

September 9, 2009

Via Electronic Mail and U.S. Mail

Florida Department of Environmental Protection Bureau of Air Regulation, Division of Air Resource Management 2600 Blair Stone Road, M.S. 5500 Tallahassee, FL 32399-2400

Attention:

Mr. Alvaro Linero, Director of Special Projects

(alvaro.linero@dep.state.fl.us)

RE:

Air Construction Permit No. 0470016-001-AC
Supplement Request No. 03 – 090809 – Submission of Additional
Information Including Updated Carbon Monoxide (CO) Emission Rate Data
Application for ADAGE Hamilton LLC - Air Construction Permit
Proposed Nominal Net 53 MW Woody Biomass Electric Power Plant
Hamilton County, Florida

Dear Mr. Linero:

ADAGE Hamilton LLC (ADAGE) submitted an application for an air construction permit to the Florida Department of Environmental Protection, Bureau of Air Regulation, Division of Air Resource Management (Bureau) on May 20, 2009 for the construction of a proposed nominal 50 MW Woody Biomass Electric Power Plant to be located in Hamilton County, Florida. Supplemental information was also provided to the Bureau on June 19, 2009 (referred to as Supplement #01-061809) and on July 17, 2009 (Supplement #02-071009).

ADAGE, the applicant, hereby submits additional information (referred to as Supplement #03-090809) to support the information provided in the initial air construction permit application dated May 20, 2009 and supplements dated June 19, 2009 and July 17, 2009. The information provided specifically pertains to updated technical information, as well as emissions data.

To clarify prior information submitted to the Bureau, the gross electrical output of the power plant will be approximately 62 megawatts (MWs) and the nominal net electrical output of the power plant is now estimated to be 53 MWs. The net MW output takes into account electrical demands required by plant operations and can vary depending on the operational phases of the plant and climatic conditions. The initial information provided by ADAGE referred to a nominal net rating of 50 MWs.

ADAGE has selected the vendor who will be supplying the bubbling fluidized bed (BFB) boiler for the Hamilton County woody biomass power plant. The selected vendor indicates that the CO emission rate is estimated to be 0.08 lbs/MMBtu which is slightly higher than the original engineering estimate of 0.07 lbs/MMBtu due to fuel variability. This emission rate pertains to operation of the BFB boiler during the combustion of clean woody biomass (i.e., normal operating load) and excludes start-up, shutdown or malfunction conditions.

Despite this slight change in emission rate, ADAGE is not requesting a change to the maximum annual allowable CO emissions (i.e., tons/year) from the proposed BFB boiler. ADAGE is requesting a synthetic limit of 232.4 tons per year from the BFB boiler

A revised version of Table 2-2, reflecting this change, is attached to this submittal. Also attached is the updated application form page 14 of the emission unit information form for the proposed BFB Boiler. The form has been modified to indicate a synthetic limit is being proposed for CO emissions from the proposed BFB boiler.

During preparation of the revised form to reflect the request for a synthetic minor limit for CO, ADAGE reviewed the initial application's emissions data and concluded that for emission of oxides of nitrogen (NO_x) and sulfur dioxide (SO₂), the synthetically limited box (i.e., box 4) on the emission unit information form should also be checked "yes" for these two air pollutants. In addition, pages 12 and 13 of the emission unit information form for the BFB boiler have also been updated to include the synthetically limited request.

ADAGE is committed to supporting the Bureau with their permitting effort and will be available to answer any additional questions that may arise as a result of the information provided in this supplement.

Included with this submittal is the following information:

- Attachment A Revised Table 2-2, and Pages 12, 13 and 14 of the Emission Unit Information application form for the BFB boiler; and
- Completed DEP Form No. 62-210.900 (1) Professional Engineer Certification.

Should you have any questions, please do not hesitate to contact Ms. Vanessa Goff of ADAGE at (585) 749-7302. We look forward to continuing working with the Bureau on issuance of a construction permit for the proposed plant.

