ANALYSIS AND PRELIMINARY DETERMINATION FOR THE CONSTRUCTION PERMIT FOR THE PROPOSED CONSTRUCTION OF TWO SPRAY DRYER ABSORBERS AND ASSOCIATED EQUIPMENT

FOR
WPL - COLUMBIA ENERGY CENTER,
LOCATED AT
W8375 MURRAY ROAD,
PARDEEVILLE, COLUMBIA COUNTY, WISCONSIN

Construction Permit No.: 11-POY-123
Facility ID No.: 111003090

This review was performed by the Wisconsin Department of Natural Resources, Bureau of Air Management in accordance with Chapter 285, Wis. Stats., and Chapters NR 400 to NR 499, Wis. Adm. Code.

Reviewed by: Paul O. Yeung Date: 10/5/2011

Peer review conducted by: Steve Dunn Date: 10/5/2011

Preliminary Determination Approved by:	**Signature**	**Date**
Regional Supervisor or Central Office Designee:	Thomas Roushar	10/5/2011
Stationary Source Modeling Team Leader:	John Roth	10/5/2011
Compliance Engineer (reviewed/approved):	poy for Michael Sloat	10/5/2011

cc: Michael R. Sloat - South Central Region Air Program, Reedsburg Area Office
Portage Public Library, 253 West Edgewater St., Portage, WI

INTRODUCTION

Stationary sources that are not specifically exempt from the requirement to obtain a construction permit under s. 285.60(5), Wis. Stats. or ch. NR 406, Wis. Adm. Code may not commence construction, reconstruction, replacement, relocation or modification unless a construction permit for the project has been issued by the Department of Natural Resource's (DNR's) Air Management Program. Owners or operators subject to the construction permit requirements must submit a construction and operation permit application to the DNR. The application is reviewed following the provisions set forth in ss. 285.60 to 285.67, Wis. Stats. The criteria for permit issuance vary depending on whether the source is major or minor and whether the source is or proposed to be located in an attainment or nonattainment area.

Subject sources are to be reviewed with respect to the equipment and facility description provided in the application and for the resulting impact upon the air quality. The review ensures compliance with all applicable rules and statutory requirements. The preliminary determination will show why the source(s) should be approved, conditionally approved, or disapproved. It will encompass emission calculations and an air quality analysis using US EPA models, if applicable. Emissions from volatile organic compound (VOC) sources and small sources whose emissions are known to be insignificant are normally not modeled. As a precautionary note, the emission estimates are based on US EPA emission factors (AP-42) or theoretical data and can vary from actual stack test data.

The sources included in this construction permit are also required to obtain an operation permit under s. 285.60(1)(b), Wis. Stats. This review constitutes the Department's review of applications for the construction permit.

A final decision on the construction permit will not be made until the public has had an opportunity to comment on the Department's analysis, preliminary determination and draft permit. The conditions proposed in the draft permit may be revised in any final permit issued based on comments received or further evaluation by the Department.

GENERAL APPLICATION INFORMATION

Owner/Operator: WPL - Columbia Energy Center
W8375 Murray Road
Pardeeville, WI 53954-8731

Responsible Official: Jerald Lokenvitz
Plant Manager

Application Contact Person: Jeff Hanson
(608) 458-0419
Application Submitted By: Jeff Hanson
(608) 458-0419
Application submittal date: July 29, 2011

Additional Information Submitted: August 18, 2011 through September 25, 2011

Date of Complete Application: September 25, 2011

PROJECT DESCRIPTION

Wisconsin Power and Light Company (WPL) is a co-owner of and the operator of the nominal 1,054 megawatt (MW) coal fired Columbia Energy Center (CEC) in Pardeeville, Wisconsin. WPL is seeking to install air quality control systems (AQCSs) and associated equipment on existing Units 1 and 2. The AQCSs are being installed to meet current and possible future mercury (Hg) and sulfur dioxide (SO_2) emission requirements, and include the following equipment/activities:

- Two spray dryer absorbers (SDAs) modules – for each power boiler.
- Two downstream fabric filter baghouses – one for each power boiler.
- Expansion of the existing activated carbon injection (ACI) system installed in 2008 on Unit 2 to serve both Units 1 and 2.
- Relevant lime, powdered activated carbon (PAC) and ash storage and handling equipment.

The project will result in particulate matter emissions. The maximum theoretical emissions from the project will exceed the threshold in s. NR 406.04(2), Wis. Adm. Code, and thus a construction permit is necessary.

This review of the construction permit application covers only the approvability of the proposed project to install the two spray dryer absorbers and associated equipment. The review does not address any emission limitations in the existing operation permit except those that will apply to units affected by the proposed project after the proposed project is implemented.

SOURCE DESCRIPTION

CEC is a nominal 1,054 MW subbituminous coal fired, electrical power station located near the town of Pardeeville, in Columbia County, Wisconsin. WPL co-owns CEC with Wisconsin Public Service Corporation (WPSC) and Madison Gas and Electric (MGE). WPL is the operator of CEC. The station currently consists of two nominal 527 MW pulverized coal fired boiler/generator sets and associated equipment. The facility also includes coal handling equipment, railcar dumpers, conveyors, storage piles, and reclaim equipment. Particulate emissions from the boilers are currently controlled by electrostatic precipitators, which will remain in service. The site includes 2726 acres south of Portage, Wisconsin between Highway 51 and the Wisconsin River.

Air pollution control equipment systems associated equipment will be constructed to serve the existing Units 1 and 2. The systems are to be constructed to meet current and possible future mercury (Hg) and SO_2 emission requirements. The applicant states that the regulatory drivers triggering the need for these air pollutant emission reductions include the following:

- Wisconsin's mercury regulation (Wisconsin Administrative Code NR 446) - The Wisconsin mercury rules require a 90 percent reduction in fleet-wide mercury emissions beginning January 1, 2015.

- The Environmental Protection Agency's (EPA) Cross-State Air Pollution (CSAP) Rule (successor to Clean Air Interstate Rule) - This rule is intended to improve ambient air quality for fine particulate matter (PM2.5) in the eastern United States through the reduction of SO_2

emissions, which are a precursor to $PM_{2.5}$.

The proposed emissions reduction project is to include the following major elements:

- Installation of dry flue gas desulfurization (FGD) systems for both units. Specifically, two SDA modules and a downstream baghouse will be installed on each unit for SO_2 emissions reduction.
- Expansion of the existing ACI system on Unit 2 to serve both Units 1 and 2.
- Modification of the ACI system installed in 2008 on Unit 2 to relocate the carbon injection point downstream of the existing electrostatic precipitator (ESP). This injection point allows the plant to maintain beneficial reuse of the fly ash. The baghouses will capture spray dryer solids, residual fly ash, and PAC, including bound mercury.

The following listing describes the equipment that will be installed on each of the two power boilers (Units 1 and 2) at the CEC.

