-term averaging period (3 hours). Total emissions over the year would not exceed the 250 tons per year PSD limit. It should also be noted that Hu Honua may also burn biodiesel fuels at nonpeak loads which have an even lower CO emission factor of 0.055 lb/MMBtu.

<u>Basis for CO limit averaging time</u>
The following provides information that was considered for establishing the proposed averaging time for the CO limit and conditions above. There are four (4) primary regulatory drivers that have been considered in determining the CO emission limits.

1) PSD Major Source Threshold.

As shown in HAR §11-60.1-132, the requirements for a Prevention of Significant Deterioration (PSD) review are applicable to any “major stationary source” or “major modification” as defined in HAR §11-60.1-131. The major stationary source threshold for a non-fossil-fuel-fired boiler is 250 tons per year of any regulated air pollutant. The emissions of CO from the proposed boiler operation will be controlled to below 246.4 tons per year, as limited by special conditions set in Section C.1 of the draft CSP. This regulatory driver is an annual threshold limit. Thus, continuous monitoring using a long averaging time for compliance determination is appropriate.

2) Top-Down BACT Analysis.

The top-down BACT analysis included review of clearinghouse BACT determinations of CO emission limits for biomass fired boilers (see Appendix A of *Top-Down BACT Analysis for Biomass-Fueled Boiler*, December 2010). Averaging periods noted in these determinations ranged from 1-hour to 12-month rolling average limits. The most frequently adopted averaging period is a 30-day rolling average. With the exception of one (1) plant that has not yet operated, limits set on a short term 1-hour average basis were mass limits (lb/hour) versus a concentration (ppmv) or emission rate (lb/MMBtu). Others with 4-hour or 24-hour averaging periods were higher emission rates than those proposed for the Hu Honua facility.

3) Proposed Area Source MACT.

The proposed Boiler Major Source (Subpart DDDDD) and Area Source (Subpart JJJJJJ) MACT standards set limits for CO emissions as surrogates for organic HAP compounds. Compliance with these limits is based upon continuous monitoring and a 30-day rolling average. The rationale for this decision is documented in *"MACT Floor Analysis (2010) for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants – Major Source"*

"For combustion-based emissions, such as CO, formaldehyde, dioxin/furan, and total hydrocarbons, the formation of emissions are dependent on the design of the combustion unit; the MACT floor emission limits for CO and dioxin/furan are subcategorized according to combustor design for boilers burning solid fuels. However, the emissions can fluctuate with changes in the operating rate of a boiler, or "boiler load." Boiler load was divided into two subcategories, depending on the role of a boiler at a facility. A boiler providing a relatively constant amount of steam to a facility is considered a "base-loaded" unit, and a boiler that adjusts its operating parameters to meet varying levels of demand in a plant over time is referred to a "load-following" unit. Stack tests for CO are conducted at near full-load conditions, and although the MACT floor limits based on stack test results achieved when operating at or near full load, the MACT floor emission levels for CO might not be achieved when best performing units are operating at lower loads. For units greater than 100 MMBtu/hr, the proposal required units to demonstrate compliance with emission limits by using a CO continuous emissions monitoring system (CEMS) and calculating a 30-day rolling average."

Typical daily boiler operation proposed by Hu Honua involves fourteen (14) hours at peak load and ten (10) hours at low load firing conditions.

4) NAAQS and SAAQS.

In addition to the regulatory drivers, dispersion modeling results presented in the revised CSP Application show 1-hour and 8-hour concentrations that, when added to background CO levels, are well below the NAAQS and SAAQS. Below are results of CO emissions modeling included in the revised CSP application

Maximum Modeled CO Concentrations

Pollutant	Maximum Modeled Conc.	Background Conc.	Maximum Total Conc.	Hawaii Standard		Federal Standard	
CO	(μg/m^3)	(μg/m^3)	(μg/m^3)	(μg/m^3)	% of Std	(μg/m^3)	% of Std
1-Hour	223.4	4,343	4,566.4.4	10,310	44.3%	40,000	11.4%
8-Hour	31.8	1,183	1,214.8	5,041	24.1%	10,000	12.1%

While permitting analysis must demonstrate that the NAAQS and SAAQS will be met, modeling of the proposed peak mass emission rate of 71.6 lb/hr demonstrates that the resulting CO emission concentrations are well below these standards, thus these standards are not the critical driver setting the low CO emission limits in the draft CSP.

Startup, Shutdown, and Malfunction

- A careful and critical review of the supplied emissions inventory discloses the omission of a number of predictable emissions events that should be included in the source's PTE. When properly included in the PTE, the source will likely exceed the PSD major source thresholds for CO, SO_x, and likely NO_x. Startup, Shutdown, Maintenance and Malfunction Emissions Must Be Included in Permit Parameters

- The State improperly minimized Startup emissions, and ignored shutdown emission from either predicted emission calculations, operational limits, and control requirements.

- Where startup emissions cannot be quantified by the manufacturer, such as with the retrofitting of old equipment as in this application, reasonable worst case estimates should be provided. In the absence of specific emissions quantification and correlative permit limitations, these emissions are unpermitted and are not properly considered in the facility's PTE.

- The revised permit is defective for failure to specify emissions limits for startup, shutdown, maintenance and upset emissions. These emissions are not included in the PTE, causing the source to be improperly considered a synthetic minor source.

- The Proposed Permit conditions must require comprehensive monitoring and immediate reporting of all Startup, Shutdown, and Maintenance emissions.

- The commenter requests performance testing during startup, shutdown, and malfunction.

- Additionally, using a 30-day rolling average and eliminating startup and shutdown times from the monitoring periods ensures that the emissions of NO_x, CO, VOC and HCL will be greater than permitted.

- Although the duration of startups (times when emissions are not monitored) is stated, there is no limit on the number or frequency of startups, allowing Hu Honua to violate the emission maximums on a regular basis.

Response:
The air permit application, and hence the draft permit, account for the expected number of start-ups in a year. The permit application presents annual emissions that are based upon boiler heat input rate at normal operations with a ten (10) percent factor added for conservatism. The total annual emissions also include emissions from three (3) startups using biodiesel (see footnote (a) under Table 3-3 of the permit application). The air dispersion modeling uses these emissions for the annual average concentration predictions and so the startups are also represented in the air dispersion modeling results. While Hu Hunua plans to stay within the parameters specified in the permit application, Hu Honua will accept a fuel consumption limit of 2,800,000 MMBtu/yr per year burning biomass and biodiesel during normal operations to ensure that plant utilization does not exceed the stated emission levels in the permit application.

Also, as shown in Table 3-2 of the permit application, biodiesel emission factors are lower than the biomass emission factors and the plant will operate at low fire during startup, so startup emissions are expected to meet the mass emission limits specified in the permit conditions. In addition, during a shutdown, emission controls are expected to be operating optimally and so emission limits would not be exceeded during a shutdown.

If a malfunction were to occur, Hu Honua would act to minimize emissions from a malfunction. In fact, the current draft permit conditions specify planning, monitoring, and reporting requirements to minimize emission during startup, shutdown, and malfunctions. For example, the permit specifies the need to develop a startup, shutdown, and malfunction plan (SSMP) that would describe procedures for "operating and maintaining the boiler during periods of startup, shutdown, and malfunction; and a program of corrective action for malfunctioning process, air pollution control, and monitoring equipment used to comply with the emission limits…" This same provision requires records to document actions taken during a startup, shutdown, or malfunction. If the SSMP is not followed and emission limits are exceeded, Hu Honua would be required to notify DOH within two (2) working days followed by a written report within seven (7) working days. If the SSMP is followed, but a limit is exceeded anyway, a report must be submitted to DOH identifying actions taken to minimize emissions and a description of the malfunction. At the same time, the permit requires that DOH be notified as soon as possible of a malfunction or breakdown that results in emissions exceeding the permit limits. This must be followed in writing within five business days, with details regarding the malfunction or breakdown. In addition, the permit requires submittal of an Excess Emissions and Monitoring System Performance Report and Summary every six (6) months. The report identifies excess emissions and monitor downtimes including during startup, shutdown, and malfunctions.

Also, Hu Honua will be required to submit an annual emissions report for each regulated pollutant including hazardous air pollutants. These emission reports will include emissions during startup, shutdown, and malfunctions (e.g. emission monitored through the CO, NO_x, and HCl CEMS). This will enable Hu Honua and DOH to verify that annual emissions do not exceed PSD levels.

The permit will be updated to incorporate the Startup, Shutdown, and Malfunction (SSM) requirements specified in the Boiler MACT for Area Sources.

The emissions of NO_x, VOC and HCl will be based on a three-hour (3-hour) average. The Department will be requiring a lower limit of 0.17 lb/MMBtu for CO when monitored by the CO CEMS and which will be based on a 30-day rolling average.

Hazardous Air Pollutant Impacts

- As a major source of HAPs the facility is subject to the major source MACT rule. The air permit application states that the Hu Honua facility's emissions of hazardous air pollutants (HAPs) are 23.8 tons per year. This emission estimate is based on the incorrect method for calculating potential to emit, however. Assuming a proportional increase in HAPs emissions if potential to emit were calculated correctly, the facility's emissions will be about 30.3 tons per year, putting it over the major source threshold. Even assuming the facility did control heat input to 2,800,000 mmbtu/yr, the daily cycling between high and low load is likely, as the applicant notes, to cause firing instability and possibly poor combustion conditions. This means that it is not only extremely likely that CO emissions will be higher than the applicant has stated, but that emissions of organic HAPs, which co-vary with CO emissions under poor combustion conditions, have also been understated. The application already admits to a greater emissions of formaldehyde (at 6.1 tons/yr) than HCl emissions (5.47 tons/yr), an organic HAPs emission rate that is outstandingly high. Thus, the applicant's own data appear to indicate that even at a reduced heat input, this facility will be a major source of HAPs.

- As a major source for HAPs, the Hu Honua facility is required to comply with EPA's new boiler MACT rule, which sets allowable filterable PM emissions for new biomass facilities at 0.0011 lb/mmbtu, and HCl emissions at 0.0022 lb/mmbtu. If EPA's other emissions limits, for CO, dioxins, and mercury, are more stringent than those included in the permit, the permit must require compliance with those as well. Hu Honua has committed to maintaining its current emissions standards, if the boiler MACT rule standards are less stringent.

- Mercury emissions are of concern and must be addressed. The Hu Honua plant will emit approximately 10 pounds of mercury a year. Considering the adiabaticrain-out effect of the rising slopes of the volcano located just 15 – 20 miles from the plant, it seems likely that local deposition of mercury could be unusually high in this region. However, the plant's air permitting application states that it is proposing zero controls for mercury emissions. The amount of mercury to be emitted by this plant is a serious public health concern and should be addressed by the agency.

