UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
AIR AND RADIATION

Robert J. Abate
Manager, Safety, Health and Environment
ISG Sparrows Point LLC
5111 North Point Boulevard
Baltimore, MD 21219

Re: CAIR Applicability Determination for ISG Sparrows Point Pennwood Boilers Nos. 1-4 in Baltimore County, Maryland

Dear Mr. Abate:

This letter is EPA's determination of applicability, under 40 CFR 97.104(c), 97.204(c), and 97.304(c) of the Clean Air Interstate Rule (CAIR) Federal Implementation Plans (FIPs), for ISG Sparrows Point, L.L.C.'s (ISG) Pennwood Boilers Nos. 1-4. This applicability determination is in response to your August 14, 2007 letter, in which ISG requested a determination as to the status of the Pennwood boilers under the CAIR FIPs. ISG also made submissions on July 26, August 3, August 22, October 19, and December 3, 2007 and February 4 and 13, 2008 and provided additional information in conference calls on October 9, 2007 and January 17, 2008.

In its August 14, 2007 letter, ISG requested a determination that the boilers are not subject to the CAIR FIPs because they are involved in "simultaneous buy-sells of electricity." ISG also stated that the boilers should be treated as cogeneration units exempt from the CAIR FIPs and requested that EPA revise its regulations to allow the boilers to qualify for such an exemption.

Background

Under the trading programs for NOx annual, SO_2, and NOx ozone season emissions in the CAIR FIPs, a unit that is a stationary fossil-fuel-fired boiler serving at any time, since November 15, 1990, a generator with nameplate capacity of more than 25 MWe producing electricity for sale is generally a CAIR NOx, CAIR SO_2, and CAIR NOx Ozone Season unit subject to the requirements of the trading programs. 40 CFR 97.104(a)(1), 97.204(a)(1), and 97.304(a)(1). However, under the trading program applicability provisions, certain units meeting these criteria are exempt from being CAIR NOx, CAIR SO_2, or CAIR NOx Ozone Season units. For example, any unit meeting the following criteria is exempt from the trading programs under the CAIR FIPs:

(A) Qualifying as a cogeneration unit during the 12-month period starting on the date the unit first produces electricity and continuing to qualify as a cogeneration unit; and

(B) Not serving at any time, since the later of November 15, 1990 or the start-up of the unit's combustion chamber, a generator with nameplate capacity of more than 25

MWe supplying in any calendar year more than one-third of the unit's potential electric output capacity or 219,000 MWh, whichever is greater, to any utility power distribution system for sale.

40 CFR 97.104(b)(1)(i), 97.204(b)(1)(i), and 97.304(b)(1)(i). (These provisions are generally referred to as the "cogeneration unit" exemption.)

Under CAIR, 40 CFR 97.102, 97.202, and 97.302, a cogeneration unit is defined as:

a stationary, fossil-fuel-fired boiler or stationary, fossil-fuel-fired combustion turbine:

(1) Having equipment used to produce electricity and useful thermal energy for industrial or commercial, heating, or cooling purposes through the sequential use of energy; and

(2) Producing during the 12-month period starting on the date the unit first produces electricity and during any calendar year after the calendar year in which the unit first produces electricity –

(i) For a topping-cycle cogeneration unit,

(A) Useful thermal energy not less than 5 percent of total energy output; and

(B) Useful power that, when added to one-half of useful thermal energy produced, is not less than 42.5 percent of total energy input, if useful thermal energy produced is 15 percent or more of total energy output, or not less than 45 percent of total energy output, if useful thermal energy produced is less than 15 percent of total energy output.

(ii) For a bottoming-cycle cogeneration unit, useful power not less than 45 percent of total energy input.

ISG owns and operates the Pennwood Boilers Nos. 1-4, located in Baltimore County, Maryland. The boilers began operating in 1949. The main purpose of the units is to provide electrical power and steam to a steel mill located on the same site and owned by ISG. Boiler Nos. 1, 2, 3, and 4 serve, through a common header, three condensing turbines providing steam to three 42 MWe generators and one back pressure turbine providing steam to a 28 MWe generator. According to the plant's operational needs, the boilers can also directly provide high pressure steam (900 PSI and 900 degrees F), and the back pressure turbine vent can supply low pressure steam (275 PSI and 650 degrees F) for industrial use at the steel mill.

The boilers burn mainly Blast Furnace Gas (BFG), for up to 80% of the total heat input. The BFG that the Pennwood boilers burn is a by-product of the reduction of iron ore with coke to metallic iron in the ISG Sparrows Point L Blast Furnace. The gas has a very low heating value and has an average composition that includes about 50% nitrogen, 23% carbon monoxide, 23% carbon dioxide, and 4% hydrogen. In order to meet the steel mill's demand of steam and electricity, the Pennwood boilers burn all the BFG available and supplement their heat input requirements either with natural gas, reclaimed oil, or No. 6 oil. The efficiency calculations submitted by ISG indicate that none of the boilers meet the definition of "cogeneration unit" with an efficiency standard of 42.5% if the BFG is a fossil fuel.

