



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

June 30, 2011

Wilfred K. Nagamine  
Manager, Clean Air Branch  
Hawaii Department of Health  
P.O. Box 3378  
Honolulu, HI 96801

Re: Proposed Covered Source Permit for Hu Honua Bioenergy

Dear Mr. Nagamine:

Thank you for the opportunity to review the Clean Air Branch's (CAB) proposed initial Covered Source Permit for Hu Honua Bioenergy, which we received on May 19, 2011. This source will be a new 21.5 MW biomass power plant, located in Pepeekeo, HI. We have reviewed the proposed permit in accordance with 40 CFR 70.8(c), and section 11-60.1-959(a) of CAB's EPA-approved title V program.

During our review, we identified significant concerns regarding the need for practically enforceable permit conditions to limit the source's potential to emit (PTE) to ensure the source is not a major source under the Prevention of Significant Deterioration (PSD) program or a major source of hazardous air pollutants (HAP) subject to case-by-case Maximum Achievable Control Technology (MACT) requirements. We want to emphasize the importance of CAB having confidence that the accuracy of the CO emission limit and acrolein emission factor will be verified by source test data and a continuous emissions monitoring system (CEMS). If source testing or CEMS data ultimately determines that either or both are too low, the permittee will be subject to PSD (which would include the need to evaluate Best Available Control Technology) and/or a case-by-case MACT determination, as if the source had not yet been constructed. This could make it more difficult for CAB to ensure that all Clean Air Act (CAA) requirements are implemented correctly, as well as create a significant financial burden on the permittee. We discussed these and other issues with your staff on June 2 and 28, 2011.

In our enclosed comments, we describe the types of conditions that CAB must add to the final permit to ensure on an on-going basis that Hu Honua is not a major source of CO or HAPs, as well as additions to the statement of basis that are required to document CAB's decisions in the administrative record for this permitting action. Given the high level of public interest in this project and the fact that the public did not have the opportunity to comment on the new conditions needed for this permit, EPA recommends that CAB re-propose the permit with a new public comment period.

We are committed to working with you to resolve the issues we have identified as expeditiously as possible. Please contact me or Roger Kohn at (415) 972-3973 or [kohn.roger@epa.gov](mailto:kohn.roger@epa.gov) if you have questions or want to discuss any of our comments.

Sincerely,

A handwritten signature in blue ink that reads "Gerardo C. Rios for".

Gerardo C. Rios  
Chief, Permits Office  
Air Division

Enclosure

cc: Richard McQuain, Hu Honua Bioenergy

**EPA Comments**  
**Hu Honua Bioenergy Covered Source Permit**

1. The discussion of PSD applicability in the statement of basis is limited to two sentences that state that the facility is not a major stationary source and therefore PSD does not apply. The CO PTE is presented as 246.4 tons per year (tpy), which very close to the 250 tpy major source threshold that would require the facility to obtain a PSD permit prior to construction. CAB does not provide any documentation or justification of the CO emission factor used to calculate the CO PTE, merely stating that the "Biomass emission factors for NO<sub>x</sub>, CO, and PM10 are proposed as Best Available Control Technology (BACT)."

The CO emission limit proposed by CAB would be among the lowest EPA has ever seen nationwide for biomass-fired boilers, including boilers with add-on CO control devices, and circulating fluidized bed boilers, which are generally more efficient than other boiler types and consequently produce lower CO emissions than stoker boilers. In California, we have recently permitted a biomass facility with a stoker boiler very similar in size to Hu Honua that also uses selective non-catalytic reduction to control NO<sub>x</sub> emissions (which might allow a source to have high pre-control NO<sub>x</sub> emissions in order to reduce its CO emissions). This facility was permitted as a major source of CO, with permitted emissions almost ten times the PSD major source threshold and a lb/hour CO emission limit average over a rolling 8-hour period that is almost 8 times higher than CAB's proposed limit based on a 30-day rolling average.<sup>1</sup> We have also permitted two biomass facilities with stoker boilers that are approximately half the size of the proposed Hu Honua plant; yet the projected future actual CO emissions and CO PTE of both facilities are much higher than Hu Honua's, and well above the 250 tpy PSD major source threshold.<sup>2</sup> In sum, we have not seen any instance of a stoker boiler of the permittee's size being able to achieve the CO emission limits that CAB is proposing for this permit.