- Emissions from the proposed biomass plant threaten all of this new [residential] activity.

- Stating that "this facility is no longer a major source of HAPs" is a gross misrepresentation. Just because Hu Honua has manipulated some figures does not make it so. Without frequent testing (surely more often than once a year) there is no guarantee that hazardous pollutants will not exceed minimal levels of safety. This is especially crucial since the facility will operate in a residential community with families living adjacent to the plant.

- Most significantly, the revised draft permit does not address the safety of residents living close to the plant — within 300 feet in some cases and several within 2,000 feet.

Response:
In a letter dated 23 February 2010, ERM responded to DOH's request (12 January 2010) for additional information regarding hazardous air pollutants (HAPs) emissions and impacts. As part of this response, ERM performed atmospheric dispersion modeling to estimate the potential for offsite impacts due to HAP emissions. The modeling analysis was performed using the same methodologies as were used for the criteria pollutant modeling. The additional information
(23 February 2010) describes the methodologies used, as well as the analysis results.

Maximum modeled 8-hour and annual HAP concentrations were assessed for compliance with Hawaii Administrative Rules (HAR) §11-60.1-179(c)(1) and §11-60.1-179(d)(3). Table A.1 of the 23 February 2010 additional information summarizes maximum hourly (used for 8-hour analysis) and annual average emissions rates for each HAP.

Table A.2 of the 23 February 2010 additional information identifies HAPs that have been identified as human carcinogens by the EPA. Maximum carcinogenic risks were estimated utilizing unit risk factors obtained from the EPA Region 9, Regional Screening Levels (SLs) (formerly Preliminary Remediation Goals) Master Table (December 2009). The EPA considers the SLs to be protective of humans over a lifetime, including sensitive groups. The calculated cancer risks were compared to the risk threshold of 10 in one million, as identified in the DOH rule HAR§11-60.1.179(c)(3). All calculated cancer risks are below the ten in a million thresholds. The maximum cancer risk due to the exposures of all identified carcinogens is less than 1 in one million, less than ten (10) times the DOH significance level. This means that if

there were a local population of 1 million people, less than one individual would be expected to contract cancer due to exposures to HAPs emitted from the Hu Honua Bioenergy facility.
For the analysis of non-carcinogenic HAPs, pollutant concentrations were compared to pollutant specific threshold limits. If chemical concentrations are below threshold limits, no adverse health effects are expected due to exposures to HAPs. As required by DOH, maximum 8-hour concentrations were compared to the 1/100 of the TLV-TWA threshold limit values as listed in the 2009 Documentation of the Threshold Limit Values and Biological Exposure Indices, published by the American Conference of Governmental Industrial Hygienists (ACGIH). Maximum annual concentrations were compared to 1/420 of the listed TLV-TWA threshold limit (ACGIH). As summarized in Table A.3 of the 23 February 2010 additional information, the analysis shows that modeled 8-hour and annual average concentrations do not exceed pollutant-specific threshold limit. Furthermore, all TACs analyzed for non-carcinogenic health effects were less than five (5) percent of their specified threshold.

With the additional control efficiency by using a baghouse, the Hu Honua facility is considered an area source of HAPs. The Department of Health will incorporate provisions of the area source Boiler MACT in the proposed permit.

Based on the detailed modeling and HAPs analysis, mercury emissions were found not to be significant.

The higher level of HAPs control (in particular HCl control) will be achieved through the use of additional sorbent injection combined with the use of a baghouse. A HCl CEMS will be in place along with the need to do annual stack testing for HCl. Wood analysis will also be done on a quarterly basis and will include measuring the chlorine content of wood.

Biodiesel Information

- There are many differing emissions possibilities depending on what type of biodiesel will be used – each fuel used should be analyzed, modeled and dealt with independently at the maximum level allowed for it.

Response:
Biodiesel will be sourced on the open market and will be required to meet the ASTM specification #D6751-09 for B100 grade S15 biodiesel.

Wood Biomass Fuel Consumption Rate

- Calculation of wood heat input is incorrect and underestimates wood use. The permit states that the amount of heat input to the boiler is based on the amount of wood fuel. It then explains how the capacity factor will be calculated for wood fuel, by relying on its lower heating value.

- This approach fails to meet current standards in the industry, and should not be allowed to form the basis for the permit. Since the lower heating value of green wood is less than the higher heating value, this condition will inevitably obscure the actual amount of wood used at the plant, and to the extent that is designed to limit heat input to 2,800,000 mmbtu/yr, it will significantly underestimate the actual heat input to the boiler and the amount of wood burned. By definition, “heat input” to a biomass burner is calculated using the higher

heating value of fuel. The permit must be rewritten so that the amount of fuel used to achieve boiler heat input rating is reflected accurately.

- Hu Honua most likely will need additional burn material per power unit generated, resulting in elevated discharge levels. These elevated levels will very likely exceed EPA minimum standards.

Response:
In order to be consistent with the calculations in the permit application, the Department will be specifying the higher heating value of wood versus the lower heating value of wood referenced in the permit. Therefore, the 2,800,000 MMBtu/yr limit will be based on the high heating value of the wood.

Hu Honua has based its calculation of the heat input demand and wood biomass fuel consumption rate of the boiler on planned operational scenarios and wood moisture content that are bound by contracts that Hu Honua is making with its fuel suppliers and supply of electricity to HELCO dispatch. Hu Honua will not be allowed to operate the plant at full load conditions for 24 hours per day, 365 days per year. Hu Honua will accept a fuel consumption limit of 2,800,000 MMBtu/yr in the revised draft permit to ensure that plant utilization does not exceed the stated emission levels ithe permit application and PSD thresholds are not exceeded. This limit reflects expected maintenance requirements for the plant, the projected HELCO dispatch and load profile, and results in a projected maximum heat rate of the plant, since it is expected to operate under low load firing conditions on a daily basis. In addition, Hu Honua has incorporated into its fuel supply contracts a requirement for four (4) weeks of field drying time as well as the right to reject any delivery to the plant of fuel containing over 45% moisture. Thus, the estimate of 260,000 tons of biomass fuel per year stated in the application is a reasonable estimate of the plant's fuel consumption capacity.

Effect of ESP on Formation of Dioxins and Furans

- The commenter argues that the ESP will increase the emissions of dioxins.

Response:
The EPA's National Center for Environmental Assessment is currently working on a comprehensive reassessment of dioxin and furan exposure and human health effects (see http://cfpub.epa.gov/ncea/CFM/nceaQFind.cfm?keyword=Dioxin). While this work is still undergoing review, their efforts find that the most critical factors associated with minimizing formation of dioxin and furan in combustion systems are maximizing complete combustion of the feed through good combustion practices, and assuring that combustion gases are quenched to below 200°C. It is the presence of products of incomplete combustion and residence time in a temperature window downstream from the combustion zone of a boiler where the combustion flue gas has cooled within a range of 200°C to 450°C that dictate whether dioxins and furans are most likely to form. While these conditions may exist within the longer residence times of ESPs at other facilities, this will not be the case at the Hu Honua plant. Hu Honua will install a continuous CO monitor that will help ensure that good combustion is occurring on a continuous basis. In addition, the boiler design provides sufficient heat recovery that combustion flue gases will be cooled to below 200°C prior to entering the ESP.

CEMs and Pollutant Monitoring

- Hu Honua is now proposing CEMs. This should not eliminate the need to take down daily readings as a recordkeeping requirement. There should be a daily limit for CO and all other hazardous chemicals since there is continuous monitoring and residential zoned property adjacent to this parcel and within 1000 ft of the stack. Remember certain members of the community supports this project because it creates jobs and for no other reason, so there is no excuse eliminating the recordkeeping aspect of best available technology.

- Continuous emissions monitoring for SO_x and particulate matter emissions are necessary.

- Annual source testing is inadequate to assure compliance. All startup emissions should be continuously monitored.

- Once enforceable emissions limitations are established for each pollutant stream, the CAA and the State program require adequate monitoring to assure continuous compliance. HAR §11- 60.1-1 (definitions). The CSP must assure compliance with each element of the emissions limitation and all other terms and conditions.

- Periodic reporting and monitoring methods that fail to assure continuous compliance with permit emissions limitations are inadequate.

- The commenter requests CEMS for all criteria pollutants and PM2.5 and HAPs.

- Items missing from the revised draft permit: Continuous emissions monitoring for Nitrous Oxides and Continuous emissions monitoring for ultra fine Particulate Matter 2.5 (the greatest concern for public health).

- While the addition of continuous emission monitoring system (CEMS) for HCl and CO has been added, Hu Honua has not included this monitoring for VOC, NOx , PM2.5, and PM10. Research indicates that VOC and PM10, and especially PM2.5, can result in a “stiffening” of the lung tissue and result in an individual becoming more susceptible to infections and pneumonia.

Response:
The proposed permit conditions would require a CO CEMS, HCL CEMS, and NO_x CEMS. These are continuous monitoring equipment that will record the measured data throughout the day, typically at least every 15 minutes. Thus, recorded measurements will be occurring more frequently than daily. The revised draft permit includes a 30-day rolling average limit for CO emissions. This means that measurements will be aggregated daily and averaged across the previous 30 days to show compliance with the CO limit. The HCl limit must be complied with continuously.

SO_2 limits will be added to permit conditions along with annual SO_2 source performance testing. PM source performance testing will be done on an annual basis. There is no applicable regulatory standard requiring monitoring of SO_2 and PM on a continuous basis.

There is no applicable regulatory standard requiring startup emissions to be monitored on a continuous basis.

There is no State regulatory requirement that requires CEMS to be installed to assure continuous compliance.

The New Source Performance Standards (NSPS) Subpart Db requires a continuous opacity monitoring system (COMS) to measure opacity (which is another indicator of PM levels) when a source is subject to the opacity limit of 20 percent. Consistent with this requirement, the permit conditions currently impose an opacity limit of 20 percent and also require the installation and operation of a COMS. A PM Continuous Emissions Monitoring System (CEMS) is not required under this rule as long as a COMS is installed. In addition, a NO_x CEM will be installed as part of a proposed urea injection system to control NO_x emissions

In addition to CEMS, emissions from the facility will be monitored through initial and annual stack testing of CO, NO_x, SO_2, VOC, PM, and HCl. DOH oversees stack testing by requiring Hu Honua to submit a test plan at least thirty (30) days prior to conducting a test and submit the results of the test within sixty (60) days of testing. An annual emission report identifying the annual emissions of each regulated pollutant, including HAPs, must be reported to DOH within sixty (60) days of the reporting year. In addition, the heating value of the wood is determined monthly and the chlorine content of the wood is determined quarterly. The wood analysis results must be submitted to DOH semi-annually as part of a larger semi-annual monitoring report.

