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

OCT 20 2010

OFFICE OF
AIR AND RADIATION

Timothy T. Travers
Senior Plant Leader
FPL Energy Marcus Hook, L.P.
100 Green Street
Marcus Hook, PA 19601-3403

Re: Applicability of CAIR Trading Programs to FPL Energy Marcus Hook MH50 Cogeneration Unit located in Marcus Hook, Pennsylvania (Facility ID (ORISPL) 50074)

Dear Mr. Travers:

This letter sets forth EPA's views concerning the applicability of the EPA-administered trading programs under the Clean Air Interstate Rule (CAIR) and the CAIR Federal Implementation Plan (FIP) to the FPL Energy Marcus Hook MH50 cogeneration unit (Marcus Hook unit) located at the Marcus Hook facility in Marcus Hook, Pennsylvania. For 2009, the CAIR FIPs applied, while, for 2010 and thereafter, Pennsylvania's State Implementation Plan (SIP) revisions approved under CAIR apply. This letter responds to a letter of January 25, 2010 from FPL Energy Marcus Hook MH50, L.P. (FPL Energy) requesting EPA's views on this matter. The Pennsylvania Department of Environmental Protection also expressed an interest in obtaining EPA's views. In addition to the January 25, 2010 letter, FPL Energy provided supplemental information on February 15, 19, 22, and 25, April 15-16, and September 2 and 23, 2010.

Background

The Marcus Hook unit is a natural-gas-fired combustion turbine equipped with an unfired heat recovery steam generator, located in Marcus Hook Pennsylvania, and owned and operated by FPL Energy. The unit's nominal generating capacity is 50 MWe, and its maximum rated heat input capacity is 696 mmBtu/hr. The unit's turbine generator has a nameplate capacity of 66 MWe. See February 25, 2010 supplemental information (indicating that the generator nameplate capacity is 82.5 MVA and the applicable power factor is 0.8). The unit's generated electricity is, and has historically been, sold to the grid. The electricity originally was sold to a single purchaser under a power purchase agreement until the agreement's expiration in December, 1997, after which time the electricity was sold under short term agreements in the competitive electricity market. See Application of Sunoco Power Marketing L.L.C. for Blanket Authorizations, Certain Waivers, and Order Approving Rate Schedule Authorizing Power Sales at Market-Based Rates, FERC Docket No. ER 97-870-000 at 3 (Dec. 20 1996). Most of the unit's useful thermal energy, in the form of steam generated by the heat recovery steam

Internet Address (URL) • http://www.epa.gov
Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Postconsumer, Process Chlorine Free Recycled Paper

generator, is, and has been, sold to the adjacent Sunoco refinery. A small portion of the steam generated by the heat recovery steam generator is used to control nitrogen oxides (NO_X) emissions from the combustion turbine. February 22, 2010 supplemental information.

The Marcus Hook unit, at that time owned by Sun Company, Inc. (Sun Company), commenced commercial operation on May 1, 1988. The unit was purchased by FPL Energy on May 12, 1999. According to FPL Energy, Sun Company purged all emission and operational records of the unit for the period before the purchase by FPL Energy, except for certain information for 1998-1999. See February 15, 2010 supplemental information at 1. Also according to FPL Energy, although the unit was permitted to burn natural gas and refinery gas (which is derived from petroleum), the unit historically has burned only natural gas. See February 22, 2010 supplement information. In any event, both of these fuels are "fossil fuel", as defined under 40 CFR 96.102, 96.202, and 96.302 and 40 CFR 97.102, 97.202, and 97.302.[1]

Under the EPA-administered CAIR trading programs for NO_X annual and ozone season and SO_2 emissions, a unit that is a stationary fossil-fuel-fired boiler or combustion turbine 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 NO_X, CAIR SO_2, and CAIR NO_X 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). The Marcus Hook unit meets these criteria. However, under the CAIR trading program applicability provisions, certain units meeting these criteria are exempt from being CAIR NO_X, CAIR SO_2, or CAIR NO_X Ozone Season units. For example, a unit meeting these criteria is exempt from the CAIR trading programs if it is a unit:

> (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, 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

[1] Because the relevant provisions in the CAIR model rules (in Part 96) and in the CAIR FIP (in Part 97) are essentially identical, only the CAIR FIP provisions will be cited in the remainder of this letter. However, whenever the CAIR FIP provisions are cited below, the comparable provisions in the CAIR model rule are also applicable, and the citation should be treated as also referencing the comparable CAIR model rule provisions.

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 then 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 input, 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.

