State Office of Administrative Hearings

Cathleen Parsley
Chief Administrative Law Judge

July 2, 2010

Les Trobman, General Counsel
Texas Commission on Environmental Quality
P.O. Box 13087
Austin Texas 78711-3087

Re: SOAH Docket No. 582-09-3008; TCEQ Docket No. 2009-0283-AIR; In Re: White Stallion Energy Center, LLC

Dear Mr. Trobman:

The above-referenced matter will be considered by the Texas Commission on Environmental Quality on a date and time to be determined by the Chief Clerk's Office in Room 201S of Building E, 12118 N. Interstate 35, Austin, Texas.

Enclosed are copies of the Proposal for Decision and Order that have been recommended to the Commission for approval. Any party may file exceptions or briefs by filing the documents with the Chief Clerk of the Texas Commission on Environmental Quality no later than Thursday, July 22, 2010. Any replies to exceptions or briefs must be filed in the same manner no later than Monday, August 2, 2010.

This matter has been designated **TCEQ Docket No. 2009-0283-AIR; SOAH Docket No. 582-09-3008**. All documents to be filed must clearly reference these assigned docket numbers. All exceptions, briefs and replies along with certification of service to the above parties shall be filed with the Chief Clerk of the TCEQ electronically at http://www10.tceq.state.tx.us/epic/efilings/ or by filing an original and seven copies with the Chief Clerk of the TCEQ. Failure to provide copies may be grounds for withholding consideration of the pleadings.

Sincerely,

Paul D. Keeper
Administrative Law Judge

Kerrie Jo Qualthrough
Administrative Law Judge

PDK/KJQ
Enclosures
cc: Mailing List

STATE OFFICE OF ADMINISTRATIVE HEARINGS

AUSTIN OFFICE
300 West 15th Street Suite 502
Austin, Texas 78701
Phone: (512) 475-4993
Fax: (512) 475-4994

SERVICE LIST

AGENCY: Environmental Quality, Texas Commission on (TCEQ)

STYLE/CASE: WHITE STALLION ENERGY CENTER, LLC

SOAH DOCKET NUMBER: 582-09-3008

REFERRING AGENCY CASE: 2009-0283-AIR

STATE OFFICE OF ADMINISTRATIVE HEARINGS	ADMINISTRATIVE LAW JUDGE ALJ KERRIE QUALTROUGH
REPRESENTATIVE / ADDRESS	**PARTIES**
SCOTT HUMPHREY ATTORNEY TEXAS COMMISSION ON ENVIRONMENTAL QUALITY OFFICE OF PUBLIC INTEREST COUNSEL P. O. BOX 13087, MC-103 AUSTIN, TX 78711-3087 (512) 239-0574 (PH) (512) 239-6377 (FAX) shumphre@tceq.state.tx.us	TCEQ PUBLIC INTEREST COUNSEL
ERIC GROTEN ATTORNEY VINSON & ELKINS THE TERRACE 7, 2801 VIA FORTUNA, STE. 100 AUSTIN, TX 78746-7568 (512) 542-8709 (PH) (512) 236-3272 (FAX)	WHITE STALLION ENERGY CENTER, LLC
PATRICK LEE VINSON & ELKINS THE TERRACE 7, 2801 VIA FORTUNA, STE. 100 AUSTIN, TX 78746-7568 (512) 542-8629 (PH) (512) 236-3265 (FAX)	WHITE STALLION ENERGY CENTER, LLC

BOOKER HARRISON
SENIOR ATTORNEY - AIR
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
ENVIRONMENTAL LAW DIVISION
MC-173 P.O. BOX 13087
AUSTIN, TX 78711-3087
(512) 239-4113 (PH)
(512) 239-0606 (FAX)
booharri@tceq.state.tx.us

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PAUL TOUGH
ATTORNEY
1201 SPYGLASS DR., SUITE 200
AUSTIN, TX 78746
(512) 327-8111 (PH)
(512) 327-6566 (FAX)
ptough@msmtx.com

THE ENVIRONMENTAL DEFENSE FUND

GREG FRIEND
ATTORNEY
1201 SPYGLASS DRIVE, Suite 200
AUSTIN, TX 78746
(512) 327-8111 (PH)
(512) 327-6566 (FAX)

THE ENVIRONMENTAL DEFENSE FUND

CHRISTINA MANN
ATTORNEY
TEXAS OFFICE OF THE ENVIRONMENTAL INTEGRITY
PROJECT
1303 SAN ANTONIO, STE. 200
AUSTIN, TX 78701
(512) 637-9477 (PH)
(512) 584-8019 (FAX)
cmann@environmentalintegrity.org

THE SIERRA CLUB AND NO COAL COALITION

xc: Docket Clerk, State Office of Administrative Hearings

SOAH DOCKET NO. 582-09-3008
TCEQ DOCKET NO. 2009-0283-AIR

IN THE MATTER OF WSEC ENERGY CENTER, L.L.C. APPLICATION FOR AIR QUALITY PERMIT NOS. 86088, HAP28, PAL26, AND PSD-TX-1160	§ § § § §	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS

TABLE OF CONTENTS

PROPOSAL FOR DECISION

SOAH DOCKET NO. 582-09-3008
TCEQ DOCKET NO. 2009-0283-AIR

IN THE MATTER OF WHITE STALLION ENERGY CENTER, L.L.C. APPLICATION FOR AIR QUALITY PERMIT NOS. 86088, HAP28, PAL26,AND PSD-TX-1160	§	**BEFORE THE STATE OFFICE**
	§	
	§	**OF**
	§	
	§	**ADMINISTRATIVE HEARINGS**

PROPOSAL FOR DECISION

I. INTRODUCTION

White Stallion Energy Center, LLC (WSEC) filed an application with the Texas Commission on Environmental Quality (TCEQ or Commission) for four permits (Permits) to construct and operate a new 1,200 net megawatt (MW) electric generation plant in Matagorda County, Texas. Opposed to the application are Sierra Club and No Coal Coalition (SC/NCC), the Environmental Defense Fund (EDF), and the Commission's Office of Public Interest Counsel (OPIC).[1] Supporting the application is the Commission's Executive Director (ED).

The administrative law judges (ALJs) cannot recommend that WSEC's application be granted at this time. After reviewing the evidence, we conclude that WSEC's modeling expert relied on data that did not meet quality assurance criteria and was not for use for "any regulatory purpose." If the Commission concludes that the data may be used for air dispersion modeling, then WSEC would meet its burden on this element of proof. Also, WSEC's State Effects Review did not consider coal dust, even though the evidence indicated that the Commission's effects screening level (ESL) for coal dust would be exceeded in several locations. In addition, although we determine that the proposed emissions limits for hydrogen chloride (HCl) and hydrogen fluoride (HF) meet the requirements for the Best Available Control Technology (BACT), the record is not sufficiently clear to determine whether the proposed limits also satisfy the requirements for the Maximum Achievable Control Technology (MACT).

---

[1] The parties opposing the application will be referred to as "Protestants."

II. PROCEDURAL HISTORY

The procedural history of this case is summarized as follows:

Date	Event
09/05/08	WSEC filed the application with the Commission.[2]
09/11/08	The ED declared the application administratively complete.[3]
10/01/08	WSEC published a Notice of Receipt of Application and Intent to Obtain Air Permit.[4]
12/22/08 to 02/16/09	WSEC supplemented the application.[5]
03/10/09	The ED referred the case to the State Office of Administrative Hearings (SOAH) and requested that the matter be set for a contested case hearing.
03/13/09	The ED concluded that the application was technically complete, issued a draft permit, and recommended that the application be approved.[6]
03/15/09	WSEC published a combined Notice of Application and Preliminary Decision, Notice of Public Meeting, and Notice of Hearing.[7]
03/30/09	On March 30, 2009, a public meeting was held in Bay City.[8]
04/14/09	Region 6 of the United States Environmental Protection Agency (EPA) submitted comments to the Commission about the draft permit.[9]
04/20/09	ALJ Paul Keeper convened a preliminary hearing in Bay City, Texas. WSEC established that notice had been given,[10] and no party contested either notice or jurisdiction. At the preliminary hearing, the ALJ granted party status to SC/NCC and EDF and adopted a scheduling order.

[2] WSEC Ex. 100 at 19; WSEC Ex. 102.

[3] WSEC Ex. 100 at 25; WSEC Ex. 110.

[4] WSEC Ex. 114.

[5] WSEC Ex. 100 at 19-24; WSEC Exs. 102-109.

[6] WSEC Ex. 100 at 29-30; WSEC Exs. 111-113.

[7] WSEC Ex. 115.

[8] *Id.*

[9] EDF Ex. 8. The letter: (1) a recommended that the Commission require WSEC to use continuous emissions monitoring systems (CEMS) for particulate matter (PM) emissions; (2) notified the Commission that EPA had not yet approved the Commission's Plant-wide Applicability Limits (PAL) rules as part of Texas' State Implementation Plan (SIP); (3) expressed concern about the Commission's guidance to WSEC on the evaluation of ozone impacts, and (4) asked the Commission to provide Region 6 with photochemical modeling for WSEC's proposed emissions.

[10] WSEC Ex. 100 at 31-33; WS Exs. 114-117.

Date	Event
05/19/09	The ALJ set the hearing on the merits for February 10-12 and 15-18, 2010.
10/02/09	The ED issued responses to public comments and a revised draft permit.[11]

On February 10, 2010, the ALJs convened the hearing, and each of the parties participated through counsel:

Party	Status	Counsel
WSEC	Applicant	Eric Groten and Patrick Lee
EDF	Protestant	Tom Weber and Paul Tough
SC/NCC	Protestant	Layla Mansuri[12] and Christina Mann
OPIC	Statutory	Scott Humphrey
ED	Statutory	Booker Harrison and Ben Rhem

On February 18, 2010, the ALJs closed the evidentiary record and adjourned the hearing. The parties filed written closing arguments and briefs, responses, and proposed findings of fact and conclusions of law. On May 5, 2010, the ALJs closed the administrative record.

III. OVERVIEW OF THE AIR QUALITY REGULATORY SYSTEM

A. Texas Clean Air Act

The Texas Clean Air Act (TCAA) sets the state's policy to safeguard the state's air resources. The statute's goals are to protect the public's health, general welfare, and physical property, including the public's esthetic enjoyment of air resources and the maintenance of adequate visibility.[13] Under the statute, if an entity plans to build a facility,[14] including a power plant, then it must obtain a state air quality permit (Air Quality Permit) from the Commission

---

[11] ED Exs. 14 and 17.

[12] Ms. Mansuri withdrew as co-counsel for SC/NCC after the hearing on the merits was adjourned but before the filing of briefs.

[13] TEX. HEALTH & SAFETY CODE ANN. § 382.002.

[14] A "facility" is a discrete or identifiable structure, device, item, equipment, or enclosure that constitutes or contains a stationary source, including appurtenances other than emission control equipment. TEX. HEALTH & SAFETY CODE ANN. § 382.003(6).

before construction begins.[15] The Commission is required to grant the application if it finds that: (1) the proposed plant will use at least BACT, considering the technical practicability and economic reasonableness of reducing or eliminating the emissions resulting from the facility and (2) there is "no indication" that the emissions from the facility will contravene the intent of the TCAA, including protection of the public's health and physical property.[16]

The standard of "no indication" sets a high bar. One Texas appellate court has described the standard as requiring an applicant to prove that its proposed facility's air emissions "would *not have any negative impact* on the health or property interests of the public in the surrounding area . . . " before the Commission may issue an Air Quality Permit.[17]

B. Federal Clean Air Act

Under the federal Clean Air Act (FCAA), EPA has established a list of emissions that cause or contribute to air pollution and that have been identified as a danger to public health or welfare. EPA sets a National Ambient Air Quality Standard (NAAQS) for each of the pollutants on the list.[18] EPA then determines whether a county complies with the NAAQS for each pollutant. EPA then designates the county as either "nonattainment" (exceeding the NAAQS) or "attainment" (meeting NAAQS or insufficient information to determine the county's status).[19]

The FCAA authorizes a state (through its designated environmental protection agency) to assume primary regulatory jurisdiction if the state has received approval from EPA for a SIP. A

---

[15] TEX. HEALTH & SAFETY CODE ANN. § 382.0518(a).

[16] TEX. HEALTH & SAFETY CODE ANN. § 382.0518(b).

[17] *United Copper Indus. v. Grissom*, 17 S.W.3d 797, 800 (Tex. App.—Austin 2000, pet. dism'd). [Emphasis supplied.]

[18] *See* 42 U.S.C.A. §§ 7408(a) and 7409(a). In establishing NAAQS, EPA has identified six "criteria pollutants": lead (Pb), ozone (O_3), nitrogen oxides (NO_x), SO_2, carbon monoxide (CO), and two sizes of PM, one less than or equal to 10 microns in diameter (PM_{10}) and one less than or equal to 2.5 microns in diameter ($PM_{2.5}$). WSEC Ex. 100 at 12.

[19] 42 U.S.C.A. § 7407(d)(1)(A).

SIP provides the terms by which a state will implement, maintain, and enforce the NAAQS.[20] EPA has approved Texas' SIP— although the parties dispute whether some changes to the state permitting process have gained EPA approval— and the Commission has authority from EPA and from the Texas legislature to issue federal air quality permits.[21] In this proceeding, WSEC seeks approval of its applications for three federal air quality permits: a Prevention of Significant Deterioration (PSD) permit, a Hazardous Air Pollutant (HAP) permit, and a PAL permit.

1. PSD Permit

A facility that proposes a major new source of pollution in an attainment area must obtain a federal PSD permit[22] A major new source includes fossil fuel-fired boilers that have the potential to emit 100 tons per year or more of any regulated new source review (NSR) pollutant. A PSD permit may be issued by the Commission if the applicant: (1) proves BACT for each criteria pollutant[23] and (2) provides a modeling analysis that demonstrates no significant environmental deterioration will result from the proposed project.[24] Under the Commission's rules, an applicant must also show that allowable emission increases from the proposed source, in conjunction with all other applicable emission increases, would not cause or contribute to air pollution in violation of: (1) any NAAQS in any air quality control region or (2) any applicable maximum allowable increase over the baseline concentration in any area.[25]

---

[20] 42 U.S.C.A. § 7410(a)(1).

[21] See 40 C.F.R. § 52.2270; 57 Fed. Reg. 28,093 (June 24, 1992).

[22] 30 TAC § 116.111(a)(2)(I).

[23] BACT is defined in the TCAA as the best available control technology, considering the technical practicability and economic reasonableness of reducing or eliminating the emissions resulting from the facility. TEX. HEALTH & SAFETY CODE ANN. § 382.0518(b). The elements of BACT are discussed in greater detail in Section XI of this document.

[24] PSD is designated under federal laws, and the Commission has incorporated PSD determination under its rules. 30 TAC §§ 116.160 through 116.163. In establishing PSD, EPA has established three "incremental pollutants": SO_2, PM, and NO_X. ED Ex. 41 at 10.

[25] 30 TAC § 116.160 and 40 C.F.R. § 52.21(k).

2. HAP Permit

An applicant must obtain a federal HAP permit if the proposed facility will emit a HAP. EPA has issued its National Emissions Standards for Hazardous Air Pollutants to limit the release of specified HAPs from specific industries, including electric generation. To obtain a HAP permit, an applicant must prove that it has incorporated the MACT standard for electric utilities.[26]

3. PAL Permit

Unlike the other federal permits for which WSEC seeks approval, a federal PAL permit does not authorize a facility to emit air pollutants. Instead, a PAL permit establishes an annual emissions level below which new facilities will not be subject to federal NSR analysis for that pollutant.[27] Obtaining a PAL permit is not required for the operation of a plant, but the owner or operator may receive a substantial benefit by operating under the protection of a PAL permit.[28] The permit allows the owner or operator to avoid triggering a major NSR if the emissions level of a pollutant at one source changes within a plant complex. To maintain the permit, a facility must monitor emissions from all emissions units under the permit. For each month, the facility owner or operator is required to demonstrate that the sum of the monthly emissions from each facility for the previous 12 consecutive months is less than the PAL, based on a 12-month average, rolled monthly. Emissions are reported in terms of tons of pollutant per year.[29]

---

[26] In brief, MACT is an emission limitation for new sources of pollution. To achieve MACT, the applicant must show: (1) it will use an emission limitation that is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and (2) the emission limitation reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major source. The definition is taken from an EPA rule, 40 CFR § 63.41, that is mirrored in a Commission rule, 30 TAC § 116.15.

[27] 30 TAC §§ 116.186(a) and 116.186(b)(1).

[28] 67 Fed. Reg. 80,186 (Dec. 31, 2002).

[29] 30 TAC § 116.186(b)(4)(C)(ii).

IV. OVERVIEW OF THE APPLICATION

A. Facilities

WSEC proposes to construct and operate a new steam-electric utility generating facility using four circulating fluidized bed (CFB) boilers. A CFB boiler relies on high pressure air to improve combustion as the fuel moves across a limestone bed surface. The combustion of the fuel over limestone reduces the creation of SO_2.[30] For the proposed WSEC facility, each CFB boiler will have a design maximum heat input of 3,300 million British thermal units per hour (MMBtu/hr). The gross electric output of the four generators will be about 1,320 MW. The net output, about 1,200 MW, is the difference between the power generated and the power required to operate the facility.

The proposed fuels are Illinois Basin coal and petroleum coke, a carbonaceous, high-ash byproduct of oil refining with a high heat content.[31] The fuel and the limestone for the CFB beds will be delivered by barge, rail, or truck. The materials will be transported from the delivery site by partially enclosed conveyors to large stockpiles for storage. The materials will be conveyed to a crusher building before being stored in silos next to the boilers. Activated carbon for mercury control, lime for SO_2 control, and sand for CFB bed stabilization will be delivered by railcar or truck. Each will be pneumatically conveyed to storage silos. The fly ash and boiler bottom ash solid wastes will be stored in silos near the boilers, loaded into trucks, and sent to an on-site landfill.

Emission control technologies will include:[32]

---

[30] WSEC Ex. 113 at 1. A CFB boiler differs from a pulverized coal (PC) boiler in that a PC boiler relies on highly pulverized coal, a lower air pressure for combustion, and a separate system to control SO_2.The manner of operation of CFBs and their reliance on sand and limestone is explained more thoroughly in the pages that follow.

[31] WSEC Ex. 1 at 5; DiSorbo, Tr. I at 257-59. References to petroleum coke will be to "pet coke."

[32] WSEC Ex. 111 at 63-67.

Pollutant	Control
NO_x	Combustion controls, including low NO_x burners and over-fired air, plus a selective non-catalytic reduction (SNCR) system. The SCNR system relies on the injection of ammonia (NH_3) injection into the upper furnace where the ammonia reacts with NO_x to form nitrogen and water.
SO_2	Two systems are proposed. First, the CFB beds will be composed primarily of limestone, which decomposes upon heating to form lime. The lime reacts with the SO_2 and SO_3 released by the burning of pet coke or coal to form gypsum. Second, SO_2 will be removed from the flue gas by injecting a lime slurry into the gas stream before it enters the PM collection system. This is known as a dry flue gas desulfurization (FGD) system.
CO and VOCs	Good combustion practice and boiler design to minimize these products of incomplete combustion.
PM/PM_{10}	For the filter catch portion and total PM/ PM_{10}, WSEC would rely on a fabric filter baghouse. For the condensable portion, WSEC would rely on the SO_3-absorbing qualities of the limestone bed and FGD.
$PM/PM_{2.5}$	WSEC relied on PM_{10} as a surrogate for estimating $PM_{2.5}$. WSEC estimated that 44% of the filterable PM_{10} would be $PM_{2.5}$ and 97% of the condensable PM_{10}. The control technologies would be the same as those for PM_{10}.
H_2SO_4, HF, and HCl	WSEC would rely on the calcium reaction technologies (limestone combustion bed, flue gas, and FGD system) and the baghouse to capture the acids.
NH_3	WSEC anticipates that the introduction of ammonia for NO_x control may result in some emissions of ammonia through non-reaction slips. WSEC estimated ammonia slip at 10 parts per million by volume (ppmv) on an hourly basis and 5 ppmv on an annual basis.
Mercury and non-mercury metals	WSEC would rely on baghouse technology for the non-mercury metals. To control mercury, WSEC proposes to use activated carbon injection, as necessary, to meet an emission limit of 0.86 x 10^{-6} lb/MMBtu, on a 12-month rolling average, to be verified by a continuous emissions monitoring system.
Materials storage	WSEC would control PM/ PM_{10} from the material storage and handling operations by using enclosed conveyors to bring the coal, pet coke, and limestone to and from stockpiles. These stockpiles would be controlled with water sprays to minimize windblown fugitive emissions. Pneumatic piping would be used for transport of activated carbon, lime, and sand. Baghouses would be used to control air vent emissions from various

Pollutant	Control
	material transfer points. The material handling baghouses would be specified to meet an emission limit of 0.005 grain PM per dry standard cubic foot. The ash would be placed in a landfill, and emissions from the landfill would be controlled by water sprays, as necessary.

The project will include seven liquid fuel storage tanks, a tank for the storage of acid for water treatment, and pressurized storage tanks for ammonia to be used for the control of NO_x. Combustion-type support facilities include two 2,800 kilowatt (kW) emergency electric generation engines and one 250 horsepower fire water-pump engine. Each engine will be limited to operate no more than 500 hours per year.

A diagram of the major components of WSEC's proposed electric generation and pollution control systems is attached as Attachment A.

B. Emissions

In addition to coal dust, WSEC proposes to release NO_x, CO, SO_2, PM_{10}, $PM_{2.5}$, volatile organic compounds (VOCs), lead, sulfuric acid (H_2SO_4), fluorides as hydrogen fluoride (HF), ammonia, hydrogen chloride (HCl), and mercury (Hg)[33] in these amounts:

Emission	NO_x	CO	SO_2	PM	PM_{10}	$PM_{2.5}$	VOC	Pb	H_2SO_4	HF	NH_3	HCl	Hg
Ton/yr	4,069	6,372	4,956	1,667	1,628	1,190	293	0.15	925	14.80	149	187	0.05

The VOCs and NO_x that WSEC will emit are precursors of ozone. Although WSEC will not emit ozone, WSEC is required under state and federal law to determine whether the precursors that it will emit will contribute to the creation of ozone in the atmosphere. WSEC asserts that its precursor emissions will not result in or contribute to the formation of ozone.