EPA believes that CAB has not sufficiently documented that this boiler will not be a new major source of CO. To address this issue, CAB should document why it believes that this source can achieve the proposed CO emission limits. This justification could include source test data from other existing stoker biomass boilers that are complying with emission limits that are equal or close to what CAB has proposed for Hu Honua. Alternatively, if CAB cannot provide such a justification and determines that this project requires a PSD permit, CAB should deny the Covered Source Permit and inform the applicant that it must submit a PSD permit application to CAB.

2. If Hu Honua is permitted as a synthetic minor instead of a PSD source, the final synthetic minor permit that CAB issues must make the facility's CO and NO<sub>x</sub> PTE limits practically enforceable. The proposed permit is missing conditions that are necessary to make the CO and NO<sub>x</sub> PTE limits practically enforceable and allow the source to avoid PSD, in accordance with EPA guidance on limiting PTE. EPA's longstanding guidance to permitting authorities and the regulated community has been that to effectively limit a source's PTE, permit conditions must be practically enforceable. For example, EPA's June 13, 1989 memorandum, "Guidance on

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<sup>1</sup> Sierra Pacific Industries, a 20 MW cogeneration plant in Loyalton, CA, has projected actual future CO emissions of 2,420 tpy and a CO emission limit of 550 lbs/hr of CO or 1443 ppm of CO (except during transient conditions), whichever is more stringent.

<sup>2</sup> Burney Mountain Power, a 10.2 MW plant in Burney, CA, has projected actual future CO emissions of 377.8 tpy and a CO PTE of 790 tpy from a 190 MMBtu/hour boiler. Mount Lassen Power, an 11.5 MW plant in Westwood, CA (Lassen County), has projected actual future CO emissions of 1031 tpy and a CO PTE of 1,375 tpy from a 203.7 MMBtu/hour boiler.

Limiting Potential to Emit in New Source Permitting” and EPA’s January 25, 1995 memorandum, “Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act,” elaborated upon the Agency’s criteria for practically enforceable PTE limits by stating that such limits should specify (1) a technically-accurate limitation and the portions of the source subject to the limitation; (2) the time period for the limitation (hourly, daily, monthly, and annual limits such as rolling annual limits); and (3) the method to determine compliance including appropriate monitoring, recordkeeping, and reporting. Our guidance specifies that the averaging time for all limits must be practicably enforceable to readily allow for determination of compliance. Short term limits, generally daily but not to exceed one month, are preferred. Operational and/or production limits are also required.

To ensure the PTE caps are practically enforceable, CAB must add permit conditions that contain CO and NO<sub>x</sub> annual PTE caps, which includes all facility emissions, including startup and shutdown emissions from the boiler, calculated on a 12-month rolling basis. For example, the CO PTE cap condition could state that “CO emissions from the entire facility, including boiler startups and shutdowns, shall not exceed [X] tpy, on a 12-month rolling basis.”

Since a CEMS is being used to verify compliance with hourly CO and NO<sub>x</sub> emission limits, CAB must revise the permit to require the use of this data to verify compliance with the annual CO and NO<sub>x</sub> PTE caps. CAB must add conditions that require the source to sum the boiler’s actual hourly CO and NO<sub>x</sub> emissions (including emissions during start-up and shutdown periods) as measured by the CEMS on a cumulative basis, to verify compliance with the 12-month rolling CO and NO<sub>x</sub> PTE caps. The permit must require that the source calculate its facility-wide CO and NO<sub>x</sub> emissions in this manner on a daily, weekly, or at a minimum, monthly basis, and maintain all records of CEMS data used to demonstrate compliance.

3. Since the facility will need to convert the ppm emission data measured by the CO and NO<sub>x</sub> CEMS to lb/hour data to verify compliance, CAB must add a permit condition that requires the permittee to install, operate, and maintain a flow monitor. Unlike natural gas-fired emission units, the heat content of the fuel being combusted and the exhaust flow rates in biomass-fired boilers are highly variable. Given the inherent variability of biomass as a fuel source and the source’s need to use CEMS data to demonstrate compliance with the annual PTE caps, it is essential that the permit require the source to use a flow meter to calculate hourly emission rates.
4. In its statement of basis, CAB provides a list of HAP emission estimates for wood and biodiesel combustion to show that estimated HAP emissions from Hu Honua do not exceed the major source thresholds of 10 tpy for a single HAP or 25 tpy for the sum of all HAPs that trigger requirements under 40 CFR Part 63 Subpart DDDDD, the National Emission Standard for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT).