HCl, Dioxins and Furans and Impacts from Salt on Trees

- Did new PTE/PSD calculations include consideration for salt spray effecting wood supplies?

- Bring the emissions from the source below HAP major source thresholds and as such Area Source HAP standards apply. The State has not responded to the previously-submitted evidence that HCl emissions will in fact likely be much higher due to the applicant's mischaracterization of the fuel stream and its chlorine content.

- Until that issue is responded to, the HAP and MACT status of the Project is unresolved since projected HCl emissions are based on averaging selective non-bark fuelstock and the Project Description indicates bark, with higher chlorine concentrations, will actually be part of the fuelstock. The HAP emissions inventory is just 1.4 tpy less than the HAP Major threshold of 25 tpy combined, reflecting the numerous hazardous air pollutants associated with this facility's emissions. Correcting the misleading chlorine concentration will likely cause the HAP total to exceed 25 tpy.

- Table 3-4: Cl Content of Eucalyptus Samples should be stricken from this application. It is an example of shoddy research and a massaging of data to justify outcomes.

- I appreciate the addition of continuous monitoring of some of the proposed biomass plant's emissions in the revised draft air permit, however, I remain distressed to see that DIOXINS and FURANS have not been addressed at all.

- Numerous acres surrounding the plant are now under food production. The possibility of DIOXINS entering the food chain must be addressed.

- Dioxin/furan emissions are high for a facility so close to residences and schools. At 5.75 grams per year, summed dioxin/furan emissions from the Hu Honua facility are significant. This is a large amount of dioxin considering that the community of Pepeekeo is located a very short distance downwind. The record appears to be devoid of information about how to minimize or mitigate these emissions. Fuel chlorine content is implicated in

dioxin formation, thus it is of concern that the permit conditions merely stipulate that chlorine content of fuel be tested, but fail to set dioxin limits. Additionally, it is of concern that the permit requires chlorine content of fuel to be represented on the basis of the lower heating value of wood. This is contrary to accepted practice and the permit should require an alternative method of representing chlorine that is consistent with sound practices.

Response:
The concern from the salt spray is the potential impact on the chlorine content of the wood. Wood analyses were conducted on samples from locations representative of the type of salt spray deposition exposure expected. Hazardous air pollutant modeling was conducted based on the wood analysis of these representative samples. The PTE/PSD calculations would not be affected as the chlorine content of the wood would not affect CO emissions.

Combustion of the chlorine in the wood may result in emissions of HCl, dioxins and furans. Salt laden wood may generate higher levels of HCl, dioxins, and furans than those that are not salt laden. It is expected that about one third of the wood for the Hu Honua facility will be near the ocean side of the main highway while the rest will be much further upland which would be less exposed to salt water. For those trees exposed, the salt deposition will be mostly on the leaves of the tree tops and outside of the tree canopy. Considering the trees will be allowed to dry for four weeks after cutting but before chipping, it's anticipated that most of the leaves will fall off prior to being chipped. Also, the wood used by the facility would be primarily the bole without the bark, and the bark of the wood would have higher chlorine content than the bole. For example, a sample of rose gum bole without the bark had a chlorine content of 0.01 percent (dry) while a sample of rose gum bole with the bark had a higher chlorine content of 0.04 percent (dry). And a sample of just the bark of rose gum had a chlorine content of 0.43 percent. To further reduce the chance of burning wood with a high chlorine content, Hu Honua is planning to test the fuel upon receipt and if the chlorine content is too high, the wood would not be accepted. It should also be noted that while wood used by Hu Honua may be exposed to salt water carried by the winds, the wood used by Hu Honua would not be stored in salt water.

Estimated emissions of HCl, dioxins, and furans, are presented in Appendix C of the application (including dibenzofurans and dibenzodioxins). The dioxins and furan emission rates were refined in a letter dated 23 February 2010 in response to DOH's request (12 January 2010) for additional information regarding hazardous air pollutants (HAPs) emissions and impacts. The refined dioxin and furan emission rates were based on an EPA study[1]. As part of this response, ERM performed atmospheric dispersion modeling to estimate the potential for offsite impacts due to HAP emissions. Maximum carcinogenic risks were estimated utilizing unit risk factors obtained from the EPA Region 9 Regional Screening Levels (SLs) (formerly Preliminary Remediation Goals) Master Table (December 2009). The EPA considers the SLs to be protective of humans over a lifetime, including sensitive groups. The calculated cancer risks were compared to the risk threshold of 10 in one million, as identified in the DOH rule HAR §11-60.1.179(c)(3). All calculated cancer risks were below the ten in a million thresholds. In fact, the maximum cancer risk due to dioxins and furans is estimated to be less than 0.01 in one million, well below the DOH significance level of 10 in one million. Based on this analysis, the impact from salt laden wood would have to be orders of magnitude greater than estimated to have a significant impact on cancer risk.

The uncontrolled HCl emission presented in the air permit application are based on the average chlorine content of four local wood samples collected over the past five (5) years. The analysis conservatively assumes all chlorine is converted to HCl emissions. In reality, some of the chlorine would be emitted as chlorine and not HCl. In addition, a portion of the chlorine would

be trapped in the fly and bottom ash (the fly ash being captured in the ESP). The HCl would be controlled using a sorbent injection if necessary to maintained levels specified by the final permit.

Additionally, emissions from the facility will be monitored through initial and annual stack testing of HCl. DOH oversees stack testing by requiring Hu Honua to submit a test plan at least thirty (30) days prior to conducting a test and submit the results of the test within sixty (60) days of testing. An annual emission report identifying the annual emissions of each regulated pollutant, including HAPs must be reported to DOH within sixty (60) days of the reporting year. The heating value of the wood is determined monthly and the chlorine content of the wood is determined quarterly. The wood analysis results must be submitted to DOH semi-annually as part of a larger semi-annual monitoring report.

Also see response "Effect of ESP on Formation of Dioxins and Furans" for more information on dioxin and furan formation and how to control such formations.

The expected reduction rate for HCl was provided by vendors of the appropriate control equipment.

Appendix D summarizes the chlorine content for four samples of wood. On a dry basis, the measured chlorine content was 0.044%, 0.042%, 0.103%, and 0.010% which would result in an average chlorine content of 0.05%. Converted to a 45% moisture basis, this is equivalent to an average chlorine content of 0.03%, which is the value used to calculate uncontrolled HCl emissions.

The proposed project will have stringent limits on CO and HCl emissions which are reflective of good combustion and chloride control. Good combustion, low chlorides, and relatively low flue gas temperatures prior to entering the ESP would suppress dioxin formation. And as shown in the HAP analysis, exposure to airborne dioxins are well below the significance thresholds recommended by DOH. Therefore, the probability of dioxins entering the food chain would be very low.

Factors associated with minimizing formation of dioxins and furans in combustion systems are maximizing complete combustion of the feed through good combustion practices. Low CO concentration is one indicator of good combustion. The permit limits CO concentrations, and a continuous CO monitor is required to be installed and operated that will help ensure that good combustion is occurring on a continuous basis. In addition, the permit includes a 0.004 lb/MMBtu HCl standard, which is not included in the final Boiler MACT for Area Sources. In order to be consistent with the calculations in the permit application, the Department will be specifying the higher heating value of wood versus the lower heating value of wood referenced in the permit.

PM_{10} and $PM_{2.5}$ Emissions and Impact Assessment

- The applicant should be required to explain why the facility cannot achieve a lower rate of PM. The draft permit indicates that using both an electrostatic precipitator and a baghouse, the facility can reduce its PM emission rate only to 0.024 lb/mmbtu. By comparison, using just a baghouse, the 38 MW Palmer Renewable Energy facility in Massachusetts has stated its PM emissions will be 0.019 lb/mmbtu. Given the proximity of communities and schools downwind of Hu Honua, the Hawaii Department of Health should adequately explain why

the emissions rate currently in the draft permit fails to reflect use of BACT for particulate matter.

- PM2.5 not included in the analysis.

- The identified pollutant FPM10 (filterable) fails to address all the "Un-filterable PM" that will settle into the lung tissue of all the surrounding residents. And what of the Un-filterable PM that escapes and contributes to even greater levels of PM2.5 from secondary formation?

- The lowering of boiler emission limits for PM, PM10, and HCL does not address the concerns re: PM2.5, the ultra fine particles that are of the greatest risk to health.

- Around five years ago the acceptable level of PM2.5 was reduced to 35ug/m3 from 65 ug/m3 (micrograms per cubic meter). The trend for the other pollutants has been to tighten the standards. Hawaii does not presently have state standards for this PM---one of 17 states out of compliance. With the addition of volcanic gas emissions, the standards in the state of Hawaii must be more stringent.

Response:
The Palmer Renewable Energy plans to use a fabric collector and a dry scrubber to reduce PM. They selected a filterable PM BACT level of 0.012 lb/MMbtu which is consistent with Hu Honua's BACT analysis. No precedent BACT emissions limitations for PM inclusive of both filterable and condensable fractions were found in the RACT/BACT/LAER Clearinghouse (RBLC) (see BACT analysis dated December 2010). The 0.025 lb/MMBtu identified in the permit conditions is based on total filterable and condensable PM being about twice the filterable fraction. While the Palmer Renewable Energy facility proposes a total filterable and condensable PM limit, the facility has not been constructed at this time. Therefore, there is limited precedence for a filterable and condensable PM BACT limit for a biomass stoker boiler.

Table 3-2 of the Hu Honua Application for New Covered Source Permit summarizes emission factors, in terms of lb/MMBtu, used to calculate boiler emissions of PM_{10}. For the purposes of the application, it was assumed that 100 percent of the PM_{10} is $PM_{2.5}$. Realistically $PM_{2.5}$ would be a fraction of the total PM_{10} emissions. Therefore, the assumption made in the application is an overestimate of $PM_{2.5}$ emissions.

Although ambient concentrations of $PM_{2.5}$ are not specifically regulated by SAAQS, the state of Hawaii is required to comply with the 24-hour average and annual average $PM_{2.5}$ NAAQS. As part of the Hu Honua Application for New Covered Source Permit, maximum daily and annual emissions of $PM_{2.5}$ were assumed to equal PM_{10} emissions. These same emission rates were used in the atmospheric dispersion modeling that was performed to estimate the potential for offsite impacts. This is a conservative assumption and thus overestimates offsite concentrations of $PM_{2.5}$.

Furthermore, recent EPA guidance provides a conservative approach for which a PM_{10} impacts may be used as a surrogate for $PM_{2.5}$ and states, "if a clearly conservative assumption is made that all PM_{10} emissions are $PM_{2.5}$, and the modeled PM_{10} impacts are taken as a direct surrogate for $PM_{2.5}$ impacts and compared to $PM_{2.5}$ NAAQS. If an adequate accounting for contributions from background $PM_{2.5}$ concentrations to the cumulative impact assessment can be made, and reasonable demonstrations that the modeled PM_{10} emission inventory adequately accounted for potential nearby sources of $PM_{2.5}$, then the appropriateness of surrogate could be

reasonably found" (modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, U.S. EPA, 2010).