1. The Reagent Preparation System consists of the following major components for <u>each of</u> the two power boilers:
   - One lime silo.
   - Two lime slurry reagent preparation trains, each consisting of the following subcomponents:
     - Lime rotary feeder.
     - Lime slakers with vent scrubbers whose exhaust is routed back into the lime slurry storage tank.
     - Weigh belt feeder.
     - Lime slurry grit screen.
   - A lime slurry storage tank.
   - Lime slurry feed pumps.
2. The Recycle Ash System consists of the following major components for <u>each of</u> the two power boilers:
   - Recycle ash (solids) silo with two dust collectors whose exhaust will be routed to the main boilers' new fabric filter baghouses..
   - One recycle slurry preparation train each consisting of the following subcomponents:
     - Recycle ash rotary feeder.
     - Recycle ash slurry mix tank with a vent scrubber whose exhaust is routed back into the recycle slurry storage tank.
     - Recycle slurry grit screen.
   - Recycle slurry feed pumps.
   - One recycle slurry storage tank.
3. The SDA System consists of the following major components on <u>each of</u> the two power boilers:
   - Two 50 percent capacity SDA modules, each module consisting of the following subcomponents:
     - SDA absorber.

- Rotary atomizer assemblies.

4. The Fabric Filter System (Baghouse) consists of the following major components on each of the two power boilers:
   - A pulse jet cleaned, fabric filter dust collector.
   - Emergency bypass.
5. The Waste Ash System consists of the following major components for each of the two power boilers:
   - Waste ash (solids) silo with two dust collectors whose exhaust will be routed to the main boilers' new fabric filter baghouses.
   - Waste solids conditioning and truck unloading equipment
6. The PAC System already exists on Unit 2, and the operation of the system will be expanded to incorporate injection on Unit 1. The system consists of the following major components:
   - Existing PAC silo.
   - PAC feed trains.
7. Fugitive emissions from truck hauling onsite of pebble lime and PAC, as well as truck hauling of SDA byproducts and grit. SDA byproducts will be land- filled onsite.

The primary reagent of the SDA System is quick lime (calcium oxide, CaO). The quick lime will be delivered to the site by self-unloading pneumatic delivery trucks, which have a typical capacity of 20 tons. Using truck-mounted blowers, these trucks pneumatically convey the lime to the lime silo. The transport air is vented from the silo through a roof-mounted fabric filter that is part of this system.

Prior to use, the dry quick lime must be converted into a calcium hydroxide ($Ca(OH)_2$) slurry. This operation is performed by the lime slakers. The lime is unloaded from the silo into one of two lime slaker trains by a lime rotary feeder. In the slaker, CaO is mixed with water to produce a calcium hydroxide slurry in accordance with the following reaction:

$$CaO + H_2O \longrightarrow Ca(OH)_2 + heat$$

As shown in this equation, one mole of water (H_2O) reacts with each mole of CaO to produce one mole of $Ca(OH)_2$. Sufficient additional water is added to produce a slurry with 25 percent solids. The lime slurry is screened to remove grit from the slurry and piped to the lime slurry tank. From the tank, the slurry is pumped to the atomizer(s) in a feed loop. Any lime slurry not discharged into the atomizer(s) is returned to one of the two lime slurry grit screens. The removed grit will be stored in a bin and will be handled as waste. Fly ash and SDA byproduct solids from the fabric filter hoppers are pneumatically transported to the Recycle Ash Storage Silo by the Fly Ash and Byproduct Solids System. The transport air is vented from the silos through roof-mounted dust collectors whose exhaust will be routed of the main boilers' new fabric filter baghouses.

The fly ash and byproduct solids are unloaded from the Recycle Ash Storage Silo into one of two Recycle Ash Slurry Mix Tanks by a rotary feeder. In the mix tank, the fly ash and SDA byproduct solids are mixed with sufficient water to produce an approximate 40 percent solids slurry. This recycle slurry is

screened to remove oversized grit that will be stored in a bin and will be handled as waste and piped to the Recycle Ash Slurry Storage Tank. From the tank, the slurry is pumped to the atomizer(s) by the Recycle Ash Slurry Feed Pumps.

The reagent slurries from the Reagent Preparation System and Recycle Ash System are discharged into the atomizer(s). Just prior to entering the atomizer, the slurry passes through an atomizer feed slurry strainer.

Each rotary atomizer assembly consists of a drive motor, gear box, atomizer wheel, and associated support equipment. As the slurry discharges from the rapidly turning atomizer wheel, the slurry is broken into very fine droplets that form an umbrella shaped spray pattern.

The flue gas enters the SDAs and is distributed around the atomizers, contacting the "umbrellas" of spray droplets. SO_2 (and other acid gases) are absorbed into the slurry droplets and react with the $Ca(OH)_2$ to form calcium salts according to the following chemical reactions:

$$SO_2 + Ca + 2OH \longrightarrow CaSO_3 + H_2O \ (60\%)$$

$$SO_2 + Ca + 2OH + \frac{1}{2}O_2 \longrightarrow CaSO_4 + H_2O \ (40\%)$$

$$H_2SO_4 + Ca + 2OH \longrightarrow CaSO_4 + 2H_2O$$

$$2HCl + Ca + 2OH \longrightarrow CaCl_2 + 2H_2O$$

$$2HF + Ca + 2OH \longrightarrow CaF_2 + 2H_2O$$

The heat of the flue gas causes the water in the slurry (and that formed in the above reactions) to evaporate leaving behind dry byproduct solids and fly ash. The chemical reactions and drying are mostly complete before the solids leave the SDA; however, a significant amount of acid gas removal occurs later as the flue gas passes through the alkaline filter cake on the fabric filter bags. The flue gas leaving the two SDAs on each unit is combined and then directed to the inlet duct of the fabric filter. Estimating worst case conditions, WPL anticipates that approximately 8,075 pounds per hour of reagent will be injected into each spray dryer absorber resulting in 16,985 pounds per hour of SDA byproduct. A small portion of reaction product, unreacted reagent and fly ash will pass through the fabric filter and be emitted through the stack as airborne particulate. These particulate emissions are modeled and addressed in Section 5 of the air permit application document.

The flue gas flows into the baghouse, and the fly ash and SDA byproduct solids collect on the outside of the fabric filter bags, forming a cake layer. While the filter bags are relatively tightly woven, most of the actual filtration of particulate matter from the flue gas is provided by the material forming the bag cake. The flue gas passes through the bag cake and filter cloth, along the length of the bag, and into the compartment outlet plenum. The flue gas from the baghouse is then discharged and is directed to the induced draft booster fans and onward to the stack exit.

Periodically, the accumulated solids on the bags must be removed. This is accomplished by directing a short pulse of compressed air into the top of the bags. The brief air pulse flexes the bag, causing most of the bag cake to fall off the bag. The cleaning is intentionally not thorough enough to remove all of the bag cake. The residual cake provides the initial filter media for subsequent filtration. The fabric filter

control system automatically steps through cleaning every bag in the fabric filter. Only a very small portion of the bags in one compartment out of the entire fabric filter are cleaned at one time.

The compressed air is supplied by a pulse air system that provides the clean, dry air to clean the fabric filter bags. Ambient air is compressed by the pulse jet air compressors. The air is dried by one of two pulse jet air dryers prior to use.