40 CFR 97.102, 97.202, and 97.302.

The information provided by FPL Energy shows that the Marcus Hook unit is a topping-cycle unit. See 40 CFR 97.102, 97.202, and 97.302 (definition of "topping cycle cogeneration unit"). Specifically, as operated by FPL Energy, the unit's combustion turbine combusts natural gas and generates electricity for sale to the grid using the combustion gas, and then the unit's heat recovery steam generator uses exhaust gas from the combustion turbine to produce steam that is used primarily for industrial purposes in the adjacent refinery. See January 25, 2010 letter at 3.

FPL Energy has actual experience with the manner in which the unit operates only starting in May 1999, when FPL Energy purchased the unit from Sun Company. Information provided by FPL Energy shows that, for 2000 through 2009,[2] the Marcus Hook unit had useful thermal energy (comprising the steam supplied to the adjacent refinery and excluding the steam used for NO_X control at the unit) ranging annually from 51 to 55% of total energy output. See January 25, 2010 letter, Attachment 2 at 1. This information also shows that, for the unit for same period, the percentage of useful power, when added to one half of useful thermal energy, ranged annually from 51.5 to 60.0% of total energy input. Id. Moreover, based on the Marcus Hook unit's maximum design heat input of 696 mmBtu/hr, one-third of the unit's potential electrical output capacity is 196,503 MWh[3], which is not greater than 219,000 MWh . Further, according to FPL Energy, the unit's gross generated electricity and net generated electricity (i.e., gross generation less 0.5% parasitic load) during 2000 through 2009 ranged from 37,506 to

---

[2] The submitted information reflects that the unit did not operate during the fourth quarter of 2009.

[3] Potential electrical output capacity for a unit is calculated by multiplying the maximum design heat input capacity in Btu/hr of the unit by 33 percent (reflecting the assumed efficiency of the unit), dividing by 3,413 (reflecting the assumed heat rate), dividing by 1,000 (converting to MWe), and multiplying by 8,760 (hours per year). See 40 CFR See 40 CFR 97.102, 97.202, and 97.302 (definition of "potential electrical output capacity").

209,462 MWh and 37,318 to 208,414 MWh respectively and never exceeded the 219,000 MWh limit. Id.

EPA's Determination

Qualification for cogeneration unit exemption

EPA concludes, for the reasons discussed below, that FPL Energy's Marcus Hook unit qualifies for the cogeneration unit exemption under the EPA-administered CAIR trading programs and is therefore exempt from the requirements of these trading programs. See 40 CFR 97.104(b)(1)(i), 97.204(b)(1)(i), and 97.304(b)(1)(i).

First, EPA finds that the unit is a fossil-fuel-fired combustion turbine 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 therefore meeting the first requirement for qualifying as a cogeneration unit. See 40 CFR 97.102, 97.202, and 97.302 (paragraph (1) of the definition of "cogeneration unit"). According to FPL Energy, the unit has operated in this manner since 2000. Also according to FPL Energy, while its experience with the operation of the unit started in May 1999, Sun Company originally designed and built the Marcus Hook unit to operate in this manner, providing steam to the refinery and electricity to the grid. FPL Energy also stated that it had no information indicating that the unit had ever operated other than as a cogeneration unit. February 15, 2010 supplemental information at 1. This is supported by the Title V operating permit, which describes the unit as combustion turbine burning "reformer off gas and/or natural gas...to generate electricity and generat[ing] steam from the hot exhaust gas." Facility Operating Permit for VOC and NO_X RACT at the Sun Company, Inc. (R&M) [Marcus Hook] Refinery at 11 (Apr. 12, 1995).

Moreover, EPA's requirement that a unit produce electricity and useful thermal energy using sequential use of energy is analogous to the sequential-use-of-energy requirement in the definition of "cogeneration facility" adopted by the Federal Energy Regulatory Commission (FERC), and therefore reflected in FERC's decisions about whether facilities are "qualifying cogeneration facilities". Compare 40 CFR 97.102, 97.202, and 97.302 (paragraph (2)(i) of the definition of "cogeneration unit") with 18 CFR 292.202(c) (definition of "cogeneration facility")). Applying the same criterion as EPA of sequential use of energy to produce electricity and useful thermal energy (as well as other ownership, operating, and efficiency requirements), FERC approved certification of the Marcus Hook unit as a qualifying cogeneration facility on August 28, 1987. Sun Refining and Marketing Co., 40 FERC ¶ 62,247 (1987). There is no indication that this certification was ever subsequently terminated.