Using AP-42 emission factors for all HAPs from wood combustion except for acrolein and hydrogen chloride (HCl), CAB estimated total HAP emissions to be 23.8 tpy. This estimate for total HAPs includes Hu Honua’s use of dry sorbent injection to reduce emissions of HCl and metals by more than 90%. Hu Honua and CAB used an acrolein emission factor of  $8.22 \times 10^{-5}$  lb/MMBtu resulting in an annual emission estimate of 0.11 tpy. The statement of basis cites the Maine Department of Environmental Protection, Bureau of Air Quality (Maine DEP), as the basis for this emission factor. The AP-42 emission factor for acrolein emissions from wood-fired boilers is  $4.00 \times 10^{-3}$  lb/MMBtu with a rating of “C”. The AP-42 emission factor is nearly 50 times higher than the emission factor used in the HAP calculation. If the HAP calculation had

been based on the AP-42 factor for acrolein, acrolein emissions would be 5.6 tpy and total HAPs would be 29 tpy, which exceeds the HAP major source threshold. The statement of basis does not explain why the Maine DEP, rather than AP-42 factor was used, and the permit does not contain source test requirements for acrolein to verify that the proposed emission factor is accurate for wood combustion at Hu Honua. In addition, the permit does not contain an emission cap for single and total HAP emissions to ensure that HAP emissions from Hu Honua remain below the major source thresholds for MACT applicability. If Hu Honua was subject to the Boiler MACT, additional emission limitations for dioxins/furans, CO, HCl, and PM would be required. However, because the effective date of the recently finalized Boiler MACT has been delayed pending judicial review and/or EPA reconsideration of rules (76 FR 15608, March 21, 2011), a case-by-case MACT determination for boiler HAP emissions would be required if Hu Honua exceeds the major source threshold for HAPs.

At our request during the 45-day EPA review period, on June 17, 2011, ERM, consultants for Hu Honua, provided to EPA and CAB additional information on source test results for acrolein from four facilities in the Northeast United States to justify its chosen emission factor for acrolein. ERM proposed including an emission limit in the permit for acrolein of  $8.5 \times 10^{-4}$  lb/MMBtu. Using this emission factor, EPA estimates the total HAP emissions to be 24.9 tpy. However, if the emission factors for any of the nearly 80 HAP compounds are underestimated, HAP emissions from Hu Honua may exceed 25 tpy.

If CAB permits Hu Honua as a nonmajor HAP source, CAB must add conditions to the final permit to establish annual PTE caps for any single HAP and the sum of all HAPs to ensure that emissions from Hu Honua do not exceed the major source thresholds of 10 tpy for a single HAP and 25 tpy for the sum of all HAPs, on a 12-month rolling basis. Since the proposed source is very close to the HAP major source threshold, CAB must require an initial source test for all HAPs to determine how representative the estimated wood combustion emission factors are for Hu Honua. In addition, EPA recommends that CAB require annual source testing for any HAP compound that exceeds 1 tpy or any compound with an initial source test result that is within 5 – 10% of the emission factor used in the statement of basis for the proposed permit. For HAP compounds that do not significantly contribute to the sum of all HAPs, or whose measured emission factors ensure a 10% or greater compliance margin to the assumed emission factor in the statement of basis, CAB may choose to not require annual testing, although CAB should consider requiring testing for all HAP compounds at least once per permit term. All source testing must use EPA-approved test methods for the specific HAP compounds.

In addition, to enforce compliance with the 12-month rolling HAP PTE caps, CAB must add one or more conditions to the permit that require the source to calculate its HAP emissions (including emissions during start-up and shutdown periods) on a cumulative basis. These calculations must be based on operational data and the best available emission factors (i.e., the most recent source test data). We recommend that the permit require the source to perform this calculation on a monthly basis (within one week of the end of each month). CAB must also add associated record-keeping and reporting requirements to the permit.