The fly ash and SDA byproduct solids dislodged from the filter bags fall into the compartments' pyramidal hoppers. Periodically, the ash and byproduct solids are removed from the hoppers by the Fly Ash and SDA Solids System

There is an emergency by-pass for the fabric filter that would only be used during black out conditions (a loss of plant electrical power) or if a high temperature excursion caused by an air heater failure occurs. Under this circumstance the generating unit would be tripped to protect the integrity of the equipment and prevent such outcomes as melting of, or fires in, the bags within the fabric filter baghouse. Even though the unit would not continue to be operating, the bypass of the fabric filter would allow the natural flow of air through the boiler to carry the flue gases and residual heat to the back of the unit thus preventing the melting of the fabric filter bags if the SDA is not able to cool the flue gases enough. Due to lack of power the entire material handling system will be shutdown, in which case there will be no resulting PM increases.

To prevent the continued build up of ash in the system, a portion of the fly ash is sent to the waste solids storage silo instead of being recycled back into the recycle ash system. There will be two waste solids storage silos. Waste ash from each storage silo is trucked out through the truck load out station either as wet ash or as dry ash. As part of the wet unloading system, water is added to the waste solids just before it enters the truck. Particulate matter emissions are suppressed with the wet unloading system. As part of the dry unloading system, vented air from the truck is captured by a fan and directed back into the silo. Particulate emissions from each silo are controlled by separate bin vent dust collectors whose exhaust will be routed to the main boilers' new fabric filter baghouses.

The existing PAC System currently injects PAC upstream of the ESP on Unit 2. The system will be modified to relocate the injection point on Unit 2 to upstream of the Unit 2 SDA and in addition, will inject PAC upstream of the SDA on Unit 1. The existing Unit 2 system has three injection trains, with one currently being spare. One of the three injection trains will now be used for Unit 1, with the other train remaining a common spare. PAC is brought onsite by trucks and pneumatically transferred to the silo. The transport air is vented from the silo through a roof-mounted fabric filter that is part of this system.

Emissions units reviewed and analyzed for fees purposes are two boilers, two lime silos, one powdered activated carbon (PAC) silo, paved road and unpaved road.

Description of New or Modified Units.

STACK INFORMATION
Stack Identification Number: S11

Exhausting Unit(s): B21
This stack has an actual exhaust point: Yes
Discharge height above ground level (ft): 500.0
Inside dimensions at outlet (ft): Circular - 21.00
Exhaust flow rate (Normal) (ACFM): 2,252,000
Exhaust gas temperature (Normal) (°F): 174
Exhaust gas discharge direction: Up
Stack equipped with any obstruction: No

Emission Unit Information
Boiler/furnace number: B21
Unit description: 527 MW Boiler/Steam Electric Generator Set. Pulverized Coal; Dry Bottom Boiler; Tangential Firing w/Concentric Firing Overfire Air.
Control technology status: Controlled
Maximum continuous rating (mmBTU/hr): 5885
Date of construction or last modification: 2/24/71
Construction Permit Requirements: This boiler is not subject to construction permit requirements because it was constructed prior to 1980.

	Primary Fuel	Backup Fuel #1	Backup Fuel #2
Fuel Name	Coal	#2 Fuel Oil	Boiler Chemical Cleaning Waste Liquid
Higher Heating Value	7800 - 7900 Btu per pound	140,000 Btu/gallon	
Max. Sulfur Content (weight %)	1.5 %	0.5 %	
Max. Ash Content (weight %)	12.0 %	0	
Max. hourly consumption	306 tons/hr	4500 gal./hr	

	Backup Fuel #3	Backup Fuel #4	Backup Fuel #5
Fuel Name	Waste Oil	Wood Fuel	Petroleum Contaminated Soil
Higher Heating Value	145 mmBTU/gal3	4500 Btu/lb	
Max. Sulfur Content (weight %)	1.5 %		
Max. Ash Content (weight %)	0.08 %		
Max. hourly consumption	40.59 gal^3/hr	653.89 tons/hr	20 cubic yds/day

Control devices associated with this emissions unit
Emission unit controlled: B21
Control device number: C11
Date of installation: 1974
Description of device: Hot side electrostatic precipitator, including flue gas conditioning system. Two units with a chevron design arrangement. Maximum 1110 kW energy input. Total Collecting Plate area is 743,000 square feet. Designed for maximum temperature operation of 810 degrees F and 2,770,000 ACFM.

Control device number: C13
Date of installation: 2012
Description of device: Spray Dryer Absorber Designed for the control of sulfur dioxide emissions

Control device number: C14
Date of installation: 2012
Description of device: Pulse jet fabric filter baghouse

STACK INFORMATION
Stack Identification Number: S12
Exhausting Unit(s): B22

This stack has an actual exhaust point: Yes
Discharge height above ground level (ft): 650.0
Inside dimensions at outlet (ft): Circular - 21.00
Exhaust flow rate (Normal) (ACFM): 2,252,000
Exhaust gas temperature (Normal) (°F): 174
Exhaust gas discharge direction: Up
Stack equipped with any obstruction: No

Emission Unit Information
Boiler/furnace number: B22
Unit description: 527 MW Coal Fired Boiler/Steam Turbine Generator Set - Pulverized Coal, Dry Bottom Boiler; Tangential/Concentric Firing & Overfire Air. NSPS Subpart D Source.
Control technology status: Controlled
Maximum continuous rating (mmBTU/hr): 5885
Date of construction or last modification: 5/12/75
Construction Permit Requirements: This boiler is currently covered by construction permit 86-LMW-406.

	Primary Fuel	Backup Fuel #1	Backup Fuel #2
Fuel Name	Coal	#2 Fuel Oil	Boiler Chemical Cleaning Waste Liquid
Higher Heating Value	7800 - 7900 Btu per pound	140,000 Btu/gallon	
Max. Sulfur Content (weight %)	1.5 %	0.5 %	
Max. Ash Content (weight %)	12.0 %	0	
Max. hourly consumption	306 tons/hr	4500 gal/hr	

	Backup Fuel #3	Backup Fuel #4	Backup Fuel #5
Fuel Name	Waste Oil	Wood Fuel	Petroleum Contaminated Soil
Higher Heating Value	145 mmBTU/gal3	4500 Btu/lb	
Max. Sulfur Content (weight %)	1.5 %		
Max. Ash Content (weight %)	0.08 %		
Max. hourly consumption	40.59 gal3/hour	653.89 tons/hr	20 cubic yards/day

Control device associated with this emissions unit
Emission unit controlled: B22
Control device number: C12
Date of installation: 5/12/75 Description of device: Cold side electrostatic precipitator, including flue gas conditioning system. Two units operated in parallel. Maximum 1110 kW energy input. Total Collecting Plate area is 743,030 square feet. Includes a SO_3 flue gas conditioning system.