[33] WSEC Ex. 113 at 2.

C. Location

WSEC selected Matagorda County for the location of the plant because the area is immediately adjacent to the Houston-Galveston-Brazoria area. The power needs of the Houston-Galveston-Brazoria area are projected to grow. WSEC's addition of electric power to the grid will be used for commercial and residential purposes. In addition, the site is near local refineries that generate large amounts of pet coke. The site has access to rail lines, roads, and waterways for delivery of fuel and other raw materials. Power lines are available for the transmission of the electricity that WSEC proposes to generate.

The location also has potential disadvantages in its proximity to the Houston-Galveston-Brazoria area. The region is a nonattainment area for many of the air quality measures, including NO_x, ozone (severe nonattainment),[34] and other federally defined pollutants. Although Matagorda County is currently an attainment area for these same pollutants, Protestants expressed concerns that the site of the plant has the potential to make Matagorda County a nonattainment area and to further pollute the air of the Houston-Galveston-Brazoria area.

V. ISSUES IN THIS CASE

The Commission referred this case directly to SOAH for a contested case hearing.[35] By law, the issues in the hearing are whether WSEC's application complies with each of the diverse elements of state and federal law. But, the Protestants' challenges to specific parts of the application framed the contested issues. By the end of the hearing, those issues were clearly defined, and the parties agreed to brief at least these questions:

- whether WSEC's multiple proposed site plans affect the evaluation of the application;

---

[34] SC/NCC Ex. 325. EPA has adopted standards for five levels of nonattainment, from "marginal" to "extreme." "Severe" is the next-to-highest level of nonattainment. 42 U.S.C.A. § 7511(a)(1).

[35] 30 TAC § 55.210.

- whether WSEC's ozone modeling met the requirements of law;
- whether WSEC properly used PM_{10} as a surrogate for $PM_{2.5}$;
- whether WSEC's air dispersion modeling properly reflected the requirements of state law;
- whether WSEC properly evaluated the project's potential for adverse effects on public health or welfare;
- whether WSEC properly conducted the BACT analysis;
- whether WSEC properly conducted the MACT analysis;
- whether the ED's inclusion of Special Condition 45 in the draft permit was proper;
- whether the inclusion of a CEMS is required for the evaluation of PM; and
- whether a PAL permit is permissible under the Texas SIP?

VI. WSEC'S MULTIPLE PROPOSED SITE PLANS

The first of the issues raised by Protestants was whether WSEC intended to build the facility as shown in the proposed site plan in the application. At the opening of the hearing, Protestants moved to dismiss the WSEC application or to continue the hearing. Protestants argued that this prehearing relief was required because WSEC had filed with two different regulatory agencies three different proposed site plans for the same power plant. Protestants alleged that the inconsistencies among the site plans undermined WSEC's assertion that the site plan in the application was the facility that WSEC intended to build.

The three applications for which WSEC filed site plans were: the current application for the four Permits, an application for a wastewater discharge permit (also filed with the Commission), and an application for a dredge and fill permit (known as a "404 permit" and filed with the United States Army Corps of Engineers (Corps)). WSEC filed the current application in September 2008, the wastewater discharge permit application in February 2009, and the 404 permit application in September 2009. The three site plans vary the locations of different parts

of the plant. The major difference was the site of the materials handling area of the proposed plant, including a railroad dumper building, a railcar site, a truck site, conveyors, and material storage piles. WSEC identified each of these elements as an emissions site in its air modeling study.[36]

WSEC filed each of the three applications under oath but made no effort to harmonize the different versions of the site plans. About a year before the hearing, WSEC officials exchanged emails about the differences. The officials also sent the emails to the three experts who were to testify for WSEC in this proceeding. At the hearing, WSEC's experts were unable to provide WSEC's reasons for filing the different site plans. Protestants argued that the public had a right to understand and comment on the alternative sites. By the time the hearing had convened, the public comment period had long since passed.

In response, WSEC asserted that the site plan for the current application, the first to be filed, had not changed. Frank Rotondi, the chief executive officer of WSEC, testified that WSEC was "fully willing to comply in every respect with construction of this project according to [the application's filed] site layout."[37] When asked about WSEC's intention to revise the site plans for the other two applications, Mr. Rotondi admitted that it had not yet notified either the Commission or the Corps about the possibility for changes. When asked about the process by which WSEC had decided to file three different site plans for the same power plant, Mr. Rotondi explained that the site plans had been filed without the approval of WSEC's development committee. Mr. Rotondi's responses failed to explain how the filings could not have been authorized by WSEC since the WSEC development committee included WSEC's top two management officials, Mr. Rotondi and Randy Bird, the company's chief operating officer.

Protestants asked that the WSEC application be dismissed or that the hearing be postponed until the site plan issues were resolved. In raising these issues, Protestants relied on TEX. HEALTH & SAFETY CODE ANN. § 382.0291(d), a statutory prohibition against an applicant's

[36] Rotondi, Tr. I at 87.

[37] Rotondi, Tr. I at 78.

making amendments to an application after the 31st day before the day before a public hearing on the application is scheduled to begin. Protestants' position was that WSEC's most recent filings at the Commission and with the Corps had revealed WSEC's intention to build the power plant using a site plan other than the one filed by WSEC with this application.

The ALJs asked the ED to clarify whether, under the Commission's policies, WSEC's simultaneous filing of multiple site plans would require WSEC to file an amendment to this application. The ED explained that the Commission's policies would require the filing of an amendment only if the applicant were proposing a change in the amount or types of emissions.[38] A restructuring of the site plan generally would not require an amendment. But, the ED went on to explain that the decision ultimately would have to rely on "a case by case review based on the facts."[39]

At the hearing and in briefs, WSEC argued that these matters did not require an amendment or even rise to the level of a legal issue. WSEC asserted that it had proposed no changes to any element of its application. The Commission's direct referral of the case to SOAH meant that WSEC was required to prove the elements of only this application, precisely the action in which WSEC was engaged. WSEC also argued further that the differences among the three site plans were meaningless with respect to the potential impact of the emissions of the proposed power plant.

We found that no Commission rule of procedure or policy directly addressed the issue. In their absence, we ultimately relied on two points to deny Protestants' motion. First, the Commission had referred this application to SOAH for a contested hearing on the merits of this application. Second, Mr. Rotondi testified that WSEC intended to build the facility as stated in this application. Although we were concerned about WSEC's actions in filing other site plans, we concluded that those actions did not change the facts that led the Commission to refer this case to SOAH. If WSEC intended to build the proposed facility as shown in the site plan in this

[38] Counsel, Tr. I at 32-36.

[39] Counsel, Tr. I at 34.

application, then Protestants' concerns did not rise to the level of a legal basis for continuing the hearing.

VII. OZONE MODELING

Ozone is one of the criteria pollutants for which EPA has set a NAAQS.[40] But, unlike most other pollutants, ozone is a byproduct of two other pollutants, VOCs and NO_x, instead of a direct emission. These ozone precursors combine to produce ozone in the presence of sunlight, but the details of the formation process are poorly understood. More confusingly, some combination of these conditions may actually eliminate ozone from the atmosphere, leading one expert witness to describe the process of ozone formation as "peculiar . . . [and] nonlinear."[41]

Although EPA does not require an applicant to predict the amount of ozone that a facility's emissions will produce, EPA does require an applicant to model the ozone concentrations in the county in which the applicant proposes to build its facility. To assist an applicant in the modeling process, EPA has published "Guideline on Air Quality Models," otherwise known as Appendix W.[42] An applicant that relies on Appendix W must consult with EPA's regional office to determine the most suitable approach in estimating the impact of individual sources.

In the alternative to relying on Appendix W,[43] a Texas applicant may use a Commission-published document, "Air Quality Modeling Guidelines," that includes the Commission's Draft

---

[40] See 40 C.F.R. §§ 50.9 and 50.10.

[41] Tran, Tr. IV at 992.

[42] 40 C.F.R. Pt. 51 App. W (July 1, 2003). Appendix W is an appendix to part 51 of title 40 of the Code of Federal Regulations. It is an EPA guideline that recommends air quality modeling techniques for federal, state, and local air quality entities. Appendix W applies only to criteria air pollutants and is intended to be used in judging the adequacy of modeling analyses. The appendix was first published in April 1978 to satisfy the requirements of the FAA by specifying air quality models. It provides a common basis for estimating the air quality concentrations of criteria pollutants used in assessing control strategies and developing emission limits.

[43] 30 TAC § 116.160(d).

Ozone Procedures.[44] Protestants challenge WSEC's reliance on the Commission document and the modeling tools upon which the Commission guidance document is based. We reject both challenges, as explained in the paragraphs that follow.

A. Required Use of Appendix W or Draft Ozone Procedures

The Commission's Draft Ozone Procedures use a straightforward, three-step procedure. First, an applicant must use ambient ozone monitoring data to determine whether the background concentration exceeds the ozone standard. The standard is calculated by using the three-year average of the annual fourth-highest ozone concentration, using the three most recent years of data. If no ambient ozone monitors exist in the county in which the source will be located, then an applicant may use data from another county with similar or greater population and emissions.[45] If the background ozone concentration is less than 75 parts per billion (ppb), then the applicant proceeds to Step 2. If the concentration is equal to or greater than 75 ppb, then the applicant proceeds to Step 3.

In Step 2, the applicant uses the ratio of VOCs to NO_x to determine if the source is VOC-limited/NO_x-dominated or NO_x-limited/VOC-dominated. If the ratio is 2:1 or less, then the site is considered to be VOC-limited/NO_x-dominated or ozone-neutral, and the demonstration is complete. If the applicant cannot complete the analysis under Steps 1 and 2, then, under Step 3, the applicant may contact the Commission's Air Dispersion Modeling Team to receive further guidance.

This three-step process was evaluated in *Blue Skies Alliance v. Texas Comm'n on Environmental Quality*,[46] the appeal of the air permit authorizing the construction of the facility

---

[44] WSEC Ex. 209.

[45] WSEC Ex. 209.

[46] 283 S.W.3d 525 (Tex. App.—Amarillo 2009, no pet.).

in the *Sandy Creek* application.[47] The appellants asserted that the Commission's Air Quality Modeling Guidelines did not comply with the more stringent federal rules governing potential inflows of ozone within a federal ozone nonattainment area.[48] The Amarillo court of appeals rejected the argument. The court held that the Commission's interpretation is entitled to deference unless it is plainly erroneous or inconsistent because the Commission and EPA have a common understanding of the federal standard. Specifically citing to the Commission's reliance on its Air Quality Modeling Guidelines and the processes the Guidelines establish,[49] the court upheld the Commission's reliance on its own modeling process:

> Thus, under the commission's assumption [using the Draft Ozone Procedures], if a source is determined to be NO[X]-dominated, no significant ozone impact is expected and no further analysis is required. Since the commission found [the applicant's] proposed plant to be NO[X]-dominated, the commission was entitled to assume that the plant would have no significant ozone impact.[50]

In EDF's challenge to the WSEC application, EDF argues that WSEC failed to comply with the applicable laws for ozone modeling. The failure, according to EDF, is that WSEC has not complied with Appendix W. Although an applicant's compliance with EPA's Appendix W may be one way that it may prove compliance with Texas' ozone modeling procedures, the decision in *Blue Skies Alliance* makes clear that compliance with Appendix W is not the only option. An applicant may rely on the Commission's Air Quality Modeling Guidelines, including the three-step Draft Ozone Procedures, unless a protesting party can show that the manner in which the Commission interprets the procedure is plainly erroneous or inconsistent. EDF has not carried its burden of showing that the Commission's procedures are the product of a plainly erroneous or inconsistent interpretation of the federal standards. Based on this analysis, we reject Protestants' arguments to the contrary.

---

[47] Application of Sandy Creek Energy Associates, L.P., for Air Quality Flexible Permit No. 70861; PSD Permit No. PSD-TX-1039, TCEQ Docket No. 2005-0781-AIR, (May 25, 2006) ("*Sandy Creek*").

[48] *Id.* at 531.

[49] *Id.* at 530-31.

[50] *Id.* at 531.

B. Empirical Kinetics Modeling Approach (EKMA)

EDF also argued that the Draft Ozone Procedures are faulty because they use an outdated ozone screening software tool, Empirical Kinetics Modeling Approach (EKMA). Matthew Kovar, a Commission engineer, prepared the ED's audit of WSEC's air modeling. He confirmed that the ED relies on EKMA when using the Draft Ozone Procedures.[51] Mr. Kovar described EKMA as "not a very refined approach" in terms of a screening tool. He explained that EKMA does not involve any photochemical analysis, despite the formation of ozone as the byproduct of a photochemical reaction between VOCs, NO_x, and sunlight.[52]

Khanh Tran, an engineer with more than 30 years of experience in air modeling and air quality, testified as an expert witness for SC/NCC. Mr. Tran restated some of Mr. Kovar's concerns about EKMA. Mr. Tran also explained that EKMA is an outdated measuring tool, has been abandoned by EPA as obsolete, and is useless in distinguishing between elevated and ground-level emission sources.[53] Mr. Tran made a case for the adoption of another, more recently developed air modeling screening tool, CAMx, that takes into account photochemical analysis.[54]

EPA echoed its support for CAMx in two letters to the Commission about the WSEC permit applications. In EPA's April 14, 2009, letter, it described CAMx as "the only modeling technique that would seem technically appropriate for this source . . . ."[55] In its February 10, 2010 letter, EPA restated its support for CAMx and expressed its "extreme concern" about the Commission's lack of proper guidance to WSEC in the preparation of an ozone impact modeling report:

---

[51] Kovar, Tr. V at 1146.

[52] *Id.*

[53] Tran, Tr. IV at 921-23.

[54] *Id.* at 923.

[55] EDF Ex. 8 at unpaginated 4, item 5; Hunt, Tr. III at 742.

> TCEQ and the applicants should utilize a technically appropriate modeling technique and should work with us (in accordance with PSD regulations and Appendix W) to determine whether a potential impact from this facility would cause or contribute to a potential violation of the ozone NAAQS standards or impacts on nearby non-attainment areas.[56]

The controlling question on this point is whether the Commission has the authority to establish its own methods, even allegedly outdated methods, for the evaluation of ozone precursors. The answer is clear. EKMA is part of the Commission's Air Quality Modeling Guidelines. The guidelines have been adopted by the Commission. The Commission's processes have been accepted by EPA as part of the SIP. The guidelines have passed state judicial review in *Blue Skies Alliance.* The law as it stands supports the ED's reliance on EKMA as part of the screening methods required by the Commission. Unless EPA rejects the SIP, the Commission's procedures—and the screening tests on which they rely—pass legal muster.

C. Accuracy of Ambient Air Monitoring Data

In compliance with the Draft Ozone Procedures, WSEC's air modeling expert, Joseph Kupper, P.E., used ozone monitor data from a monitor site at Aransas Pass in San Patricio County.[57] No ambient ozone data was available for Matagorda County.[58] Mr. Kupper calculated an average ozone concentration of 74.7 ppb.[59] The EPA-adopted current 8-hour ozone standard is 75 ppb, making WSEC's calculation of 74.7 ppb just within the acceptable NAAQS limits for ozone under the Draft Ozone Procedures.[60] Protestants raises two challenges to the quality of the data on which Mr. Kupper relied in reaching his conclusions.

---

[56] EDF Ex. 133 at unpaginated 3.

[57] ED Ex. 29 at 17; WSEC Ex. 209.

[58] Kupper, Tr. II at 292-93.

[59] ED Ex. 29 at 17.

[60] *Id.* Decimal places in the expression of an ambient ozone concentration in ppb are truncated, not rounded. WSEC Ex. 714.

1. EPA quality assurance criteria

Mr. Kupper used data that was collected by the Commission and published on a Commission website.[61] At the hearing, EDF noted a Commission-published footnote to the data. The footnote states that the data for the San Patricio monitoring site "does not meet EPA quality assurance criteria and cannot be used for regulatory purposes."[62] EDF challenged Mr. Kupper's use of the data on the grounds that the Commission had designated it as not available to be used for regulatory purposes.

On cross-examination, Mr. Kupper contended that: (1) the limitation applied only to federal attainment/nonattainment designations, not air modeling; (2) he had used the same data without objection in previous Commission hearings; and (3) he could have used data from other monitors that were EPA quality-compliant and would have reached the same conclusion about Matagorda County's ambient ozone levels.[63] Mr. Kupper explained that TCEQ's written guidance does not address the issue of whether monitoring data must meet EPA's quality assurance criteria.[64] He testified that he selected this San Patricio County monitor because it was a conservative choice. San Patricio County has a higher population and more ozone precursor emissions than Matagorda County. Also, this monitor had the highest measured ozone concentrations and was the only one with three years worth of data.[65]

Mr. Kupper could point to no published rule, policy, or guidance that supported his position that the footnote precluded use of the data only for determining whether an area is in nonattainment. During the hearing, no party offered any additional evidence about the limitation on the use of the data. After the hearing, in briefs and responses, neither WSEC nor the ED

---

[61] EDF Ex. 129.

[62] *Id.* at unpaginated 4, 8, and 12.

[63] Kupper, Tr. II at 418-31.

[64] Kupper, Tr. II at 419-20.

[65] Kupper, Tr. II at 294-95.

provided citations to resources that supported Mr. Kupper's assertion regarding his past use of similar data. Nor did WSEC offer in rebuttal revised models using EPA compliant data.

EDF's challenge raises a legitimate question about the quality of the data on which Mr. Kupper based his conclusions. WSEC has the burden of refuting this challenge. We find that Mr. Kupper's modeling is offered by WSEC for a regulatory purpose. The purpose of this hearing is to determine whether a regulatory agency should issue a permit based in part on Mr. Kupper's modeling. The data relied on in the modeling was not approved for this purpose. The parties did not direct the ALJs to any information that defines the scope of the term "regulatory purpose."

We recognize that Mr. Kupper's report was not meant to be a direct measure of the air quality of Matagorda County. Instead, the report was offered to show that the air quality data of another county would serve as a conservative substitute for that of Matagorda County. There is evidence to support Mr. Kupper's use of the data if the Commission were to disregard its own limitation. The monitor was the only monitor with over three years of data and had the highest measured ozone concentrations. Also, San Patricio County has a higher population and more precursor emissions than Matagorda County. Further, the ED's witnesses testified that the use of the monitor was reasonable although they did not address the quality assurance issue.[66] Although we do not find that the data may be used, the Commission may determine that it was acceptable for Mr. Kupper to use the data from the San Patricio County monitor in his ozone modeling.

2. Three-year averages

EDF argues that if WSEC had included 2009 data from the Aransas Pass monitor, the three-year average would increase from 74.7 ppb in 2006 to 2008 to 75.0 ppb in 2007 to 2009.[67]

---

[66] ED Ex. 29 at 17 and ED 41 at 14.

[67] Kupper, Tr. II at 299-300.

At a 75.0 ppb level, WSEC would be required to analyze the ozone compliance issues using Step 3 procedures instead of Steps 1 and 2.

WSEC argues that the 2009 data was not available when WSEC filed its application and that an applicant is not required to address data that was not available when it filed its application.[68] WSEC points out that even the ED did not have the data when his staff reviewed the application.[69] Finally, because the data became available only about a month before the hearing, WSEC argues that it is not fair to require WSEC to respond to criticisms about its failure to rely on recently released data.

Second, WSEC argues that if the 2009 data had been available, then it could have shown compliance with ozone attainment standards using Step 3.[70] Specifically, WSEC argues that Mr. Kupper could have used a "transport analysis" to determine the wind direction relative to the monitor on the days with the highest ozone measurements.[71] In the alternative, Mr. Kupper could have used monitoring data from a county other than San Patricio, one with higher population and more ozone precursor emissions.[72] Among Mr. Kupper's options might have been the data from Nueces County, home to Corpus Christi, in which the Commission maintains multiple monitors.[73] If that data set had been used, then WSEC argues, it would have had to comply with only a Step 1 level of analysis.

In raising issues based on recently acquired information, Protestants ask WSEC to provide new analysis. Protestants have that right, and WSEC has the obligation to respond. We reject WSEC's argument that it was shielded from responding to new information that may be relevant to the Commission's consideration of its application. We acknowledge that at some

---

[68] *Id.* at 300-01.

[69] WSEC Ex. 111.

[70] ED Ex. 29 at 17.

[71] Kupper, Tr. II at 302-03.

[72] *Id.* at 422.

[73] *Id.* at 422-32.

point the Commission must cease its consideration of new information. Without a boundary, the Commission would face ongoing requests for postponements to require an applicant to factor the latest data into its application.

But, this challenge does not involve that type of problem. Here, Protestants presented new information during the course of a hearing. One of the purposes of a contested-case hearing is to examine the relevant information raised by one party against another.[74] A hearing is a legitimate forum in which to examine recently acquired information. WSEC knew about this new information at least a month in advance of the hearing. WSEC's witnesses were prepared to address the information and were not surprised by Protestants' questions about the effect of this information on air quality issues. We reject WSEC's first argument.

As to WSEC's second argument, WSEC is entitled to show that it could have addressed these issues by relying on other data or other steps of analysis. In this instance, WSEC's revision of its prefiled analysis is appropriate (in contrast to the issue raised in the previous subsection) because WSEC was challenged with information at the hearing that it had not prefiled. WSEC is not seeking to explain the legitimacy of the information that it included with its application. Instead, it is addressing the new data that Protestants raised for the first time at the hearing.

The question then becomes whether WSEC's analyses are sufficient to respond to Protestants' questions. We find that they are. WSEC's expert, Mr. Kupper, outlined plausible arguments about the analysis of other data from other counties. In addition, Mr. Kupper explained the availability of other post-Step 1 analyses to account for the ozone concentrations at the 75 ppb level. In essence, Protestants' argument was that WSEC's original analysis should be discarded because the ozone concentration was higher than originally anticipated. WSEC addressed that argument using the Commission's analytical steps and leading to a conclusion that supported WSEC's position. Taken on balance, we find that WSEC satisfied its burden of proof on this issue.

---

[74] 30 TAC § 80.127(a)(1).

