Golder Associates Inc.

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Golder Associates

May 21, 2001

RECEIVED 0039515

MAY 22 2001

BUREAU OF AIR REGULATION

Florida Department of Environmental Protection
Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attention: Mr. M. P. Halpin, P.E.

RE: Auburndale Cogeneration Facility – New Simple Cycle Combustion Turbine
DEP File No. 1050221-004-AC (PSD-FL-311)
Request for Additional Information

Dear Mike:

This correspondence provides additional information requested in your letter dated February 6, 2001. Presented below are responses to the information requested.

1. Requested Information: The January 18 response appears to effectively revise the original application. Please clarify whether or not DLN burners will be installed on the new simple cycle CT (i.e. a Phase II). As previously indicated the use of water injection as the control method for NO_X emissions does not represent BACT.

   Response: As a result of the comments and suggestions suggested by the Department in the January 10, 2001 correspondence and during the meetings held on January 12, 2001 and April 27, 2001, a "netting" approach as indicated in the Department's January 18th letter is proposed. Under the netting approach, BACT would not be applicable to the project. In this approach, the Siemens Westinghouse 501D5A would be equipped with wet injection for NO_x control and dry low-NO_x (DLN) combustors are not proposed.

2. It appears (at least for the beginning of the project) that the applicant wishes to net out of a PSD review for NO_X. The Department has questions related to the supplied netting analysis:
   a) The netting utilizes actual emissions from calendar year 2000 (as the baseline year), with adjustments for outages. Please supply emissions for calendar year 1999 and explain why these should not be utilized. Additionally, please provide further support for the requested adjustments to year 2000 emissions.
   b) According to the EPA's New Source Review Training Course, the netting analysis should specify:
      1) Increases from the proposed modification, added to source-wide creditable decreases, less source-wide creditable decreases. Please specifically itemize these values for this project. The Department maintains that as a prerequisite to performing the analysis, "un-netted" emission increases from the proposed

modification must be known. These may then be compared to the proposed decreases to ascertain whether the project will indeed net out.

2) All emission increases and decreases must be creditable, contemporaneous and not otherwise needed to meet a regulatory compliance requirement. Among other requirements, *creditable* is defined as permanent, real, quantifiable and federally enforceable. Please specifically itemize the creditable emission reductions (from the existing source) which are being permanently proposed.

Response: 2.a)—At the January 10th meeting, the Department indicated that one representative year of operation would be acceptable given the difficulty with steam injection to control NO_x. The Year 2000 is the most appropriate and representative of actual emissions. The information contained in the January 18, 2001 letter is the information available on the proposed adjustments to actual emissions. As subsequently discussed, 292 tons/year would be an appropriate and acceptable total annual NO_x emissions for the facility for "netting out" of PSD review. This includes 253 tons/year as actual emissions and 39-tons/year increase over actual emissions.

Response: 2.b)1)—Based on the meeting of April 27, 2001 with the Department and subsequent discussions with Jim Little of EPA Region IV, Calpine proposes to generate credible emission reductions from the existing cogeneration facility as suggested by the Department. Calpine proposes a 12-month rolling annual NO_x emission limit, which will limit the total annual NO_x emissions for the existing cogeneration facility to 177 tons/year. A 12-month rolling average tons/year limit using CEMs is the proposed means of compliance. The short-term emissions limits would remain the same. The tons/year limit will allow the cogeneration facility to operate at 8,760 hours/year. For example, the facility could operate 8,560 hours/year firing gas at the average historical input heat rate and 200 hours/year on distillate oil, for a total of 8,760 hours/year. Attached is an example calculation of the potential NO_x emissions at full operation. As noted in the example, the emission calculations were based on the EPA Method 19 F-Factor method. This method is used under the Acid Rain requirements. The amount of oil firing currently authorized for the existing cogeneration facility would remain as identified in the PSD and Title V permit (i.e., 400 hour/year).