Control device number: C15
Date of installation: 2012
Description of device: Spray Dryer Absorber Designed for the control of sulfur dioxide emissions

Control device number: C16
Date of installation: 2012
Description of device: Pulse jet fabric filter baghouse

STACK INFORMATION
Stack Identification Number: S25
Exhausting Unit(s): P25

This stack has an actual exhaust point: Yes
Discharge height above ground level (ft): 115.0
Inside dimensions at outlet (ft):Circular - 1.00
Exhaust flow rate (Normal) (ACFM): Passive
Exhaust flow rate (Maximum) (ACFM): 1500
Exhaust gas temperature (Normal) (°F): Ambient
Exhaust gas discharge direction: Up
Stack equipped with any obstruction: No

Emission Unit Information
Boiler/furnace number: P25
Unit description: Lime Silo for Unit 1 - controlled by fabric filter dust collector. Pebble lime is pneumatically loaded into silo.
Control technology status: Controlled
Date of construction or last modification: 2012
Construction Permit Requirements: 11-POY-123.

Control device number: C25
Date of installation: 2012
Description of device: Fabric filter collector

STACK INFORMATION
Stack Identification Number: S26
Exhausting Unit(s): P26
This stack has an actual exhaust point: Yes
Discharge height above ground level (ft): 115.0
Inside dimensions at outlet (ft):Circular - 1.00
Exhaust flow rate (Normal) (ACFM): Passive
Exhaust flow rate (Maximum) (ACFM): 1500
Exhaust gas temperature (Normal) (°F): Ambient
Exhaust gas discharge direction: Up
Stack equipped with any obstruction: No

Emission Unit Information
Boiler/furnace number: P26
Unit description: Lime Silo for Unit 2 - Controlled by fabric filter dust collector. Pebble lime is pneumatically loaded into silo.
Control technology status: Controlled
Date of construction or last modification: 2012
Construction Permit Requirements: 11-POY-123.

Control device number: C26
Date of installation: 2012
Description of device: Fabric filter collector

STACK INFORMATION
Stack Identification Number: S31
Exhausting Unit(s): P31
This stack has an actual exhaust point: Yes
Discharge height above ground level (ft): 82.0
Inside dimensions at outlet (ft):Circular - 3.00
Exhaust flow rate (Normal) (ACFM): Passive
Exhaust flow rate (Maximum) (ACFM): 1500
Exhaust gas temperature (Normal) (°F): Ambient

Exhaust gas discharge direction: Up
Stack equipped with any obstruction: No

Emission Unit Information
Boiler/furnace number: P31
Unit description: Transfer of powder activated carbon (PAC) from truck to existing PAC Silo. PAC from the silo will be injected downstream of Unit 1 and Unit 2 ESPs, and upstream of the SDAs. Emissions are generated from the potential increased usage of PAC through the silo (load-in and out) controlled by a bin vent filter dust collector.
Control technology status: Controlled
Date of construction or last modification: 2012
Construction Permit Requirements: 11-POY-123.

Control device number: C31
Date of installation: 2012
Description of device: Fabric filter collector

STACK INFORMATION
Stack Identification Number: S26
Exhausting Unit(s): P26
This stack has an actual exhaust point: Yes
Discharge height above ground level (ft): 115.0
Inside dimensions at outlet (ft): Circular - 1.00
Exhaust flow rate (Normal) (ACFM): Passive
Exhaust flow rate (Maximum) (ACFM): 1500
Exhaust gas temperature (Normal) (°F): Ambient
Exhaust gas discharge direction: Up
Stack equipped with any obstruction: No

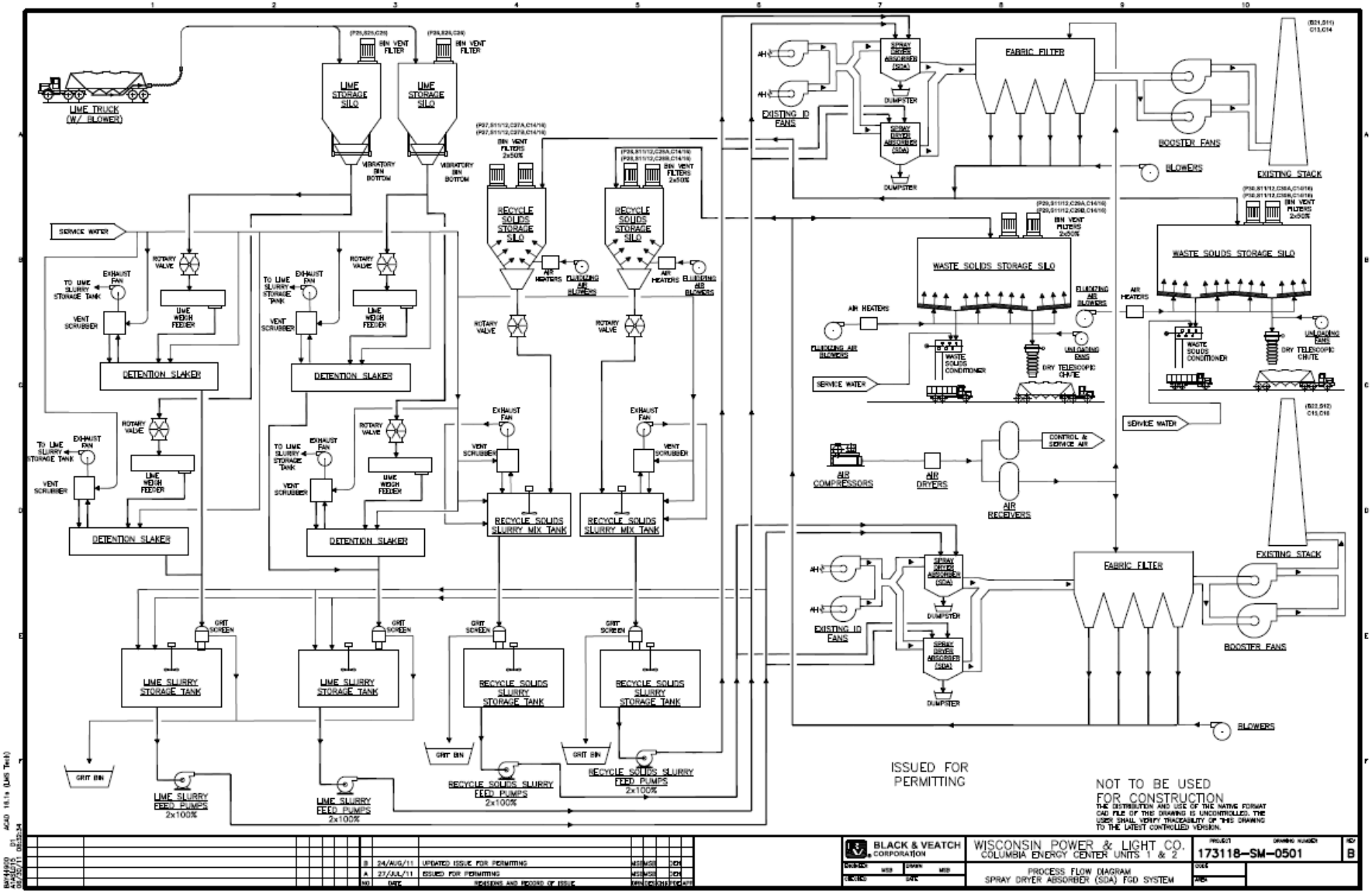
Emission Unit Information
Boiler/furnace number: P26
Unit description: Lime Silo for Unit 2 - Controlled by fabric filter dust collector. Pebble lime is pneumatically loaded into silo.
Control technology status: Controlled
Date of construction or last modification: 2012
Construction Permit Requirements: 11-POY-123.