D. Proximity of the Houston-Galveston-Brazoria Nonattainment Area

SC/NCC raises an objection to WSEC's application based on the potential for WSEC's NO_x emissions to increase the ozone levels of the Houston-Galveston-Brazoria area, a severe nonattainment area for ozone.[75] But, SC/NCC acknowledges that any measurement of WSEC's ozone contributions to the area would be difficult because no regulatory agency has adopted a significant impact level for ozone.

SC/NCC urges that an accurate prediction of the amount of ozone produced by WSEC could be supplied by CAMx, the air modeling software tool described in subsection B of this section. To demonstrate the quality of CAMx, SC/NCC offered the testimony and reports of Mr. Tran. He produced a photochemical modeling report that predicted that WSEC would: (1) contribute 2 ppb or more to the existing ozone levels of the Houston-Galveston-Brazoria area and (2) cause new exceedances of the 8-hour ozone standard of 75 ppb.[76] SC/NCC argued that EKMA, the older modeling tool on which the Commission still relies, is useless for conducting complex photochemical modeling.

We reject SC/NCC's argument, not on the basis of evaluating the accuracy of Mr. Tran's analysis, but on the status of the law. We return to the fundamental question of whether the Commission has the authority to establish its own methods for the evaluation of ozone impacts. We reiterate our conclusion that the Texas legislature has delegated that authority to the Commission, and we reiterate that EPA has taken no formal steps to reconsider the status of the SIP by which the Commission regulates ozone in Texas.

Although the Houston-Galveston-Brazoria area may be in severe nonattainment and EKMA may not be "a very refined approach" as a screening tool, the Commission's procedures

---

[75] SC/NCC Ex. 325.

[76] SC/NCC Ex. 102 at 8.

are supported by current law.[77] Although EPA would prefer the Commission to require the use of photochemical modeling, the analytical method used by the Commission apparently does not require that approach. The ED continues to rely on EKMA, and the ED does not object to an applicant's reliance on that modeling software to predict ozone concentrations.

The Protestants ask us to determine that the use of a more comprehensive analytical system is required by law. This we have no authority to do. The Commission uses EKMA as an acceptable screening tool. The Commission's three-step Draft Ozone Procedures provide a method of analysis upon which the Commission relies. The photochemical modeling performed by Mr. Tran is not required by Texas law, and we recommend the rejection of Protestants' argument on this point. Also, EPA's own regulations provide that there is a presumption that no single source causes or contributes to ozone exceedances. "For ozone, sources of [VOCs] locating outside a designated ozone nonattainment area, will be presumed to have no significant impact on the designated nonattainment area."[78]

Furthermore, even if CAMx modeling was required, Mr. Tran's CAMx modeling does not show that WSEC's emissions will cause or contribute to an exceedance. In Table 2, Mr. Tran's CAMx modeling shows that WSEC's emissions will have no effect on the maximum 8-hour ozone concentrations in the Houston area.[79] On cross-examination, Mr. Tran stated that due to NO_X quenching, on two occasions, his model in Table 2 predicted a reduction in ozone concentrations.[80] On Table 3, the highest modeled ozone impact at any one monitor was 4.1 ppb.[81] However, the total ozone concentration where this increase occurred was 63 ppb, below

---

[77] Section 182(c)(2)(A) of the FCAA requires Texas to demonstrate that the Houston SIP will achieve attainment of the ozone NAAQS by a statutory deadline. 42 U.S.C. § 7511a(c)(2)(A). "This attainment demonstration must be based on photochemical grid modeling *or any other analytical method determined . . . to be at least as effective*." [Emphasis supplied and citations omitted.] EPA approved Texas's attainment demonstration for the Houston-Galveston area because the agency concluded, based on all the evidence, that the area would reach attainment of the NAAQS for ozone by 2007 and that no additional measures would advance the attainment date. *BCCA Appeal Group v. United States EPA*, 355 F.3d 817, 830 (5th Cir. 2003)

[78] 40 CFR Part 51, App. S, § III.C; *see Blue Skies Alliance*, 283 S.W.3 at 530 n.3.

[79] SC/NCC Ex. 102 at 10.

[80] Tran, Tr. IV at 955-56.

[81] SC/NCC Ex. 102 at 11, Table 3.

the 75 ppb ozone standard.[82] Furthermore, there is no significance impact level for ozone and Mr. Tran did not know what the significance impact level should be.[83] On Table 4, while Mr. Tran's CAMx modeling predicted that out of 62,120 opportunities to indicate an exceedance, WSEC's emissions increased an ozone level over 75 ppb only 28 times. However, there is a margin of error built into Mr. Tran's model[84] that could affect whether WSEC's emissions caused an exceedance. Also, Mr. Tran classified an exceedance as an increase of the ozone level over 75 ppb for just one day. However, this fails to meet the standard that specifies that an exceedance is based on a 3-year average of the annual fourth-highest 8-hour ozone concentration.[85]

In sum, we do not agree with the Protestants that WSEC was required to perform a CAMx model. In addition, the CAMx model performed by Mr. Tran in this case is not sufficient to conclude that WSEC's emissions would cause or contribute to exceedances. As stated in *Blue Skies Alliance*, "[b]oth EPA and the [TCEQ] interpret the 'cause or contribute to' standard as allowing some contribution to an NAAQS violation, provided that the contribution is determined to be insignificant or to have virtually no effect on the nonattainment area."[86] The ALJs recommend a finding that WSEC complied with the TCEQ's process and, as a result of that process, WSEC would not cause or contribute to an exceedance of a NAAQS in the Houston-Galveston-Brazoria nonattainment area.

VIII. PM_{10} AS A SURROGATE FOR $PM_{2.5}$

EDF argues that WSEC failed to prove that the proposed facility's emissions would not cause or contribute to a violation of the $PM_{2.5}$ NAAQS. We reject the argument.

---

[82] Tran, Tr. IV at 966-67.

[83] Tran, Tr. IV at 959-60.

[84] Tran, Tr. IV at 976-80.

[85] Tran, Tr. IV 90-89; *see* 73 Fed. Reg. 16,436, 16,512 (Mar. 27, 2008).

[86] *Blue Skies Alliance*, 283 S.W.3d at 531.

In 1997, EPA adopted an interim policy allowing sources to use PM_{10} as a surrogate for $PM_{2.5}$.[87] In 2009, EPA issued an order in a contested case in which EPA identified the circumstances in which applicants and permitting authorities could continue to use the surrogacy policy.[88] On February 11, 2010, EPA published a formal proposal to end the surrogacy policy.[89] Based on the EPA order and the EPA proposal, EDF argues that WSEC failed to: (1) quantify, model, and account for $PM_{2.5}$ emissions and demonstrate that they do not cause or contribute to violations of the NAAQS; and (2) address the propriety of applying the surrogacy policy to demonstrate compliance with the PSD requirements, including a showing that technical difficulties preclude $PM_{2.5}$ quantification and modeling.

The SIP is the authority by which the Commission may consider and issue PSD permits. Under the existing SIP, the Commission may accept an applicant's proof of compliance with $PM_{2.5}$ NAAQS by demonstrating compliance with PM_{10} NAAQS.[90] Neither EPA's contested case order in another matter nor EPA's mere proposal to end the surrogacy policy affects the legal status of the Texas SIP.

In addition, on May 16, 2008, EPA adopted a rule affecting state environmental agencies' use of the PM_{10} surrogacy policy. For sources for which applications were filed before July 15, 2008, state environmental agencies may consider the applications under the existing PM_{10} surrogate standard.[91] This application comes within the limits of that rule.

Finally, the Commission's recent actions on this issue may reflect the Commission's current policy. To that extent, the Commission concluded in its final administrative orders in the

---

[87] *See* 73 Fed. Reg. 28,321, 28,324 (May 16, 2008).

[88] *In re Louisville Gas and Electric Co., Trimble County, Kentucky, Title V/PSD Air Quality Permit #V-02-043 Revisions 2 and 3* (Aug. 12, 2009).

[89] 75 Fed. Reg. 6,827, 6,834 (Feb. 11, 2010).

[90] WSEC Ex. 200 at 30-32.

[91] ED Ex. 17 at 558; 40 C.F.R. 52.21(i)(1)(xi).

power plant applications in the *NRG Texas Power*,[92] *Oak Grove*,[93] and *Sandy Creek*[94] cases that a demonstration of compliance with the PM_{10} NAAQS suffices to demonstrate compliance with the $PM_{2.5}$ NAAQS. Considering all of the evidence and argument of counsel, we accept WSEC's proof that that the proposed facility's emissions would not cause or contribute to a violation of the $PM_{2.5}$ NAAQS, based on its showing of compliance with the PM_{10} NAAQS.

IX. DISPERSION MODELING

An applicant is required to conduct air dispersion modeling to show the predicted concentrations of emissions that its proposed facility may generate. Air dispersion modeling is a mathematical exercise that simulates the dispersion processes that occur in the atmosphere.[95] In general, the modeling shows the maximum off-property ground level concentration in ambient air of the various pollutants to be emitted from the proposed facility.[96] The modeling report compares the anticipated emissions from the proposed facility to the NAAQS, the PSD increment standards, and the concentrations of specific pollutants using the state property-line standards.[97] This information is evaluated to determine whether the draft permit will protect the public's health and physical property.[98]

---

[92] Application of NRG Texas Power, LLC, for State Air Quality Permit 79188, Prevention of Significant Deterioration Air Quality Permit PSD-TX-1072, and MACT HAP-14 Permit, TCEQ Docket Nos. 2007-1820-AIR and 2008-1210-AIR, SOAH Docket Nos. 582-08-0861 and 582-08-4013 at 42, Conclusion of Law No. 8 (Dec. 11, 2009) ("*NRG*").

[93] Application of Oak Grove Management Co., LLC, for Proposed Air Permit No. 76474 and PSD-TX-1056, Docket No. 2006-0195-AIR; SOAH Docket No. 582-06-1502 at 12, Conclusion of Law No. 69 (June 20, 2007) ("*Oak Grove*").

[94] SOAH Docket No. 582-05-5612 at 11, Conclusion of Law No. 67.

[95] WSEC Ex. 200 at 9.

[96] Rotondi, Tr. I at 116. Ground-level readings are used in modeling compliance for PSD increments.

[97] ED Ex. 41 at 7. NAAQS standards are expressed as airborne concentrations in ppm, or in the case of particulate matter, micrograms per cubic meter ($\mu g/m^3$) of air. PSD increments are measured in ground level concentrations (GLCs). The Commission's property line standards are measured in net GLCs, which is a measure of the difference between ambient concentrations upwind and downwind of a particular property compared to an applicable standard. The Commission has set property line standards for three compounds: hydrogen sulfide (H_2S), SO_2, and H_2SO_4 WSEC Ex. 300A at 9-10.

[98] TEX. HEALTH & SAFETY CODE ANN. §§ 382.002 and 382.0518(b).

Among the first steps in the air dispersion modeling process is the creation of a modeling grid. The grid establishes a two-dimensional map of the site at which virtual receptors would be placed. The grid is more narrowly spaced at the perimeter of the site and is then more broadly spaced away from the perimeter. Next, the air dispersion modeling tool is used to generate its prediction of the effect of the movement of the pollutants through the ambient air. Among the data evaluated by the modeling tool is information about emission sources, the rise of the plume into the atmosphere, and the effects of airflow around buildings and structures.[99] For applications that include barges or ships, the Commission rules require that any dockside vessel emissions be included as an emission source.[100]

WSEC's expert, Mr. Kupper, provided the air dispersion modeling and report. He concluded that the facility would meet each of the standards. The ED's audit team concluded that Mr. Kupper's modeling analysis was acceptable and that the proposed facility would create no adverse public health effects.[101] Protestants challenged WSEC's conclusions and raised the legal issues discussed in the paragraphs that follow.

Mr. Kupper placed receptors along the WSEC site property line except around the area where barges would be delivering pet coke or coal. At that location, Mr. Kupper placed no receptors within 25 meters of the area,[102] relying instead on a 25-meter buffer zone suggested by one of the Commission's guideline documents. Mr. Kupper placed the receptors around the buffer zone and found no exceedances of the PM standards.

Protestants challenge WSEC's proposed receptor placement. Protestants' objection is that WSEC's placement of the receptor would mask potential emissions of PM_{10} around an area with some of the highest potential concentrations of low-level fugitive emissions from limestone,

---

[99] WSEC Ex. 200 at 9.

[100] 30 TAC § 116.111(a)(2)(A)(i).

[101] ED Ex. 19 at 1; ED Ex. 20 at 631 and 633.

[102] WSEC Ex. 200 at 21. A copy of the grid is attached as Attachment B to this PFD; WSEC Ex. 213 at 1.

coal, pet coke, and waste ash.[103] Because Mr. Kupper stated in prefiled testimony that WSEC would store these materials "right on or very close to property lines,"[104] EDF argued that the proper placement of receptors would be along those property lines.

Further, EDF argues that the Commission rules incorporate by reference Appendix W, EPA's air modeling guidance document.[105] Because Appendix W provides that receptor sites "should be utilized in sufficient detail to estimate the highest concentrations and possible violations of a NAAQS or PSD increment,"[106] EDF asserts that WSEC's receptor placement violates EPA rules. EDF also relies on EPA's Draft October 1990 New Source Review Workshop Manual in arguing that EPA's rules require an applicant to use its "fenceline" as one location where "receptors should be located."[107] EDF argues that EPA's language requires an applicant to place receptors along a proposed facility's property line.

In concluding that WSEC need not place its receptors along the property line, we begin with a review of the legal status of the Commission's and EPA's guideline documents. Those materials do not have the status of law. They serve as guidance to applicants who seek to understand a standard approach for achieving the Commission's and EPA's regulatory goals. An applicant may seek to vary a guidance document's standard approach by showing the ED that other approaches may work equally well, as long as the applicant can also show satisfaction of EPA's and the Commission's statutes and rules.[108] One of the roles of the ED in this process is to examine how an applicant's proposals address the issues in the guidance documents and whether the applicant's modelers have used the best available professional judgment.

---

[103] Kupper, Tr. II at 320-22; WSEC Ex. 200 at 46-47.

[104] WSEC Ex. 200 at 47.

[105] 30 TAC § 116.160(d).

[106] 70 Fed. Reg. 68,238-239 (EPA Nov. 9, 2005).

[107] ED Ex. 4 at C.42 (272).

[108] Expert witnesses for WSEC and the Protestants testified about their familiarity with the ED's system of negotiation-based evaluation. WSEC Ex. 600 at 19; Hunt, Tr. III at 674.

An applicant's modeler's decision not to use the methods in the Commission's or EPA's guidance documents is not evidence of a failure to comply with the law. Instead, non-adherence imposes on an applicant the additional burden of showing that its modelers' best professional judgments satisfy the requirements of law.

The facts in each case determine what constitutes best professional judgment.

EDF's offered the testimony of its expert witness, Michael Hunt, P.E., to show the effects of WSEC's movement of its receptors from the property line to the edge of the inland buffer zone. With this sole change in receptor locations, Mr. Hunt's remodeled calculations showed that WSEC's emissions produced short-term PSD exceedances of PM up to 400 percent for each of the five meteorological test years.[109] WSEC challenged the assumptions underlying EDF's expert's remodeling.

From that dispute, we examine two issues: (1) from what locations should WSEC be required to measure emissions from the barges, and (2) whether WSEC accurately calculated the emissions near the barge unloading site. We conclude that a 25-meter buffer zone around the barges is appropriate and that WSEC's emissions calculations are accurate and comply with the Commission's rules.

A. From what locations should WSEC be required to measure emissions from the barges?

Mr. Kupper based his recommendation for a buffer zone on an August 12, 2002, Commission memorandum, "Air Dispersion Modeling for Dockside Marine Vessels and Related Activities" (Dockside Guidance Document).[110] The guidance document describes three different methods (referred to in the document as "approaches") for analyzing off-site receptors over

---

[109] EDF Ex. 109. The PSD allowable increment level is 30 $\mu g/m^3$. For each of the five test years, WSEC's modeling without the receptors in the barge area was between 24.9 and 28.2 $\mu g/m^3$. For the same period and with the receptors in the barge area, the modeling showed PSD increment levels between 110 and 119 $\mu g/m^3$.

[110] WSEC Ex. 103 at 103-17.

water.[111] Of these three, WSEC relied on the first, the "set distance" approach. None of the other parties challenge that approach or suggest the use of the other approaches.

The "set distance approach" states that "[s]ince the general public would not be present at the source, receptors should be placed starting at a distance of 25 meters from the edge of the source instead of on the actual property line."[112] The document also contemplates that the source of emissions is considered to be part of the property but only during actual operations. [113]

This approach also suggests that receptors would be placed on the property line except around a barge unloading area while a barge is being unloaded. Applying this guidance in this case, the receptors would be placed along the property line until a point near the barge-unloading area. At that point, the receptors would be moved 25 meters into the Colorado River beyond the barge, while barge unloading is taking place.

But, as we understand the parties' positions, WSEC proposes that the receptors be moved 25 meters landward, into the footprint of the facility's site. In contrast, EDF proposes that receptors be placed directly along the property line. Neither of these proposals tracks the language in the guidance document. Neither seems to achieve the regulatory requirements of the Commission's statutes and rules. And neither seems to represent the best possible professional judgment. If, however, our task is to choose among the least objectionable of the two proposals, we select WSEC's for the reasons that we outline.

WSEC's proposal moves the receptors landward and measures the emissions in non-ambient air on the property of the applicant's facility. This approach seems to disregard the requirement that receptors measure emissions in ambient air, air to which the public will be exposed. In contrast, EDF's proposal places the receptors on the property line, disregarding the Commission's treatment of the barges as emissions sources during their unloading of fuel. The

---

[111] *Id.* at 108-09.

[112] *Id.* at 108.

[113] *Id.*

guidance document's suggestion that the buffer zone extend 25 meters beyond the barge would place the receptor site in the Colorado River. This would be adjacent to the closest point to which the public would approach. The set distance approach anticipates this treatment of the public health issue.

As applicant, WSEC carried the burden of proof. In asserting that it satisfied its burden, WSEC repeatedly made reference to its having relied on the guidance document and the ED's approval of WSEC's reliance. After the conclusion of the hearing on the merits, we are faced with a choice between arguments, neither of which completely addresses the issues before us. Nonetheless, we note that WSEC substantially complies with the terms of the guidance document, although in ways about which we have some concerns. In part, those concerns are reflected in the degree to which WSEC's emissions would exceed the PM standards. By looking at those exceedances, we are better able to come to a decision about this issue.

B. Calculation of the emissions

Mr. Hunt argued that if the receptors were moved from the edge of the 25-meter buffer zone to the property line itself, the change would create 24-hour PM exceedances of the 30 $\mu g/m^3$ permissible PSD increment level for the 1983 meteorological sampling year.[114] But, as Mr. Cabe, WSEC's rebuttal witness, pointed out, four of the exceedance points were within the no-public-access area.[115] This would make the exceedance points not within ambient air—thus making them something other than exceedances.

The remainder would be a single exceedance emission point of 39.7 $\mu g/m^3$, located a few feet outside the no-public-access area. Mr. Cabe argued this point could easily be remodeled to produce an acceptable limit by making corrections in the assumptions underlying the baghouse

[114] EDF Ex. 100 at 13; EDF Ex. 110.

[115] WSEC Ex. 600 at 25-26. The calculations generated by Mr. Hunt were 31.4, 43.4, 47.7, 119.3, and 39.7 $\mu g/m^3$, compared to the PSD incremental level of 30.0 $\mu g/m^3$.

emissions.[116] Mr. Cabe's rebuttal testimony contained examples of the areas that he would investigate to reach those conclusions.[117] The question is whether a single data point that exceeds the permissible PSD increment by 9.7 $\mu g/m^3$ for a single modeling year would be sufficient to conclude that the emissions from the facility would contravene the intent of the TCAA.

But, EDF argues that more than a single data point was in play. Mr. Hunt's evidence was that the high, second-highest PM level for each of the five modeling years would exceed the PSD increment levels by factors of 9 or 10 in each year.[118] Mr. Cabe disputed the accuracy of the conclusion by asserting that the exceedances actually occurred a short distance from the property line and not in ambient air.[119]

We concur with Mr. Cabe. By measuring the emissions on the property line, the results are a measurement of emissions from the points of release rather than from the border of ambient air. While we have questions about WSEC's measurements based on receptors placed within the property line, we cannot disregard the provisions of the guidance document and the ED's acceptance of WSEC's interpretation and use of that material.

C. Other Issues

1. SO_2 Standards

Mr. Kupper calculated WSEC's SO_2 emission rates, and Mr. Hunt identified some errors in Mr. Kupper's assumptions in calculating the emission rates. During Mr. Hunt's cross-examination, he readily concluded that the correctly calculated SO_2 concentrations would be

---

[116] *Id.* at 26-27.

[117] *Id.* at 27.

[118] EDF Ex. 100 at 10-11; EDF at 106. The predicted concentrations for each year ranged from 297 to 350 $\mu g/m^3$.

[119] WSEC Ex. 600 at 20-21.

within the applicable SO_2 emission standards.[120] Mr. Hunt's conclusion on cross-examination effectively eliminated the matter as a legal issue for this proceeding.[121]

2. Road Emissions

In preparing WSEC's air modeling, Mr. Kupper did not model annual road dust emissions. He based his decision on the language of the Commission's Air Quality Modeling Guidelines.[122] For short-term periods, the guidelines provide that an applicant need not model road dust at all.[123] For annual periods, modeling is not required if: (1) the applicant plans to use best management practices to control the emissions, and (2) the emissions "will not be generated in association with the transport, storage, or transfer of materials (raw, intermediate, and waste), including sand, gravel, caliche, or other road-base aggregates."[124] Based on these terms, Mr. Kupper concluded that no road dust modeling was required.[125]

EDF challenged Mr. Kupper's conclusions through the testimony of its expert, Mr. Hunt. Mr. Hunt's challenge was based on two points. First, Mr. Hunt disagreed with Mr. Kupper's interpretation of the Commission's guidelines. Mr. Hunt asserted that, although the list of transportable materials ends with "road based aggregates," the list should be read broadly to include other fugitive emissions-producing materials, including the types of ash and fuel that WSEC would be transporting by truck.