ISG submitted the contracts governing the Sparrows Point facility's purchases and sales of electricity since 1966. According to ISG, since November 15, 1990, the Sparrows Point facility has generally consumed all the power it generated using the Pennwood boilers and purchased the rest from a local utility, Baltimore Gas & Electric Co. (BGE).

In its August 14, 2007 letter, ISG requested a determination that the boilers are not subject to the CAIR FIPs because they are involved in "simultaneous buy-sells of electricity" under the BGE contract. ISG argued that, because of the simultaneous buy-sells, no electricity produced by the boilers left the plant. However, in its August 22, 2007 submission, ISG stated, after further review of company records, that, since November 15, 1990, there was only one occurrence when electric generation left the plant and was sold, i.e., one event on February 14, 2007 when, during hours 13 through 16, 38.5 MWh of electricity generated by the Pennwood boilers left the facility and flowed into the grid (i.e., the PJM system) at the BGE zone. ISG indicated that the event was caused by an ice storm that caused a fault on a 34 KV insulator at BGE's Cold Mill Sub Station. The fault caused relays to trip the two incoming 110 KV cables and resulted in shutdown of the major process areas of the plant, with the exception, for safety reasons, of the blast furnace. The Pennwood boilers, which burn BFG from that blast furnace, remained in operation while BGE re-energized the 110 KV cables, and the electricity generation of the boilers exceeded the electricity demand of the blast furnace and plant safety equipment that remained in operation. This resulted in a net flow of electricity out of the facility on 34 KV lines that remained in service.

However, during a conference call on October 9, 2007 with EPA, ISG indicated that, while electricity left the facility during the February 14, 2007 event, the company now believed that no reimbursement had been received for that electricity. ISG provided documentation on October 19 and December 3, 2007 and February 4 and 13, 2008 to confirm that no payment was received by the company for the electricity that left the facility and flowed into the grid on February 14, 2007.

In its August 14, 2007 letter, ISG also stated that the Pennwood boilers should be treated as cogeneration units exempt from the CAIR FIPs. ISG noted that, in order to qualify as cogeneration units, the units must meet an efficiency standard. According to ISG, its Pennwood boilers, which burn mainly BFG, cannot meet the efficiency standard because of the low thermal energy of the BFG and because the units are optimized for process steam, not electricity, production. ISG indicated that BFG should not be considered fossil fuel as defined in the CAIR FIP in 40 CFR 97.102, 97.202, and 97.302 and requested that EPA revise the efficiency standard in such a way that only the energy input from fossil fuels is included in the calculations. According to ISG, with such a change, the Pennwood boilers would qualify for the cogeneration unit exemption.

EPA's Determination

EPA has determined that ISG's Pennwood Boilers Nos. 1-4 are not CAIR NOx units, CAIR SO_2 units, and CAIR NOx Ozone Season units, subject to the requirements of the CAIR FIPs, for the reasons discussed below.

A. Electricity Sales

As discussed above, the CAIR FIPs apply to CAIR NOx, CAIR SO_2, and CAIR NOx Ozone Season units, which generally are "stationary, fossil-fuel fired boilers or stationary, fossil-fuel-fired combustion turbines serving at any time, since the later of November 15, 1990 or the start-up of the unit's combustion chamber, a generator with nameplate capacity of more than 25 MWe producing electricity for sale." 40 CFR 97.104(a) (1), 97.204(a) (1), and 97.304(a) (1). ISG claimed that the generators served by the Pennwood boilers do not produce electricity for sale because all of the electricity produced is generally used on site.

Since at least 1987, the electric service agreements for the Sparrows Point facility have provided that electricity produced on site (i.e., produced by generators served by the Pennwood boilers) would be purchased by BGE at specified rates. For example, the electric service agreement dated November 30, 1966, as amended effective July 1, 1987, provided that:

> The dispatched electric energy generated by Bethlehem [predecessor owner of the Sparrows Point facility to ISG] may be used to reduce Bethlehem's load when it is economical to do so. All electric energy generated by Bethlehem that is not used to reduce load shall be purchased by Baltimore. Baltimore shall pay Bethlehem for such Backfeed Energy at the hourly integrated Baltimore dispatch rate as described in the PJM Accounting Guidelines.

Agreement Between Bethlehem Steel Corporation and Baltimore Gas and Electric Company for Electric Service to the Sparrows Point Plant of Bethlehem Steel Corporation Dated November 30, 1966, as amended, Article V, Section 4 (effective July 1, 1987).[1]

According to ISG, electricity produced by steam from the Pennwood boilers was provided to the grid on only one occasion since November 15, 1990, i.e., for four hours on February 14, 2007. However, according to documentation provided by ISG on October 19 and December 3, 2007 and February 4 and 13, 2008, ISG did not receive any payment for that electricity provided to BGE. Specifically, ISG provided a PJM final billing statement for February 2007 for the account that would reflect -- as a credit -- any payment for electricity provided to, and sold on, the grid (i.e., the PJM system) by ISG. That billing statement showed that ISG had no credits for February 2007 and that therefore no payments were made to ISG for electricity provided to the grid during the 4 hours on February 14, 2007 event. See ISG's October 9, 2007 submission (PJM final billing statement at page 3). In addition, the PJM invoice for the account reflecting payments by ISG for electricity showed the ISG had actually paid minimal charges for electricity for those hours. See ISG's February 4, 2008 submission (PJM Account Load, ISGSPL 2/14/07 invoice at line 5); and ISG's February 13, 2008 submission (clarifying that terminology in PJM invoice indicates that ISG made, and did not receive, payments for electricity on February 14, 2007).