The $PM_{2.5}$ modeling analysis performed for Hu Honua was performed using these same guidelines. Maximum modeled concentrations were added to existing ambient background concentrations of $PM_{2.5}$ and then compared to the 24-hour and annual NAAQS. As summarized in Table 5-9 concentrations of $PM_{2.5}$ are well below NAAQS.

For control of filterable PM_{10} (and thus $PM_{2.5}$), the two most stringent control technologies identified in the Top Down BACT Analysis dated December 2010, a fabric filter baghouse and an ESP, have both been incorporated into the project design as BACT in the revised application. Also, a separate filterable plus condensable PM limit is incorporated as part of the permit conditions.

Since Hawaii does not have a SAAQS for $PM_{2.5}$, the DOH implements the NAAQS for $PM_{2.5}$ of 35 $\mu g/m^3$ (24-hr) and 15 $\mu g/m^3$ (annual).

SO_2, VOC Emissions

- If the EPA has set a limit of 40 tons/year for VOC and SO_2 emissions it is precisely because higher emissions are clearly unhealthy for the environment and the surrounding population. The calculated emissions of 39.2 tons/year are only 2% below the BACT trigger and must not be accepted by the DOH. If the DOH goes along with this manipulation of the data, you will have to explain your position. The same problem applies to the calculated yearly emissions of carbon monoxide which comes in about 1.5% below the PSD trigger.

- The revised CSP does not subject SO_2 to best available control technology ("BACT") analysis. Emissions of 39.2 tpy are predicted, just barely under the 40 tpy BACT significance threshold. Operational biodiesel SO_2 emissions factors are identified in the revised Permit review Summary, but not included in the CSP itself. The emissions factors indicate the additional SO_2 emissions associated with startups and routine backup generator maintenance and nominal assumed operational use will add sufficient emissions such that the SO_2 BACT significance threshold is exceeded. The Project's SO_2 emissions are subject to a BACT analysis and the permit is defective for its omission.

- The permit must include a limit on SO_2 emissions. The draft permit as written improperly fails to include any limit on sulfur dioxide emissions. The applicant and the Department of Health should provide a complete explanation of the basis for this omission particularly considering that an emission limit for VOCs is proposed.

- Sulfur dioxide emissions from the Hu Honua facility may be of special concern. The facility's one-hour modeled impact of SO_2 is 12.8 ug/m^3, compared to a background concentration of 44 ug/m^3 – in otherwords, emissions from the facility would represent a further 29% above ambient SO_2 concentrations. This is a disproportionately large impact from a single facility, which warrants a top down BACT analysis for SO_2 emissions.

Response:
The air permit application presents emissions of SO_2 and VOC, both of which are regulated air pollutants. The SO_2 emission rate would be controlled to achieve a SO_2 emission rate of

0.028 lb/MMBtu which results in annual emissions of 39.2 tons per year. This annual emission rate is well below the Prevention of Significant Deterioration (PSD) threshold of 250 tons per year and below the significant level for a BACT analysis. Based on this emission rate, the air dispersion modeling predicted SO_2 concentrations that were less than 70 percent of the state or federal ambient air quality standards. To monitor SO_2 emissions, Hu Honua will need to sample and analyze wood fuel quarterly to determine, among other constituents, the sulfur content of the fuel. In addition, Hu Honua will need to submit an annual emission report to DOH identifying the emissions of each regulated pollutant, including SO_2. However, the permit will be revised to incorporate a SO_2 emission limit and an annual source performance test for SO_2.

VOC limits are specified in the draft permit. In addition, as with the other regulated pollutants, Hu Honua will need to submit an annual emission report to DOH quantifying annual VOC emissions.

Air dispersion modeling takes into account both background and project contributions. The project used background data from DOH. The level of impact is dependent on the total predicted concentrations. The modeling demonstrated SO_2 impacts in the vicinity of the plant (background plus project concentrations) are expected to be less than the health protective ambient air quality standards. Also, a BACT analysis is triggered if project emissions of SO_2 exceed 40 tons per year. Based on the emission estimates, SO_2 emissions would fall under this significance level. To ensure that SO_2 emissions will remain below this significance level, SO_2 emission limits will be added to the permit conditions.

Criteria Pollutant Modeling Methodologies and Results

- The current version of the application still uses data which do not apply to this location.
- There is still no effort in this application to inform the DOH of the exact location of nearby residences and of the demographics of the local area. The DOH should consider such information before making a decision on the conditions of this permit.
- Commenter believes that the applicant's modeling is biased and requests independent modeling.
- The commenter believes the monitoring stations used for background ambient concentrations are not representative.
- The commenter requests monitoring stations at the nearest residences.
- How is it that the Department recommends approval for a major source of air pollution (despite the manipulations to squeeze it into the smaller definition of “Area Source”) when such a vast source of known air pollution poses one of the biggest threats to human health and environment on our island given its location and the surrounding circumstances and history?

Response:
An ambient air quality impact assessment was performed to estimate offsite concentrations due to emissions from the proposed Hu Honua Bioenergy facility. The analysis included atmospheric dispersion modeling to simulate the downwind transport of air emissions from the proposed project. Section 5, of the Hu Honua Application for New Covered Source Permit

(ERM 2009), entitled Ambient Air Quality Analysis includes a description of the methodologies used for the air quality impact assessment and the resulting potential impacts. The analysis was performed using methodologies recommended by the EPA.

National Ambient Air Quality Standards (NAAQS) and State Ambient Air Quality Standards (SAAQS) have been developed to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. To help address air quality impacts due to new source of air pollutants, the EPA has developed modeling protocols, including atmospheric dispersion models, to conservatively simulate downwind transport of air pollutants from various source types. Specific modeling guidance, outlined in Appendix W (The Guideline for Air Quality Models, 2005) of the Federal Register, currently prefer and recommend the use of the AERMOD modeling system (http://www.epa.gov/ttn/scram/dispersion_prefrec.htm#rec) to estimate offsite pollutant concentrations due to facility emissions. AERMOD was developed by the American Meteorological Society/EPA Regulatory Model Improvement Committee (AERMIC) and contains three (3) main components: AERMET for processing meteorological data, AERMAP for processing terrain information and AERMOD for simulating the downwind transport of pollutants.

As described in Section 5 of the Hu Honua Application for New Covered Source Permit, the AERMOD modeling system was used in the air quality impact assessment. The modeling was performed assuming worst case operating conditions for estimating maximum offsite concentrations for various averaging times. Table 5-3 of the Hu Honua Application for New Covered Source Permit summarizes the boiler source parameters used as input to the dispersion model. In order to calculate potential offsite pollutant concentrations for the various pollutants and relevant averaging times, worst-case operating conditions were developed. The various averaging times for each pollutant were based on existing SAAQS and NAAQS. Emission assumptions for the various pollutants and averaging times are summarized in Tables 5-4 through 5-8 of the same document.

Specific input requirements for AERMOD include hourly meteorological data, which were used to represent local wind and temperature conditions, as well as other specific meteorological parameters required by AERMOD. The five year data set was prepared using surface and upper air data from the Hilo International Airport. As described in Section 5.2 of the Application for New Covered Source Permit, the data were processed using the AERMET software. To illustrate daily wind conditions, wind roses have been prepared to illustrate hourly average flows (see Attachment A). Each wind rose shows average wind direction and wind speed data as they occur during each hour of the day. There is one wind rose illustrating wind conditions from midnight to 1 AM, another illustrating wind conditions from 1 AM until 2 AM, and so on. As shown, night-time conditions are dominated by light south westerly winds. These conditions are due to drainage caused by the nightly cooled air forming at high elevations on both Mauna Loa and Mauna Kea. As temperatures rise during daylight hours, the persistent north easterly trade winds dominate during the afternoon and early evening. As such, the tradewinds, as well as night time and early morning drainage from the nearby Mauna Kea and Mauna Loa are accounted for in the atmospheric dispersion modeling analysis.

As described in Section 5.2.1 of the Hu Honua Application for New Covered Source Permit, the affects of aerodynamic building downwash (building turbulent wake effects) were considered as part of the modeling analysis. These wake effects can influence the localized dispersion of emissions from point sources located on roof tops and those located adjacent to the influencing building. The EPA has developed guidance for determining the area of influence around each building. The area of influence is defined as an area around a structure equal to five (5) times

the length or width of the building (whichever is less). Any point source (stack) that is located within the zone of influence must be evaluated for building wake effects. As illustrated on Figure 5-5 of the Hu Honua Application for New Covered Source Permit, the buildings included in the building downwash analysis are the boiler house, boiler equipment (extending eastward from the boiler house), steam turbine house, diesel generator, and the storage building. The boiler stack is not located within the zone of influence for any other buildings in the vicinity. Please refer to the Hu Honua Application for New Covered Source Permit for further description of the downwash analysis.

Offsite pollutant concentrations were calculated using a wide-spread receptor grid which extends from the property boundary to a distance of 10 kilometers (6.2 miles). This included over 6,300 receptor locations. Pollutant concentrations were estimated at locations including residential locations, nearby schools, undeveloped areas and nearby businesses. Pollutant concentrations reported in the Hu Honua Application for New Covered Source Permit were at receptor locations where maximum modeled impacts were calculated. Concentrations at all other receptor locations were lower, and therefore, potential air quality impacts are also expected to be lower. To illustrate compliance with the NAAQS and SAAQS, modeled concentrations were added to available worst case background pollutant concentrations available through various monitoring locations operated by DOH. The EPA has requirements that ambient monitors be placed in areas where high pollutant concentrations are expected. Due to local volcanic activity on the Island of Hawaii, there are six monitoring stations that monitor levels SO_2, including two located on the eastern side, near the Hu Honua project site. Concentrations of other criteria pollutants, including CO, PM_{10}, and NO_2, are collected on various other islands throughout the state of Hawaii. Ambient air quality monitoring stations for these pollutants are generally sited in populated areas where concentrations of air pollutants are expected to be higher than at rural locations. The monitored concentrations used in the impact analysis are conservative and represent higher background concentrations than would be expected to occur at or near the proposed Hu Honua facility. By using these data in the analysis, total concentrations of criteria pollutants have been overestimated. As all concentrations due to operations of the proposed facility remain below all SAAQS and NAAQS, no adverse effects are expected due to operations at the facility. A summary of modeling results is included in Table 5-9 of the Hu Honua Application for New Covered Source Permit. The results show that maximum modeled concentrations (plus background) are well below both NAAQS and SAAQS. Figure 5-6 of the Hu Honua Application for New Covered Source Permit, illustrates the locations of maximum criteria pollutant concentrations which occur between 100 meters and 1,000 meters west of the property boundary (west-southwest of the Hu Honua boiler stack) at non-residential agricultural locations.