The merits of Mr. Hunt's arguments aside, the Commission has resolved the issue in its recent decision in the *NRG* case, also involving a coal-fired power plant. The Commission's final order included these findings of fact:

---

[120] Hunt, Tr. III at 738.

[121] Hunt, Tr. III at 739.

[122] WSEC Ex. 202.

[123] *Id.* at 76.

[124] *Id.*

[125] WSEC Ex. 200 at 22.

> Under TCEQ's modeling guidance, modeling of road dust emissions is explicitly excluded for short-term averaging periods.[126]
>
> Under TCEQ's modeling guidance, modeling of plant road dust emissions is excluded for long-term averaging periods if the emissions will not be generated in association with transport, storage, or transfer of road-base aggregate materials and if best management practices are used to control dust emissions.[127]

Because the issues in this case are the same as those in the *NRG* case, the meaning of the Commission's Air Quality Modeling Guidelines language is not open to further interpretation.

As a second argument, Mr. Hunt noted that EPA's Draft 1990 NSR Workshop Manual listed "road dust" among the same category of fugitive emissions that should be evaluated for PM levels.[128] Based on that listing, Mr. Hunt argued that applicants and the Commission are bound by EPA's guidelines. If that argument had any weight before the Commission's issuance of the *NRG* decision, the matter is now resolved in WSEC's favor by virtue of the Commission's order in *NRG.*

X. STATE EFFECTS REVIEW

For this case, two toxicology experts prepared state effects reviews, Dr. Lee for the ED[129] and Dr. Thomas Dydek for WSEC.[130] Each expert prepared prefiled testimony or a report,[131] and each concluded that WSEC's proposed facility posed no threat to public health or physical property.

---

[126] Application of NRG Texas Power, LLC, for State Air Quality Permit 79188, Prevention Of Significant Deterioration Air Quality Permit PSD-TX-1072, and MACT HAP-14 Permit, TCEQ Docket Nos. 2007-1820-AIR and 2008-1210-AIR, SOAH Docket Nos. 582-08-0861 and 582-08-4013 at 9, Findings of Fact No. 55 (Dec. 11, 2009).

[127] *Id.* at Finding of Fact No. 56.

[128] EDF Ex. 111 at A.10.

[129] ED Ex. 43.

[130] WSEC Ex. 300A.

[131] ED Exs. 25 and 26 (Dr. Lee); WSEC Ex. 300A (Dr. Dydek).

The preparation of a state health effects review is governed by two Commission procedural guides, "Air Permitting Effects Evaluating Procedure"[132] and "Modeling and Effects Review Applicability."[133] A health effects review is based on whether a receptor is "industrial," (an area that is involved in a manufacturing process or in the handling of raw materials) or "non-industrial" (virtually any other type of area). Non-industrial receptors are further classified as "sensitive receptors," including areas of human congregation, like churches, schools, and day care centers, or non-sensitive receptors, including waterways, agricultural areas and undeveloped land.[134]

A state effects review compares the concentrations of pollutants to be emitted from a facility to the maximum ground level concentrations of 4,500 substances listed in the TCEQ Effects Screening Levels (ESL).[135] The substances on the list are those identified by the Commission as having potential adverse human health effects, potential for odor or nuisance, or potential negative effects on vegetation.[136] ESLs are established for long-term (annual) and short-term (one-hour average) analysis. Exceedances of short-term ESLs are evaluated in terms of the number of hours and the frequency with which an emission exceeds the standard.

A health effects review begins with a Tier I analysis. If a receptor does not exceed the ESL for that pollutant, then the analysis ends. If a receptor exceeds the ESL, then a Tier II examination is made. In Tier II, if the pollutant occurs at an industrial receptor and the concentration of the pollutant is more than twice the maximum ground level concentration of the ESL, then a Tier III analysis is made. In Tier II, if the pollutant occurs at a non-industrial receptor and the concentration is equal to the maximum ground level concentration of the ESL, then a Tier III analysis is made.[137] A Tier III analysis is a case-by-case review, taking into

---

[132] ED Ex. 45.

[133] ED Ex. 46.

[134] ED Ex. 46 at 1055.

[135] ED Ex. 47.

[136] ED Ex. 43 at 12.

[137] ED Ex. 45 at 1032-33; Lee, Tr. V at 1196-99.

account eight factors, including surrounding land use, type of toxic effects, magnitude of concentration, frequency of exceedance, and margins of safety.[138]

In this case, Mr. Hamilton, the ED's permit engineer, gave Dr. Lee a list of 23 different pollutants that would be emitted by the proposed WSEC facility.[139] Dr. Lee found that four—vanadium, nickel, HCl, and silica— exhibited concentrations that were sufficiently high to require Tier II or III analyses.[140] Of these, none exceeded the short-term ESL for more than seven hours, and none exceeded the long-term ESL at all.[141]

Coal dust is one of the substances listed in the ESLs as a measurable pollutant, but it was not on the list provided by Mr. Hamilton to Dr. Lee.[142] Dr. Lee would have conducted a state effects review for coal dust if the substance had been on the list provided to him by Mr. Hamilton.[143] Protestants challenged the decision by the ED and by WSEC not to conduct a health effects review for coal dust. As part of that challenge, Protestants established these facts through the cross-examination of Dr. Lee:

- WSEC's long-term ESL coal dust emissions would be exceeded in an area extending 200 meters from the facility—across the Colorado River and onto property on the opposite side of the river.[144]
- WSEC's short-term ESL coal dust emissions would extend even farther—more than 1,000 meters from the facility.[145]
- At least one of WSEC's short-term ESL coal dust exceedances would be at a sensitive receptor.[146]

---

[138] ED Ex. 45 at 1033.

[139] Lee, Tr. V at 1201.

[140] Lee, Tr. V at 1201-02.

[141] Lee, Tr. V at 1203.

[142] Lee, Tr. V at 1219-20.

[143] Lee, Tr. V. at 1210.

[144] Lee, Tr. V at 1213. Mr. Kovar testified to this fact, and Dr. Lee did not dispute its accuracy.

[145] Lee, Tr. V at 1215.

[146] Lee, Tr. V at 1216.

- For coal dust, WSEC's facility is predicted to exceed the short-term ESL annually in some locations on 86 occasions, in some locations on 100 occasions, and, in one location, more than 1,000 occasions.[147]

- For the four substances on the ESL list that Dr. Lee did evaluate, none exceeded the short-term ESL by more than 2.97 times the standard or for more than 7 hours.[148]

- Dr. Lee was not asked to review the WSEC application for coal dust and was not provided WSEC's documents showing the locations at which the ESL for coal dust was predicted to be exceeded, despite his having been asked to review coal dust ESLs in the *NRG* and *IPA Coleto Creek* applications.[149]

In response, WSEC argues that its witness, Dr. Dydek, a former Commission toxicologist, rebutted Protestants' challenges through his testimony. In his prefiled testimony, Dr. Dydek contended that WSEC's emissions of coal dust would cause no adverse health effects because: (1) the exceedances of the long-term ESL would occur no more than a few hundred feet from the barge unloading area, (2) the short-term concentration standard average for coal dust is much lower than that for the long term ESL, and (3) the model contains so much inherent conservatism that its variables could easily be adjusted upward without changing the results.[150]

This "inherent conservatism" argument was explained not in Dr. Dydek's testimony but in Mr. Kupper's. Mr. Kupper testified in prefiled remarks that Dr. Dydek told him that only the respirable portion of coal dust, identified by Dr. Dydek as PM_4, raised health effects concerns. Based on his conversations with Dr. Dydek, Mr. Kupper reduced PM_{10} by 50 percent to calculate a PM_4 emission rate for a respirable portion of the coal dust. Even that was allegedly conservative because, Mr. Kupper contended, "the literature supports a smaller factor."[151]

---

[147] Lee, Tr. V at 1217-18; EDF Exs. 137 and 138.

[148] Lee, Tr. V at 1203.

[149] Lee, Tr. V at 1211 and 1220; WSEC Ex. 213.

[150] WSEC Ex. 300A at 41.

[151] WSEC Ex. 200 at 26.

The evidence did not disclose what that smaller factor might be. The Commission employee responsible for evaluating the accuracy of this assertion about the use of only respirable coal dust was Mr. Hamilton, the ED's permit engineer.[152] His testimony reflects that he relied on Dr. Lee for the conclusion that the public health would not be harmed by the plant's proposed emissions.[153] But, as Dr. Lee explained, it was Mr. Hamilton who decided not to list coal dust among the substances for Dr. Lee's evaluation. Unexplained in the evidence was how Mr. Hamilton concluded that respirable coal dust emissions should not be the subject of evaluation in this application after it was the subject of evaluation in the *NRG* and *IPA Coleto Creek* applications. Mr. Hamilton's prefiled testimony did not mention respirable coal dust emissions, address PM emissions of any fractional size other than PM_{10} or $PM_{2.5}$, or state whether Mr. Hamilton concurred or disagreed with Mr. Kupper's use of a 50 percent reduction factor to calculate PM_4. No representative of the ED testified that PM_4 was the correct measure of respirable coal dust, that a measure of respirable coal dust exists, or that a measure other than PM_{10} is appropriate to use in evaluating coal dust as part of a health effects review.

Mr. Hamilton relied on the work of Dr. Lee and Mr. Kovar to conclude that the project presented no threat to human health and that the project should be approved.[154] But, Dr. Lee's testimony was that Mr. Hamilton never showed him the coal dust data, that Mr. Hamilton never chose to include coal dust in his request for a health effects review, and that Dr. Lee accepted the decision without question. Dr. Lee accepted Dr. Dydek's reduction of the PM_{10} figures not because Dr. Lee was familiar with the reduction but because Dr. Dydek concluded that PM_4 was an appropriate measure. This sequence of explanations is troubling.

In turning to Mr. Kovar's testimony, Mr. Kovar acknowledged that neither of the modeling audits contained a state health effects analysis for coal dust.[155] He also confirmed his understanding that the highest annual concentrations of coal dust from the proposed plant would

---

[152] WSEC Ex. 400 at 5.

[153] ED 1 at 42.

[154] ED Ex. 1 at 45.

[155] Kovar, Tr. V at 1140.

be in a public place, on the opposite bank of the Colorado River from the facility's site.[156] Beyond that, Mr. Kovar expressed no opinions and no concerns about how the proposed facility might affect public health.

As noted before in this PFD, the TCAA and the Commission rules set a high standard in requiring an applicant to prove that its application will give "no indication" that it will harm the public's health, general welfare, and physical property.[157] The ED's Air Permitting Evaluation Effects Procedure requires that a health effects review adhere to this same standard.[158]

We cannot conclude that an applicant's definition of acceptable concentrations of coal dust takes precedence over those stated in the Commission's policies and procedures. Similarly, we are unwilling to conclude that an application's proposed off-site exceedance of established ESLs in ambient air gives "no indication" that an application would give proper consideration to the protection of the public health or physical property. With the evidence clearly showing coal dust exceedances extending into and across the Colorado River onto the opposite bank, we conclude that WSEC has not met its burden of proving the application's compliance with the state's health effects requirements.

XI. BACT

A. In General

Section 382.0518(b) of the Texas Health and Safety Code provides:

> The commission shall grant within a reasonable time a permit or permit amendment to construct or modify a facility if, from the information available to the commission, including information presented at any hearing held under Section 382.056(k), the commission finds:

---

[156] Kovar, Tr. V at 1145.

[157] TEX. HEALTH & SAFETY CODE ANN. § 382.0518(b)(2); 30 TAC § 116.111(a)(2)(A)(i).

[158] ED Ex. 45 at 1030.

> (1) the proposed facility for which a permit, permit amendment, or a special permit is sought will use at least the best available control technology, considering the technical practicability and economic reasonableness of reducing or eliminating the emissions resulting from the facility; and
>
> (2) no indication that the emissions from the facility will contravene the intent of this chapter, including protection of the public's health and physical property.

The TCEQ's definition of BACT is found in 30 TAC § 116.10(3) and is consistent with the requirement in section 382.0518(b)(1) of the Texas Health and Safety Code.

In 1992, EPA approved the Texas PSD program to issue and enforce PSD permits, subject to agreements between TCEQ and EPA.[159] In its proposal to approve the Texas PSD program, EPA commented that the BACT definition in the FCAA possessed two fundamental concepts:

> First, a PSD applicant must consider the most stringent control technology (and associated emission limitation) that is available in conducting a PSD analysis. Second, if the applicant proposes as BACT a control alternative that is less effective than the most stringent available, it must demonstrate to the State through objective indicators that case-specific energy, environmental, or economic impacts renders that alternative unreasonable or otherwise not achievable. The State must exercise independent judgment in reviewing that demonstration.[160]

EPA determined that the TCEQ regulations satisfied the FCAA requirements by approving the Texas SIP related to the PSD program.[161]

To implement the BACT requirement, the TCEQ developed a regulatory guidance document entitled "Evaluating Best Available Control Technology (BACT) in Air Permit

---

[159] 57 Fed. Reg. 28,093 (Jun. 24, 1992) (amending 40 CFR Pt. 52, Subpt SS); *see also,* 54 Fed. Reg. 52,823 (Dec. 22, 1989).

[160] 54 Fed. Reg. at 52,825.

[161] 54 Fed. Reg. at 52,824-825; 57 Fed. Reg. at 28,093.

Applications," also known as RG-383.[162] This guidance document describes the process to conduct and evaluate BACT proposals submitted in a NSR air permit application. RG-383 states that the TCEQ BACT evaluation is conducted using a "tiered" analysis approach, involving three different tiers. In addition to RG-383, Texas also relies on EPA's draft "October 1990 New Source Review Workshop Manual Prevention of Significant Deterioration and Nonattainment Area Permitting."[163] Although almost 20 years old, the TCEQ uses this EPA manual as the primary source of EPA guidance to understand EPA's PSD permitting process.[164]

A Tier I evaluation involves a comparison of an applicant's BACT proposal to the emission reduction performance levels that have been accepted as BACT in recent permit reviews involving the same process or industry. Under Tier I, RG-383 notes that in some cases, "evaluation of new technical developments may also be necessary."[165] A Tier II evaluation involves consideration of controls that have been accepted as BACT in recent permits for similar air emission streams in a different process or industry. A Tier III evaluation is a detailed technical and quantitative economic analysis of all emission reduction options available for the process under review. RG-383 states that "technical practicability is established through demonstrated success of an emission reduction option based on previous use, and/or engineering evaluation of a new technology."[166] The guidance document provides that the "Tier III evaluation is rarely necessary because technical practicability and economic reasonableness have usually been firmly established by industry practice as identified in the first two tiers."[167]

In contrast, EPA uses a "top-down" approach for BACT analysis and requires the following steps: (1) identify all potential control technologies; (2) eliminate technically infeasible options; (3) rank remaining control technologies by control effectiveness; (4) evaluate

---

[162] WSEC Ex. 119; ED Ex. 3.

[163] ED Ex. 4.

[164] ED Ex. 1 at 10.

[165] WSEC Ex. 119 at 6.

[166] WSEC Ex. 119 at 6-7.

[167] WSEC Ex. 119 at 7.

the most effective controls and document the results; and (5) select the BACT by choosing the best technology not eliminated in step four (based upon concerns regarding collateral energy, environmental, or economic impacts). However, in its approval of the Texas SIP and PSD program, EPA determined that Texas was not required to use its top-down approach.[168]

In 2006, TCEQ submitted to EPA a SIP revision that inadvertently removed certain references to the federal BACT definition.[169] After EPA published notice of its proposed disapproval of this revision in 2009,[170] the Commission proposed to re-incorporate by reference the federal BACT definition into 30 TAC § 116.160.[171] On June 2, 2010, the Commission amended 30 TAC § 116.160(c)(1)(A), and incorporated by reference the federal definition of BACT.[172] In responding to comments regarding the validity of permits issued during the time when the federal definition was not incorporated into state law, the Commission stated:

> [A]lthough references to [federal NSR] are currently missing from §116.160, in its permitting actions, the TCEQ does not circumvent FNSR requirements and does not allow a control technology review to be conducted that results in a technology that is less stringent than BACT as defined in federal rule. The commission agrees [with comments on the rulemaking] that these rule revisions do not support an argument that any BACT review conducted for any PSD permit that was issued before the rule revisions become effective was inadequate or invalid.[173]

Regarding whether the TCEQ's three-tiered approach is sufficiently stringent to meet EPA guidance, the Commission said:

> As noted in the December 22, 1989 and June 24, 1992 *Federal Register* notices, PSD-SIP approved states are free to follow their own course, as long as the state's actions are consistent with the letter and spirit of the SIP. EPA has concurred that

---

[168] 57 Fed. Reg. 28,095.

[169] 35 Tex. Reg. 569 (Jan. 29, 2010).

[170] 74 Fed. Reg. 48,467 (Sep. 23, 2009).

[171] 35 Tex. Reg. 569 (Jan. 29, 2010).

[172] 35 Tex. Reg. 5344 (June 18, 2010).

[173] *Id.* at 5347.

> TCEQ's three-tiered BACT evaluation is equivalent to EPA's top down evaluation considering a review of the [RACT/BACT/LAER Clearinghouse (RBLC)] and the review of similar permits across the country. Therefore, TCEQ's BACT evaluation and determination process is consistent with the federal BACT requirements in 40 CFR §55.21(b)(12) and (j).[174]

The effective date of the Commission's rule revision is June 24, 2010.

1. WSEC's BACT Analysis

In its State Air Quality/PSD application, WSEC included a BACT analysis performed by its consultant, Shanon DiSorbo, P.E., of RPS.[175] Mr. DiSorbo utilized the TCEQ's three-tier approach, concluding that the Tier I evaluation was sufficient because of recent permits involving the same industry or processes as the proposed CFB unit. Mr. DiSorbo reviewed the requirements in two recently TCEQ-issued permits for CFB boilers: Formosa Plastics (Formosa);[176] and Calhoun County Navigation District (CCND).[177]

Mr. DiSorbo also testified that his BACT analysis was done in accordance with RG-383 and he reviewed the RBLC database to collect information on control technologies required of CFBs by other states.[178] In addition, Mr. DiSorbo considered information from vendors and engineering experts on the most realistic emissions limits available with BACT, as well as other permit applications and state websites. He also contacted other state regulators and utility representatives during his review.[179] WSEC's expert testimony further indicated there are no new technical developments that are both technically practicable and economically reasonable

---

[174] *Id.* at 5348 (emphasis in original).

[175] Although Mr. DiSorbo was primarily responsible for the BACT analysis, he had significant input from RPS staff and equipment suppliers. WSEC Ex. 100 at 53.

[176] TCEQ Permit No. 76044/PSD-TX-1053.

[177] TCEQ Permit No. 45586/PSD-TX-1055; WSEC Ex. 102 at 51. The RACT/BACT/LAER Clearinghouse is a central data base of air pollution technology information. RACT (Reasonably Available Control Technology) and LAER (Lowest Achievable Emission Rate), like BACT, are air quality standards required of new or existing emission sources.

[178] WSEC Ex. 100 at 53.

[179] WSEC Ex. 100 at 56-57.

that offer the potential for further emissions reductions, other than activated carbon injection to control mercury.[180]

According to the testimony of Mr. DiSorbo and the ED's engineer Mr. Hamilton, the limits in the draft permit are consistent with BACT.[181] WSEC asserts that it is proposing to use every control technology that all of the existing CFBs in Texas or in the RBLC are required to use. Based on these assertions, WSEC contends that its proposed limits represent BACT and that Protestants' arguments against its analysis are simply "AOCT," or "Any Other Control Technology besides the one proposed by the applicant or approved by the permitting authority."[182]

Protestants argue that WSEC's BACT analysis is deficient in many respects. Generally, Protestants assert that WSEC's and the ED's reliance on past permit limits does not create a "technology forcing" BACT analysis. EDF posits that the WSEC BACT analysis goes no further than "WLGD," or "Whatever the Last Guy Did."[183] Protestants contend that the TCEQ process fails to include a BACT analysis consistent with the federal definition found in the FCAA and in EPA's regulations. In addition, they assert that WSEC and the ED also failed to comply with RG-383, TCEQ's BACT guidance document. SC/NCC contends that the ED and WSEC "improperly seize[d]" upon the following language from RG-383: "Emission reduction performance levels accepted as BACT in recent permit reviews for the same process and/or industry continue to be acceptable if no new technical developments have been made that indicate additional reductions are economically or technically reasonable."[184] By focusing on this language, SC/NCC asserts, WSEC improperly limited its BACT analysis to permits for facilities using the same process and fuel type instead of looking at facilities within the "same

---

[180] WSEC Ex. 100 at 61.

[181] WSEC Ex. 100 at 52; ED Ex.1 at 28.

[182] WSEC Closing Argument (Closing) at 57.

[183] EDF Reply to Closing Arguments (Reply) at 32. The ALJs will add "AOCT" and "WLGD" to their rather long list of acronyms, found in Attachment C.

[184] SC/NCC Closing Arguments (Closing) at. 24, quoting, RG 383 at 3 (emphasis omitted), *see* (WSEC Ex. 119, pg. 6).

industry." SC/NCC also argues that WSEC and the ED failed to consider cleaner fuels and better performing control technology, as set out in RG-383. According to SC/NCC, WSEC's and the ED's interpretation of the BACT analysis "creates a perverse incentive for applicants to strategically select dirtier conversion processes or poorer quality and cheaper fuels to avoid having to consider better performing, but more costly control technologies."[185] SC/NCC asserts that a proper BACT analysis does not disregard facilities such as PC boilers, biomass boilers, or Integrated Gasification Combined Cycle (IGCC) electric generating units if the applicant does not propose a control technology that achieves the same performance level permitted as these facilities. The ALJs review these arguments below.