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1. See also April 30, 1986 letter modifying November 30, 1966 electric service agreement (stating that BGE would pay Bethlehem for Backfeed Energy from Sparrows Point Plant).

EPA concludes that while the Pennwood boilers have, since November 15, 1990, served generators with nameplates exceeding 25 MWe, the electricity produced was never sold and that the boilers therefore are not CAIR NOx, CAIR SO_2, and CAIR NOx Ozone Season units under the applicability criteria in 40 CFR 97.104(a), 97.204(a), and 97.304(a).

B. Cogeneration Unit Definition

As discussed above, the CAIR FIP trading program rules provide that certain units that otherwise meet the criteria being CAIR units, but that also meet the definition of a "cogeneration unit", are exempt from the requirements of the trading programs if the units meet certain limitations concerning annual electricity sales.

Consistent with the cogeneration unit definition in 40 CFR 97.102, 97.202, and 97.302, the Pennwood boilers produce electricity and useful thermal energy through sequential use of energy. This is because each of the Pennwood boilers produces steam used first by the back pressure turbine to generate electricity, and then some of the reject heat from the back pressure turbine is used to provide steam for industrial use. Further, because of this configuration, each boiler is a topping cycle unit. See 40 CFR 97.102, 97.202, and 97.302 (definitions of "topping cycle cogeneration unit" and "sequential use of energy"). However, the cogeneration definition also requires that topping-cycle units, such as the Pennwood boilers, meet a minimum efficiency requirement. The efficiency standard is applied to all energy input to the unit regardless of the type of fuel that is combusted, except for, in the case of boilers, biomass. See 40 CFR 97.102, 97.202, and 97.302 (definitions of "cogeneration unit" and "total energy input"); and 72 FR 59190, 59206-7 (Oct. 19, 2007). This means that a unit does not qualify as a cogeneration unit under the CAIR FIP trading programs unless the unit meets the applicable efficiency standard, here the efficiency standard for topping-cycle units requiring that the useful power plus one-half of useful thermal energy output of the unit must equal no less than 42.5 percent of the total energy input of the unit. If a unit meets the definition of cogeneration unit (including the efficiency standard), then the unit may qualify for the cogeneration unit exemption under the CAIR FIP trading programs depending on whether the unit meets the additional criteria concerning the amount of annual electricity sales from the unit.

In this case, the Pennwood boilers do not burn any biomass.[2] Consequently, in applying the efficiency standard in the cogeneration unit definition, the heat input from all fuel combusted by the Pennwood boilers must be included in the efficiency calculation. ISG stated in its August 3, 2007 submission that the Pennwood boilers do not meet the efficiency requirement when the heat input from BFG, as well as the heat input from natural gas, reclaimed oil, and No. 6 oil, is included in the efficiency calculations. The Pennwood boilers therefore do not qualify as cogeneration units.

EPA rejects ISG's request that the Agency amend the CAIR FIPs to modify the

2. See 72 FR 5907 (setting forth the definition of "biomass" in 40 CFR 97.102, 97.202, and 97.302).

efficiency standard in the cogeneration unit definition in order to eliminate the heat input of BFG from the total energy input figure used to calculate efficiency.[3] EPA promulgated the CAIR FIPs, after providing a public hearing and opportunity for submission of public comments, as a final rule on April 28, 2006. EPA cannot, in the context of applying the applicability provisions and related definitions in the CAIR FIPs, modify those provisions and definitions. The time for parties to request rule changes, such as the change requested here by ISG under the CAIR FIPs, is in the context of a rulemaking (e.g., the rulemaking adopting the CAIR FIPs), where parties requesting or opposing revisions have the opportunity to comment.

However, as determined above, the Pennwood boilers -- whether or not they qualify as cogeneration units -- are not CAIR NOx, CAIR SO_2, and CAIR NOx Ozone Season units under 40 CFR 97.104(a), 97.204(a), and 97.304(a) and are not subject to the trading programs under the CAIR FIP.

EPA's determination relies on the accuracy and completeness of the information provided by ISG on July 26, August 3, August 14, August 22, , October 9, October 19, and December 3, 2007 and January 17 and February 4 and 13, 2008. If you have any questions regarding this determination, please contact Charles Frushour at (202) 343-9847. Thank you for your continued cooperation.

Sincerely,

Sam Napolitano, Director
Clean Air Markets Division

cc: Marilyn Powers, EPA Region III

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3. ISG stated, without support, that BFG is a "non-fossil fuel." EPA notes that it disagrees with, but is not addressing here on the merits, that characterization. The characterization is moot because EPA declines to amend the regulations in this proceeding and, in any event, EPA has already determined that ISG's Pennwood boilers are not subject to the trading programs.