Representativeness of Hilo International Airport Meteorological Data

- It is my opinion that the wind rose from Hilo Airport does not reflect the conditions in Pepeekeo. The DOH should require the production of an on site wind rose over a period of one year so that this information could be used in calculating the dispersion of the emissions.

- The commenter believes the meteorological data used are not representative.

- There are still no requirements for a study of wind directions. The information provided in the permit application from the Hilo airport are not accurate for Pepeekeo where the plant is located.

- No baseline collection of air data has been completed.

- Using air data from the Hilo Airport or Oahu is not acceptable.

Response:
The wind roses (Figures 5-1, 5-2, and 5-3) illustrate the wind conditions used for the atmospheric dispersion modeling and impact assessment. The EPA recommends that five (5) years of meteorological data be used for atmospheric dispersion modeling and should be adequately representative of the area wind patterns. The data can be either site specific or from a nearby National Weather Service (NWS) monitoring station. There are no onsite meteorological data available, but five years of NWS meteorological data collected at the Hilo Airport have been found to be representative for the use in atmospheric dispersion modeling for purposes as discussed below.

Both the Hilo Airport and the proposed Hu Honua Bioenergy Facility are located along the east coast of the Island of Hawaii. As such, daily winds patterns are influenced by the same major geographic features, the elevated terrain to the west and southwest, and the northeasterly trade winds. Attachment A includes 24 hourly wind roses, one representing wing speeds and wind directions for each hour of the day. The major geographic features to the west, specifically Mauna Loa and Mauna Kea, produce nighttime drainage flows, caused by cooled air at the peaks to flow down to the lower elevations below. This causes the west-southwesterly wind directions observed in the windroses from 7 pm to 9 am. During daytime conditions, the temperatures overland rise and allow the trade winds to dominate with northeasterly winds, as seen in the 9 am to 7 pm windroses).

Boiler MACT for Area Sources

- Now that the EPA has promulgated these MACT regulations, the Hawaii Dept. of Health (DOH) must require a newly revised application from Hu Honua before a permit can be considered.

- Area Source HAP regulations adopted today mandate imposition to manufacturer's recommended procedures for startup and shutdown periods. Table 2 to 40 Code of Federal Regulations Part JJJJJJ (76 Fed. Reg. 15602, 3/21/2011). These are not included in the application or publicly available information.

- Commenter requests MACT controls.

- This plant with the levels of hazardous gasses emitted must be classified as a major source, thereby triggering additional standards to be met for the public's safety, and a more thorough application process.

Response:
Overall, the application and draft condition are consistent with the recently promulgated Area Source Boiler MACT. In fact, the emission limits and monitoring equipment are consistent with Area Source Boiler MACT. Additional changes will be made to the permit conditions to ensure the specific details of the MACT are incorporated.

Since the Boiler MACT for Area Sources, 40 CFR Part 63, Subpart JJJJJJ, has become final, the permit will be updated with its requirements.

A higher level of HCl control will be achieved through the use of additional sorbent injection combined with the use of a baghouse. As a result, total HAPs emissions will be less than 25 tons per year and emissions of any individual HAPs will be less than 10 tons per year. Below these levels, US EPA considers a source to be an area source for HAPs. The boiler is subject to the Boiler MACT for Area Sources, 40 CFR Part 63, Subpart JJJJJJ.

VOG/SO_2 Attainment

- The vog also contains a lot of particulate matter which must be factored into the total emissions of particulate matter. Perhaps the boiler has to be required to shut down during periods of heavy vog.

- Hu Honua's application must be viewed in the context of high background concentrations of $PM_{2.5}$ and SO_2 air pollution.

- DOH cannot ignore background conditions, in particular the last several years where the volume of natural air pollution is increasing substantially, and ignore this situation in approving yet more air pollution and degraded air quality immediately adjacent to a residential area.

- Instead the Big Island should be designated based on factual air quality accounting for Vog as it is and has been for years. Designate appropriately as NOT an attainment, (see Item #2, Finding Failure to Submit State Implementation Plans for Interstate Transport for Fine Particulate Matter). This failure by our state needs to be corrected!

Response:
The total contribution of particulate matter from this power plant is minuscule compared to the particulate matter from vog.

Air dispersion modeling takes into account both background and project contributions, and the background levels are based on data approved by DOH. The level of impact is dependent on the total predicted concentrations. The modeling conducted demonstrated PM and SO_2 impacts to be less than significant. Currently, the area is designated as attainment to all NAAQS where sufficient data were available. Hawaii has remained in attainment for the SO_2 ambient air quality standards since episodes of VOG have been classified as exceptional events, such that the background SO_2 data does not include episodes of VOG.

HCl Control Efficiency/Ash Waste

- The capture of hydrogen chloride by the ash has magically increased from 71% to 94%. How is this possible? I also think that disposal of the ash will be a problem because high salinity may render it useless for agricultural purposes.

Response:
The higher level of control will be achieved through the use of additional sorbent injection combined with the use of a baghouse. Since the DOH Solid Waste Branch is responsible for the permitting of the disposal of ash waste, the DOH Clean Air Branch has no comments on whether disposal would be a problem or not.

Baghouse Information:

- Where is this baghouse located in relationship to the new stack?

Response:
The baghouse will be placed in series between the ESP and the stack.

- Will the baghouse be enclosed or be impervious to rain?

Response:
The baghouse will be within an enclosure, impervious to rain.

- What about baghouse fugitive dust and pollutants being released when the dust cake is removed?

Response:
The baghouse design will ensure that fugitive dust is minimized when the cake is removed by pulse jets. The ash will be captured in a hopper and periodically transferred to a closed container for transport.

- How will the baghouse dust cake be disposed of?

Response:
The dust cake from the baghouse will be predominantly made up of sorbent injected for emission control. The collected dust cake will be sent to a landfill until such time as it is certified for beneficial uses.

- A complete physical description of the baghouse and its operation is absent.

Response:
The permit will require the baghouse to be a B & W pulse jet fabric filter or equivalent.

Boiler Operations

- Is there still a plan to run the boiler at half power for ten hours at night?

Response:
It is expected that Helco will dispatch the unit in accordance with the load curve for the island. That will mean curtailment during the off-peak period. Load will be gradually decreased and increased during the shoulder periods (periods between peak and off-peak) and will be at the minimum (10 MW) for approximately four (4) hours each night.

BACT for VOCs and SO_2

- The permit must include BACT for VOCs and SO_2. Calculating emissions on the basis of 2,800,000 mmbtu of heat input also allows the applicant to avoid BACT for key pollutants. The emission rate for VOCs (0.028 lb/mmbtu) apparently was chosen to avoid triggering BACT, as was the emission rate for SO_2, which is identical to that for VOCs. However, it is important to note that while the current draft of the permit includes an emission limit for

VOCs, it does not include one for SO_2, even though the emission rate of 0.028 lb/mmbtu for SO_2 is discussed in the air application documents.

- At 0.028 lb/mmbtu, the emission rates for VOCs and SO_2 are more than double those found in several recently-issued permits for similar wood burning biomass facilities. For instance, emission rates in the air permit for the 38 MW Palmer Renewable Energy in Massachusetts are 0.012 lb/mmbtu for SO_2 and 0.01lb/mmbtu for VOCs. Conducting a BACT analysis would have resulted in more effective emissions controls for both VOCs and SO_2, resulting in increased benefits to public health and the environment.

- If the EPA has set a limit of 40 tons/year for VOC and SO_2 emissions it is precisely because higher emissions are clearly unhealthy for the environment and the surrounding population. The calculated emissions of 39.2 tons/year are only 2% below the BACT trigger and must not be accepted by the DOH. If the DOH goes along with this manipulation of the data, you will have to explain your position. The same problem applies to the calculated yearly emissions of carbon monoxide which comes in about 1.5% below the PSD trigger.

- The revised CSP does not subject SO_2 to best available control technology ("BACT") analysis. Emissions of 39.2 tpy are predicted, just barely under the 40 tpy BACT significance threshold. Operational biodiesel SO_2 emissions factors are identified in the revised Permit review Summary, but not included in the CSP itself. The emissions factors indicate the additional SO_2 emissions associated with startups and routine backup generator maintenance and nominal assumed operational use will add sufficient emissions such that the SO_2 BACT significance threshold is exceeded. The Project's SO_2 emissions are subject to a BACT analysis and the permit is defective for its omission.

Response:
A BACT analysis is not required for VOCs and SO_2, based on the estimated emissions being below the significant level for BACT. However, the permit will be revised to incorporate a SO_2 emission limit and an annual source performance test for SO_2.

BACT for $PM_{2.5}$

- Emissions limits can only be set AFTER DOH undertakes a BACT analysis for each pollutant stream, including SO_2 and $PM_{2.5}$ considering a full range of air pollution control technologies and proceeding through the NSR Handbook's Top Down BACT analysis process.

Response:
A BACT analysis was prepared for NO_x, CO, and PM_{10} (December 2010). BACT is not required for SO_2. The following regarding $PM_{2.5}$ is taken from the BACT analysis: "$PM_{2.5}$ constitutes a fraction of PM_{10} emissions and as such is generated and controlled in much the same way as PM_{10}. Regulation by USEPA of $PM_{2.5}$ is more recent than regulation of PM_{10}. Accordingly, precedent-setting BACT determinations are extremely limited for control of $PM_{2.5}$ emissions from biomass boilers. While determination of BACT for $PM_{2.5}$ emissions is not required, it should be noted that Hu Honua's proposed control technology of an ESP combined with a fabric filter designed to achieve less than 0.012 lb/MMBtu FPM_{10} employs what is considered the most effective control technologies for the control of $PM_{2.5}$.

BACT for Greenhouse Gases

- The Hu Honua permit should include a BACT analysis for greenhouse gases. As a "BACT anyway" source for criteria pollutants, and as a permit that is falling within the window of time when EPA is requiring Step 1 analysis and permitting for greenhouse gas emissions from biogenic sources, EPA and the Hawaii Department of Health should require a BACT analysis for greenhouse gas emissions at the Hu Honua facility. The facility will at a minimum emit 262,000 tons of carbon dioxide from wood combustion alone, and may also be a significant source of methane emissions from its chipped fuel pile. As such it is a major source for greenhouse gases.