2. BACT Review - Compliance with FCAA

Between February 1, 2006 and June 24, 2010, the federal definition of BACT was not incorporated by reference into the TCEQ's rules. Because of this omission, EPA proposed to disapprove Texas' program.[186] EDF and SC/NCC argue that the TCEQ must still apply the federal BACT definition found in the FCAA and relevant EPA regulations. They assert that the federal BACT definition remains part of the EPA-approved SIP for Texas, and continues to be a state law requirement. Protestants further allege that had WSEC and the ED applied the proper federal definition, WSEC would have been required to consider IGCC technology and the use of cleaner fuels. EDF and SC/NCC reference the recent TCEQ rulemaking that amended 30 TAC § 116.160 to re-incorporate by reference the federal BACT definition into the TCEQ's rules.[187]

The Texas legislature has enacted statutes and the TCEQ has adopted rules that govern the state's PSD permitting process. Texas law requires that the TCEQ must follow its own rules

---

[185] SC/NCC Closing at 25.

[186] 45 Fed. Reg. 48,472 (Sep. 23, 2009).

[187] 35 Tex. Reg. 569, 569-70 (Jan. 29, 2010). On June 2, 2010, the Commission amended 30 TAC 116.160(c)(1) to include a reference to the federal BACT definition in 40 CFR § 52.21(b)(12). 35 Tex. Reg. 5344 (June 18, 2010).

until those rules are changed.[188] Also, an agency's interpretation of its own rules is entitled to deference, and the ALJs must analyze the application accordingly.[189]

The Commission and EPA have already determined that the TCEQ's BACT process complies with the FCAA requirements. Although the TCEQ inadvertently removed the federal BACT definition from its rules in 2006, there is no indication that the TCEQ's actual BACT review process changed as a result. Further, the ED continues to rely on EPA's 1990 draft NSR Workshop Manual as a reference for understanding EPA's PSD permitting process. We conclude that WSEC and the ED followed the proper process in performing their BACT analysis.

Regarding IGCC, the TCEQ has determined that consideration of IGCC is not a component of a BACT analysis in Texas. In the *Sandy Creek* air permitting case, other ALJs submitted a certified question to the TCEQ, asking whether an applicant that proposed to construct a PC boiler power plant must include other electric generation technologies, such as IGCC, in its BACT analysis. The TCEQ answered "No" and the determination was upheld by a Texas court of appeals.[190] WSEC is not required to analyze IGCC as part of its BACT analysis.

We also conclude that WSEC was not required to analyze different fuels as part of its BACT review. In anticipation of this argument, WSEC argued that the TCEQ has treated the use of a particular fuel as an initial business decision and that a change in fuel is a source redefinition. WSEC submitted an application for an air permit for its proposed facility, which is defined as "a discrete or identifiable structure . . . that constitutes a stationary source, including appurtenances other than emission control equipment."[191] A developer makes decisions

---

[188] TEX. WATER CODE ANN. § 5.103(c) ("The [TCEQ] shall follow its own rules as adopted until it changes them in accordance with [the APA]." If a Texas agency fails to follow the clear, unambiguous language of its own rules, its action is arbitrary and capricious. *See, Rodriguez v. Service Lloyds Ins. Co.*, 997 S.W.2d 248, 255 (Tex. 1999) and *Public Util. Comm'n of Tex. v. Gulf States Util. Co.*, 809 S.W.2d 201, 207 (Tex. 1991).

[189] *Gulf States Util.*, 809 S.W.2d at 207.

[190] *Blue Skies Alliance v. Texas Comm'n on Envtl. Quality*, 283 S.W.3d 525 (Tex. App.—Amarillo 2009, no writ).

[191] TEX. HEALTH & SAFETY CODE § 382.003(6); 30 TAC § 116.10(6).

regarding the design and location of the facility by considering a number of factors. Mr. Rotondi, WSEC's president and CEO, testified that fuel selection was part of the overall design and business plan for the project. Pet coke is generated in the Gulf Coast region of Texas, providing a fuel source close to WSEC's proposed site. Mr. Rotondi stated that the local availability of pet coke was an important factor in selecting the site and design of the facility. He also testified that the use of Illinois Basin coal would diversify the overall mix of fuels used for power generation in Texas since other solid-fuel generation in Texas is fueled by either Texas lignite or western sub-bituminous coals from the Power River Basin.[192]

Mr. Cabe also explained the importance of fuel selection in the fundamental business decisions of the developer. He testified that a developer selects a fuel for its facility based on its availability, cost, reliability, performance, and other factors.[193] In addition, fuel selection plays a part in the decision of where to locate a facility.[194] Therefore, fuel selection is central to the developer's initial decisions regarding fundamental aspects of a proposed facility. We conclude that requiring WSEC to consider cleaner fuels during the BACT analysis would result in a redefinition of the source. Therefore, we agree that analyzing cleaner fuels is not required as part of WSEC's BACT analysis.

3. RG-383 Process

SC/NCC argues that WSEC and the ED failed to properly follow the process outlined in RG-383 about the steps an applicant must take in completing the tiered BACT analysis. The gist of SC/NCC's arguments seems to rest on the assertion that the ED and WSEC considered permits for CFB boilers only and excluded permits for PC boilers even though they are within the "same industry" as WSEC. SC/NCC also asserts that WSEC and the ED conflated and skipped steps in the RG-383 process. SC/NCC asserts that WSEC and the ED improperly focused on the summary of the tiers instead of following the actual steps specified in RG-383.

---

[192] WSEC Ex. 1 at 9-10.

[193] WSEC Ex. 600 at 53.

[194] WSEC Ex. 1 at 10.

According to SC/NCC, since WSEC did not propose emission performance that is at least equivalent to the performance in permits for PC boilers, WSEC needed to demonstrate technical differences between the CFB and PC processes and proceed to Tiers II and III.

WSEC responds to this argument by pointing out that there is no expert testimony that supports the RG-383 interpretation asserted by SC/NCC. WSEC asserts that the experts in the hearing who had actually performed a BACT analysis stated that WSEC's analysis complied with the BACT requirements and that neither a Tier II or Tier III analysis was required.[195] WSEC also argues that CFBs and PC boilers are only in the same industry "in the same sense that CFBs, wind turbines and nuclear plants are in the same industry."[196]

We will evaluate WSEC's BACT analysis for each pollutant to determine whether it complies with section 382.0518(b) of the Texas Health and Safety Code and 30 TAC § 116.111(a)(2)(C). From its arguments, SC/NCC appears to be attempting to elevate the status of RG-383 to that of a rule. However, RG-383 is not a rule adopted pursuant to the Texas Administrative Procedure Act, but it is simply a guidance document. The ALJs are unaware of a requirement that WSEC must meet each step of the RG-383 process. Therefore, an alleged failure to follow any particular step in RG-383 is not by itself dispositive of the issue of whether WSEC's BACT analysis is sufficient.

Regarding whether WSEC should have considered PC boilers in its analysis because it is in the "same industry," SC/NCC did not direct the ALJs to any rule or guidance that explains how broadly to construe the term "same industry." SC/NCC argues that the term should include PC boilers, but the term could conceivably be broad enough to encompass wind turbines, nuclear facilities, and facilities that burn natural gas, as suggested by WSEC. Furthermore, the summary of Tier I states that, "[e]mission reduction performance levels accepted as BACT in recent permit reviews for the *same process and/or industry* continue to be acceptable . . ."[197] Therefore, by

---

[195] WSEC Ex. 400 at 19-20; WSEC Ex. 100 at 50 and 56; WSEC Ex. 600 at 49-50.

[196] WSEC Response to Closing Aruguments at 6.

[197] WSEC Ex. 119 at 6.

using the term "and/or," the TCEQ contemplated that a BACT analysis could rely only on permits for facilities using the same process.

Testimony in the record shows that the two different combustion processes produce significant differences in the chemical and physical characteristics of the flue gases. Given these differences, the ALJs will review the individual BACT analyses to determine whether consideration of PC emission limits is reasonable and would not result in an unbalanced comparison.

B. NO_x

WSEC proposes to rely on the CFB combustion processes that effectively suppress NO_x formation.[198] WSEC also proposes to use SNCR for additional NO_x removal, a process that requires high temperatures in the range of 1,600° to 1,800° fahrenheit to function properly.[199] WSEC proposes to inject ammonia into the gases leaving the boiler, which will react with NO_x to form nitrogen and water that is then emitted into the air.[200] Using SNCR technology, WSEC proposes that the BACT emission limits for NO_x are 0.10 lb/MMBtu (hourly limit) and 0.070 lb/MMBtu (30-day average).[201] WSEC asserts that these are the most stringent NO_x emission limits for any pet coke- or coal-fired CFB in the United States.

EDF, SC/NCC, and OPIC disagree that the proposed NO_x emission limits represent BACT for the WSEC facility. They take issue with WSEC's BACT analysis and its failure to go beyond Tier I. Protestants argue that WSEC's analysis was too narrow in that it did not consider other types of solid fuel fired power plants, which are within the "same industry." Furthermore, according to Protestants, WSEC's BACT analysis is incomplete because it relied only on permit limits and did not consider the actual performance of similar sources, such as the JEA Northside

---

[198] WSEC Ex. 102 at 52.

[199] WSEC Ex. 102 at 53.

[200] WSEC Ex. 113 at 5.

[201] WSEC Ex. 113 at 5.

Generating Station in Jacksonville, Florida.[202] EDF states that the JEA facility has a CFB boiler that has been consistently operating well below WSEC's proposed NO_x emission limits. EDF presented evidence that showed that, during the summer of 2002, JEA achieved NO_x emissions of 0.02 lb/MMBtu while burning pet coke.[203]

Protestants also argue that using selective catalytic reduction (SCR) instead of SNCR would result in even lower NO_x levels than those proposed by WSEC. EDF, SC/NCC, and OPIC contend that WSEC's proposed NO_x limits do not represent BACT because of the failure to require SCR technology to control NO_x, as used by PC boilers and required to be used in nonattainment areas. With SCR, the NO_x-ammonia reactions take place between 700° to 750° fahrenheit.[204] The flue gas passes through a catalyst in the presence of ammonia, thus causing the nitrogen oxides in the exhaust stream to be broken down and absorbed onto a catalyst rather than emitted. EDF points out that while the CFB combustion process creates less NO_x than the process used by PC boilers, PC boilers using SCR have lower NO_x limits.[205] Furthermore, in light of the apparent vendor guarantees for the use of SCR technology on CFB boilers,[206] Protestants assert that WSEC was not sufficiently diligent and simply disregarded SCR in its BACT analysis.[207]

Although Protestants agree that WSEC should use SCR technology to control NO_x, Protestants' experts differ on how that technology should be integrated into the WSEC emission control train. EDF's expert, Dr. Ranjit Sahu, argued that his lower limit of 0.02 lb/MMBtu could be achieved through the use of "high-dust SCR," which places the SCR between the CFB boiler

---

[202] *See*, EDF Ex. 7 at 16 (which had NO_x "emission test results" of 0.04-0.06 for coal and 0.02 for pet coke).

[203] EDF Ex. 1 at 14.

[204] WSEC Ex. 102 at 53.

[205] EDF Closing at 32 (citing EDF Exs. 5 and 6 (showing the proposed limits for the *NRG* and *IPA Coleto Creek* units)).

[206] SC/NCC Ex. 200 at 17-18; SC/NCC Ex. 320.

[207] SC/NCC Ex. 200 at 17.

and the baghouse (the technology proposed to control PM).[208] Dr. Sahu testified that WSEC's proposed emission limit of 0.07 lb/MMBtu represents only a 30 percent removal efficiency of in-boiler NO_x levels of 0.10 lb/MMBtu.[209]

SC/NCC's expert, William Powers, P.E., advocated a "tail-end SCR" configuration, in which the SCR is placed after the baghouse and the scrubber. To utilize tail-end SCR, the flue gas would have to be reheated to optimum temperatures. Mr. Powers points out that SCRs have been in use on PCs for years and have also been used to retrofit other facilities. Further, since the exhaust gas characteristics of a PC boiler and a CFB boiler after the baghouse are similar, tail-end SCR is technically feasible for use on a CFB.[210] Mr. Powers cites to a number of PCs and bubbling fluidized bed boilers where SCR has been in use and lower NO_x limits have been achieved or guaranteed.[211]

EDF and SC/NCC recommended different emission limits for NO_x. EDF recommended NO_x emission limits of a 0.03 lb/MMBtu hourly rate and a 0.02 lb/MMBtu as 30-day rolling average and a 12-month rolling average.[212] SC/NCC stated that SCR technology could reduce NO_x emissions by 90 percent and that 0.02 lb/MMBtu is achievable and appropriate.[213] SC/NCC also states that "the maximum emission rate at the outlet of the SCR at guarantee conditions would be 0.019 lb/MMBtu NO_x."[214]

WSEC considered the use of SCR in its BACT analysis. According to the application, WSEC rejected high-dust SCR due to the risk caused by the relatively high concentration of lime in the flue gas, which could potentially plug or poison the catalyst bed. WSEC also rejected the

---

[208] EDF Ex. 1 at 15.

[209] EDF Ex. 1 at 17.

[210] SC/NCC Ex. 200 at 14, 17; Hamilton, Tr. V at 1083-84.

[211] SC/NCC Ex. 200 at 18-19.

[212] EDF Ex. 1 at 15.

[213] SC/NCC Ex. 300 at 14, 18, and 20. SC/NCC does not specify whether the 0.02 lb/MMBtu should be a short- or long-term emission limit.

[214] SC/NCC Ex. 300 at 19.

tail-end SCR configuration due to the need to reheat the flue gas, thereby consuming more fuel and generating more air emissions. Since no CFB has utilized SCR due to these limitations, WSEC concluded that SCR is not a technically-demonstrated control alternative and, thus, did not perform a cost effectiveness analysis on the use of SCR.[215]

The ED also considered the use of SCR in its review of WSEC's application. Mr. Hamilton reviewed the Las Brisas Energy Center (Las Brisas) permit application immediately before reviewing the WSEC application.[216] The Las Brisas application sought authorization for a proposed CFB that would burn only pet coke as a fuel. During the review of the application, Mr. Hamilton investigated the use of high-dust SCR but rejected its use because it had not been shown to be technically feasible on a CFB due to plugging and deactivation of the catalyst. Although he relied on his opinions on SCR formed during the Las Brisas permit review, Mr. Hamilton also had to conduct further analysis for the WSEC application because of WSEC's proposal to use both coal and pet coke as fuel. Therefore, Mr. Hamilton was required to analyze other permits and other CFB facilities than those reviewed for Las Brisas to arrive at his final opinion about BACT for NO_x for the WSEC facility.[217]

On cross-examination, Mr. Hamilton testified that while he did not analyze the use of a tail-end SCR during his BACT analysis, he began considering tail-end SCR based on testimony he heard in the WSEC hearing. He learned that there was only one PC boiler that had been retrofitted with SCR in the tail-end position,[218] and he agreed that the exhaust gas of a PC boiler would be similar to the exhaust gas of a CFB boiler after the baghouse.[219] While it might be technically feasible to install a tail-end SCR on a CFB, Mr. Hamilton stated that reheating the exhaust gas would require additional operational costs and create more air emissions from the

---

[215] WSEC Ex. 102 at 53-54.

[216] ED Ex. 1 at 14, referring to Application of Las Brisas Energy Center, LLC, for State Air Quality Permit Nos. 850130, HAP 48, PAL41, and PSD-TX-1138; TCEQ Docket No. 2009-0033-AIR, SOAH Docket No. 582-09-2005. Las Brisas is another proposed CFB project using pet coke as a fuel to generate electricity.

[217] ED Ex. 14 at 474.

[218] Hamilton, Tr. V at 1061-62 (referring to the Mercer PC boiler in New Jersey).

[219] Hamilton, Tr. V at 1083-84.

facility. Therefore, it was Mr. Hamilton's opinion that the use of SNCR is the appropriate BACT control technology for NO_x at the WSEC facility.[220]

The ED reviewed the RBLC and found that the lowest permit limit was 0.07 for the CFB boilers listed below, including WSEC's proposed emissions:[221]

Facility	Primary Fuel	NO_x Limit (lb/MMBtu)	Average Time
VEPCO VCHEC	Bituminous Coal	0.07	30 day
NRG Big Cajun I	Pet Coke	0.07	30 day
CCND	Pet Coke	0.07	30 day
Formosa Plastics	Pet Coke	0.07	30 day
Cleco Rodemacher 3	Pet Coke	0.07	12 month
WSEC	Pet Coke, Bit. Coal	0.070	30 day

On rebuttal, WSEC's experts addressed Protestants' opinions and recommendations. Regarding the actual NO_x levels achieved by other CFBs, Larry Shell, P.E., testified that the JEA Northside CFB stack test results were not appropriately analyzed by Protestants. According to Mr. Shell, to adequately review stack test results, one has to review all the variables that could affect that facility's NO_x levels achieved during the test. To determine whether WSEC's proposed emission limit should be lowered to 0.02 lb/MMBtu on the basis of JEA's performance, one would have to review operating conditions, fuel types, facility design and capacity, among other variables. According to Mr. Shell, once a thorough review of JEA's emissions data was performed, EDF's claims were not supportable that the JEA's stack test results required lower NO_x limits for WSEC.[222] Mr. Shell contacted JEA to discuss the 2002 results referenced by EDF. The stack test results relied upon by Dr. Sahu were achieved by JEA during a four-hour test under highly controlled, new, and clean conditions by a "highly incentivized" operator. To look at JEA's long-term performance, Mr. Shell reviewed the CEMS data for the facility instead of the "snapshot in time" as represented by Protestants' stack test

[220] Hamilton, Tr. V at 1116-17.

[221] ED Ex. 17 at 586.

[222] WSEC Ex. 500 at 24-29.

results. After reviewing the CEMS data, Mr. Shell determined that JEA's average monthly NO_x emissions were much higher than the limit of 0.02 lb/MMBtu advocated by EDF. Mr. Shell testified that the average 30-day rolling average NO_x emission rates for JEA in 2008 were 0.075 lb/MMBtu and 0.080 lb/MMBtu, which are higher than WSEC's proposed limit.

WSEC also presented evidence to rebut Protestants' positions regarding the use of SCR as a control technology for NO_x. WSEC asserts that SCR is not a new technological development because it has been in use for years on PC boilers, and no pilot programs or projects use SCR on a CFB. Furthermore, according to Mr. Hamilton, other permitting authorities have considered and rejected SCR for CFBs.[223] WSEC asserts that since SCR is not required in permits for CFBs and is not a new technological development, SCR does not need to be considered in WSEC's Tier I review.[224]

Regarding Dr. Sahu's high-dust SCR, WSEC asserts that it is technically not feasible to properly operate an SCR before the baghouse. The particle size, temperature, and properties of the flue gas will cause plugging of the catalyst of high-dust SCR.[225]

Regarding Mr. Powers' tail-end SCR, WSEC's experts testified that SCR in that position was also not technically feasible. Mr. Shell stated that the most significant problem was the increased energy use due to reheating the flue gas to the temperature necessary for the reactions in the SCR to occur. This would also increase overall emissions. He stated further that there would still be a small amount of calcium oxide in the flue gas that would not be removed by the baghouse and could plug the catalyst. Mr. Shell also had concerns with oxidation of SO_2 causing increases in PM_{10} and sulfuric acid mist emissions and acid condensation. Mr. Shell stated that since "the technology has never been demonstrated on a full-scale fossil fuel-fired CFB . . . there might be other issues that nobody has even thought of yet."[226]

---

[223] Hamilton, Tr. V at 1121.

[224] WSEC Ex. 600 at 50.

[225] WSEC Ex. 500 at 29.

[226] WSEC Ex. 500 at 34.

Having considered all the evidence and arguments, we recommend a finding that WSEC has met its burden of proof by a preponderance of the evidence that the NO_x limits in the draft permit represent BACT for the WSEC facility. It is our opinion that WSEC and the ED properly applied a Tier I analysis to WSEC's proposed facility regarding NO_x removal.

WSEC has proposed to control NO_x from the CFBs through the use of SNCR. This is the same control technology required by the TCEQ for the Formosa and CCND CFB facilities. This is also the same technology required in permits for CFBs issued by regulatory authorities outside of Texas.[227] The NO_x emission limits for these facilities listed on the RBLC range from 0.07 to 0.155 lb/MMBtu for such fuels as lignite, western coal, pet coke, and waste coal.[228] WSEC's NO_x emission limits of 0.07 lb/MMBtu is the lowest of the limits reflected on the RBLC. Therefore, the proposed performance levels represent BACT as previously accepted in permits for similar processes, demonstrating that the control technology is technically practicable and economically reasonable.

Furthermore, there is no showing that there are new technological developments to achieve additional NO_x reductions that are technically practicable or economically reasonable. EDF, SC/NCC, and OPIC argue that SCR could provide higher levels of NO_x reduction, and the failure to include an analysis of the performance levels achieved by PC boilers using SCR renders WSEC's BACT analysis incomplete. However, the ALJs conclude that SCR is neither technically practicable nor economically reasonable at this time. Therefore, the Tier I BACT analysis is sufficient.

Protestants' own expert witnesses differ on how the SCR technology should be used on a CFB. Dr. Sahu advocated SCR in the high-dust position and Mr. Powers advocated a tail-end configuration. Both experts pointed out technical concerns with the other's proposal.[229] This lack of agreement alone seems to support a finding that SCR is not clearly BACT for a CFB.

---

[227] WSEC Ex. 102 at 153.

[228] Some of the limits are based on a 30-day rolling period and some are based on 24-hour rolling period.

[229] Sahu, Tr. III at 573 and 635; Powers, Tr. IV at 837-39, 856, and 868-69.

Protestants argue that PC boilers are within the same industry; therefore, the exclusion of permits for PC boilers that utilize SCR renders the BACT analysis deficient because it impermissibly narrows the universe of permits to be considered in a BACT analysis. While there is testimony that PC and CFB boilers are in the "same industry," the technical differences between the two processes make reliance on one as BACT for the other highly questionable. The evidence in the record shows that PC boilers cannot be compared to CFB boilers in terms of which NO_x control technologies are technically practicable and economically reasonable. The evidence demonstrates:

- The uncontrolled NO_x levels in a CFB are approximately 75 percent lower than the uncontrolled NO_x levels in a PC.[230]

- For a high-dust SCR, the flue gas from a PC boiler does not create the same risk of catalyst poisoning as does the flue gas from a CFB boiler before the baghouse.[231] For the flue gas coming from a CFB boiler, the fly ash mass loading is greater, the particle size is larger, and the calcium oxide content is higher than the flue gas coming from a PC boiler.[232]

- For a tail-end SCR on a CFB, the flue gas would have to be reheated to the temperature necessary for the reaction in the SCR to occur. Unlike the use of SCR on a PC, this would cause additional pollutant emissions and increased energy consumption and costs from the reheating process if SCR is installed on a CFB.[233]

Based on the differences between a PC and a CFB, we conclude that reliance on PC permits for NO_x emissions is not proper in a CFB BACT review.