Control device number: C26
Date of installation: 2012
Description of device: Fabric filter collector

F99 - Haul roads for hauling lime, PAC, waste solids byproducts, and other waste solids.

In addition, there will be two recycled solids silos and two waste solids silos constructed. These silos will be vented through the new baghouses for the two boilers.

The process flow diagram is presented as follow.


LIME TRUCK (W/ BLOWER)
LIME STORAGE SILO
LIME STORAGE SILO
BIN VENT FILTER
BIN VENT FILTER
VIBRATORY BIN BOTTOM
VIBRATORY BIN BOTTOM
RECYCLE SOLIDS STORAGE SILO
RECYCLE SOLIDS STORAGE SILO
BIN VENT FILTERS 2x50ft
BIN VENT FILTERS 2x50ft
AIR HEATERS
FLUIDIZING AIR BLOWERS
SERVICE WATER
ROTARY VALVE
EXHAUST FAN
TO LIME SLURRY STORAGE TANK
VENT SCRUBBER
LIME WEIGH FEEDER
DETENTION SLAKER
GRIT SCREEN
LIME SLURRY STORAGE TANK
RECYCLE SOLIDS SLURRY MIX TANK
RECYCLE SOLIDS SLURRY STORAGE TANK
GRIT BIN
LIME SLURRY FEED PUMPS 2x100%
RECYCLE SOLIDS SLURRY FEED PUMPS 2x100%
EXISTING ID FANS
SPRAY DRYER ABSORBER (SDA)
DUMPSTER
FABRIC FILTER
BOOSTER FANS
BLOWERS
EXISTING STACK
WASTE SOLIDS STORAGE SILO
WASTE SOLIDS CONDITIONER
UNLOADING PANS
DRY TELESCOPIC CHUTE
AIR COMPRESSORS
AIR DRYERS
AIR RECEIVERS
CONTROL & SERVICE AIR
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B 24/AUG/11 UPDATED ISSUE FOR PERMITTING
A 27/JUL/11 ISSUED FOR PERMITTING
BLACK & VEATCH CORPORATION
WISCONSIN POWER & LIGHT CO.
COLUMBIA ENERGY CENTER UNITS 1 & 2
PROCESS FLOW DIAGRAM
SPRAY DRYER ABSORBER (SDA) FGD SYSTEM
173118-SM-0501
B

CROSS MEDIA IMPACTS

The project will result in waste ash that will be disposed of in the existing on-site landfill.

EMISSION CALCULATIONS.

The boilers themselves as combustion equipment will not be changed. Air pollution control equipment will be installed for the control of sulfur dioxide and mercury. As such the net increase of emissions of pollutants generated from combustion, based on baseline actual-to-future projected actual emissions will be zero. However, there will be a reduction of sulfur dioxide emissions since the purpose of this project is to reduce sulfur dioxide emissions. The applicant is not claiming any emission reduction credit due to this project, so the net change will be considered as zero.

The particulate matter (PM)/PM_{10}/$PM_{2.5}$ net emission increases are calculated based on the future potential to emit for the new emissions units (the lime silos and the powdered activated carbon silo). The spray dryer absorbers will result in additional PM/PM_{10}/$PM_{2.5}$ emissions downstream from the electrostatic precipitator. A new baghouse will be installed downstream from the spray dryer absorber. The applicant has asked for PM/PM_{10}/$PM_{2.5}$ emission limits as follows such that the net emission increases will not be significant as defined in s. NR 405.02(27).

	PM (#/MMBTU)	PM_{10} (#/MMBTU)	$PM_{2.5}$ (#/MMBTU)
Unit 1 (B21)	0.025	0.017	0.0165
Unit 2 (B22)	0.0195	0.0175	0.0175

At 5885 MMBTU/hr heat input for each boiler, the PM/PM_{10}/$PM_{2.5}$ emissions in #/hr will be:

	PM (#/hr)	PM_{10} (#/hr)	$PM_{2.5}$ (#/hr)
Unit 1 (B21)	147.1	100.0	97.1
Unit 2 (B22)	114.76	103.0	103.0

Based on the pounds per hour emission limits, the potential to emit in tons per year will be:

	PM (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)
Unit 1 (B21)	644.3	438	425.3
Unit 2 (B22)	502.65	451.14	451.14

According to the application material, the baseline actual PM/PM_{10}/$PM_{2.5}$ emissions in tons/yr, based on emission test data and operational data in the time period of May 2009 to April 2011, are as follow:

	PM (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)
Unit 1 (B21)	1513.82	426.06	426.06
Unit 2 (B22)	484.51	456.83	456.83

The net increase of PM/PM_{10}/$PM_{2.5}$ emissions in tons/yr from each boiler unit will be:

	PM (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)
Unit 1 (B21)	644.3 – 1513.82 < 0	438.0 - 426.06 = 11.94	425.3 – 426.06 < 0
Unit 2 (B22)	502.65 - 484.51 = 18.14	451.14 - 456.83 < 0	451.14 - 456.83 < 0

No netting analysis is done for this project, so only increases are considered. When the increase is less than zero, the increase is set as zero. Thus, the net increase of PM/PM_{10}/$PM_{2.5}$ emissions in tons/yr from each boiler unit will be:

	PM (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)
Unit 1 (B21)	0	11.94	0
Unit 2 (B22)	18.14	0	0

The two new lime silos will each be limited to 0.064 #/hr for PM/PM_{10}/$PM_{2.5}$ emissions. The annual potential to emit for each lime silo will be:

0.064 #/hr * 8760 hrs/yr / 2000 #/ton = 0.28 tons/yr

The new powder activated carbon (PAC) silo will be limited to 0.13 #/hr for PM/PM_{10}/$PM_{2.5}$ emissions. The annual potential to emit for the new PAC silo will be:

0.13 #/hr * 8760 hrs/yr / 2000 #/ton = 0.57 tons/yr

Unpaved haul road $PM/PM_{10}/PM_{2.5}$ emissions are calculated as follows:

Emission Factor (EF) Equation [1]

EF = k * (s/12)^a * (W/3)^b * ((365-p)/365)

Where:

EF =	particulate emission factor, lb/VMT		
k =	particle size multiplier =	4.9	for PM
		1.5	for PM-10
		0.15	for PM-2.5
a =	constant =	0.7	for TSP
		0.9	for PM10 & PM2.5
s =	surface material silt content, % =	6.4	Landfill
b =	constant =	0.45	for TSP, PM10, & PM2.5
W =	average vehicle weight, tons =	see Table below	
p =	number of days per year with at least 0.01 in of precipitation	115	

Basis:

Empty Truck Weight	11.75	tons	Empty Truck Weight

Vehicle Traffic Counts:

Material	Truck Capactiy (tons)	Number of Trucks (per day)	Number of Trucks (per year)
Biproduct Silo Waste Removal	20	28	7178