Response:
The PSD and Title V Tailoring rule issued by the EPA on May 13, 2010 establishes GHG emissions thresholds for major sources (PSD and Title V) and major modifications (PSD). GHGs will become subject to review under PSD beginning on January 2, 2011. On that date, GHG emissions from projects that have not received permits would be subject to PSD review if: 1) the project is for new stationary source which is a major source for a PSD regulated pollutant other than GHGs and the project has a Potential to Emit (PTE) of 75,000 tons/year or more of CO_2e; or 2) the project is for a new or modified emission unit at an existing source that is "otherwise" subject to PSD review for regulated pollutant other than GHGs and the project would increase CO_2e emissions by 75,000 tons/year. Beginning July 1, 2011, PSD permitting requirements will extend to include projects that trigger PSD solely for GHGs if the project: 1) is a new stationary source that has a PTE of 100,000 tons/year or more of CO_2e, or 2) is a modification at an existing PSD major source and the project would result in an increase in CO_2e emissions of 75,000 tons/year.

Hu Honua has applied for a permit for a new stationary source, but that source has not triggered PSD review because it is not a major source for a PSD regulated pollutant other than GHG. Thus, this facility does not fall within the first set of permitted sources that are subject to this newly adopted rule. The second phase of this rule has been postponed because on July 1, 2011, the EPA finalized it's deferral for CO_2 emissions from bioenergy and other biogenic sources under PSD and Title V programs for a period of three (3) years.

Also, Biomass power plants that burn tree wood are carbon neutral, in that the CO_2 emitted from wood combustion is ultimately displaced by CO_2 taken from the atmosphere by replacement trees.

Information issued by US EPA on biomass power indicates that EPA generally considers biomass power to be a carbon-neutral power source:

- According to EPA: "Although the burning of biomass also produces carbon dioxide, the primary greenhouse gas, it is considered to be part of the natural carbon cycle of the earth. The plants take up carbon dioxide from the air while they are growing and then return it to the air when they are burned, thereby causing no net increase." (http://www.epa.gov/cleanenergy/energy-and-you/affect/non-hydro.html)

- Furthermore, according to EPA: "Carbon sequestration is the process through which plant life removes CO_2 from the atmosphere and stores it in biomass. Over the course of a year, plants remove and release CO_2 and net sequestration results if the rate of removal is higher than the rate of release. Young, fast-growing trees in particular will remove more carbon

dioxide from the atmosphere than they will release."
(http://www.epa.gov/climatechange/emissions/co2_human.html)

EPA has also recently embarked on a three-year (3-year) research effort to study details of the carbon lifecycle for biomass energy and biofuels, which will form the basis for subsequent policy and regulatory refinements on biogenic CO_2 emissions. New rules issued late in 2010 by EPA regulate, for the first time, CO_2 emissions from fuel combustion under EPA's air permitting programs (PSD and Title V).
[75 FR 238, December 13, 2010]

Significantly, however, EPA has fully exempted from such regulation, CO_2 emissions from biomass combustion, at least through the duration of the three-year (3-year) study period.
[http://www.epa.gov/nsr/ghgdocs/bioenergynprm.pdf]

Further to the point, EPA has indicated that combustion of biomass fuels may in itself be considered Best Available Control Technology (BACT) in some permitting jurisdictions for *abatement* of CO_2 emissions.
[http://www.epa.gov/nsr/ghgdocs/bioenergyguidance.pdf]

WHO Standards

- It is important to note that the World Health Organization standard for SO_2, at 20 ug/m^3 and about 8 ppm, is considerably lower than EPA 24-hr NAAQS for SO_2, at 365 ug/m^3 or 140 ppm.

Response:
The Clean Air Act, which was amended in 1990, requires EPA to set National Ambient Air Quality Standards (40 CFR Part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

NH_3 Emissions

- Ammonia emissions are inexplicably high. The draft permit states that the facility will emit 38.3 tons of ammonia per year. This figure is inexplicably high for a biomass electricity generating facilities of this size. For example, the 116 MW(gross) Gainesville Renewable Energy facility in Florida is projected to emit 37 tons of NH_3. The 38 MW(net) Palmer Renewable Energy plant in Massachusetts will emit 13.4 tons of ammonia. The applicant should be required to provide a full explanation of why ammonia emissions at the Hu Honua facility total 38.3 tons per year. The applicant should also explain the effect this ammonia level has on the estimation of condensable particulate matter.

Response:
The emissions are based on a NH_3 concentration of 40 ppm at 3% oxygen. While ammonia would be emitted from the SNCR that is used to control NO_x, ammonia is not a criteria or hazardous air pollutant and is not regulated by DOH. The ammonia slip limit specified in the permit also did not exceed the odor threshold for ammonia.

Fugitive PM Emissions from Trucks

- The permit conditions for control of fugitive emissions fail to meet current practices compared to those at other comparable facilities in the United States, where, for instance, street sweeping and street watering are often imposed as a means of reducing dust from trucks. The Department of Health should use the full range of state air pollution control and public health laws to address the issue of fugitive emissions for the protection of public health.

Response:
The permit condition for controlling fugitive dust from trucks does include wet suppression methods. The permittee is responsible for controlling fugitive dust and emissions beyond their property line.

HCl Emission Rate

- The applicant should be required to explain why the HCl emission rate is expressed in terms of "lower heating value" since this appears to lack a sound scientific basis. The applicant should be required to explain what is referred to by the "lower heating value." The "mmbtu" term in the units for emission rates refers to the heat input rating of the burner – there is no "lower heating value" for the burner.

Response:
The Department will be removing the "(lower heating value)" term in Attachment II, Special Condition No. G.1.b.ii.(2).

Biodiesel Use

- The permit and application contain conflicting information on the amount of biodiesel used. The document titled "review.draft.dl", with review by Darin Lum in February 2011, states:"While only wood will be burned at full load, at lower loads during normal operation(approximately 60% of maximum load or less), wood pellets or biodiesel may be burned. Given the relatively low heat content of the unpelletized wood, wood pellets or biodiesel may be needed to stabilize the fire in the boiler at the lower loads."

- This suggests that the total potential use of biodiesel is 137,350 mmbtu per year, using the applicant's calculations. Potential biodiesel use calculated correctly (i.e., assuming 8,760 hours of operation) is 149,650 mmbtu/year. Again using the applicant's numbers, and assuming the facility really did only fire 2,800,000 mmbtu of heat input per year, the total amount of biodiesel potentially used under this scenario would be 984,870 gallons annually. However, the permit contains the following stipulation, under Section D, "Operational Limits:" i. Biodiesel usage shall not exceed a maximum of 3,300 gallons per rolling twelve-month (12-month)period; The discrepancy between the figures of 3,800 and 984,870 gallons should be resolved. The applicant should be required to state whether or not the plant will routinely firing biodiesel. The permit should set operational limits on the amount of biodiesel to be used in normal operations, and not just startup conditions.

- The revised proposed CSP fails to include limitations on biodiesel heat input to the boiler, while the permit itself purports to limit total heat input to maintain synthetic minor permit

status. Biodiesel volumes and heat inputs must be monitored and reported to ensure permit limits are achieved and maintained.

- The presented pollutants in Table 3-3 (Page 9 of the original permit) had not changed, yet there has been a change in the fuel: In the revised permit the fuel is now a combined average of biomass and biodiesel.

Response:
The revised draft permit specifically states: "Biodiesel (S15) usage during startup shall not exceed a maximum of 3,300 gallons per rolling twelve-month (12-month) period." Additional biodiesel may be used at other low load conditions. An analysis was conducted demonstrating that even if only biodiesel is used (which is not a practical scenario), criteria pollutant and HAPs emissions are predicted to not have a significant impact. In fact, the criteria pollutant emissions are expected to be less under the scenario of burning all biodiesel.

The revise draft permit includes a combined heat input limit for the wood fuel and biodiesel of 2,800,000 MMBtu/yr. Records of the total gallons of biodiesel and total biodiesel heat input is required in Attachment II, Special Condition Nos. E.2.d.i.(4) and E.2.d.i.(5). Reporting of the total gallons of biodiesel and total biodiesel heat input is required in Attachment II, Special Condition No. F.6.a.i and F.6.a.v.

There is no change in the fuel that will be used. The emissions and air dispersion modeling has always considered the potential use of biomass and biodiesel.

Public Comment Period/Public Hearing

- The Notice of the Public Comment period states inappropriately that "The DOH will not be accepting further comments on the original draft permit and will only be considering comments on the proposed revisions to the draft permit." Notice, Docket No. 11-CA-PA-03 (emphasis added). This statement chills public participation by stating that certain comments may be not accepted by DOH. The state may not reject public comment - depending on its requirements and other issues, it may choose to not respond or give less weight to a comment, but under these circumstances, this statement is overbroad and has poisoned the integrity and viability of the recirculation process.

- By this letter, commenter requests the public comment period be extended by an additional 30 days. This extension is necessary to address the newly applicable standards for Area Sources of Hazardous Air Pollutants, 40 Code of Federal Regulations § 65, Subpart JJJJJJ. The Notice of Final Rulemaking was published in the Federal Register on March 21, 2011, the day that comments are due. Although these standards are not effective until May 20, 2011, the revisions to the CSP indicate they are applicable to this source. They are central to the revisions, since the source was previously a major HAP source. The Revision Summary establishes their applicability and identifies them as a "significant Permit condition."

- By this letter, commenter requests that a public hearing be convened to inform the affected and interested community about the specifics of the proposed revised permit and to take testimony from interested parties.

Response:
The procedures implemented to process the revised application and proposed revisions to the draft permit including the public participation proceedings were in accordance with the applicable state and federal regulations including Hawaii Administrative Rules, Chapter 11-60.1 and 40 CFR, Part 70. It should also be noted that the Department of Health on its own motion conducted a public hearing and extended the 1st comment period to 60 days, beyond the required 30 days to accommodate the community concerns. The 2nd comment period intentions were to limit the comments to the proposed revisions to the draft permit since the public already had sufficient time, 60 days versus the minimum 30 days, to provide comments during the 1st comment period. The 2nd comment period also went beyond the minimum 30 days (32 days) for public participation.

The Department is also denying an extension of the public comment period by an additional 30 days since the draft permit had already incorporated many of the boiler MACT requirements using the proposed boiler MACT as a guideline and at the time the public comment period had begun (February 17, 2011), the final Boiler MACT for Area Sources had not yet been issued.

The Department is also denying a request for a public hearing as the Department feels that a public hearing is unwarranted as it would not aid the decision making process.

Grandfathered Sources

- Improperly "Grandfathered" Sources. The applicant contends that they have "maintained in active status" all permits, despite having shut down all operations at the facility in 2004, and thereby may grandfather a very large older diesel generator (1120 bhp, vintage not supplied) without complying with current internal combustion engine emission standards.

Response:
The biodiesel generator is not subject to NSPS requirements because it was manufactured prior to April 1, 2006. As of September 16, 2010, the coal permit (Covered Source Permit No. 0229-02-C) has been closed and is no longer valid. Prior to this, the coal permit kept its permit status active by complying with the conditions of the permit including paying annual fees, submitting annual emissions and monitoring reports and submitting a complete renewal application on time. In addition, there was no determination that the facility permanently ceased operation or of enforcement actions revoking the permit.