Mr. Powers stated that SCR represents an additional cost for an applicant because SCR provides no benefit to the utility; its sole purpose is to protect public health. Therefore, "some ALJ has got to make the call" before SCR will be required for a CFB.[234] However, to find that

---

[230] WSEC Ex. 500 at 32.

[231] WSEC Ex. 500 at 21, 22, and 28.

[232] WSEC Ex. 500 at 28; *see also*, WSEC Ex. 113 at 5; ED Ex. 1 at 14.

[233] Sahu, Tr. III at 631-33; WSEC Ex. 500 at 38.

[234] Powers, Tr. IV at 869.

SCR should be BACT for a CFB burning pet coke or coal, an ALJ has to find that the technology is technically practicable and economically reasonable.[235] In this case, the evidence does not support such a finding. No CFB in the world burns pet coke or coal and uses SCR to control NO_x. At most, the evidence shows that SCR may be theoretically possible on a CFB.[236] Although a vendor indicated that it could provide a guarantee for a tail-end SCR on a CFB,[237] the record does not contain an example of SCR used for the control of NO_x on a CFB that burns pet coke or coal on a full-scale, commercial basis. Protestants could cite to no demonstration or pilot projects that show that SCR, in either position, would effectively reduce NO_x emissions from a CFB. The ALJs conclude that SCR on a CFB has not been shown to be an available technology.

In sum, the ALJs recommend a finding that WSEC properly analyzed the recent permitting decisions for CFBs and proposed NO_x emission control performance equal to or greater than those previous decisions. Furthermore, although WSEC did consider SCR in its BACT analysis, SCR in either the high-dust or tail-end configuration is not a new technological development that is technically practicable and economically reasonable. It is our opinion that WSEC's Tier I analysis conformed to the TCEQ process and that the proposed emission limits represent BACT for this facility.

C. SO_2

WSEC proposes to use two systems for SO_2 control. First, the CFB bed will be composed mostly of limestone, which decomposes, or calcines, upon heating to form lime. This lime in turn reacts with the SO_2 and SO_3 released from the burning coal or pet coke to form gypsum.[238] The gypsum leaves the reaction zone as particulate, which is then captured in the baghouse.[239] Second, WSEC proposes to inject lime slurry into the flue gas stream before it

---

[235] 30 TAC § 116.111(a)(2)(C).

[236] WSEC Ex. 500 at 20.

[237] SC/NCC Ex. 320.

[238] ED Ex. 15 at 514-15.

[239] WSEC Ex. 102 at 54.

enters the PM collection system to remove additional SO_2 from the flue gas.[240] This dry FGD control is also known as a "spray lime dryer" or a "polishing scrubber" because the gypsum product is collected as a dry powder with the fly ash. WSEC asserts that these two control measures will have a combined control efficiency of 99 percent. WSEC also argues that this is higher than the SO_2 control efficiencies at all other recently permitted CFBs. WSEC proposes the following SO_2 emission limits and argues that these rates represent the lowest guaranteed emission rates:[241]

	Coke	Coal
SO_2 (lb/MMBtu)	.114 (30 day rolling)	.063 (30 day rolling)
	.086 (12 month)	.063 (12 month)

Protestants challenge WSEC's and the ED's SO_2 BACT determination on a number of bases. Both EDF and SC/NCC argue that, because the SO_2 BACT analysis does not consider alternative fuels with lower sulfur contents, the analysis does not comply with federal law. EDF further contends that WSEC's argument that consideration of alternative fuels during the BACT analysis could cause a redesign of the facility is pure speculation and not supported by any evidence in the record. SC/NCC asserts that both the federal BACT definition and the TCEQ's RG-383 require an analysis of alternative fuels to determine BACT.

SC/NCC also contends that there are three CFBs with an SO_2 emission limit of 0.022 lb/MMBtu, which is more stringent than the limit proposed by WSEC: AES Puerto Rico; Nevco Sevier; and Dominion's Virginia City Hybrid Energy Center (VCHEC). SC/NCC discounts WSEC's argument that the lower permit limit in those permits is due to lower sulfur content in the fuel. SC/NCC argues that WSEC is required to consider cleaner fuels as part of its BACT analysis and if it chooses to burn fuel with a higher sulfur content, it should be required to achieve a higher removal efficiency if technically practicable. Therefore, according to SC/NCC, WSEC's higher sulfur content argument has no merit.

---

[240] ED Ex. 15 at 515.

[241] WSEC Ex. 500 at 53.

EDF also claims that WSEC's assumed sulfur values in its application were too high, thereby inflating the SO_2 emission limits. Dr. Sahu testified that while a 99 percent reduction in inlet sulfur values represents BACT in his experience, a 4 percent sulfur content would have been more representative of the sulfur content for pet coke.[242] According to Dr. Sahu, the correct range for the amount of sulfur in pet coke is 3 to 6 percent, obtained from a handbook that he has relied upon in the past.[243] EDF recommends an SO_2 limit of 0.058 lb\MMBtu for both the 30-day rolling and 12-month rolling averages for pet coke based on 4 percent sulfur content with an overall sulfur removal of 99 percent.[244]

SC/NCC argues in its replies to closing arguments that instead of dry FGD, wet FGD is technically practicable, economically reasonable, and could achieve an SO_2 removal efficiency of 99.9 percent, which is higher than WSEC's proposed removal efficiency. In the dry FGD system, the SO_2 is removed in the form of a dry powder. In the wet FGD system, the SO_2 is removed in the form of a scrubber sludge.[245]

SC/NCC also contends that WSEC application should be denied because the SO_2 BACT analysis fails to comply with the TCEQ's tiered process. According to SC/NCC, the Tier I analysis was too narrow because it failed to consider non-CFB boilers and to analyze the technical practicability and economic reasonableness of wet FGD. In the alternative, SC/NCC asserts that the record requires a finding of an SO_2 limit requiring 99.9 percent control efficiency.

Protestants argue that WSEC should have considered alternative fuels. The ALJs have already determined that changing fuels would be a redefinition of the source based on the facts of this case. Therefore, WSEC was not required to consider cleaner fuels in its BACT analysis.

---

[242] EDF Ex. 1 at 18.

[243] EDF Ex. 1 at 20, n. 16.

[244] EDF Ex. 1 at 19-20.

[245] ED Ex. 1 at 15.

Regarding EDF's concerns about the sulfur content of the fuels, WSEC points out that Dr. Sahu agreed that WSEC's proposed control of efficiency of 99 percent was "a good level of control."[246] According to WSEC, the sulfur content assumptions it made were conservative and provided a margin of compliance. Furthermore, WSEC asserts that its sulfur content levels were in line with "worst case concentrations tested in samples of the types of fuels it may burn."[247]

To address SC/NCC arguments on the use of a wet FGD, WSEC stated that no CFB in the world is equipped with wet FGD and this type of technology is not new since it has been in use on PC boilers for years. Therefore, WSEC argues, it did not have to evaluate wet FGD in its Tier I BACT analysis. Furthermore, WSEC points out the control efficiencies of wet FGD on the PC boilers referenced by Mr. Powers are lower than or comparable to the control efficiency proposed by WSEC using a dry FGD.[248] In addition, a wet FGD requires more energy and water to operate properly than does a dry FGD.[249] For these reasons, WSEC argues that the technology advocated by SC/NCC is not appropriate for the proposed facility.

We conclude that WSEC has met its burden of proof that the proposed emission limits and control efficiencies represent BACT for SO_2. WSEC's Tier I BACT analysis is sufficient and WSEC was not required to consider alternative fuels or the use of wet FGD for this facility.

In the control of SO_2, the emission limit is dependent upon the amount of sulfur in the fuel.[250] The term "control efficiency," also known as "removal efficiency," represents the amount of the pollutant that a technology will remove from the flue gas.[251] Due to the combustion process, a CFB boiler produces less SO_2 than a PC boiler because 90 percent of the SO_2 is removed by the limestone in the CFB bed. This is WSEC's primary method of

---

[246] Sahu, Tr. III at 504-05.

[247] WSEC Closing at 81, citing WSEC Ex. 600 at 59.

[248] WSEC Ex. 500 at 49.

[249] WSEC Ex. 500 at 51.

[250] ED Ex. 15 at 515.

[251] The parties seem to use the terms "control efficiency" and "removal efficiency" interchangeably. The ALJs use the terms as if they were synonymous.

controlling SO_2 emissions. WSEC also proposes a secondary method to control SO_2: the dry FGD system. These two methods combined will remove approximately 99 percent of the SO_2 from the flue gas, according to WSEC. WSEC's expert, Mr. Cabe, testified that there are no solid fuel-fired power plants anywhere in the United States with permitted SO_2 control efficiencies higher than the 99 percent proposed by WSEC.[252]

The following table is a summary of the evidence regarding SO_2 emission limits found in recent CFB permits, and includes WSEC's proposed limits for comparison.

Owner/Facility	Primary Fuel	SO_2 Removal Efficiency	30-day SO_2 Permit Limit (lb/MMBtu)[253]
VCHEC	Central Appalachian bituminous coal	98.8%	0.022
MDU/Gascoyne	North Dakota lignite	98.5%	0.038
AES Puerto Rico Guayama	South American Bituminous Coal	98.3%	0.022
Nevco Sevier[a]	Bituminous Coal	--	0.022
JEA/Northside 1/2	Pet Coke	98.4%	0.15
CLECO's Rodemacher 3[a]	Pet Coke	--	0.15
NRG's Big Cajun[a]	Pet Coke	--	0.15
Entergy's Little Gypsy 3[a]	Pet Coke	--	0.15
WSEC	Illinois Basin Bituminous Coal	98.8%	0.063
WSEC	Pet Coke	99.0%	0.114

[a] The record does not disclose the SO_2 removal efficiencies for these facilities.

The lowest SO_2-emitting CFB facilities in the RBLC database use both a limestone bed and a tail-end dry scrubber.[254] As can be seen from the above table, for those removal efficiencies listed, WSEC has the same or higher SO_2 removal efficiency for pet coke and coal,

[252] WSEC Ex 600 at 58.

[253] ED Ex. 15 at 515-16.

[254] ED Ex. 15 at 515.

as compared to the other CFBs. For those CFBs burning pet coke, WSEC not only has the highest removal efficiency, but it also has the lowest SO_2 limit, 0.114 lb/MMBtu. The ED and Mr. Cabe testified that WSEC's SO_2 limits are lower than the SO_2 limits in the TCEQ permits for the Formosa and CCND CFBs.[255]

Although WSEC may have the highest control efficiency, there are coal-fired CFBs that have lower SO_2 emission limits.[256] Since emission limits are dependent on the amount of a sulfur content in the fuel, a facility may have a lower SO_2 limit because it burns a fuel with a lower sulfur content. As previously discussed, in this case, the choice of fuel to be used at WSEC was a fundamental business decision in the design and location of the facility. Therefore, it is the ALJs' opinion that an analysis of alternative fuels with lower sulfur content was not required as part of the WSEC's BACT analysis.

Nor does RG-383 require an analysis of alternative fuels, as argued by SC/NCC. SC/NCC stated that "consideration of alternative fuels is . . . specifically required by RG-383."[257] This overstates not only the regulatory impact of a guidance document, as previously discussed, but RG-383's actual wording. The RG-383 language referenced by SC/NCC merely "encourages" an applicant to consider the use of alternative fuels if considering the "preferred" option of Pollution Prevention as means to control emissions.[258] Therefore, SC/NCC's reliance on RG-383 as mandating a review of alternative fuels as part of its BACT analysis is not supported by the language used in the guidance document.

Regarding whether WSEC overestimated the sulfur content of pet coke, WSEC calculated its maximum SO_2 emissions based on the firing of 100 percent pet coke with a sulfur

---

[255] ED Ex. 1 at 15-16; WSEC Ex. 600 at 58. The actual SO_2 emission limits for Formosa and CCND do not appear in the record.

[256] WSEC Ex. 102 at 200.

[257] SC/NCC Reply at 40.

[258] WSEC Ex. 119 at 9 ("Pollution prevention is the *most preferred* option for emission reduction because it can become an integral part of a facility's process. Consistent with our emphasis on 'pollution prevention' applicants *are encouraged* to address pollution prevention as an emission reduction option.") (Emphasis in original.)

content of 8 percent by weight. In calculating annual SO_2 limits, WSEC used a pet coke sulfur content of 6 percent.[259] According to Mr. Cabe, "WSEC's characterization of maximum fuel sulfur contents are [sic] in-line with worst-case concentrations tested in samples of the types of fuels it may burn."[260] Nevertheless, even using the "worst-case concentrations," WSEC still has the lowest SO_2 emission limit of any permitted CFB burning pet coke.

Regarding the sulfur content of Illinois Basin bituminous coal, Protestants do not dispute the appropriateness of the Illinois Basin bituminous coal sulfur values used by WSEC to calculate SO_2 emission limits. Mr. Hamilton testified three coal-fired projects had more stringent SO_2 limits than WSEC's 0.063 lb/MMBtu. These three projects had an SO_2 limit of 0.022 lb/MMBtu.[261] However, Mr. Hamilton found that the average and maximum sulfur content of the WSEC bituminous coal was higher than the average and maximum sulfur content of the three projects permitted at 0.022 lb/MMBtu. Mr. Shell testified that the three facilities use fuels with a sulfur content of less than half of the sulfur content in WSEC's proposed fuels.[262] In other words, the projects with lower SO_2 limits burned coal with lower sulfur content. Even though these three projects had more stringent limits, WSEC's proposed control efficiency is higher than two of the projects,[263] while the third project had yet to commence operations.

Since Protestants did not dispute WSEC's estimated sulfur content for coal, we conclude that WSEC's sulfur content values for coal are reasonable. Regarding the sulfur content of the pet coke, we agree with WSEC's approach in including high sulfur source values in estimating the sulfur content because those are consistent with the fuels to be utilized. Mr. Cabe testified that the values were representative of the values he had seen for samples of the type of fuel WSEC would use. While Mr. Shell testified that he did not think WSEC overestimated the

---

[259] WSEC Ex. 102 at 31.

[260] WSEC Ex. 600 at 59.

[261] ED Ex. 1 at 17 (referencing Dominion's VHEC, Nevco's Sevier plant, and AES' Puerto Rico Energy Center).

[262] WSEC Ex. 500 at 48.

[263] Nevco's Sevier plant and AES' Puerto Rico Energy Center.

sulfur content,[264] this conservative approach could overestimate actual emissions, which may be lower than the permitted limits. But, given the variability in sulfur content, it would not be appropriate to base the emission standard on only the best case scenario. Furthermore, WSEC has proposed SO_2 limits for pet coke that are lower than the limits for other facilities using pet coke.

Regarding the proposed dry FGD system, the ALJs conclude that this represents BACT for the WSEC facility. While wet FGD has been used for years on PC boilers, there are no permitted CFB boilers in commercial operation that use wet FGD to control SO_2 emissions.[265] According to Mr. Cabe, the TCEQ has rejected wet FGD as BACT in favor of dry FGD because of wet FGD's higher energy and water needs and the creation of sludge in need of disposal.[266] Therefore, wet FGD is neither BACT for CFB boilers nor a new technology necessitating consideration in WSEC's BACT analysis.

Nor will the theoretically higher removal efficiencies of a wet FGD system result in significantly more SO_2 being removed from the flue gas than through dry FGD. Stated simply, the higher the control efficiency, the more SO_2 will be removed from the flue gas. However, as the amount of SO_2 decreases to very low levels, it becomes more difficult to remove the small amount of SO_2 remaining in the flue gas. The CFB combustion process removes 90 percent of the SO_2 in the flue gas leaving the boiler. According to Mr. Shell, "[i]t is not possible for a wet FGD or any other control device to remove 98 or 99% of the remaining SO_2 because there is so little to begin with."[267] The proposed WSEC dry FGD will remove an additional 90 percent of the remaining SO_2 concentrations from the flue gas, for a combined SO_2 removal efficiency of 99 percent. Wet FGD cannot significantly improve upon this removal efficiency. Given the increased energy and water needs of a wet FGD system without a significant increase in the removal efficiency, we decline to find that the technology is BACT for a CFB.

---

[264] WSEC Ex. 500 at 46.

[265] WSEC Ex. 600 at 58.

[266] WSEC Ex. 600 at 58.

[267] WSEC Ex. 500 at 49.

In summary, the use of a dry FGD system with a CFB represents BACT for the WSEC facility. The SO_2 emission limits for pet coke are lower than any of the limits for other CFBs permitted in Texas and found in the RBLC database. WSEC has the highest control efficiencies of any CFB burning coal, as documented by the ED. Wet FGD is not a new technology and has not been required for SO_2 removal on a CFB. Therefore, WSEC's BACT analysis meets the requirements found in 30 TAC § 116.111(a)(2)(C).

D. PM

To control PM/PM_{10} emissions, WSEC proposes to equip its CFB boilers with fabric filter baghouses. The injection of limestone into the boilers and use of a dry FGD will further reduce PM emissions. Using these controls, WSEC has proposed that the facility will comply with the following emission limits, which WSEC asserts are BACT:

	Pet Coke	**Coal**
Filterable PM/PM_{10}	0.011 lb/MMBtu	0.011 lb/MMBtu
Total PM	0.033 total lb/MMBtu	0.025 lb/MMBtu
Total $PM_{2.5}$	0.026 lb/MMBtu	0.018 lb/MMBtu

According to WSEC, PM is defined "simply as that which is measured by the prescribed reference method sampling technique, which controls for temperature and other conditions at the point of measurement."[268] Because the reference method varies with the emission standard, WSEC maintains that it is important that the method that is used to set the limit be the same as the method used to determine compliance with that limit.[269]

---

[268] WSEC Closing at 85.

[269] WSEC Ex. 600 at 74.

There are two categories of PM limits: filterable PM/PM_{10}[270] and total PM. Filterable PM includes solid and liquid particles that can be captured on the filter.[271] Total PM is the sum of filterable and condensable PM. Condensable PM includes materials that are in the vapor phase in the stack but condense or react upon cooling and dilution in the ambient air to form solid or liquid PM after discharge from the stack.[272] Condensable PM includes acid gases, such as H_2SO_4, VOCs, and ammonia. WSEC states that because condensable PM does not form from the combustion process itself and escapes any PM capture system, the only way to control it is to reduce the level of reactants available for the formation of condensable PM.[273] For example, by reducing the amounts of SO_2 and SO_3 that react to form H_2SO_4, the amount of H_2SO_4 is also reduced.

1. Filterable PM/PM_{10}

WSEC proposes to use a fabric filter baghouse to control filterable PM.[274] According to WSEC, the TCEQ has approved this technology as BACT in recent permitting actions for CFBs firing similar fuels.[275] Both the ED and WSEC assert that the emission limit of 0.011 lb/MMBtu for both fuels is "fairly consistent" with other permitted filterable PM emission rates for CFBs.[276]

According to the ED, this table shows the lowest filterable PM limits permitted.[277] WSEC's proposed limit is included for comparison.

---

[270] The ALJs conclude that the terms "front-half" and "front-catch" PM are interchangeable with the term "filterable PM/PM_{10}."

[271] WSEC Ex. 104 at 22.

[272] WSEC Ex. 104 at 22.

[273] WSEC Ex. 104 at 23.

[274] When we use the term "filterable PM," this includes filterable PM_{10}.

[275] WSEC Ex. 600 at 61.

[276] WSEC Closing at 85; ED Ex. 15 at 517.

[277] ED Ex. 17 at 586.

Facility	Fuel	Filterable PM (lb/MMBtu)	Compliance Period
VCHEC	Bit Coal	0.010	3-hour
Sunnyside Ethanol Project	Bit Coal	0.010	3-hour
River Hill Power	Waste Coal	0.010	3-hour
Seward Power	Waste Coal	0.01	3-hour
NRG Big Cajun I	Pet Coke	0.011	30-day
CLECO Rodemacher I	Pet Coke	0.011	30-day
Entergy Little Gypsy 3	Pet Coke	0.011	30-day
JEA Northside 1 & 2	Pet Coke	0.011	3-hour
WSEC	Pet Coke/Bit Coal	0.011	3-hour
AES Warrior Run	Pet Coke	0.015	3-hour

This table shows that the predominant emission limit for filterable PM is 0.011 lb/MMBtu. According to the ED, the VCHEC limit of 0.010 lb/MMBtu is to be measured by a CEMS.[278] VCHEC's 30-day average is 0.009 lb/MMBtu, also measured by a CEMS. The ED further stated that the limit of 0.01 lb/MMBtu is less stringent than WSEC's proposed limit of 0.011 lb/MMBtu because a test value below 0.015 lb/MMBtu would comply with the 0.01 limit because of the lack of a trailing zero.

Protestants argue that 0.011 lb/MMBtu does not represent BACT for filterable PM. EDF asserts that a limit that is "fairly consistent" with other permit limits is not the "best" and, therefore, is not BACT. EDF contends that there are lower permitted limits as shown by the ED's and WSEC's own evidence and that several permits have a limit of 0.010 lb/MMBtu for filterable PM. Furthermore, since the test results indicate that the filterable PM results are likely to be more than half the permitted level, reliance on Special Condition 45 does not justify the higher permit limit.[279] SC/NCC argues that since WSEC did not propose a control performance at least as stringent as the performance in other permits, it failed to comply with RG-383 and the permit application should be denied.

---

[278] ED Ex. 15 at 517.

[279] Special Condition 45 is a proposed permit provision that allows for the reduction of an emission limit after the permit is issued if certain criteria are met. Special Condition 45 is discussed elsewhere in this PFD.

The ALJs conclude that BACT for filterable PM is 0.010 lb/MMBtu, not 0.011 lb/MMBtu as proposed by the ED and WSEC. There is only one proposed limit for filterable PM, regardless of the type of fuel burned. Three permits have been issued to CFBs that burn bituminous coal and have a lower 3-hour filterable PM limit than that proposed by WSEC.[280] Of those facilities authorized to burn pet coke, WSEC has the same or lower limit.