The amount of NO_x emissions creditable to the new peaking unit would total 115 tons/year; 76 tons/year of NO_x reductions from the existing cogeneration facility and 39-tons/year increase. The short-term NO_x emission limits would be 25 ppmvd corrected to 15 percent O_2 when firing natural gas and 42 ppmvd corrected to 15 percent O_2 when firing distillate oil. The maximum amount of oil firing proposed for the new peaking unit is 400 hours/year. Attached are example calculations based on an annual limit of 115 tons/year for firing only natural gas and firing both natural gas and distillate oil for 400 hours/year. For example, if only natural gas is fired, the peaking unit could operate about 1,730 hours per year. If distillate oil were fired for 400 hours/year, than the amount of gas firing would be about 1,020 hours/year. A 12-month rolling annual tons/year limit using CEMs is the proposed means of compliance.

The emissions of other air pollutants were evaluated for the new peaking unit based on either the amount of gas-only firing or the amount of firing for both gas and oil firing. This would provide the potential range of emissions of other air pollutants. The calculations are attached. As noted from the calculations, the increases in other pollutants are less than the significant emission rates for all pollutants for baseload operation. For CO, the mass emissions provided by Siemens Westinghouse at 75 percent load are higher than at baseload. To assure that the

operation of the facility would not increase emissions above the significant emission rate for CO, Calpine proposes to install a CO CEM on the peaking unit to demonstrate that CO emissions are less than 100 tons/year. The short-term compliance limits would be as indicated in the application (i.e., 10 and 50 ppmvd corrected to 15 percent O2 for baseload and 75 percent load, respectively). The mass emissions of other pollutants do not increase with lower load operation.

Response: 2.b)2)—As discussed above, the proposed unit-specific NO_x emission cap for the existing cogeneration facility would be creditable by being permanent, real, quantifiable and federally enforceable. The unit-specific tons/year limits would be determined using CEMs and therefore quantifiable. A proposed permit condition for the Department's consideration is attached.

Please call if there are any questions.

Sincerely,

Kennard F. Kosky, P.E.
Principal
Professional Engineer No. 14996

SEAL

cc: Bruce Franco, Calpine Eastern Corporation
Benjamin Borsch, Calpine Eastern Corporation
Ted Baldwin, Calpine Eastern Corporation
A. A. Linero, FDEP, Bureau of Air Regulation

P:\Projects\2000 0039\0039515a Calpine Auburndale\02 02-L052001 doc

C. Holladay
B. Thomas, SW Dist.
G. Worley, EPA
G. Bunyak, NPS

EXAMPLE CALCULATIONS FOR UNIT-SPECIFIC EMISSION CAP FOR CALPINE AUBURNDALE

Existing Auburndale Unit:

	1,116	mmBtu/hr maximum average heat input
assume:	8,560	hrs/year gas firing
then:	9,552,960	mmBtu/yr for gas firing
	0.033	lb/mmBtu at 9 ppmvd (see F-Factor)
	158.368	tons/year
add:	200	hrs/year oil firing
then:	8,760	hrs/year total
	223,200	mmBtu/yr for oil firing
and:	9,776,160	mmBtu/yr total for cogen
	0.163	lb/mmBtu for oil firing at 42 ppmvd (see F-Factor)
then:	18.219	tons/year for oil firing
Unit Cap:	177	tons/year emission cap for cogeneration facility
	292	tons/year past actual plus 39 tons/year per FDEP discussions

New Peaker Unit:

Unit Cap:	115	tons/year allocated for new unit
	1,448	mmBtu/hr gas at ISO
	0.09	lb/mmBtu for gas firing at 25 ppmvd (see F-Factor)
	1,730.85	hours/year available for gas firing only
if:	400	hours/year oil firing
then:	47.28	tons/year used by oil firing
and:	68.13	tons/year available for gas firing
	1,021.82	hours/year available for gas firing
	1,421.82	hours/year total gas including 400 hours of oil

Calculation of emission for other pollutants from new peaking unit (at ISO):

	CO	SO_2	PM/PM_{10}	VOC
Emissions Gas (lb/hr)	33.30	4	2.7	7.5
Emissions Oil (lb/hr)	33.90	71.1	8.7	9.7
Emission Gas Only (tpy)	28.82	3.46	2.34	6.49
Emissions Gas & Oil (tpy)	23.79	16.26	3.12	5.77
PSD SERs	100.00	40	15	40

