COALITION FOR SUSTAINABLE CEMENT MANUFACTURING & ENVIRONMENT
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AIR RESOURCES BOARD
EXECUTIVE OFFICE

December 3, 2010

Ms. Mary Nichols, Chairman
California Air Resources Board
1001 "I" Street
Sacramento, CA

Subject: COMMENTS OF THE COALITION FOR SUSTAINABLE CEMENT MANUFACTURING AND ENVIRONMENT ON PROPOSED CHANGES TO GHG REPORTING REQUIREMENTS

The Coalition for Sustainable Cement Manufacturing and Environment (CSCME) offers these limited comments on the proposed revisions to the AB 32 reporting requirements posted October 28, 2010.[1] CSCME has previously provided input to the California Air Resources Board (CARB) on matters related to bottoming cycle cogeneration. We have emphasized the importance of distinguishing the fuel input to a manufacturing process that would occur regardless of whether there was any subsequent electricity production, from the fuel input that might occur to enhance the electrical production possible from the waste heat from the manufacturing process. The fuel input to the manufacturing process has no bearing on the electricity production and should not be reported in the context of electricity production from a bottoming cycle facility that uses the waste heat from the manufacturing process as in input. As we show below, both the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) have recognized this difference and reflected it in their decisions and regulation. For this reason we recommend that the proposed reporting requirements be amended in the following way:

In Section 95112, additional language should be added to specify that only the fuel associated with supplemental firing and related emissions should be reported for bottoming cycle cogeneration. We recommend the following changes.

Add to Section 95112(a)(3):

"(3)Fuel consumption by fuel type, reporting in units of mission standard cubic feet for gases, gallons for liquids, short tons for non-biomass solids, and bone dry short tons for biomass-derived solids. *For a bottoming cycle cogeneration unit that uses waste heat from an industrial process, only fuel consumption by fuel type that is used for supplemental firing for electricity production should be included in this reporting, since fuel consumption for the industrial process that produces the waste heat is directly related to the industrial process and not to electricity production.*"

[1] PROPOSED AMENDMENTS TO THE REGULATION FOR THE MANDATORY REPORTING OF GREENHOUSE GAS EMISSIONS issued October 28, 2010 by CARB ("revised GHG reporting requirements")

Section 95112(b)(1) should be changed to read:

"(b) *Basic Information for Cogeneration Units.* In addition to the information required by paragraph (a) of this section, the operator of a cogeneration unit must:
(1) Indicate whether the unit is topping or bottoming cycle, and the prime mover technology;
(2) Provide useful thermal output (mmBtu);
(3) Where steam or heat is acquired from another facility for the generation of electricity, report the provider, the provider's ARB ID, and the amount of acquired steam or heat (mmBtu);
(4) Where supplemental firing has been applied to support electricity generation or industrial output, report fuel consumption by fuel type using the units in paragraph (a)(3) of this section and indicate the purpose of the supplemental firing. *For a bottoming cycle cogeneration facility, only fuel used for supplemental firing should be reported.*

(c) CO_2 from Fossil Fuel Combustion. When calculating CO_2 emissions from fuel combustion, the operator who is subject to Subpart C or D of 40 CFR Part 98 must use a method in 40 CFR §98.33(a)(1) to §98.33(a)(4) as specified by fuel type in Section 95115 of this article. *A bottoming cycle cogeneration unit shall not include the emissions associated with the industrial or commercial process, but rather, shall only include emissions associated with any supplemental firing that might occur.*

These changes are clearly supported by decisions of the CPUC and CEC. The California Public Utilities, Commission, in its Decision No. 09-06-051, p. 9 clearly drew the distinction between fuel input to the industrial process producing the waste heat used in the bottoming cycle process and fuel input for supplemental firing, finding that the only GHG emissions associated with electricity production from bottoming-cycle cogeneration result from any possible supplemental firing.

> "Moreover, we more fully considered bottoming-cycle cogeneration with respect to GHG emissions and the allocation of administrative allowances in Phase II of this proceeding. In D.08-10-037, we recognized that in a bottoming-cycle cogeneration, if there is no supplemental firing, there are no additional emissions associated with the generation of electricity. Further, we stated that since there were zero additional emissions associated with bottoming-cycle cogeneration facilities, those facilities did not need administratively allocated allowances for compliance in a cap-and-trade system. Thus, in D.08-10-037, we stated that no allowances needed to be allocated to a bottoming-cycle cogeneration facility when there is zero supplemental firing because there are no new emissions associated with the generation of that electricity.

"In light of the arguments presented in the Petition and ICC's Response, as well as our subsequent determinations in D.08-10-037, we are persuaded that since the electric output of a bottoming-cycle cogeneration facility is generated using waste heat from the industrial process (assuming no supplemental firing), there are no associated GHG emissions. As such, D.07-08-009 should be modified to state that in the case of zero supplemental firing, there are zero additional emissions associated with the generation of electricity in a bottoming-cycle cogeneration application. We now turn to the case where there is supplemental firing that occurs in the generation of electricity from a bottoming-cycle cogeneration facility. Supplemental firing can occur to either regulate the heat across the entire industrial process including the generation of electricity or to maximize the capture of waste heat for the generation of electricity. While the purpose of supplemental firing might vary from case to case, we believe that it is reasonable that all of the additional emissions that result from the supplemental firing count towards the EPS. If there were no bottoming-cycle cogeneration at the facility, then there would be no supplemental firing and no additional emissions would occur. While not all of the emissions might directly go to the generation of electricity, we believe that it is reasonable to attribute all of the emissions from supplemental firing to the generation of electricity and subsequently apply them to the EPS. Accordingly, in the case where supplemental firing occurs in a bottoming-cycle cogeneration facility, the emissions from that supplemental firing are additional and should be counted towards the EPS."