Average Vehicle Weight	One Way Distance	Vehicle Mile Traveled	Vehicle Mile Traveled	Emission Factor		
				PM	PM-10	PM-2.5
(tons)	(ft)	(VMT/day)	(VMT/yr)	(lbs/VMT)	(lbs/VMT)	(lbs/VMT)

21.8	533	5.7	1,450	5.27	1.42	0.14

Potential Uncontrolled Emissions					Potential Controlled Emissions		
PM	PM-10	PM-2.5		Control Efficiency	PM	PM-10	PM-2.5
(ton/yr)	(ton/yr)	(ton/yr)	Control Method	%	(ton/yr)	(ton/yr)	(ton/yr)
3.82	1.03	0.10	Water Spray	**90.0**	3.82E-01	1.03E-01	1.03E-02
3.82	**1.03**	**0.10**		**Total Controlled Emissions (tons/yr)**	**0.38**	**0.10**	**0.01**

Paved haul road $PM/PM_{10}/PM_{2.5}$ emissions are calculated as follows:

Emission Factor (EF) Equation

EF = [k * (sL)^0.91 * (W)^1.02] * (1-(P/(4*N))

Where:

EF =	particulate emission factor, lb/VMT		
k =	particle size multiplier =	0.011	for PM
		0.0022	for PM-10
		0.00054	for PM-2.5
sL =	surface silt loading, g/m^2 =	0.6	
W =	average vehicle weight, tons =	see Table below	
P =	number of days per year with at least 0.01 in of precipitation	115	
N =	number of days in the averaging period	365	

Empty truck weighs 11.75 tons.

Material	Truck Capacity (tons)	Number of Trucks (per day)	Number of Trucks (per Year)
Lime Delivery	20	14	3,412
Powdered Activated Carbon Delivery	20	8	170
Biproduct Silo Waste Removal	20	28	7,178
SDA & Slurry Storage Tank Waste Removal	20	2	342
Byproduct Silo Waste Removal (Landfill Travel)	20	28	7,178
	Total -->	**80**	**18,280**

Process Number	Transport Activity	Average Vehicle (tons)	One-way (ft)	Vehicle Mile (VMT/day)	Vehicle Mile (VMT/yr)	Emission Factor		
						TSP (lbs/VMT)	PM10 (lbs/VMT)	PM25 (lbs/VMT)
F99a	Lime Delivery	21.8	2,957	15.7	3,821.5	0.1473	0.0295	0.0072
F99b	Powdered Activated Carbon Delivery	21.8	2,124	6.4	136.8	0.1473	0.0295	0.0072
F99c	Biproduct Silo Waste Removal	21.8	3,129	33.2	8,507.8	0.1473	0.0295	0.0072
F99d	SDA and Slurry Storage Tank Waste Removal	21.8	2,957	2.2	383.0	0.1473	0.0295	0.0072
F99e	Truck Travel in Landfill	21.8	500	5.2	1,359.5	0.1473	0.0295	0.0072

Process Number	Transport Activity	Potential Uncontrolled Emissions			Control Method	Control %	Potential Controlled Emissions		
		PM (ton/yr)	PM10 (ton/yr)	PM25 (ton/yr)			PM (ton/yr)	PM10 (ton/yr)	PM25 (ton/yr)
F99a	Lime Delivery	2.81E-01	5.63E-02	1.38E-02	Water Flushing/Sweeping	90.0	2.81E-02	5.63E-03	1.38E-03
F99b	Powdered Activated Carbon Delivery	1.01E-02	2.01E-03	4.94E-04	Water Flushing/Sweeping	90.0	1.01E-03	2.01E-04	4.94E-05
F99c	Biproduct Silo Waste Removal	6.26E-01	1.25E-01	3.08E-02	Water Flushing/Sweeping	90.0	6.26E-02	1.25E-02	3.08E-03
F99d	SDA and Slurry Storage Tank Waste Removal	2.82E-02	5.64E-03	1.38E-03	Water Flushing/Sweeping	90.0	2.82E-03	5.64E-04	1.38E-04
F99e	Truck Travel in Landfill	1.00E-01	2.00E-02	4.91E-03	Water Flushing/Sweeping	90.0	1.00E-02	2.00E-03	4.91E-04
		1.05	**0.21**	**0.05**	**Total Controlled Emissions (tons/yr)**		**0.10**	**0.02**	**0.01**

The net increase of emissions due to this project will be:

	CO	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOC	Pb	H_2SO_4	CO_{2e}
Boiler 1	**0**	**0**	**0**	**11.94**	**0**	**0**	**0**	**0**	**0**	**0**
Boiler 2	**0**	**0**	**18.14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2 Lime Silos	--	--	0.56	0.56	0.56	--	--	--	--	--
PAC	--	--	0.57	0.57	0.57	--	--	--	--	--
Paved Haul Roads	--	--	0.10	0.02	0.01	--	--	--	--	--
Unpaved Haul Roads	--	--	0.38	0.10	0.01	--	--	--	--	--
TOTAL	**0.00**	**0.00**	**19.75**	**13.19**	**1.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SER	**100**	**40**	**25**	**15**	**10**	**40**	**40**	**0.6**	**7**	**75,000**
PSD Review Required?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

WISCONSIN HAZARDOUS AIR POLLUTANT (NR 445) REVIEW

The project will result in small amounts of calcium oxide emissions. The lime silos will result in calcium oxide emissions. The potential to emit for each lime silo is 0.064 pound per hour for particulate matter (PM) emissions. If all PM emissions are assumed to be calcium oxide emissions, the potential to emit of calcium oxide is 0.13 pound per hour. That is the only source of calcium oxide emissions from the facility. That is below the table value for calcium oxide emissions of 3.24 pounds per hour for a stack with a height greater than 75 feet.

COMPLIANCE AND TECHNOLOGY REVIEW

The spray dryer absorbers use calcium oxide and calcium hydroxide as reagent. The reaction byproduct will be calcium sulfate. This will result in additional amounts of particulate matter loading downstream of the electrostatic precipitator in the form of $PM/PM_{10}/PM_{2.5}$ emissions. A new baghouse will be installed to control the $PM/PM_{10}/PM_{2.5}$ emissions. The applicant has requested $PM/PM_{10}/PM_{2.5}$ emission limits from each boiler stack such that the net increase of $PM/PM_{10}/PM_{2.5}$ emissions from the project will be less that the significance levels given in NR 405.02(27), Wis. Adm. Code. See emission calculations above.

The new silos will be controlled by fabric filter dust collectors.

The truck traffic on paved and unpaved roads will be controlled by wet suppression. The plant will follow requirements provided in Department guidance on the control of fugitive road dusts (WDNR's 1998 nonmetallic mining air emissions guidance) such that 90% control of $PM/PM_{10}/PM_{2.5}$ emissions will be considered.

AIR QUALITY REVIEW

John Roth performed the air quality review for this proposed project. The following are his findings and conclusion.