(SERs = significant emission rates)

Potential FDEP Permit Condition:

Existing Cogen: Short-term emission limits remain the same

New annual tons/year limit

$(E_{cc\text{-}gas} \times HI_{cc\text{-}gas} + E_{oil} \times HI_{oil})/2000 =$ 177 tons/year

Where: E = Emissions in lb/mmBtu from CEM
HI = Heat Input in mmBtu/year
CC = combined cycle unit

New Peaker: Short-term emissions limits of 25 ppmvd on gas and 42 ppmvd on oil

New Annual Limit:

$(E_{sc\text{-}gas} \times HI_{sc\text{-}gas} + E_{oil} \times HI_{oil})/2000 =$ 115 tons/year

Where: E = Emissions in lb/mmBtu from CEM
HI = Heat Input in mmBtu/year
SC = simple cycle unit

Determination of Maximum Heat Imputs using 40 CFR Part 60 Procedures to Determine Emission Rates

Calculation of Emission Rate in lb/mmBtu using the Oxygen F-Factor from EPA Method 19

$E = K \times C_h \times F \times 20.9/(20.9-\%O_2)$

Existing Unit	K =	1.194E-07	(lb/dscf)/ppm NOx
	C_h =	9	ppm NOx - dry
	F =	8710	dscf/mmBtu for natural gas
	O_2 =	15	% dry
	E =	0.0331558	lb/mmBtu
New Unit	K =	1.194E-07	(lb/dscf)/ppm NOx
	C_h =	25	ppm NOx - dry
	F =	8710	dscf/mmBtu for natural gas
	O_2 =	15	% dry
	E =	0.0920994	lb/mmBtu
Oil Firing	K =	1.194E-07	(lb/dscf)/ppm NOx
	C_h =	42	ppm NOx - dry
	F =	9190	dscf/mmBtu for oil
	O_2 =	15	% dry
	E =	0.1632538	lb/mmBtu

FLORIDA

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

February 6, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Benjamin Borsch
Environmental Manager
Calpine Corporation
4890 West Kennedy Blvd., Suite 600
Tampa, Florida 33609

Re: Request for Additional Information No.2
DEP File No. 1050221-004-AC (PSD-FL-311)
Auburndale Cogeneration Facility - Construction of new simple cycle combustion turbine (CT)

Dear Mr. Borsch:

On January 18, 2001 the Department received your response to the request for additional information dated January 10, 2001. The response was related to an application for a modification to the air construction permit for the existing Auburndale Cogeneration Facility. This modification is intended to add one simple cycle combustion turbine (CT) to the facility. The application remains incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. The January 18 response appears to effectively revise the original application. Please clarify whether or not DLN burners will be installed on the new simple cycle CT (i.e. a Phase II). As previously indicated the use of water injection as the control method for NO_X emissions does not represent BACT.

2. It appears (at least for the beginning of the project) that the applicant wishes to net out of a PSD review for NO_X. The Department has questions related to the supplied netting analysis:

   a) The netting utilizes actual emissions from calendar year 2000 (as the baseline year), with adjustments for outages. Please supply emissions for calendar year 1999 and explain why these should not be utilized. Additionally, please provide further support for the requested adjustments to year 2000 emissions.

   b) According to the EPA's New Source Review Training Course, the netting analysis should specify:

      1) Increases from the proposed modification, added to source-wide creditable decreases, less source-wide creditable decreases. Please specifically itemize these values for this project. The Department maintains that as a prerequisite to performing the analysis, "un-netted" emission increases from the proposed modification must be known. These may then be compared to the proposed decreases to ascertain whether the project will indeed net out.

      2) All emission increases and decreases must be creditable, contemporaneous and not otherwise needed to meet a regulatory compliance requirement. Among other requirements, *creditable* is defined as permanent, real, quantifiable and federally enforceable. Please specifically itemize the creditable emission reductions (from the existing source) which are being permanently proposed.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Material changes to the application should also be accompanied by a new certification statement by the authorized representative or responsible official. Permit applicants are advised that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days. If there are any questions, please call Mike Halpin at 850/921-9519.