Very truly yours, ADAGE Hamilton LLC

F. Reed Wills President

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Table 2-2 Estimated Potential to Emit Regulated NSR Air Pollutants from the Proposed Woody Blomass Fluidized Bed Boller ADAGE Hamilton LLC Hamilton County, Florida Proposed Nominal 50-MW Woody Blomass Power Plant

Operating Scenar	A CONTRACT OF THE PARTY OF THE	Startup, Shutdown, and Bed		Normal ^(a)			
		Maximum, Hourly	Maximum Anniral	Maximum Hourly	Maximum Annual		CONTRACT CARREL
Heat Input, H (mmBtu/hr)		240	240	758	758	_	-
Annual Operating I	Hours, T (hours/year)		8760		8760	-	_
PM.	Emission Factor (lb/mmBtu)	0.0056	0.0056	0.01	0.01	-	
(Filterable)	Emission Rate (lb/hr "hourly" & tpy "annual")	1.34	5.87	8	33	8	33
PM.	Emission Factor (lb/mmBtu)	0.0019	0.0019	0.019	0.019		44
(Condensible)	Emission Rate (fb/hr "hourly" & toy, "annual")	0.45	1.96	14	63	14	63
PM	Emission Factor (ib/mmBtu)	0.0075	0.0075	0.029	0.029	-	
(Total)	Emission Rate (lb/hr "hourly" & toy "annual")	1.79	7.83	22	96.3	22	95.3
	Emission Factor (lb/mmBtu)	0.0075	0.0075	0.029	0.029	_	
PM ₁₀	(fb/hr "hourly" & tpy."annual")	1.79	7.83	22	96.3	22	98.3
PM _{2.5}	Emission Factor (lb/mmBtu)	0.0075	0.0075	0.029	0.029	-	
	Emission Rate (lb/hr "hourly" & tpy "annual")	1.8	7.8	22	98.3	22	98.3
(0	Emission Factor (lb/mmBtu)	0.3	0.2	0.3	0.07		**
NO _x ^(d)	Emission Rate (ib/hr "hourly" & tpy "annual")	72	210·	227	232	227 .	232.4
- 64	Emission Factor (lb/mmBtu)	0.0006	0.0006	0.180	0.045		**
SO ₂ ^(c,d)	Emission Rate (ib/hr "hourly" & tpy "annual")	0.1	0.6	136	149.4	136	149,4
H ₂ SO ₄	Emission Factor (lb/mmBtu)	0,00004	0.00004	0.012	0.0077	- in	
(Aerosols and Mist)	Emission Rate (Ib/hr.*hourly* & tpy "annual")	0.009	0.040	9	25.6	9	25.6
	Emission Factor (ib/mmBtu)	0.082	0.082	0.6	0.08		
CO(q)	Emission Rate (lb/hr "hourly" & tpy "annual")	20	87	455	232	455	232.A
	Emission Factor (lb/mmBtu)	0.0054	0.0054	0.017	0.017		
VOC	Emission Rate (lb/hr "hourly" & tpy "annual")	1.3	5.7	13	56.4	13	58.4
	Emission Factor (lb/mmBtu)	0.0000	0.0000	0.008	800.0		-
Fluorides ^(e)	Emission Rate (lb/hr "hourly" & tpy "annual")	0.0	0.0	6	27	6	27.1

Calculation Method:

Maximum Hourly Emission Rate (Ib/hr) = Maximum Hourly Heat Input (mmBtu/hr) x Maximum Hourly Emission Factor (Ib/mmBtu)

Annual Emission Rate (tons/year) = Average Heat Input (mmBtu/hr) x Average Annual Emission Factor (Ib/mmBtu) x Annual Operating Hours (hr/year) / (2000 lb/ton)

Sample Calculations:

Maximum Hourly PM Emission Rate for Normal Operating Scenario,

8 lb/hr = 758 mmBtu/hr x 0.01 lb/mmBtu

Annual PM Emission Rate for Normal Operating Scenario,

33 ton/year = 758 mmBtu/hr x 0.01 b/mmBtu x 8760 hours/year / (2000 b/ton)

Notes

- (a) Startup fuel is natural gas. Emission Factors based on AP-42 or NSPS (refer to Table 2-3).
- (b) Normal operating fuel is woody biomass. Emission factors based on AP-42, NSPS, or fuel sample testing (refer to Table 2-3).
- (c) Reduction of hydrogen fluoride (HF) can reasonably be expected with dry sorbent injection (DSI). Most of the fluoride emissions are expected to occur in the form of HF emissions. However, it was assumed no DSI occurs for calculation of worst-case estimated PTE fluoride rates.
- (d) Maximum annual emission factor provided for informational purposes only. Continuous emission monitoring system (CEMS) will be used to demonstrate compliance with the federally enforceable annual emission limit. Short-term emission estimates are provided for informational purposes only. Ton per year (TPY) estimates based on boiler heat input of 758 MMBtu/hr, appropriate average emission factor (i.e., bs/MMBtu) and 8,760 hours per year. The emission factor employed is a long term average, including curtailment and scheduled outages. Short term emissions may exceed this average factor.