Findings of Fact in D. 09-06-051 make this conclusion clear:

"3. The emissions associated with the industrial process at a bottoming-cycle cogeneration facility would be the same whether or not the generation of electricity occurred.
4. When there is zero supplemental firing, there are no additional emissions with the production of electricity in a bottoming-cycle cogeneration facility.
5. Where there is supplemental firing, the additional emissions from the supplemental firing should be fully attributed to the electric generation." (D. 09-06-051, p. 10)

This is reinforced in the related Conclusion of Law and Ordering Paragraph:

Conclusions of Law:
"2. The clarifications made in D.07-08-009 to D.07-01-039 should be further clarified to state that when applying the Conversion Method to bottoming-cycle cogeneration facilities, only the emissions associated with supplemental firing shall be used in calculating the EPS. "(Ibid.)

Ordering Paragraph:
"2. Ordering Paragraph 2.a of Decision 07-08-009 is deleted and replaced with the following:

"The following language shall be *added* to footnote 140, which appears on page 107: The numerator of the conversion formula for a bottoming-cycle cogeneration facility would reflect the emissions associated with supplemental firing for the generation of electricity. The denominator of energy produced will consist of the kWh of electricity produced by the facility." (Op. cit., p. 11)

The CEC, in developing standards for CHP that qualifies for sales to a utility under AB 1613 also recognized this distinction in its report "GUIDELINES FOR CERTIFICATION OF COMBINED HEAT AND POWER SYSTEMS PURSUANT TO THE WASTE HEAT AND CARBON EMISSIONS REDUCTION ACT, PUBLIC UTILITIES CODE, SECTION 2840 ET SEQ."(CEC-200-2009-016-CMF-REV1):

"c) Energy Conversion Efficiency Standard
A Bottoming Cycle CHP System that uses supplementary firing shall achieve an Energy Conversion Efficiency of no less than 60 percent both as designed and on a calendar yearly operating basis. The Energy Conversion Efficiency shall be calculated as the Useful Energy Output occurring downstream of the supplementary burner divided by the supplementary firing fuel energy input, on a HHV basis.
A Bottoming Cycle CHP System that does not use supplementary firing is exempt from the Energy Conversion Efficiency Standard." (op. cit., p. 3)

"For Bottoming Cycles with supplementary firing, Useful Energy Output is the sum of hourly electrical energy output plus mechanical energy output, plus useful thermal energy recovery from the supplementary firing with the industrial or commercial process operating under annual average hourly operating conditions and the supplementary burner operating at full rated output." (op, cit., p. A-19)

"d) Greenhouse Gas Emission Standard
A CHP System shall meet a Greenhouse Gas (GHG) Emission Standard of 1,100 pounds of carbon dioxide equivalent emissions per megawatt-hour (1,100 lb CO2 equivalent/MWh), crediting 1 MWh per 1,341 hp-hr of useful mechanical energy output, and 1 MWh for each 3.4121 MMBtu of useful thermal energy output. Carbon dioxide equivalent emissions shall be calculated according to Title 17, California Code of Regulations, Section 95125.

"A Bottoming Cycle CHP System that does not use supplementary firing is exempt from the Greenhouse Gas Emission Standard." (Ibid.)

Again, this CEC report makes it clear that only the fuel input from supplemental firing for a bottoming cycle cogeneration unit is relevant to electricity production. The fuel input to the industrial process is the same, regardless of whether electricity is later produced or not.

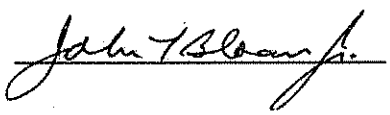
"Instructions for Form CEC-2843 Annual Report of Operation as a Qualifying Combined Heat and Power (CHP) System Annual Schedule A:
Annual Energy Inputs, Outputs and Thermal Energy Usage
Purpose of Schedule:
1. Compile the energy input and energy output values that provide the basis for determining if the CHP system met the technical performance requirements in the Guidelines.
2. Convert the reported energy input and energy output values to Annual Average Hourly Values, metrics that are in units that are easy to comprehend.
3. Present the equations that compare the CHP System performance, as represented by Annual Average Hourly Values, to the Guideline's Performance Standards.

"Instructions
1. **Reporting Monthly Values.** Monthly summations of energy flows were chosen as a way to recognize the seasonal difference in the cost of electricity generation. Diurnal and weekly variations and load profiles may be submitted as additional attachments.
2. **Generator Equivalent Full Load Hours per Month.** This is the same as a monthly Capacity Factor times the Standard Hours per Month or the hours when Supplementary Firing was used.
*3. **Fuel Energy Input.** Report on a Higher Heating Value basis. For a bottoming cycle, report fuel energy input to Supplementary Firing only.* (Op. cit., p. A-11, emphasis added)

The last reporting requirement for the CEC here makes it clear that fuel energy input for a bottoming cycle cogeneration unit is only relevant as it relates to supplemental firing.

For the above reasons, CSCME requests that the California Air Resources Board add clarifying language to its reporting requirements to make it clear that the only reportable fuel use and emissions for bottoming cycle cogeneration are those associated with such supplemental firing as may be used in the bottoming cycle application.

Respectfully submitted,



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