Sincerely,

M. P. Halpin, P.E.
New Source Review Section

AAL/mph

cc: Gregg Worley, EPA
John Bunyak, NPS
B. Thomas, SWD
J. Spence, Polk Co.
Ken Kosky, Golder Associates

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Mr. Benjamin Borsch
Environmental Manager
Calpine Corporation
4890 W. Kennedy Blvd.,-Ste 600
Tampa, Fl 33609

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Tampa Fl 33609

PS Form 3800, July 1999 See Reverse for Instructions

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Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

January 10, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Benjamin Borsch
Environmental Manager
Calpine Corporation
4890 West Kennedy Blvd., Suite 600
Tampa, Florida 33609

Re: Request for Additional Information
DEP File No. 1050221-004-AC (PSD-FL-311)
Auburndale Cogeneration Facility - Construction of new simple cycle combustion turbine (CT)

Dear Mr. Borsch:

On December 12, 2001 the Department received your application and complete fee for a modification to the air construction permit for the existing Auburndale Cogeneration Facility. This modification is intended to add one simple cycle combustion turbine (CT) to the facility. The application is incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. The initial (Phase I) gas fired emission level of NO_X requested for the CT is 25 ppmvd, utilizing water injection as the control method. This does not represent BACT for the unit. Please reconsider the control technology, which is being proposed. Recent determinations by the Department have concluded that dry low NO_X combustion represents BACT for intermittent operation simple cycle CT's.

2. According to Department records, annual NO_X emissions from the existing combined cycle unit for the past 3 years (1999, 1998 and 1997) have been 233.34, 367.2 and 300.0 TPY respectively. Please evaluate the possibility of accepting an emissions cap for the combined emissions of the new CT and the existing unit. An emissions increase of less than 40 TPY over past actual emissions would not require a review for BACT.

3. The Department has recently reviewed the proposal for a new combined cycle power plant (Osprey Energy Center) which is to be located in the same proximity as the Auburndale Cogeneration Facility. Please evaluate the combined ambient impacts of these projects.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Material changes to the application should also be accompanied by a new certification statement by the authorized representative or responsible official. Permit applicants are advised that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days. If there are any questions, please call Mike Halpin at 850/921-9519.

Sincerely,

M. P. Halpin, P.E.
New Source Review Section

AAL/mph

cc: Gregg Worley, EPA
John Bunyak, NPS
B. Thomas, SWD
J. Spence, Polk Co.
Ken Kosky, Golder Associates

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1. Article Addressed to:
Mr. Benjamin Borsch
Environmental Manager
Calpine Corporation
4890 West Kennedy Blvd., Ste 600
Tampa, Fl 33609

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Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

December 15, 2000

Mr. Gregg Worley, Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA, Region 4
61 Forsyth Street
Atlanta, Georgia 30303

RE: Auburndale Power Partners L.P.
Auburndale Cogeneration Facility
Facility ID No. 1050221-004-AC, PSD-FL-311

Dear Mr. Worley:

Enclosed for your review and comment is an application for construction of a PSD source. The applicant, Auburndale Power Partners L.P., proposes to construct and operate a power generating facility in Polk County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/922-6979. If you have any questions, please contact the review engineer, Mike Halpin, at 850/488-0114.

Sincerely,

Patty Adams

for Al Linero, P.E.
Administrator
New Source Review Section

AAL/pa

Enclosure

cc: M. Halpin

Department of
Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

December 15, 2000

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS – Air Quality Division
Post Office Box 25287
Denver, Colorado 80225

RE: Auburndale Power Partners L.P.
Auburndale Cogeneration Facility
Facility ID No. 1050221-004-AC, PSD-FL-311

Dear Mr. Bunyak:

Enclosed for your review and comment is an application for construction of a PSD source. The applicant, Auburndale Power Partners L.P., proposes to construct and operate a power generating facility in Polk County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/922-6979. If you have any questions, please contact the review engineer, Mike Halpin, at 850/488-0114.

Sincerely,

Patty Adams

for Al Linero, P.E.
Administrator
New Source Review Section

AAL/pa

Enclosure

cc: M. Halpin