EMISSIONS UNIT INFORMATION Section [2]

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Page	[1	of	ſ	1			

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NO _x	2. Total Percent Effici >70%	ency of Control:
3. Potential Emissions: See Application Document lb/hour ton	s/year 4. Synt	hetically Limited? Yes No
5. Range of Estimated Fugitive Emissions (as to tons/year	s applicable): Not Applica	able
6. Emission Factor: See Application Docu Reference:	ment	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): Not Required tons/year	8.b. Baseline 24-month From: N.A.	Period: Fo:
9.a. Projected Actual Emissions (if required): Not Required tons/year	9.b. Projected Monitor	ng Period: N.A. 0 years
10. Calculation of Emissions: See Application Document, Section 2.0 11. Potential Fugitive and Actual Emissions Co.		
11. Potential, Fugitive, and Actual Emissions Consequence See Application Document	omment:	

DEP Form No. 62-210.900(1) - Form

EMISSIONS UNIT INFORMATION Section [2]

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F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1 Otterial, Estimated I ugitive, and Dasenite d	CATOJCCICA ARCIANI ISMINS	310113			
1. Pollutant Emitted:	2. Total Percent Efficiency of Control:				
SO₂	Uncontrolled. Limited by selection of fuel				
	with appropriately low	sulfur content.			
3. Potential Emissions:	4. Synth	etically Limited?			
See Application Document lb/hour ton	s/year x	Yes 📋 No			
5. Range of Estimated Fugitive Emissions (as to tons/year	applicable): Not Applica	ble			
6. Emission Factor: See Application Docu	ment	7. Emissions			
		Method Code:			
Reference:	,	0			
8.a. Baseline Actual Emissions (if required):	8.b. Baseline 24-month	Period:			
Not Required tons/year	From: N.A.	`o:			
9.a. Projected Actual Emissions (if required):	9.b. Projected Monitori	ng Period: N.A.			
Not Required tons/year	5 years 1	0 years			
10. Calculation of Emissions:					
See Application Document, Section 2.0.	•				
11 D					
11. Potential, Fugitive, and Actual Emissions Co See Application Document	omment:				

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EMISSIONS UNIT INFORMATION Section [2]

POLL	UT	ANT	DETA	IL	INF(DRMA	TION
Page	[]	of	I]		

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Otential, Estimated Fugitive, and Daschile C					
1. Pollutant Emitted:	2. Total Percent Efficie	-			
co	Unspecified. Controlled	d by good			
·	combustion practices.	•			
3. Potential Emissions:	4. Synth	netically Limited?			
See Application Document lb/hour ton	s/year x	Yes No			
5. Range of Estimated Fugitive Emissions (as applicable): Not Applicable to tons/year					
6. Emission Factor: See Application Docu	ment	7. Emissions			
		Method Code:			
Reference:		0			
8.a. Baseline Actual Emissions (if required):	8.b. Baseline 24-month	Period:			
Not Required tons/year	From: N.A.	Co:			
9.a. Projected Actual Emissions (if required):	9.b. Projected Monitori	ng Period: N.A.			
Not Required tons/year	5 years 10 years				
10. Calculation of Emissions:					
See Application Document, Section 2.0	•				
•					
·					
11. Potential, Fugitive, and Actual Emissions C	omment:				
See Application Document . The proposed flui	dized bed boiler design	provides highly			
efficient and complete combustion which min	imizes CO emissions.				

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Professional Engineer Certification

	D.C. : 17 : N
l.	Professional Engineer Name: David Cibik
	Registration Number: 55467
2.	Professional Engineer Mailing Address
	Organization/Firm: Malcolm Pirnie, Inc.
	Street Address: 1300 East 8 th Avenue, Suite F100
	City: Tampa State: Florida Zip Code: 33605
3.	Professional Engineer Telephone Numbers
	Telephone: (813) 248 - 6900 ext. Fax: (813) 248 - 8085
4.	Professional Engineer E-mail Address: DCibik@pirnie.com
5.	Professional Engineer Statement:
	I, the undersigned, hereby certify, except as particularly noted herein*, that:
,	(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and
	(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.
	(3) If the purpose of this application is to obtain a Title V air operation permit (check here, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.
	(4) If the purpose of this application is to obtain an air construction permit (check here x , if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here x , if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.
	(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.
	David Cibl 9/3/09
	Signature Date
	(seal)

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^{*} Attach any exception to certification statement.