EPA also finds that the unit meets the other requirements for qualifying as a cogeneration unit, i.e., the operating and efficiency requirements for a topping-cycle unit like the Marcus Hook unit. See 40 CFR 97.102, 97.202, and 97.302 (paragraph (2)(i) of the definition of "cogeneration unit"). FPL Energy's information, discussed above, shows that the Marcus Hook unit generated useful thermal energy each year, during 2000 through 2009, comprising from 51 to 55% of the total energy output, which exceeds the 5% level required in order for a topping-

cycle unit to qualify as a cogeneration unit. See 40 CFR 97.102, 97.202, and 97.302 (paragraph (2)(i)(A) of the definition of "cogeneration unit"). Also as discussed above, FPL Energy's information shows that, for each year during 2000 through 2009, the unit's useful power, when added to one half of the unit's useful thermal energy and divided by the unit's total energy input, exceeded the 42.5% level required for a topping-cycle unit with useful thermal energy at least 15% of total energy output. See 40 CFR 97.102, 97.202, and 97.302 (paragraph (2)(i)(B) of the definition of "cogeneration unit").

Moreover, EPA's requirement that a unit meet certain operating and efficiency standards in order to be a cogeneration unit is analogous to the operating and efficiency requirements established by FERC for "qualifying cogeneration facilities". The application of these operating and efficiency standards by EPA and by FERC differ primarily in the manner in which certain types of fuel are treated in that application. Specifically, FERC applies the efficiency standards only to energy input of natural gas and oil, while EPA applies the efficiency standards to all energy input except, in the case of boilers, biomass. Compare 40 CFR 97.102, 97.202, and 97.302 (paragraphs (2)(i)(B) and (3) of the definition of "cogeneration unit") with 18 CFR 292.205(a)(2) and (b) (stating criteria of "qualifying cogeneration facilities"). These differences in the treatment of certain fuels are not relevant here because the Marcus Hook unit burns only natural gas, a fuel that is treated the same under the EPA and FERC regulations for purposes of applying the efficiency standards. As discussed above, FERC applied the same operating and efficiency standards as EPA for natural gas (as well as the requirement for sequential use of energy and certain ownership requirements) in approving certification of the Marcus Hook unit as a qualifying cogeneration facility in 1987 in Sun Refining and Marketing Co., 40 FERC ¶ 62,247 (1987), which certification was not subsequently terminated. In summary, based on FPL Energy's information concerning operation of the Marcus Hook unit during 2000-2009 and FERC's determinations concerning operation of the Marcus Hook unit during the period when the unit was owned by Sun Company, EPA finds that the unit consistently met the sequential energy requirement and the operating and efficiency requirements under EPA's "cogeneration unit" definition and therefore qualifies as a "cogeneration unit" under the CAIR trading programs.

In addition, EPA finds -- based on the data and the condition discussed below -- that the unit meets the applicable electricity sales limit that must be met in order to qualify for the cogeneration unit exemption. Initially, as discussed above, EPA finds that the electricity sales limit applicable to the Marcus Hook is 219,000 MWh because that figure is higher than one-third of the unit's potential electric output capacity. Also as discussed above, FPL Energy's information on annual sales of electricity to a utility power distribution system during 2000 through 2009 shows that such sales never exceeded the 219,000 MWh limit. FPL Energy stated that it is unable to provide information on the amount of electricity sales by the Marcus Hook unit during the period when the unit was owned by Sun Company, i.e., 1987 through 1999. FPL Energy also stated that it did not have any information indicating that the unit was operated differently (i.e., as a cogeneration unit providing steam for the refinery) before the unit's sale by Sun Company than after the sale. FPL Energy's February 15, 2010 supplemental information at 1. Under these circumstances, EPA assumes, solely for purposes of this letter, that the unit's annual electricity sales to the grid during 1987 through 1999 did not exceed 219,000 MWh .

Further, EPA conditions its finding concerning the unit's compliance with the electricity sales limit -- and the conclusion of this letter concerning the applicability of the CAIR trading programs to the unit -- on the accuracy of that factual assumption. In summary, based on, and conditioned on the accuracy of, the factual assumption about the unit's annual electricity sales to the grid during 1987-1999 and based on the actual sales data for 2000 through 2009, EPA finds that the unit meets the electricity sales limit under the cogeneration unit exemption.