The evidence is that the difference between 0.010 and 0.011 is "small" and that WSEC's proposed limit of 0.011 is only "slightly higher" than a limit of 0.010.[281] However, Mr. Hamilton testified that "[b]ased on testing of other CFBs, including JEA Northside 2 and AES Warrior Run, which both burn pet coke, it is expected that the WSEC emission limit will require adjustment under Special Condition 45 and that the adjusted limit will be at least as stringent as the permit limits identified in the RBLC with lower filterable PM."[282]

Based on this record, the ALJs conclude that although a 3-hour filterable PM limit of 0.011 lb/MMBtu may be fairly consistent with a limit of 0.010 and that the difference between the two limits is small, a limit of 0.011 is not BACT. The other CFBs with the lower limit burn bituminous coal and use a fabric filter baghouse to control PM. We are unaware of evidence in the record that supports a higher filterable PM limit for a CFB that burns pet coke. Therefore, we recommend a finding that a 3-hour filterable PM limit of 0.010 represents BACT.

2. Total PM

Texas is one of a few states that sets emissions limits for total PM, which is the sum of condensable PM and filterable PM. Since there are few states that regulate total PM through a permitted emission limit, there are few permits to review in a BACT analysis.[283] Also, EPA's

---

[280] The record does not disclose the filterable PM limits in the permits issued to the two Texas CFBs, CCND and Formosa.

[281] ED Ex. 17 at 587.

[282] ED Ex. 1 at 18.

[283] ED Ex. 1 at 20.

reference test method for condensable PM has an erratic positive bias, and EPA proposed a new test method on March 25, 2009. According to the ED, EPA's proposed test method should be more accurate and unlikely to produce oddly high values.[284] However, EPA had not adopted this new test method as of the time of Mr. Hamilton's prefiled testimony.[285] Given these facts, determining BACT as a legal exercise is difficult to make with accuracy, much less precision.

The following table summarizes the evidence on the permitted total PM limits for CFB boilers and includes WSEC's proposed limits for comparison:[286]

Facility	Fuel Type	Total Pm (lb/MMbtu – 3 hour average)
VCHEC	Bit. Coal	0.012
WSEC	Bit. Coal	0.025
W. Greenbrier	Waste Coal	0.030
WSEC	Pet Coke	0.033
AGP Soy Proc.	Subbit. Coal	0.041
Sunnyside Ethanol	Bit. Coal	0.050
River Hill Power[287]	Waste Coal	0.050

There is some variation in the total PM limits shown in this table. The limits range from 0.012 to 0.050 lb/MMBtu, with WSEC's limits falling within that range.

Protestants argue that the proposed total PM limits are too high and that even WSEC's vendor guaranteed a much lower total PM rate of 0.016 lb/MMBtu for both fuels. Protestants also point out that the Santee Cooper Pee Dee Generating Station in South Carolina, which burns a mixture of coal and pet coke, has a lower total PM limit of 0.018 lb/MMBtu.[288] According to

---

[284] ED Ex. 1 at 20.

[285] ED Ex. 1 at 20 ("Based on the likelihood that the new procedure will be adopted before the initial performance test for [WSEC] . . . .").

[286] ED Ex. 17 at 589.

[287] The River Hill Power permit included in SC/NCC's exhibits indicates that the total PM limit is 0.012 lb/MMBtu "based on the average of three 1-hour stack tests." SC/NCC Ex. 200 at 29 and Ex. 211 at 7. The record does not disclose whether WSEC's limit based on a "3-hour average" is comparable to the River Hill limit based on "the average of three 1-hour stack tests."

[288] EDF Ex. 1 at 26; EDF Ex. 11.

EDF, the ED and WSEC are essentially "punting" the total PM emission limit because of the problems associated with testing condensable PM and the use of a new test method by EPA. EDF states that on an almost identical evidentiary record, the ALJs presiding over the Las Brisas application contested case hearing determined that the same total PM limit was too high for that proposed facility.[289]

Although EDF's expert Dr. Sahu seemed generally satisfied with the use of a fabric filter baghouse to control PM, SC/NCC's expert, Mr. Powers, advocated the use of wet electrostatic precipitator (ESP) technology for controlling total PM and $PM_{2.5}$.[290] Although Mr. Powers testified that wet ESP and some other technologies are highly effective at controlling filterable and condensable PM_{10} and $PM_{2.5}$, SC/NCC did not address the use of wet ESP in its closing arguments and replies.

WSEC's witness Mr. Shell testified that one vendor could guarantee a total PM rate of 0.016 lb/MMBtu for both pet coke and coal. However, WSEC did not want to commit to that limit due to the unique problems associated with the measurement of PM and the risk that measured PM levels could be higher than the permit limits.[291] WSEC is also reluctant to support a lower limit because the test method assumed by the vendor in making the guarantee may not be the method required by the permit. Further, the risk of artificially-inflated PM results is compounded when measuring sulfate-bearing exhaust streams that may be subject to artifact formation.

With regard to Protestants' assertion that other CFBs have lower total PM limits than WSEC proposes, Mr. Shell testified that differences in fuels, methods of demonstrating compliance, and even the developers' levels of risk aversion could account for the lower limits.[292] He further testified that WSEC did not get a vendor guarantee for a total PM limit as

---

[289] *Application of Las Brisas Energy Center, LLC*, SOAH Docket No. 582-09-2005.

[290] SC/NCC Ex. 200 at 27-28.

[291] WSEC Ex. 500 at 63.

[292] WSEC Ex. 500 at 61.

low as those contained in the permits cited by Mr. Powers.[293] Regarding the stack test results, WSEC contends that isolated results cannot be used as bases for setting permit limits that will govern day-to-day operations.

Addressing the wet ESP issue, WSEC asserts that the technology is not new and that no CFB in the world is required to use wet ESP.[294] According to WSEC, wet ESP is not used on CFB boilers because wet ESP requires a saturated flue gas to operate. If a wet ESP is used, it must be installed downstream of a wet FGD system.[295] As previously discussed in this PFD, the ALJs do not recommend a finding that a wet FGD system is BACT for controlling SO_2. Since wet ESP must be used in conjunction with a wet FGD system, wet ESP is likewise not BACT to control total PM.

Given the substantial uncertainty surrounding the measurement of condensable PM, the determination of BACT for the control of total PM is unclear. The problems with EPA's current test method and the lack of comparable permits compound the problem. Although EPA has proposed a new test method that may be more accurate, EPA had not adopted the new method at the time of the evidentiary hearing. Compliance with PM emission limits depends on the test method used to set the limit. Whether EPA will formally adopt its proposed test method creates additional ambiguity in setting a limit in this case. Nevertheless, this uncertainty affects other applicants as well as WSEC.

Regarding the Santee Cooper Pee Dee Generating Station, we are not convinced that facility sets BACT for WSEC, as suggested by Protestants. The Santee Cooper facility uses a PC boiler. The particle size and amount of PM in the flue gas emitted from a PC boiler vary from that emitted by a CFB boiler. Therefore, again, relying on a PC boiler to determine BACT for a CFB boiler is inappropriate.

---

[293] WSEC Ex. 500 at 62.

[294] Powers, Tr. IV at 849.

[295] WSEC Ex. 500 at 56.

As previously stated, there is variation in the total PM limits reviewed by the ED, ranging from 0.012 to 0.050 lb/MMBtu.[296] This tends to support Mr. Shell's testimony that the variation in total PM limits is due to a number of factors, including differences in fuel types and content, differences in test methods, inaccuracies in results, and differences in the guarantees developers are willing to make.[297] Complicating matters is the limited evidence regarding a total PM limit for a CFB burning pet coke. The ED does not reference any permits for such facilities that have total PM limits.[298]

EDF argues, that due to the proposed changes in the EPA test method for condensable PM, the ED and WSEC simply do not know what BACT is for total PM. EDF states that "[i]n essence the ED is punting the BACT question [which is] the exact conclusion that the ALJs reached in the Las Brisas Proposal for Decision under an almost identical record."[299] One difference between this record and the one in Las Brisas is the existence of a supposed vendor guarantee for 0.016 lb/MMBtu for total PM for both fuels. In its rebuttal case, WSEC presented the following testimony:

> Q. Do you believe [WSEC] could get vendor guarantees lower than . . . 0.033 lb/MMBtu for total [PM] when firing pet coke, and 0.025 lb/MMBtu when firing coal, all on three hour averages?
>
> A. Maybe. One vendor, Alstom Power, has indicated to [WSEC] that it could guarantee a total PM emission rate of 0.016 lb/MMBtu for both fuels. But I understand why [WSEC] would not want to commit to that, because of the unique problems associated with measuring particulate emissions, and the significant risk that measured emission rates could be higher than that very low number.[300]

---

[296] ED Ex. 17 at 589. Curiously, the total PM limits in the two permits issued in Texas to Formosa and CCND do not appear in the record. Mr. Hamilton did not list these two permits as those he reviewed in reaching his recommendation regarding the limit for total PM. ED Ex. 1 at 20.

[297] WSEC 500 at 61-62.

[298] ED Ex. 17 at 589.

[299] EDF Reply at 37.

[300] WSEC Ex. 500 at 63.

This is the extent of the testimony regarding this particular vendor guarantee.

Based on this limited testimony, the ALJs recommend a total PM emission limit of 0.016 lb/MMBtu for both fuels. WSEC was told by Alston Power that it could guarantee this limit. Also, this limit is within the range of emission limits reviewed by the ED. Mr. Hamilton stated that he anticipates that WSEC's proposed limits would be reduced by 50 percent according to Special Condition 45. Therefore, we recommend a finding that BACT for total PM is 0.016 lb/MMBtu for both pet coke and coal.

However, the ALJs recognize that the uncertainty in demonstrating compliance makes setting a total PM limit difficult and may necessitate a higher limit if the Commission declines to rely on the limited evidence of a vendor guarantee. The issue of setting a BACT limit for total PM in the midst of such scientific uncertainty was addressed by EPA's Environmental Appeals Board (EAB) in *In re: Prairie State Generating Co.*[301] In that case, the Illinois EPA (IEPA) issued a PSD permit for a PC boiler, and the issuance of the permit was appealed to the EAB. The EAB considered whether the total PM limit represented BACT when the limit could be adjusted based on post-construction performance data. There was a similar range of total PM limits, 0.018 to 0.055 lb/MMBtu. Also, IEPA's limit of 0.035 lb/MMBtu was subject to a downward adjustment based on performance data. IEPA stated that this was necessary given the uncertainty in the scientific knowledge of condensable PM emissions, total PM_{10} emissions, and the control of such emissions. The EAB recognized that in those circumstances, the use of an adjustable limit was a reasonable approach. The EAB upheld the limit as BACT subject to the downward adjustment, recognizing the uncertainty in achieving the PM_{10} emission limit.[302]

The facts in the *Prairie State* EAB appeal are similar to the facts in this record. Based on that EAB decision, the record would support a finding that the total PM limits in the draft permit would be BACT for this facility. There is a range of total PM limits found in the limited number of permits containing such a limit. WSEC's proposed total PM limits are within the range of

---

[301] EAB No. 05-05, 2006 EPA App. LEXIS 38 (EAB Aug. 24, 2006).

[302] *In re: Prairie State*, 2006 EPA App. LEXIS at 213-17.

those permitted limits. Furthermore, the current test methods for condensable PM are apparently inaccurate, and the record does not reflect when EPA will formally adopt its proposed test method to resolve those inaccuracies. If the Commission determines that reliance on the vendor guarantee is not supportable because of the limited amount of evidence, the ALJs recommend finding that WSEC's proposed total PM limits for coal and pet coke, subject to a downward adjustment, are BACT for the facility.

In summary, the ALJs recommend as BACT a total PM limit of 0.016 lb/MMBtu based on the purported vendor guarantee and testimony that lower total PM levels are expected. However, given the scientific uncertainty surrounding this issue, as an alternative, we would recommend that the proposed total PM limits of 0.025 lb/MMBtu for coal and 0.033 lb/MMBtu for pet coke are BACT, subject to the downward adjustment.

3. $PM_{2.5}$

The draft permit contains the following emission limits for $PM_{2.5}$:[303]

	Pet Coke	Coal
$PM_{2.5}$ (lb/MMBtu)	0.026 (3-hr average)	0.018 (3-hr average)

The draft permit provides that compliance with the $PM_{2.5}$ limit will be determined within 180 days after EPA promulgates a new test method.[304] WSEC proposes to control $PM_{2.5}$ emissions through the same control processes that control other size fractions of particulate matter, including the fabric filter baghouse and the SO_2-absorbing limestone bed in the CFB boiler and dry FGD.[305]

---

[303] ED Ex. 14 at 474.

[304] ED Ex. 14 at 475.

[305] WSEC Ex. 600 at 62; ED Ex. 15 at 518.

$PM_{2.5}$ represents a portion of PM_{10} and is controlled by the same systems that control all sizes of particulate matter. WSEC's expert Mr. Cabe testified that "[m]eeting the BACT limit for PM_{10} will ensure that $PM_{2.5}$ emissions are also minimized."[306] According to WSEC, no separate BACT analysis is required because the same technology that controls PM_{10} will be used to control $PM_{2.5}$.[307] Also, the ED did not perform a separate BACT analysis for $PM_{2.5}$.[308]

EDF argues that this lack of a $PM_{2.5}$ BACT analysis makes the application deficient. EDF's expert testified that other applicants in other states have performed a separate BACT analysis for $PM_{2.5}$ and WSEC should do the same.[309] Also, WSEC relied upon "Appendix B of AP-42" in analyzing $PM_{2.5}$.[310] In the context of discussing PM emissions from material handling facilities, Mr. DiSorbo stated that "[a]ll particulate matter from fabric filters was conservatively assumed to be PM_{10}, and, in accordance with Appendix B of AP-42, which contains emission factors for fabric filters at coal cleaning facilities, $PM_{2.5}$ was assumed to be equal to 50% of the PM_{10} emissions."[311] SC/NCC did not state a position regarding BACT for $PM_{2.5}$ in either its closing arguments or replies.

The evidence in the record shows that the technology that controls PM_{10} emissions is the same technology that controls $PM_{2.5}$. The record also reflects that $PM_{2.5}$ is a percentage of PM_{10}. EDF does not explain why WSEC's reliance on AP-42 was somehow wrong, other than the unexplained conclusion that reliance on AP-42 is not BACT.

Although not argued as such, whether WSEC should have performed a BACT analysis for $PM_{2.5}$ seems to stem from the question of whether applicants can continue to rely on the

---

[306] WSEC Ex. 600 at 62.

[307] WSEC Ex. 500 at 54.

[308] ED Ex. 17 at 590.

[309] EDF Ex. 1 at 26.

[310] "AP-42" refers to "US EPA's Compilation of Air Pollutant Emission Factors (AP-42, 5th Edition)." *See,* WSEC Ex. 102 at 30.

[311] WSEC Ex. 100 at 46.

EPA's PM_{10}-for-$PM_{2.5}$ surrogate policy.[312] In the PFD on the application for *IPA Coleto Creek*, the ALJs determined that the TCEQ's policy was to accept PM_{10} as a surrogate for $PM_{2.5}$ in its BACT analysis.[313] At an open meeting on April 28, 2010, the Commission approved the PFD in the *IPA Coleto Creek* matter, thereby affirming the ALJs' determination regarding the surrogate policy.[314] Therefore, the TCEQ accepts PM_{10} as a surrogate for $PM_{2.5}$. WSEC's control technologies will also control emissions of $PM_{2.5}$, and WSEC's BACT analysis properly addressed $PM_{2.5}$ emissions as a subset of PM/PM_{10}.

Nevertheless, due to our determination that the total PM limit should be 0.016 lb/MMBtu, we find ourselves recommending $PM_{2.5}$ limits that are higher than the recommended total PM limits for pet coke and coal. Since $PM_{2.5}$ is a subset of total PM, we must assume that any $PM_{2.5}$ limit will be equal to or less than the total PM_{10} limit.

In *IPA Coleto Creek*, the ALJs recommended a reduction in the total PM limit from 0.032 lb/MMBtu to 0.025 lb/MMBtu.[315] The ALJs concluded that "the emission limit of 0.025 lb/MMBtu that is BACT for PM_{10} is also BACT for $PM_{2.5}$."[316] This approach was approved by the TCEQ. Therefore, if the Commission determines that BACT for total PM is 0.016 lb/MMBtu for both fuels, then we recommend that the $PM_{2.5}$ limit be reduced to 0.016 lb\MMBtu as well. However, if the Commission determines that BACT for total PM are those limits set out in the draft permit based upon the reasoning in *Prairie State* EAB decision, then the ALJs recommend that the Commission also determine that the proposed $PM_{2.5}$ limits in the draft permit are BACT as well.

---

[312] For extensive discussion on the use of EPA's $PM_{2.5}$ surrogacy policy, *see*, Feb. 8, 2010 PFD in *Application of IPA Coleto Creek, LLC* at 33-36; approved by TCEQ on Apr. 28, 2010, and order issued on May 5, 2010.

[313] *Id.* at 36.

[314] The Commission issued an order in the *IPA Coleto* Creek matter on May 5, 2010.

[315] *IPA Coleto Creek* PFD at 31.

[316] *IPA Coleto Creek* PFD at 36.

E. Mercury

To control mercury emissions, WSEC proposes to use a combination of limestone injection, a fabric filter baghouse, and activated carbon injection. The limestone injection and the baghouse are used primarily to control SO_2 and PM. These control technologies have the added benefit of reducing mercury emissions, as well.[317] WSEC also proposes to use activated carbon injection to further control mercury emissions. According to WSEC expert Mr. DiSorbo, activated carbon will be injected into the exhaust gas ductwork before the fabric filter where it will collect on the fabric filter and absorb the mercury in the flue gas as it passes through the filter.[318] Mr. DiSorbo testified that neither the Formosa nor the CCND Texas permits require the use of activated carbon injection to control mercury. He also stated that no CFB permits in the RBLC require additional control technologies beyond those proposed by WSEC.[319]

WSEC asserts that its proposed use of activated carbon injection is a new, economically reasonable, and technically practicable technological development that the TCEQ has not previously required of other permitted facilities.[320] WSEC contends that its proposed emission limit of 0.86×10^{-6} lb/MMBtu (0.86 lb/TBtu) is BACT for mercury.

In their post-hearing submissions, Protestants do not appear to challenge WSEC's BACT analysis for mercury. In its closing and reply briefs, EDF states that it "incorporates Sierra Club's arguments regarding BACT for mercury."[321] However, we were unable to locate SC/NCC's BACT arguments for this pollutant in either its closing arguments or replies. Although SC/NCC discussed mercury in the context of the MACT analysis in its replies to closing arguments, EDF only incorporated SC/NCC's BACT discussion, not its MACT discussion. Therefore, we find that since there is no challenge to WSEC's BACT analysis

---

[317] WSEC Ex. 104 at 25.

[318] WSEC Ex. 100 at 62.

[319] WSEC Ex. 100 at 61.

[320] WSEC Ex. 100 at 61.

[321] EDF Closing at 36; EDF Reply at 37.

regarding mercury, the proposed emission limit is BACT. Additional discussion of mercury emissions will be found in the PFD section addressing MACT.

F. Carbon Monoxide

WSEC proposes to use good combustion practices to meet a CO emission limit of 0.11 lb/MMBtu based on a 12 month rolling average. The term "good combustion practice" is the industry standard to control CO. WSEC asserts that this rate is the lowest emission rate guarantee than WSEC could obtain from any vendor.[322]

Protestants cite to other existing permits with lower CO limits as evidence that WSEC's proposed limit is not BACT. EDF also argues that these existing permits use a 30-day averaging period and not the 12-month period proposed by WSEC. EDF argues that "[t]here is absolutely no justification for a limit that is higher on an annual basis than the short-term limit established as BACT elsewhere."[323]

The record contains the following CO emission limits for CFB permits:[324]

Facility	Fuel	CO (lb/MMBtu)	Compliance Period
CLECO Rodemacher 3	Coal & Pet Coke	0.10	30-day rolling average (at or near full load)
		0.15	30-day rolling average (loads at 75% or less)
NRG Big Cajun I	Pet Coke	0.10	30-day rolling average (loads at or greater than 60%
		0.15	24 hr rolling average (loads at 60% or less)
	Bit., Coal Waste, &	0.10	Variable limit for loads equal to or greater than 75%.[a]

[322] WSEC Ex. 500 at 69.

[323] EDF Closing at 37.

[324] ED Ex. 15 at 516.

Facility	Fuel	CO (lb/MMBtu)	Compliance Period
VCHEC	Biomass	0.15	Variable limit for loads less than 75%[a]
Entergy Little Gypsy 3	Pet Coke	0.10	30-day rolling average (loads at or greater than 60%)
		0.15	24 hr rolling average (loads at 60% or less)
WSEC	Pet Coke & Coal	0.11	12 month rolling average

[a] VCHEC's boiler performance standards are weighted according to the amount of time operating within each range.

SC/NCC argues that an even lower emission limit of 0.05 lb/MMBtu is BACT for CO because the ED and WSEC ignored the technical feasibility of using an oxidation catalyst to further reduce CO emissions. Due to the same catalyst fouling issue found in the use of SCR to control NO_x, SC/NCC recognizes that the oxidation catalyst should be piggybacked within the housing of the tail-end SCR. Since the ALJs have concluded that SCR is not BACT for NO_x and the use of an oxidation catalyst is not technically feasible without a tail-end SCR, the use of this catalyst to control CO emissions is not BACT.

The ED claims that WSEC's performance standard "based on a 30-day rolling average" is similar but not identical to the most stringent performance standards of other similar CFBs.[325] Due to the differences in the emission limits when operating at various percentages of capacity, the ED stated that "[i]t is not clear whether any of these limits are more stringent than the proposed limit for WSEC."[326]

We conclude that the proposed CO limit is not BACT. We understand that CO emissions are minimized through ideal combustion practices and that when a facility is operating at a lower

[325] ED Ex. 15 at 516. In the Preliminary Determination Summary, the ED refers to 0.011 lb/MMBtu as the WSEC performance standard for CO control. Based on the record, the ALJs assume the ED meant to state 0.11 lb/MMBtu, and not 0.011 lb/MMBtu, as the CO performance standard. *See*, ED Ex. 14 at 474.