5. If CAB's final permit contains practicably enforceable conditions that allow the source to limit its CO and/or HAP emissions to become a synthetic minor source, CAB must clearly explain these actions in its statement of basis. The explanation should include what emission limitations the source has voluntarily accepted to become a nonmajor PSD and HAP source, and why CAB believes these emission limits are achievable. The explanation should also discuss the associated

testing, record-keeping, monitoring, and reporting that the source must comply with. EPA recommends that CAB also explicitly state that any future relaxation of, or non-compliance with, any limit that makes the source non-major (e.g., heat input limit) will require a re-evaluation of PSD and/or case-by-case MACT applicability. CAB's analysis could state that the result of this re-evaluation could be that the source will be subject to PSD and/or MACT as if it had not yet constructed. For PSD, this requirement is stated in 40 CFR 52.21(r)(4):

At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements or paragraphs (j) through (s) of this section shall apply to the source or modification as though construction had not yet commenced on the source or modification.

6. The permit requires the facility to comply with the boiler emission limits at all times, except during boiler startup and shutdown. EPA seeks clarification from CAB on what limits, if any, apply during startup and shutdown, and how CAB will ensure that CO and HAP emissions during these periods will be included in the on-going demonstrations of compliance with the synthetic minor PTE caps.

To ensure that emissions are measured during startup, when emissions can be orders of magnitude higher than during normal operations, the CEMS must often be equipped with dual range monitors. When reviewing the CO and NO<sub>x</sub> CEMS protocols the permittee will submit, CAB should ensure that the CEMS can measure emissions accurately during all operating conditions. Alternatively, since the boiler is expected to start up only three times per year, if CAB determines that equipping the CEMS with a dual range monitor is not economically practical, the permit must require the source to use a conservative default value to calculate CO and NO<sub>x</sub> emissions during start-up and shutdown operations.

7. EPA believes that the addition of emission caps and conditions to assure compliance with synthetic minor permit limitations represents significant changes to existing monitoring, reporting, and recordkeeping requirements of the permit, irrespective of the improved stringency of those conditions. Therefore, EPA recommends that CAB provide the public with another period to review and provide comments limited to the permit changes that will be made by CAB in response to EPA comments.
8. Condition F.7 in Attachment II states: "As required by Attachment IV, and in conjunction with the requirements of Attachment III, Annual Fee Requirements, the permittee shall report annually the total tons per year emitted of each regulated air pollutant, including any hazardous air pollutants." Attachments III and IV do not have any specific requirements that provide further explanation of the source's emissions reporting obligation. We recommend that CAB revise condition F.7 in Attachment II to clarify that all emissions, including emissions from periods of startup and shutdown, must be reported annually.
9. In the proposed permit, the boiler performance test method for PM specifies use of Method 5 for front (filterable) and back-half (condensable) particulate emissions (Attachment II, Condition G.3.e). EPA Method 5 measures only filterable emissions. EPA Method 201A, as revised on December 1, 2010, measures filterable PM<sub>10</sub> and PM<sub>2.5</sub> emissions. Method 202, as revised on

December 1, 2010, is the EPA method for measuring condensable particulate matter. CAB must revise condition G.3.e to incorporate the following:

- EPA Method 5 to measure filterable PM,
- EPA Method 201A to measure filterable PM<sub>10</sub> and PM<sub>2.5</sub>,
- EPA Method 202 to measure condensable PM,
- These tests must be performed in accordance with the test methods set forth in 40 CFR § 60.8, 40 CFR Part 60 Appendix A, and 40 CFR Part 51 Appendix M,

CAB may also consider including a specification to collect a minimum of 90 dry standard cubic feet per 3-hour test run. Additionally, the permit (condition G.3.e.i) specifies filter holder temperatures for PM measurements that differ than those specified under EPA Method 5. Such a revision to the test method requires an explanation in the statement of basis as to why these modifications are necessary and concurrence from the Emissions Measurement Center at the EPA Office of Air Quality Planning and Standards to verify the revision to EPA Method 5 is necessary or appropriate for Hu Honua.