MODEL RESULTS

The impact of the change in emission from the facility was calculated by modeling the modified and proposed sources along with credit for existing sources. Specifically, in addition to the proposed material handling sources the main power boiler stacks were modeled with existing parameters and existing emission rates as negative, along with the future power boiler parameters and future emission rates as positive. The results of this dispersion modeling analysis indicate that the impact of the installation of the air quality control system is less than applicable significant impact levels (SIL) for particulate matter, NO_x, and CO. Therefore, this project is assumed to have no impact on the ambient air quality for those pollutants.

Modeling Analysis Results
(All Concentrations in $\mu g/m^3$)

	CO – 1 hour	CO – 8 hour	NO_2 – Annual
Project Impact	570.7	112.2	0.56*****
SIL	2,000	500.0	1.0
% SIL	28.5	22.4	56.0

***Note:** The USEPA and WDNR Ambient Ratio Method Tier II was applied to convert NO_x emissions into NO_2

Modeling Analysis Results (All Concentrations in $\mu g/m^3$)			
	PM_{10} – 24 hour	$PM_{2.5}$ – 24 hour	$PM_{2.5}$ – Annual
Project Impact	3.28	1.0	0.15
SIL	5.0	1.2	0.3
% SIL	65.6	83.3	50.0

For SO_2 emissions, the impact of this project is above the SIL; therefore an increment and NAAQS analysis was performed considering the entire facility. A review of the Wisconsin emissions inventory found no other SO_2 increment consuming sources in the area.

Modeling Analysis Results (All Concentrations in $\mu g/m^3$)			
	SO_2 – 3 hour	SO_2 – 24 hour	SO_2 – Annual
Increment Source Impact	299.4	80.0	5.47
PSD Class II Increment	512.0	91.0	20.0
% Increment Consumed	58.5	87.9	27.4
Facility Impact	826.0	198.9	13.3
Background Concentration	11.8	11.2	5.4
Total Impact	837.8	210.1	18.7
NAAQS	1,300.0	365.0	80.0
% NAAQS	64.4	57.6	23.4

D. CONCLUSION

The results of the modeling analysis demonstrate that the proposed air quality control system project at Alliant Columbia will not have an effect upon ambient air concentrations of particulate matter, NO_x, and CO and will attain and maintain air quality standards for SO_2.

ALLIANT ENERGY COLUBIA ENERGY CENTER - PORTAGE Point Source Parameters					
Stack ID	LOCATION (UTM83)	HEIGHT (M)	TEMP (K)	VELOCITY (M/S)	DIAM (M)
S11Old	304248, 4817601	152.40	407.0	32.27	6.40
S12Old	304248, 4817675	198.12	411.5	32.56	6.40
S11New	304248, 4817601	152.40	352.0	33.03	6.40
S12New	304248, 4817675	198.12	352.0	33.03	6.40
STK_25	304108, 4817754	35.05	Ambient	9.70	0.30
STK_26	304078, 4817754	35.05	Ambient	9.70	0.30
STK_37	304260, 4817689	25.02	Ambient	1.08	0.91
S10	304341, 4817576	78.00	435.9	5.99	1.68
S23	304337, 4817571	4.11	779.8	87.83	0.20

ALLIANT ENERGY COLUBIA ENERGY CENTER - PORTAGE Volume Source Parameters				
Volume ID	LOCATION (UTM27)	HEIGHT (M)	Sig-Y (M)	Sig-Z (M)
BIPRO	Multiple Roadway Sources	1.00	8.140	1.418
LIME	Multiple Roadway Sources	1.00	8.140	1.418
PAC	Multiple Roadway Sources	1.00	8.140	1.418
SDA	Multiple Roadway Sources	1.00	8.140	1.418
LAN	Multiple Roadway Sources	1.00	8.140	1.418

ALLIANT ENERGY COLUBIA ENERGY CENTER - PORTAGE Emission Rates					
Stack ID	PM_{10} Rate (#/HR)	PM_{25} Rate (#/HR)	SO_2 Rate (#/HR)	NO_x Rate (#/HR)	CO Rate (#/HR)
S11Old	-3530.9	-531.0	-18831.7	-2648.3	-8892.8
S12Old	-588.5	-147.1	-7061.9	-2648.3	-8892.8
S11New	100.0	97.1	18831.7	2648.3	8892.8
S12New	**103.0**	**103.0**	**7061.9**	2648.3	8892.8
STK_25	0.064	0.064	-	-	-
STK_26	0.064	0.064	-	-	-
STK_37	0.13	0.13	-	-	-
S15	*n/a*	*n/a*	*92.51*	*n/a*	*n/a*
S23	*n/a*	*n/a*	*5.76*	*n/a*	*n/a*
BIPRO	0.0044	0.0011	-	-	-
LIME	0.0021	0.00051	-	-	-
PAC	0.00086	0.00021	-	-	-
SDA	0.00030	0.000073	-	-	-
LAN	0.025	0.0026	-	-	-

Note: Due to the insignificant impact of the project for PM, NO_x, and CO, only the SO_2 emissions from stacks S15 and S23 were considered.

EMISSIONS FROM NEW EQUIPMENT OR MODIFICATION

A. Stack Emissions

Stack S11 - PM/PM_{10}/$PM_{2.5}$ emissions

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
PM	147.1	644.3
PM_{10}	100.0	438.0
$PM_{2.5}$	97.1	425.3

Stack S12 - $PM/PM_{10}/PM_{2.5}$ emissions

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
PM	114.76	502.65
PM_{10}	103.0	451.14
$PM_{2.5}$	103.0	451.14

The potential to emit for the other pollutants (due to combustion) will not be changed.

Stack S25 - $PM/PM_{10}/PM_{2.5}$ emissions

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
$PM/PM_{10}/PM_{2.5}$	0.064	0.28

Stack S26 - $PM/PM_{10}/PM_{2.5}$ emissions

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
$PM/PM_{10}/PM_{2.5}$	0.064	0.28

Stack S31 - $PM/PM_{10}/PM_{2.5}$ emissions

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
$PM/PM_{10}/PM_{2.5}$	0.13	0.57

FACILITY AND PROJECT CLASSIFICATION

1. Project Status.

The existing facility is a major source of PSD and Part 70. The application has requested federally enforceable emission limitations and conditions for $PM/PM_{10}/PM_{2.5}$ emissions, such that the net emission increase for these pollutants will be below the significant level defined in NR 405.02(27). There is no change to the combustion operations of the boiler, so the projected future actual emissions equal the baseline actual emissions for the pollutants generated by fuel combustion. Therefore this project is synthetic minor for PSD.

2. Facility Status After the Permit is Issued.

After the permit is issued, the facility will remain a major source for PSD, Part 70 and HAPs.

3. EPA Class Code After the Permit is Issued.

☒ **"A"** [Means the source's maximum theoretical emissions ***and*** potential to emit for one or more pollutants are greater than major source thresholds. The source is a major

source (will have a FOP)];

☐ **"SM80"** [Means the source's maximum theoretical emissions of one or more pollutants are greater than major source thresholds and potential to emit is at least 80% but less than 100% of major source thresholds. The source is a non-major source (will have a FESOP)];

☐ **"SM"** [Means the source's maximum theoretical emissions of one or more pollutants are greater than major source thresholds but potential to emit for all pollutants is less than 80% of major source thresholds. The source is a non-major source (usually will have a FESOP)];

☐ **"B"** [Means the source's maximum theoretical emissions and potential to emit for all pollutants are less than major source thresholds. The source is a non-major source (will have a SOP)].