Calibrating Source and Emissions Tests

- The proposed permit should be revised to include conditions ensuring that simultaneous source and fuel testing validates assumptions concerning mass balance and emissions' effect on ambient air quality. Emissions testing protocols must assure compliance at all times.

Response:
CO CEMS, NO_x CEMS, HCL CEMS, COMS, and emissions and fuel testing will be conducted to ensure the facility is compliant with emission and Btu limits specified in the permit conditions.

Compliance with BACT Limit for PM

- The revised proposed CSP contains conditions that are inadequate to assure compliance with BACT limits for particulate matter.

Response:
The revised draft permit requires an initial and annual source performance test for PM. CAM is not applicable for PM and there is no other regulatory requirement to require a PM CEMS.

CAM Requirements

- Similarly, Table 2, CAM, states that none of the pollutants are subject to federally enforceable applicable requirements, when clearly the permit itself imposes federally enforceable applicable requirements to maintain its synthetic minor source status.

- The revisions Summary incorrectly contends all pollutants are exempt from federally enforceable requirements except PM, while the permit, the SIP, federal rules (NSPS, NESHAPS, BACT standards and other emissions limitations) create federally enforceable requirements for each pollutant. The applicability of monitoring and reporting requirements must be reevaluated for all pollutants.

Response:
The Department of Health will revise Table 2 – CAM Applicability For Boiler, in the Permit Review Summary such that federally enforceable requirements are applicable for the pollutants of NO_x, CO, SO_2, PM and VOC, since the draft permit includes emission limits for NO_x, CO, SO_2, PM and VOC. CAM for the proposed project is only applicable for PM/PM_{10}, but will not apply until permit renewal since the post-control emissions are less than the major source threshold.

Classification Terminology

- The permit analysis mixes and switches between federal and state law requirements with little or no explanation or notice. Hence the CSP states that the facility is not a major stationary source (page 5 of Permit Summary), is a major source (pages 6, 7), and that it is not a synthetic minor source (id) when quite clearly the fuel usage limit achieves synthetic minor status.

Response:
The permit review summary refers to a major stationary source and major source as defined in HAR §11-60.1-1 and §11-60.1-131, respectively. A synthetic minor source is a source which would potentially be a major source, but because of federally enforceable permit conditions, is a synthetic minor source. A PSD synthetic minor source is a source which would potentially be a major stationary source (PSD), but because of federally enforceable permit conditions, is a PSD synthetic minor source.

Part 70 Issues

- Permit Notification Adequacy
  The Notice of Availability of Documents for the proposed permit action is defective, and therefore null and devoid of effect. HAR §11-60.1-99(b)(5)(I) requires the Notice to contain all information listed in paragraph (1), including the applicant's application information (HAR §11-60.1-99(b)(1)(B); the department's analysis (HAR §11-60.1-99(b)(1)(C); and other information (HAR §11-60.1-99(b)(1)(C)). Federal regulations require the Notice to reference materials set forth pursuant to 40 CFR §70.4(b)(vii), including the Attorney General's legal opinion demonstrating the State's authority to make the aforementioned information available to the public. 40 CFR §70.7(h)(2). The applicant's certification under CAA §503(e) is not referenced. In the absence of an index or posting of this information to the internet, as discussed supra, it is impossible to gauge compliance and creates an extraordinary burden on community commenters. As such, the proposed permit process is defective due to substantial inconsistencies between the procedures followed and the requirements of state and federal law.

Response:
HAR §11-60.1-99(b)(5)(I) states the notice of public comment and public hearing shall identify: (I) the availability of the information listed in paragraph (1), and the location and times the information will be available for inspection. The Department's public comment notice did comply with this.

- Public Comment Period
  The State allowed an extended public comment period for the initial permit, but truncated the period for the revised permit and delayed notification to commenters, materially limiting their continuing contribution. Despite an issuance date of the revised draft CSP on February 17, the copy mailed to commenter's counsel was postmarked February 23. Commenters requested that if the draft CSP was to be recirculated, that an extended comment period be provided. The State instead offered the bare statutory minimum.

- I am disappointed in the failure of DOH to acknowledge many of the concerns raised in earlier comments on this project.

Response:
The procedures implemented to process the application and permit including the public participation proceedings were in accordance with the applicable state and federal regulations including Hawaii Administrative Rules, Chapter 11-60.1 and 40 CFR, Part 70. A courtesy photocopy of the February 17 newspaper showing the public comment notice was provided to the commenter's counsel postmarked February 23, however, the Department of Health's website also provided this same information.

- Statement of Basis
  Part 70 regulations mandate that each proposed Title V permit be accompanied by a Statement of Basis that provides specific information regarding the permit and the data relied upon from the application, and permit conditions. 40 CFR §70.7(a)(5). Federal PSD Permitting regulations, 40 CFR §124.7 also requires the public statement of basis. Despite prior comment and request, this information has not been publicly supplied.

Response:
A Statement of Basis (draft review summary) has been made available to the public along with draft permit. Information was made widely available to the public as the Administrative Records were available for public viewing at the Department of Health Offices in Kona and Hilo. Also, the Department of Health has provided information if necessary by email.

- Prior Comments
  All prior comments should be incorporated here as commentor feels they were not adequately addressed in the proposed revisions.

Response:
The DOH plans to address all comments in the 1st and 2nd round of public comments. It should be noted that the procedures implemented to process the application and permit including the public participation proceedings were in accordance with the applicable state and federal regulations including Hawaii Administrative Rules, Chapter 11-60.1 and 40 CFR, Part 70.

Heat Input of Biodiesel

- To ensure compliance with this fuel usage limit, the revised Draft Permit includes conditions in Section E, Monitoring and Recordkeeping Requirements, and a new Monitoring Report Form for annual reporting of heat input to the boiler in MMBtu for biodiesel (S15) and wood fuel on a monthly basis and a rolling 12-month basis. However, the Draft Permit fails to include a condition for determining the heat input of biodiesel (in MMBtu/gallon) and a condition specifying how total biodiesel (S15) heat input to the boiler is determined and calculated (gallons per month × heat content).

Response:
The Department of Health feels that the permit condition as it is currently written is sufficient, no permit changes are necessary to calculate the heat value of biodiesel since the heat value varies very little for biodiesel and can be supplied by the manufacturer of the biodiesel. This is because the refining process and blending methods have no significant effect on energy content. The heat content for biodiesel varies little because the energy content of the fats and oils used to make biodiesel are similar. Biodiesel made from the most common feedstocks will provide the same fuel economy, power and torque. There is also no need for a permit condition to determine how the total biodiesel is calculated since it is a standard calculation.

NAAQS/SAAQS

- Since EPA says the NAAQS are inadequate to protect against all public health threats (http://www.epa.gov/nheerl/research/pm/), DOH should impose standards stricter than the NAAQS.

Response:
The State Ambient Air Quality Standards (SAAQS) are more stringent than the National Ambient Air Quality Standards (NAAQS) for NO_x, CO, SO_2, and H_2S.

Truck Emissions

- Diesel exhaust from biomass hauling is not included as part of the source emissions.

- Items missing from the revised draft permit: - Any requirements that address the pollution generated in the harvesting and transporting of the biomass.

- In closing, generating electricity from biomass generates airborne pollution from the thermal conversion facility, but also from the activities required to produce, process and provide the biomass. It is important that this is recognized in environmental evaluations of biomass power plants. Transportation to the plant, the harvesting and tractor transport being significant contributors as well.

Response:
The air permit process evaluates emissions generated with the property lines of the facility only. Exhaust emissions from the logging trucks within the property lines of the facility are exempt from air permitting requirements per HAR §11-60.1-82(d)(4), which exempts internal combustion engines propelling mobile sources such as automobiles, trucks, cranes, trains, helicopters, and airplanes.

Biodiesel Only Usage

- The commentor would like an analysis of the situation in which the plant runs biodiesel only and objects to the biomass plant being a biodiesel plant.

Response:
Firing the Hu Honua boiler solely on biodiesel would not create significant air quality impacts. The criteria pollutant emission factors for uncontrolled biodiesel combustion are even lower than those for controlled biomass combustion. Because criteria pollutant emission factors are lower for S15 biodiesel than for biomass, the impacts from combusting biodiesel will subsequently be smaller than the impacts of combusting biomass. The criteria pollutant emission factors for biomass and S15 biodiesel are shown in Table 3-2 of the permit application.

Impacts from Hazardous Air Pollutants (HAPs) vary for each specific HAP. A comparison of HAP emission factors for biomass and biodiesel combustion is shown in Attachment B. Of the HAPs emitted by both fuels, biomass emission factors are higher for two-thirds of the HAPs. Biomass also has emission factors for dioxins, furans, and polychlorinated biphenyls, while biodiesel does not.

Atmospheric dispersion modeling was performed to estimate the potential for offsite impacts due to Hazardous Air Pollutant emissions from the proposed Hu Honua Bioenergy Facility under two scenarios:

1) the boiler burning both biomass and biodiesel (as presented in the permit application); and
2) the boiler burning biodiesel exclusively.

The details of the analysis is shown in Attachment B.

New Source Classification

- The commenter argues that the legal argument for this being a new source is specious.

Response:
In general, emission limits are more stringent for new sources compared to existing sources. Therefore, by being treated as a new source, the facility will need to comply with more stringent standards.

Stack Height

- The revised permit does not address the safety, or lack thereof, of lowering the height of the stack to 140 feet. Although the application states that "lowering the stack height will significantly reduce its visibility", there is no evidence provided that such a lowering will increase the plant's safety. In fact, lowering the stack will most likely increase the pollution exposure of residents near the plant (which is already in a hollow). Keeping the emissions low will decrease their dispersion by wind over a broader area.

- The smoke stack will be lowered (per Hu Honua) resulting in particulate matter (PM) and VOCs (volatile organic compounds) being dispersed and settling-out closer to residencies nearby and to the town of Pepeekeo. This calculation of data should be reflected in the Draft 2 document.

- The "lowering" of the smoke stack will result in VOCs and PMs settling-out in areas closer to the power plant: The local residencies and town of Pepeekeo.

Response:
The modeling (which shows compliance with the NAAQS/SAAQS) was done based upon a stack height of 140 feet which was the original stack height for the biomass operation. The stack was extended to 190 feet when coal was burned. A new stack will be built to 140 feet.

Biodiesel Emission Factors

- Page 7 of the Hu Honua Review DRAFT 2 permit lists sources at Minimum Load, using a factor from the Minnesota Air Pollution Biofuels Report. No mention was made in the original application of how this plant compares with the Pepeekeo plant.