10. Starting on January 2, 2011, GHG became subject to regulation pursuant to EPA's Tailoring Rule. See 75 FR 31514 (June 3, 2010). In March 2011, EPA announced its proposal to defer CO<sub>2</sub> emissions from biogenic sources from the PSD and Title V programs and its intention to finalize this proposal by July 2011. See 76 FR 15249 (March 21, 2011). Assuming that CAB issues the permit after EPA finalizes the deferral, CAB must still address PSD applicability for the non-CO<sub>2</sub> portion of the source's GHG emissions. If CAB issues a final permit before EPA finalizes the deferral, CAB must document that the total of all GHG emissions is below the GHG major source threshold, i.e., a GHG PTE of 100,000 tpy CO<sub>2</sub>e or more.
11. CAB does not correctly explain the applicability of Compliance Assurance Monitoring (CAM) in the statement of basis, which says that CAM "for the proposed project is only applicable for NO<sub>x</sub>." The permit will require the use of a CEMS to measure NO<sub>x</sub> emissions from the boiler. The CEMS is a "continuous compliance determination method," as defined in Part 64. There is an exemption in the CAM regulation for "Emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in §64.1" (64.2(b)(1)(vi)). Therefore the boiler is not subject to CAM for NO<sub>x</sub>. In addition, the boiler will be subject to CAM for PM/PM-10. But since the boiler is not a "large" pollutant specific emission unit for CAM purposes (i.e., post-control PTE exceeds the major source threshold; see 64.5(a)), CAM for PM/PM-10 will not apply until permit renewal (or a significant modification of the permit involving the boiler). CAB should revise its statement of basis to accurately document CAM applicability.
12. CAB's statement of basis lists the New Source Performance Standard (NSPS) for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR Part 60, Subpart Db, as an applicable requirement, but does not contain any explanation of which Db standards are applicable. (Subpart Db has different emission limits for various fuels and combination of fuels.) Based on our review, we believe the boiler is subject to the PM standard at 60.43b (h)(1) and the opacity standard at 60.43b (f). CAB should address the Subpart Db requirements in the statement of basis, and either add the requirements to the permit or provide a streamlining demonstration in the statement of basis in accordance with EPA policy.<sup>3</sup>

<sup>3</sup> See EPA's White Paper 2, which is available online at <http://www.epa.gov/ttn/caaa/t5/memoranda/wtppr-2.pdf>.

13. Condition D.2.d in Attachment II requires the permittee to “follow a regular maintenance schedule” of baghouse maintenance, including checking bags for leaks. CAB must revise this condition to add an appropriate frequency to improve the clarity and enforceability of the permit.
14. Condition D.2 of Attachment 2 states that the “ESP and baghouse shall be operated at all times during operation of the boiler,” and has additional language about not operating if the control devices are not working properly. We recommend revising this condition into multiple conditions to improve the clarity and enforceability of the permit. First, CAB should have a separate condition for each control device, requiring the permittee to “install, operate, and maintain” the control device. (We note that the proposed permit does not specifically require the permittee to “install” and “maintain” these control devices.) CAB should address non-operation of the boiler during periods when the control devices are not working properly, and the source’s obligation to diagnose and correct the problem(s) before resuming operation, in one or more separate conditions.
15. The permit lacks a condition that requires the source to operate the SNCR system. Such a condition is a necessary component of the set of requirements that limit the NO<sub>x</sub> PTE to less than the PSD major source threshold. CAB should add a condition to the permit that requires the source to install, operate, and maintain an SNCR system.
16. CAB’s annual compliance certification condition (condition F.2. in Attachment II) requires the permittee to submit its certifications within 90 days after the end of each calendar year, and allows the permittee to submit written requests to CAB to approve extensions to this deadline. While Part 70 and CAB’s EPA-approved title V program do not establish any maximum allowable period of time for sources to compile and submit compliance certification data, a 90-day period is unwarranted and, as far as we know, unprecedented among Region 9 permitting authorities. EPA recommends that CAB revise this condition to require that certification be submitted within 30-60 days of the end of the year (or, to be even more precise “postmarked by January 30 of each year”).

EPA recognizes that this is a standard permit condition that CAB uses in all Covered Source Permits. We think that initial and renewal permit issuance is an appropriate time to start revising the compliance certification condition in all Covered Source Permits.

17. The statement of basis does not address PM-2.5 in the PSD context. CAB should add a statement that the facility is not a major source under the PSD program for this pollutant, based on the conservative assumption that all PM-10 emissions are PM-2.5.
18. Standard condition 28 in Attachment I requires the permittee to send copies of all documents (including reports) to both CAB and EPA. We do not need to receive a copy of every document the permittee submits to CAB. EPA requests that CAB revise the permit to require that only copies of source test results, annual compliance certifications and semi-annual NSPS excess emissions reports be submitted to us.