4. Summary.

NSR Applicability	After Permit Issuance	
	Major	Minor
PSD	X	
Non-Attainment	NA	
Federal HAP	X	

Part 70 Applicability	Facility After Permit Issuance		
	Part 70	FESOP (Syn. Minor)	non-part 70
Status	X		

EPA Class Code	EPA Class Code After Permit Issuance			
	A	SM80	SM	B
Status	X			

ENVIRONMENTAL ANALYSIS

The proposed project is a Type III action under Chapter NR 150, Wis. Adm. Code, because there is a potential increase in hazardous emissions and the potential to emit of the project is less than 100 TPY for each criteria pollutant.

A news release is required for this proposal and is included in the public comment notice. It is proposed that an environmental assessment not be completed.

RULE APPLICABILITY

The purpose of this project is to reduce acid gas and mercury emissions so as to meet future applicable federal requirements. A spray dryer absorber system will be installed for each boiler unit. This spray dryer system will result in PM/PM_{10}/$PM_{2.5}$ emission downstream of the existing ESP. A new baghouse will be installed for each boiler unit. The applicant has requested federally enforceable emission limitations and conditions such that the net increase of PM/PM_{10}/$PM_{2.5}$ emissions will be below significance levels. PSD is not applicable for this project.

There will be no physical change to the combustion portion of two boilers B21 and B22, and no change in the fuel used at the boilers. This project involves adding new control devices to the boilers. For each boiler and spray dryer absorber system combined, there will be a net increase of PM/PM_{10}/$PM_{2.5}$ emissions on an annual basis determined by comparing the actual baseline emissions to the future potential to emit. On a short term pounds per hour basis, the emission limit will be lowered for each boiler. In addition, the combustion portion of each boiler will not be changed, and the fuel burned will not be changed because of this project. The will be no change in emissions due to combustion of fuel. As such, the proposed project will not result in the applicability of the New Source Performance Standard (NSPS) in ss. NR 440.19 and NR 440.20, Wis. Adm. Code.

However, since each boiler together with the spray dryer absorber is considered as an emissions unit, adding the spray dryer absorber to the boiler represents a physical change, and there will be an increase of particulate matter emissions, therefore each boiler is considered modified under chapter NR 406. As such, the emission limitation in s. NR 415.06(2)(c) for particulate matter and s. NR 431.05 for visible emissions will be applicable.

NEW SOURCE PERFORMANCE STANDARDS (NSPS) APPLICABILITY

For proposed construction of a source:

1. Is the proposed source in a source category for which there is an existing or proposed NSPS?
   ☐ Yes ☒ No ☐ Not applicable. (If yes, identify the source category.)

2. Is the proposed source an affected facility?
   ☐ Yes ☒ No ☐ Not applicable. (Explain if necessary to clarify.)

For the proposed modification of an existing source:

1. Is the existing source, which is being modified, in a source category for which there is an existing or proposed NSPS?
   ☐ Yes ☐ No ☒ Not applicable. (If yes, identify the source category.)

2. Is the existing source, which is being modified, an affected facility (prior to modification)?
   ☐ Yes ☐ No ☒ Not applicable. (Explain if necessary to clarify here and in the following items)

3. Does the proposed modification constitute a modification **under NSPS** to the existing source?
   ☐ Yes ☐ No ☒ Not applicable.

4. Will the existing source be an affected facility after modification?

☐ Yes ☐ No ☒ Not applicable.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) APPLICABILITY

Part 61 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing or proposed NESHAPS?
   ☒ Yes ☐ No (if yes, identify the pollutant). Mercury

2. Is the proposed new or modified source subject to an existing or proposed NESHAPS?
   ☐ Yes ☒ No (if yes, identify NESHAPS).

Part 63 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing Part 63 NESHAPS?
   ☒ Yes ☐ No (if yes, identify the pollutant). Mercury, formaldehyde, as examples.

2. Is the proposed new or modified source subject to an existing Part 63 NESHAPS?
   ☐ Yes ☒ No (if yes, identify NESHAPS).

3. Is the proposed project subject to s. 112(g) of the Clean Air Act?
   ☐ Yes ☒ No.

The section 112(g) rules only apply to case-by-case MACT standards that are developed for new construction or reconstruction of sources that (by themselves) constitutes a new major source of federal hazardous air pollutants (for source categories not covered under an existing Part 63 MACT standard).

CAM - COMPLIANCE ASSURANCE MONITORING.

There is no change in the CAM requirements.

CRITERIA FOR CONSTRUCTION PERMIT APPROVAL

Section 285.63, Wis. Stats., sets forth the specific language for permit approval criteria. The Department finds that:

1. The source will meet emission limitations.

2. The source will not cause nor exacerbate a violation of an air quality standard or ambient air increment.

3. The source is operating or seeks to operate under an emission reduction option. Not Applicable.

4. The source will not preclude the construction or operation of another source for which an air pollution control permit application has been received.

PRELIMINARY DETERMINATION FOR CONSTRUCTION PERMIT NO. 11-POY-123

The Wisconsin Department of Natural Resources has reviewed the construction permit application and

other materials submitted by WPL - Columbia Energy Center and hereby makes a preliminary determination that this project, when constructed or modified and operated consistent with the application and subsequent information submitted, will be able to meet the emission limits and conditions included in the attached Draft Permit. A final decision regarding emission limits and conditions will be made after the Department has reviewed and evaluated all comments received during the public comment period. The proposed emission limits and other proposed conditions in the Draft Permit are written in the same form that they will appear in the construction permit. These proposed conditions may be changed as a result of public comments or further evaluation by the Department.

PERMIT FEE CALCULATION

BASIC FEES.

PSD or NAA minor modification of a Part 70 major source. [$7,500]	$7,500.00
TOTAL BASIC FEES	$7,500.00

ADDITIONAL FEES.

The application is for a source not reviewed under ch. NR 405 or 408, Wis. Adm. Code, where the applicant requested in writing and received the permit within 50 days of receipt of a complete application [$5,000].	$5,000.00
The permit application is for a PSD or NAA minor source or minor modification to a major PSD or NAA source whose projected air quality impact requires a detailed air quality modeling analysis. [$1,000]	$1,000.00
The construction permit requires emission testing.	$5,000.00
The permit application required review and analysis of two or more basic emissions units.	$5,600.00
The application is for a source which requires specific permit conditions limiting the potential to emit to make the source a minor source or to make the modification a minor modification [$3,500].	$3,500.00
TOTAL ADDITIONAL FEES	$20,100.00

TOTAL FEES (Total Basic Fees + Total Additional Fees)	$27,600.00

CREDITS.

The initial fee submitted with the application. [$7,500]	-$7,500.00
TOTAL CREDITS	-$7,500.00

TOTAL AMOUNT DUE (Total Fee + Total Credit)	$20,100.00