Response:
The emission factors derived in the Minnesota report was not strictly based on Minnesota facilities. The "Emission Factors for Priority Biofuels in Minnesota" was based on an exhaustive review of over 90 different sources. The authors conducted internet search of key words including "biodiesel." In addition, the authors reviewed four databases: "Knovel Scientific and Engineering Databases," "Applied Science & Technology Index," "Science Direct," and "American Chemical Society." As a result of these searches, the author found several publications and academic journals that could contain relevant emission data. In addition, several air permitting agencies, energy offices, economic development offices, agricultural, and other environmental agencies at the state and federal were contacted to identify facilities that combustion biomass fuels. Research centers, professional societies, end-users of biofuels, and equipment manufactures were also contacted. Ultimately, the authors found the best two resources for biodiesel emission factors

were: (1) Miller, B., Fuel Flexibility in Boilers for Fuel Cost Reduction and Enhanced Food Supply Security. The Energy Institute, Pennsylvania State University for the Pennsylvania Energy Development Authority. June 30, 2006; and (2) Plains Environmental. 2005. Boiler Stack Biodiesel Test PM/NO_x/CO Measurements at South Dakota Soybean Processors. Volga, South Dakota. Test Date: October 20, 2005. Plains Environmental Project ID: SDS5263T. Plains Environmental 11180 Schoolhouse Lane, Belle Fourche, SD 57717.

Purpose and Duty of DOH

- I am currently ill with a respiratory infection that I believe was caused by the volcanic emissions...Despite this, I am still greatly affected by the poor air quality from the increased volcanic output...The air quality is already poor due to the volcano, and to add a smoke stack, would make it a disaster for me and my family...I am writing this to you because I understand that you may be able to deny any permit request, or require that this plant be required to obtain the most stringent scrubbing and emission reduction technology.

Response:
The Department of Health regulates and monitors air pollution sources. The Clean Air Branch is responsible for air pollution control in the state. It conducts engineering analysis and permitting, performs monitoring and investigations, and enforces the federal and state air pollution regulations. The air permit would incorporate emission limits, monitoring, testing, recordkeeping and reporting requirements to ensure the facility operates in compliance with all state and federal air regulations, including BACT.

IV. RESPONSE TO OUT OF SCOPE COMMENTS

The public comments were reviewed and categorized in Section IV as follows:

Process Water
Land Use
Fuel Supply Availability
Need for Project
Environmental Impact Statement
Environmental Review
HELCO Plant Shutdowns/Jobs
Geothermal Energy
Wood Burning Efficiency
Fire Hazard

Process Water

- I find no discussion of the possible impact of the cooling water discharge into the ocean. I also know that the outfall structure is disintegrating so that environmental permits will be required for repair, including possible environmental assessment.

- For example, there are no longer settling basins for the expended cooling water from the plant, questionable modeling use to “make gas emission levels,” and pollution gas calculated levels extremely close to EPA limits.

Response:
The cooling system for the power plant is not relevant to the air pollution permitting process. Also, the Department of Health does not have jurisdiction over the other triggers for an EA, specifically HRS, 343-5(a)(1) through (8), and therefore we are not able to comment on whether the proposed power plant requires an EA under these provisions. The Department of Health also does not have broad discretionary authority to require an Environmental Assessment or Environmental Impact Statement if one is not required by HRS, Chapter 343. The cooling system and the lack of settling basins does not impact the air permit evaluation.

Land Use

- Do your rules have a zoning clearance form that has to be signed by HC planning department before a permit application is complete? [I ask because not all the property is zoned industrial and classified SLU Urban lands. There is a portion of land in the agricultural district.]

- Has the Department of Health investigated how many residential house permits have been pulled at the Hawaii County Building Department to construct residential homes in the immediate vicinity since the prior plant owner obtained its "expedited approval" of its house lot subdivisions? Or since the plant shut down in 2004?

- Has the Department reviewed the settlement agreement by which the prior power plant owner divided up all the remaining and surrounding commercial lands into various subdivision house lots and which subdivision approvals were "expedited" by the County?

- Did the Department itself give approval on those subdivisions bringing human lives back to the immediate vicinity of the power plant during the time that the plant was shut down?

- Nor has the underlying principle of placing a polluting power plant in what is now a residential neighborhood even been mentioned.

Response:
The Hu Honua facility is completely within the industrial zoned portion of the site.

The Department does not have any authority or discretion on the proposed site or on zoning or land use issues. The air permitting process provides the means to assess a facility's potential emissions and its impact on the ambient air. The air permit review determines if a facility will operate in compliance with federal and state air regulations including the health-based National Ambient Air Quality Standards. The operating conditions of the air permit are written based on the review of the facility and is the means to regulate a stationary source of air pollution through operating, monitoring, recordkeeping, and reporting requirements.

Fuel Supply Availability

- Wood is not sustainable.

Response:
Research has shown the eucalyptus trees add mass at a rate that makes harvesting on a 7 year cycle viable when the trees are allowed to coppice. Leucaena which is an alternative fuel crop can be harvested on a 4 to 5 year cycle.

Need for Project

- The increased reliance on biodiesel as a fuel also highlights the lack of any real need for this power plant. HELCO already has biodiesel plants, and despite a profit motivation to do so, does not NEED to replace its existing plants which already operate in safer locations.

- While HELCO is driven by desire to cut its own costs, and thereby increase shareholder profits, Hu Honua is driven by the hefty federal and state subsidies available if it can be one of the first to qualify for the highly lucrative "Renewable Energy" status, and the resulting return on profit for its speculative energy investors.

Response:
As noted by Mr. Jose Dizon in his deposition for the SMA contested case hearing, the Hu Honua capacity is required to support the Hawaii utilities in their effort to meet the requirements of the Hawaii renewable portfolio standards. As a base load facility, the Hu Honua facility will also support the system so that more intermittent sources of renewable energy may be incorporated into the supply grid.

Hu Honua does not qualify for any tax incentives.

Environmental Impact Statement

- The commenter requests an EIS.

- Proceeding with this project without even the minimal requirement of an Environmental Assessment is surely negligent on DOH's part.

- It is unfortunate that the county's planning department allowed the subdivision to occur and did not rescind the permit to operate the plant, but that does not change the fact that the area has undergone significant change, which triggers an EIS.

- EIS Required - Traffic Impact. The volume of logging trucks that HuHonua projects for its daily supply of wood was significant for the department of transportation to require HuHonua conduct a traffic study.

- EIS Required - Coastal Zone Use. Lastly the trees earmarked for HuHonua are on the coastal land of Hamkua Coast, and are subject to the laws governing the coastal zone. HuHonua has stated in its application that these lands are its sources of wood, and that the owners of these lands will be subject to laws related to watershed and erosion prevention. However, the specific owners of these lands, and the identity of the parcels have not been identified, for the purpose of appropriate oversight. This usage is a trigger for an EIS, and must be enforced before any harvesting operations begin.

Response:
The Department of Health, Clean Air Branch, is only responsible for the air requirements and therefore we do not have any knowledge of whether the applicant has all the appropriate permits and approvals besides the air permit.

Regarding the requirements for an Environmental Assessment (EA), the Department of Health has determined that the proposed power plant does not require an EA under Hawaii Revised Statutes (HRS), 343-5(a)(9). HRS, 343-5(a)(9) requires an EA for actions proposing, in summary, any wastewater treatment unit, waste-to-energy facility, landfill, oil refinery, or power-generating facility which is defined as a fossil-fueled electric generating facility greater than 5.0 megawatts.

An EA is not required for the Hu Honua project because it does not meet any of the triggers established in HRS 343-5. In particular, it does not meet HRS 343-5(a)(9)(E) because HRS 343-2 defines a power generating facility to mean: (1) A new, fossil-fueled, electricity generating facility, where the electrical output rating of the new equipment exceeds 5.0 MW; or (2) an expansion in generating capacity of an existing fossil-fueled, electricity generating facility, where the incremental electrical output rating of the new equipment exceeds 5.0 MW. The Hu Honua facility is NOT fossil-fueled and the capacity of the existing facility is not being increased.

The Department of Health does not have jurisdiction over the other triggers for an EA, specifically HRS, 343-5(a)(1) through (8), and therefore we are not able to comment on whether the proposed power plant requires an EA under these provisions. The Department of Health also does not have broad discretionary authority to require an Environmental Assessment or Environmental Impact Statement if one is not required by HRS, Chapter 343.

Environmental Review

- The plant owners have done all in their power to avoid environmental review as it seems they fear the responsibility and costs of environmental clean up.

Response:
Hu Honua has hired environmental experts to conduct both a Phase 1 and 2 environmental assessment and no hazardous waste issues were identified.

HELCO Plant Shutdowns/Jobs

- In 2010, HELCO's engineer, Mr. Dizon acknowledged in his deposition that there is no need at all for increased generation capacity in East Hawaii; that this project would benefit HELCO by enabling it to further cut its labor and operating costs at its own plants thereby shifting the costs to Hu Honua. Those changes would in no way reduce rates to HELCO ratepayers - they would ONLY cut some of the HELCO jobs and increase profit to HELCO shareholders.

Response:
HELCO has indicated that once the Hu Honua facility has proven to be reliable, it may place the Shipman plant in standby reserve. According to HELCO, that action will only potentially impact two HELCO jobs. HELCO has indicated that the displaced personnel will be assigned to other HELCO facilities and it will ultimately eliminate the slots via attrition.

Geothermal Energy

- Commenter supports geothermal energy from volcano instead of use of out-of-date equipment at Hu Honua.

Response:
The Department of Health acknowledges this comment.

Wood Burning Efficiency

- Items missing from the revised draft permit: Any requirement that the boiler system be made more efficient so that 80 percent of the island's resources are not wasted.

Response:
Hu Honua's calculations indicate that the refurbished plant will have an efficiency of at least 27.5%. Although the interveners have used the 20% value, the basis for that number is not known and has not be explained by the interveners. In addition, there is not an applicable air permitting requirement that the boiler system be made more efficient.

Fire Hazard

- The risk of fire in the fuel pile is not addressed. When so much biomass is being stored, there is always the risk for spontaneous combustion, explosion and fire (as has happened at other biomass plants on the mainland) when adequate safeguards are not in place.

Response:
The site will be equipped with appropriate fire control measures should a fire occur. However, there is minimal fire hazard associated with wood stored as logs. The fire hazard associated with chip storage is mitigated by proper fuel handling and management techniques whereby the fuel is not allowed to sit for extended periods of time.

The chip storage facility will be well ventilated to prevent a build-up of combustible gases. The facility will be equipped with a fire protection system.

References for Section III

[1] EPA, *An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000*, November 2006, EPA/600/P-03/002F.

ATTACHMENT A

ATTACHMENT B