EPA therefore concludes that, up through 2009 and conditioned on the accuracy of the assumption about the unit's 1987-1999 electricity sales, the Marcus Hook unit meets the requirements for the cogeneration unit exemption.[4] See 40 CFR 97.104(b)(1)(i), 97.204(b)(1)(i), and 97.304(b)(1)(i). If the unit at any time fails to meet these requirements in the future, then the unit will lose the exemption, and become a CAIR NO_X, CAIR SO_2, or CAIR NO_X Ozone Season unit, on the earlier of: January 1 after the first calendar year during which the unit first no longer qualifies as a cogeneration unit; or January 1 after the first calendar year during which the unit no longer meets the electricity sales limit. At that time, the unit will become subject to the requirements of the CAIR trading programs, including the requirements concerning monitoring, recordkeeping, and reporting, allowance holding, and permitting. See 40 CFR 97.104(b)(1)(ii), 97.204(b)(1)(ii), and 97.304(b)(1)(ii). EPA notes that the Marcus Hook unit continues to be subject to the requirement, under Pennsylvania's SIP, to meet the monitoring, reporting, and recordkeeping requirements under 40 CFR part 75 with regard to the unit's NO_X emissions during the ozone season (May 1-September 30). 25 Pa. Code § 145.8.(d)(2).

CAIR allowances allocated and recorded for the Marcus Hook unit

For the 2009 control periods, EPA allocated and recorded 57 CAIR NO_X Annual allowances and 40 CAIR NO_X Ozone Season allowances for the Marcus Hook unit under the CAIR FIPs. Under §§97.142(e) and 97.342(e), if a unit (here, the Marcus Hook unit) that is not actually a CAIR NO_X or CAIR NO_X Ozone Season unit is allocated allowances for 2009, EPA will deduct from the compliance account for the unit's source (here, the Marcus Hook facility) equivalent amounts of allowances allocated for 2009, unless the Administrator has already completed deductions for compliance with the requirements to hold allowances to cover emissions. See 40 CFR 97.154(b) and 97.354(b). If the compliance deductions have been completed for the CAIR NO_X Annual Trading Program or the CAIR NO_X Ozone Season Trading Program, the Administrator will not take any further action to account for the allocation of allowances in the respective program for 2009.

For the 2010 control period, the Pennsylvania Department of Environmental Protection (PaDEP) allocated, and EPA recorded, 22 CAIR NO_X Annual allowances and 23 CAIR NO_X Ozone Season allowances for the Marcus Hook unit under Pennsylvania's CAIR SIP trading program regulations. For the 2011 control period, the PaDEP allocated, and EPA recorded, 49 CAIR NO_X Annual allowances and 47 CAIR NO_X Ozone Season allowances for the unit under

[4] If the electricity sales assumption proves to be inaccurate, then EPA's finding concerning the electricity sales limit and conclusion concerning the applicability of the CAIR trading programs to the unit will not be valid or binding for any year.

Pennsylvania's regulations. Pennsylvania's regulations do not address what happens when allocations are made to a unit that is not actually a CAIR unit.

In this case, EPA has not made any compliance deductions concerning the Marcus Hook unit for 2009, 2010, or 2011. FPL Energy has retained, in the compliance account for the Marcus Hook facility, all the CAIR NO_X Annual allowances and CAIR NO_X Ozone Season allowances allocated to the unit for these years and has expressed its willingness to surrender these allowances. September 2 and 23, 2010 supplemental information. The PaDEP has indicated that it intends to reallocate these allowances for 2010 and 2011 to existing units. July 29, 2010 e-mail from Randy Bordner (PaDEP) to Charles Frushour (EPA). Under these circumstances, EPA will deduct the allowances for 2009 from the Marcus Hook facility's compliance account and transfer the allowances to the new unit set-aside account for Pennsylvania in accordance with §§97.142(e) and 97.342(e)[5] and will deduct the allowances for 2010 and 2011 from the Marcus Hook facility's allowance account and transfer the allowances to the general reserve account for Pennsylvania for reallocation to existing units. EPA will make these deductions within 30 days after the issuance of this letter.

Conclusion

EPA's views in this letter concerning the applicability of the CAIR trading programs to the Marcus Hook unit are conditioned on the above-described assumption about the unit's electricity sales during 1987-1999 and rely on the accuracy and completeness of the information provided by FPL Energy in the January 25, 2010 letter and the supplemental information provided on February 15, 19, 22, and 25, April 15-16, and September 2 and 23, 2010. 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 3
Randy Bordner, PaDEP

[5] EPA notes that, because distribution of the new-unit set-asides to new units has already been completed for 2009, EPA will then allocate to existing units the 2009 allowances transferred to the new-unit set-asides. See 40 CFR 97.142(d) and 97.342(d).