[326] ED Ex. 15 at 516.

capacity, the facility may have a higher emission limit to compensate for the formation of CO due to incomplete combustion. We also understand that long-term limits, such as annual limits, are typically lower than short term limits, such as 30-day averages. Higher limits in the short-term allow for variations in emission levels that can occur periodically but tend to even out when considered on a long-term, or annual, basis. What we do not understand is why WSEC's long-term CO limit of 0.11 is higher than the short-term 0.10 limits of three of the permits in the RBLC. There is no explanation of how WSEC's 0.11 annual limit when operating at full capacity is as stringent as the short-term limit of 0.10 when the three other CFBs are also operating at full capacity. To complicate matters, there is no discussion in the record explaining why WSEC has a long-term limit and no short-term limit[327] or how regulatory authorities determine which compliance averaging period is applicable or appropriate.

Good combustion practices are BACT for the control of CO on a CFB and there are no other CO control technologies that are technically feasible. Also, the difference between WSEC's long-term limit of 0.11 and the short-term limit of 0.10 found in three other CFB permits is "minor."[328] Therefore, the ALJs recommend a finding that a CO emission limit of 0.10 lb/MMBtu based on a 12-month rolling average meets the definition of BACT in 30 TAC § 116.111(a)(2)(C).

G. VOCs

WSEC has proposed a limit of 0.005 lb/MMBtu based on a 3-hour average as BACT for VOCs. To achieve this limit, WSEC proposes to use good combustion practices and states that this limit was the lowest limit for which WSEC could obtain a vendor guarantee.

Protestants cite to recent permits that have a limit of 0.0047 lb/MMBTu for VOCs, and contend that WSEC's permit limits should be lowered accordingly to match this lower limit. EDF argues that there at least three CFBs with lower limits and, if one considers PCs, many

---

[327] *See*, ED Ex. 14 at 474.

[328] WSEC Ex. 600 at 62.

more permits with lower limits. EDF contends that since CFBs and PCs rely on good combustion practices to control VOCs, there should not be appreciable differences in their limits.

SC/NCC argues that the BACT analysis is deficient because of the failure to consider the use of an oxidation catalyst to control VOCs. Since an oxidation catalyst must be used in conjunction with an SCR and the ALJs did not recommend SCR for the control of NO_x, we do not recommend a finding that the oxidation catalyst is BACT for the control of VOCs.

The following permit limits, including WSEC's, were reviewed by the ED for his BACT analysis:[329]

Facility	VOC (lb/MMBtu)	Compliance Period
CLECO Rodemacher 3	0.0047	30-day rolling average
NRG Big Cajun I	0.0047	30-day rolling average
Entergy Little Gypsy 3	0.0047	30-day rolling average
VCHEC	0.0050	3-hour average
Gascoyne Gen. Station	0.0050	3-hour average
Wellington Dev. Greene Energy Proj.	0.0050	3-hour average
JEA Northside 1 & 2	0.0050	3-hour average
Sithe Global River Hill Power Proj.	0.0050	3-hour average
Reliant Seward Power Proj.	0.0050	3-hour average
Sunnyside Ethanol Proj.	0.0050	3-hour average
WSEC	0.0050	3-hour average

According to the ED, the difference between 0.0047 and 0.0050 is "a small difference in relative and absolute terms between numbers which are small compared to other pollutants."[330] The ED also stated that there is a limited amount of VOC emission data as compared to CO,

[329] ED Ex. 15 at 516-17.

[330] ED Ex. 15 at 517.

which is frequently required to be monitored continuously. In addition, the ED points out that the prevalent limit for VOCs is 0.0050, WSEC's proposed limit. The ED asserts that "[b]ecause the control technology for VOCs is the same for all the CFBs, and the small difference in emission limits has not been verified by emission testing, the more prevalent 0.0050 lb/MMBtu limit also represents BACT for VOCs from CFBs."[331]

We agree that the limit of 0.0050 lb/MMBtu based on a 3-hour average is BACT for this facility pursuant to 30 TAC § 116.111(a)(2)(C). The 0.0047 limit is based on a different compliance period, and the difference between the limit of 0.0047 and 0.0050 is very small. Furthermore, PCs should not be considered in determining BACT for a CFB. As pointed out by Mr. Shell, PCs and CFBs use different processes to burn fuel, and this difference accounts for the differences in the VOC emissions.[332]

H. H_2SO_4

Sulfuric acid mist (SAM) is an acid gas and a component of condensable PM emissions. WSEC proposes to control H_2SO_4 through the use of a limestone bed CFB and a dry FGD, which will provide a 95 percent removal efficiency. The draft permit contains the following limits for H_2SO_4:

	Pet Coke	Coal
H_2SO_4 (3-hour average)	0.022 lb/MMBtu	0.012 lb/MMBtu

According to the ED, a higher H_2SO_4 limit is warranted when burning pet coke because pet coke contains higher levels of sulfur and vanadium than coal contains. The higher levels of vanadium tend to increase the H_2SO_4 levels due to the conversion of SO_2 to SO_3.[333]

---

[331] ED Ex. 15 at 517.

[332] WSEC Ex. 500 at 70.

[333] ED Ex. 17 at 588.

EDF argues that the H_2SO_4 limits should be much lower. EDF notes that the RBLC database reveals numerous permitted coke-fired CFBs with far lower emission limits for H_2SO_4. EDF asserts that the ED should have relied on these lower emission limits instead of improperly relying on Special Condition 45, which would require a downward adjustment based on actual emission levels. EDF contends this is unacceptable, as BACT limits must be determined before construction.

Although not discussed in SC/NCC closing arguments or replies, Mr. Powers testified that WSEC's BACT analysis was deficient because it failed to consider other control technologies, such as a more efficient dry FGD, wet FGD, wet ESP, air heater additives, and combinations of control options.[334] Given that most of these issues were discussed in the SO_2 BACT analysis and were not asserted by SC/NCC in its post-hearing written submissions, the ALJs will not discuss these issues further here.

WSEC points out that the RBLC contains two CFBs with H_2SO_4 removal efficiencies of 90 and 92 percent[335] compared with WSEC's proposed removal efficiency of 95 percent. WSEC asserts that there is no technology other than that proposed by WSEC that provides additional H_2SO_4 emission reductions.

Regarding vendor guarantees for the removal of H_2SO_4, Mr. Shell testified that Foster Wheeler indicated to WSEC that it could guarantee emissions limits of 0.016 lb/MMBtu when using pet coke, and 0.012 lb/MMBtu when using coal.[336] However, Mr. Shell cautioned that since H_2SO_4 is so difficult to measure, it is understandable that WSEC would want a "slightly higher permit limit." Again, this is the extent of the testimony regarding vendor guarantees for H_2SO_4 removal.

---

[334] SC/NCC Ex. 200 at 34.

[335] WSEC Ex. 104 at 23.

[336] WSEC Ex. 500 at 72.

According to the ED, the following table shows the lowest H_2SO_4 emission limits found in the RBLC for CFBs using pet coke as fuel (compared to WSEC proposed limits):[337]

Facility	Primary Fuel	H_2SO_4 (lb/MMBtu)	Compliance Period
JEA Northside 1 & 2	Pet Coke	0.0004	3-hour average
NRG Big Cajun I	Pet Coke	0.0012	30-day average
Entergy Little Gypsy 3	Pet Coke	0.0012	30-day average
CLECO Rodemacher 3	Pet Coke	0.0012	12-month average
Manitowoc	Pet Coke	0.0045	3-hour average
WSEC	Pet Coke	0.022	3-hour average

The ED asserted that "establishing the appropriate limit for H_2SO_4 is complicated because the quantification of H_2SO_4 and other condensing species is difficult and test results using the EPA test method have frequently produced questionable results."[338] To further complicate matters, the ED stated that test results for H_2SO_4 are scarce because permitting authorities do not always require stack tests for H_2SO_4. Regarding Special Condition 45, the ED speculated that a downward adjustment is likely.[339]

Since H_2SO_4 is a constituent of condensable PM, the same problems that plague determining what is BACT for total PM, as previously discussed, also plague the determination of BACT for H_2SO_4. The uncertainty in the test methods and inaccuracies in the results could account for the differences in BACT limits shown in the RBLC, in addition to the amount of sulfur and vanadium present in the pet coke.

Although WSEC claims to have proposed a removal efficiency of 95 percent, its proposed pet coke H_2SO_4 limit of 0.022 is higher than the other limits for CFBs burning pet coke by at least one order of magnitude. The closest permit limit to WSEC's proposed unit is the Manitowoc CFB. This CFB burns pet coke and has a limit of 0.0045 lb/MMBtu based on a 3-

[337] ED Ex. 17 at 588.

[338] ED Ex. 17 at 588.

[339] ED Ex. 17 at 589.

hour average. The ALJs are unaware of any evidence in the record to indicate that the sulfur and vanadium content of WSEC's pet coke is so much higher than the content in the pet coke used at the Manitowoc facility to justify the much higher rate. Nor are we aware of any other evidence in the record to justify WSEC's higher limit, other than the uncertainty surrounding compliance testing for condensable PM, including H_2SO_4. Although we understand that it is difficult to accurately quantify H_2SO_4 emissions, we are not convinced that this is sufficient justification for the substantial differences between existing emission limits for other facilities and limits contained in the draft permit. Accordingly, we recommend that the limit of 0.0045 lb/MMBtu be adopted as BACT for H_2SO_4 for both fuels. This is consistent with the Manitowoc CFB that burns pet coke and is also based on the same 3-hour average.

In the alternative, the EAB's rationale in the *Prairie State* EAB decision is applicable to this case, as well.[340] H_2SO_4 is a form of condensable PM, and the EAB recognized that there is scientific uncertainty surrounding the quantification of condensable PM. In that situation, the EAB found that an emission limit was BACT, even though it was subject to a post-construction reduction. If the Commission determines that there is sufficient uncertainty to justify higher emission limits, we recommend an H_2SO_4 limit of 0.016 lb/MMBtu when using pet coke and 0.012 lb/MMBtu when using coal. Mr. Shell testified that a vendor stated that it could guarantee these lower limits.[341] Therefore, we recommend these limits if the Commission finds that the uncertainty presented in the measurement of condensable PM justifies emission limits higher than 0.0045 lb/MMBtu.

I. HCl and HF

WSEC proposes to control the emission of HCl and HF through the injection of limestone into the boilers and the use of polishing scrubbers. These control methods will provide a 98 percent control efficiency for the removal of HCl and a 95 percent efficiency for the removal

[340] *In re: Prairie State Generating Co.*, 2006 EPA App. Lexis 38 at 214-17.

[341] WSEC Ex. 500 at 72.

of HF.[342] Through the use of these control devices, WSEC proposes BACT emission limits for HCl of 0.0013 lb/MMBtu for pet coke and 0.005 lb/MMBtu for coal, based on a 3-hour average. For HF, WSEC proposes emission limits of 0.0004 lb/MMBtu on a 3-hour average when firing pet coke and 0.0003 lb/MMBtu on a 3-hour average when burning coal.

Neither EDF nor SC/NCC argued in their post-hearing submissions that these limits were not BACT for HCl and HF. Therefore, we conclude that the proposed limits for HCl and HF are BACT for these two pollutants. However, we will further address emissions limits for HCl and HF in our review of the MACT analysis.

XII. MACT

Like BACT, MACT is designed to be technology-forcing to ensure that new technologies are used to obtain the lowest achievable emissions of pollutants in newly issued permits. Both EPA and the TCEQ have provided a definition for MACT emissions limits in their rules. EPA's definition states:

> Maximum achievable control technology (MACT) emission limitation for new sources means the emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major source.[343]

The TCEQ's definition is found at 30 TAC § 116.15 and mirrors the EPA's definition.

In this case, WSEC performed a two-step process for conducting its MACT analysis. First, WSEC established a "MACT floor" (the most stringent emission limitation achieved in

---

[342] WSEC Ex. 104 at 24.

[343] 40 CFR § 63.41.

practice by the best-controlled similar source). Then, WSEC performed a "beyond-the-floor" analysis of other methods for potentially reducing emissions to a greater degree, considering all applicable factors, such as the cost of achieving such emissions reductions and associated energy requirements.[344] Protestants contest the adequacy of WSEC's analysis.

WSEC asserts that its proposed facility may emit four categories of HAPs: non-mercury HAP metals, which are emitted as PM; mercury; organic HAPs; and acid gases, which include HCl and HF. Therefore, in its MACT application, WSEC developed emission limits for only five pollutants, contending that two of these pollutants serve as surrogates for two categories of HAPs. The five specific emissions limits proposed in the MACT application are:

- CO, for organic HAPs;
- Filterable PM, for non-mercury HAP metals;
- Mercury;
- HF; and
- HCl.

WSEC argues that CO is an adequate surrogate for organic HAPs, so the CO emission limit will serve to ensure that MACT emission limits for organic HAPs are met. Further, WSEC contends that filterable PM is an adequate surrogate for non-mercury HAP metals, and the filterable PM limit will ensure that MACT emission limits for non-mercury HAP metals will be met.

Protestants argue that WSEC's case-by-case MACT analysis was non-compliant with the applicable regulations and that WSEC failed to consider a full range of methods to control HAPs. Specifically, Protestants assert that WSEC's MACT analysis is deficient because:

(1) The MACT analysis did not consider and set limits for all necessary HAPs;

---

[344] WSEC Ex. 104 at 29.

(2) The MACT analysis improperly relied on the use of surrogates instead of proposing emission limits for each HAP;

(3) The MACT analysis failed to consider "similar sources" of HAPs, such as PCs;

(4) The MACT floor was not met for each HAP; and

(5) WSEC's "beyond-the-floor" analysis was inadequate.

The ALJs will discuss each issue in turn.

A. Does the Application Consider All Necessary HAPs?

Protestants contend that WSEC's MACT analysis failed to properly include all HAPs anticipated to be emitted. For example, EDF's expert, Dr. Sahu, testified that limits are required for every HAP that will be emitted from the proposed source, unless a surrogate is used in limited circumstances.[345] According to Dr. Sahu, EPA has listed 67 different HAPs that are emitted by coal-fired power plants.[346] He argues that WSEC's grouping of HAPs into four categories is arbitrary and does not take into account differences in the physical and chemical properties of the compounds.[347] He also argued that compounds such as dioxins and radionuclides were not included in WSEC's MACT analysis, nor have specific organic HAPs been identified by WSEC. Rather, WSEC simply relied on the broad category of "organic HAPs" without listing and identifying all HAPs to be considered. Further, Dr. Sahu notes that there should be a MACT limit for selenium and arsenic.[348] SC/NCC's witness, Mr. Powers, also asserts that WSEC's categorization omits radionuclides, hydrogen cyanide, and organic HAPs

[345] EDF Ex. 1 at 63.

[346] EDF Ex. 1 at 63. WSEC's expert, Mr. Cabe, testified that there were over 100 HAPs. WSEC Ex. 600 at 71.

[347] EDF Ex. 1 at 67-68.

[348] EDF Ex. 1 at 69.

that would be present in the condensable PM, such as dioxins and polynuclear aromatic hydrocarbons.[349]

WSEC disputes Protestants' contention that it did not properly consider all applicable HAPs. WSEC stated that while there are potentially numerous HAPs, they fall into the four categories used by WSEC in its MACT analysis.[350] According to Mr. Cabe, there is no separate control technology for each potential HAP, and the control technologies to control one pollutant can also be effective to control multiple HAPs with shared characteristics. Furthermore, WSEC asserts that EPA focused on mercury as the HAP of most concern when listing fossil fuel-fired electric utility steam generating units (EUSGUs) in its 2000 section 112(n) listing.[351]

After reviewing the evidence in the record, the ALJs find very little discussion regarding individual HAPs other than mercury, HCl, and HF. As pointed out by Mr. Powers, WSEC does not indicate which individual HAPs fall into which category. However, Mr. Shell did testify that dioxins, benzene, hydrogen cyanide, benzo(G,H,L) biphenyl, cyanide, isopherone, methyl chloride, polynuclear aromatic hydrocarbons, and polycyclic organic matter are organic compounds controlled through the use of good combustion practices, as is CO.[352] He also identified arsenic, selenium, cadmium, chromium, and nickel as metals controlled through the use of fabric filter baghouses.[353]

To control emissions, Mr. Shell stated that there are limited control technologies for an applicant to evaluate. For the vast majority of elements and chemical compounds; there are no control technologies at all.[354] However, Mr. Shell testified that one control technology for one pollutant may ultimately control hundreds of pollutants. For example, a fabric filter baghouse is

---

[349] SC/NCC Ex. 200 at 55.

[350] WSEC Ex. 100 at 79.

[351] *See,* 65 Fed. Reg. 79,825, 79,826 (Dec. 20, 2000).

[352] WSEC Ex. 500 at 15-16.

[353] WSEC Ex. 500 at 16.

[354] WSEC Ex. 500 at 15.

a control technology that reduces PM emissions but also controls many other pollutant subcategories, such as metals and acid gases.

We find that WSEC's use of categories in its analysis is appropriate. In two recent cases, the TCEQ has approved the same categories of HAPs for use in a case-by-case MACT analysis. In the *NRG* case, the Commission approved the use of the same four categories of HAPs.[355] In the *IPA Coleto Creek* matter, the Commission again approved a case-by-case MACT analysis that used the same four categories.[356] The argument that a MACT analysis must consider each HAP was argued before the Commission in both cases and rejected.[357] While there may be differing levels of detail in the three applications, the Commission has determined that the use of these same four categories of HAPs is sufficient for a case-by-case MACT analysis. While it may have been helpful if the application contained more details about which HAPs fall into which category, the actual categories used by WSEC are sufficient to encompass the HAPs that may be emitted from the facility.

B. Did WSEC and the ED Properly Rely on Surrogates?

After grouping the HAPs into four categories, WSEC proposes to use surrogates for two of those categories. WSEC proposes to use CO as a surrogate for organic HAPs and WSEC also proposes to use filterable PM as a surrogate for non-mercury HAP metals. WSEC asserts that these two surrogates will satisfy the MACT requirements for these two categories of HAPs.[358]

Protestants disagree with this approach and argue that surrogates can be used only in limited circumstances when certain criteria are met. EDF's expert, Dr. Sahu, contends that WSEC's use of surrogates is arbitrary and does not adequately represent the characteristics of the

---

[355] *NRG* PFD at 94; Finding of Fact Nos. 286-309; Conclusion of Law Nos. 38-43.

[356] *Application of IPA Coleto Creek, LLC*, SOAH Docket No. 582-09-2045, PFD at 38; May 3, 2010 Order, FOF Nos. 244-262, COL Nos. 12-26.

[357] *IPA Coleto Creek* PFD at 39-40; *NRG* PFD at 97-99.

[358] WSEC Ex. 104 at 32.

HAPs in issue. He contends that the surrogates chosen will not always fairly represent the HAPs to be controlled. For example, Dr. Sahu notes that WSEC has grouped dioxins under the "organic HAPs" category, which also includes benzene. However, according to Dr. Sahu, the formation and fate of dioxins are very different from those for benzene. Dr. Sahu alleges that this is representative of WSEC's failure to explain how the behavior of the pollutants listed under "organic HAPs" is similar—from either a formational or control standpoint.[359]

Similarly, Dr. Sahu and SC/NCC's expert, Mr. Powers, disagree with WSEC's decision to group together all non-mercury HAP metals and use the filterable PM limit as a surrogate. They point out that EPA has identified four different classes of metals not represented by the surrogate. They also argue that selenium should be grouped with mercury rather than with PM, based upon the volatility of the two metals.[360] Protestants' experts contend that there should be separate MACT limits for both selenium and arsenic, based upon their characteristics.[361] Most HAP metals partition into the fine particulate range (*i.e.*, in the range of $PM_{2.5}$, rather than in the larger PM_{10} range). So, Protestants assert that the best controls for $PM_{2.5}$ are different from the best controls for PM_{10} or filterable PM. Thus, while they agree that $PM_{2.5}$ might be a fair surrogate for many of the non-volatile HAP metals, PM_{10} or PM in general is not.[362]

In response to the criticism regarding its use of surrogates, WSEC points out that there are no separate control technologies for each HAP, of which there are more than 100.[363] Therefore, it is appropriate and necessary to use a surrogate approach. Mr. Cabe states that he agrees with WSEC's use of surrogates and notes that the Commission has previously approved the same surrogates in the heavily-contested *NRG* matter. Furthermore, according to Mr. Cabe,

---

[359] EDF Ex. 1 at 68.

[360] EDF Ex. 1 at 69; SC/NCC Ex. 200 at 57.

[361] EDF Ex. 1 at 69; SC/NCC Ex. 200 at 58-60.

[362] EDF Ex. 1 at 70.

[363] WSEC Ex. 600 at 71.

with one exception, WSEC's MACT emission limits are lower than the level that the Commission determined was MACT for the NRG Limestone Unit 3 facility.[364]

Regarding the use of PM as a surrogate for non-mercury HAP metals, Mr. Shell testified that most if not all of these metals usually have melting and boiling points greater than the flue gas temperature entering the baghouse. Therefore, the metals would generally exist as particles instead of a vapor in the flue gas stream. As a result, Mr. Shell asserts that these metals are generally subject to the same physical mechanisms as other particulate matter, which includes being subject to removal by filtration in the baghouse.[365] Regarding the use of CO as a surrogate for organic HAPs, Mr. Shell stated that low levels of CO in the flue gas is an indicator of good combustion, and thus a good indicator of the destruction of the organic HAPs.[366]

The ED also relied on surrogates in its MACT analysis. The ED states that non-mercury HAP metals are a constituent of filterable PM_{10} emissions and that the emission limit for filterable PM_{10} serves as the limit for these metals.[367] Likewise, according to the ED, organic HAPs are a subset of VOC emissions and both VOCs and CO are products of incomplete combustion. While organic HAPs are a subset of VOC emissions, the ED stated that since CO is easily monitored and low CO emissions indicate the presence of good combustion, CO is used as a surrogate for organic HAP emissions. The ED points out that the proposed permit requires quantification of VOC emissions on a periodic basis, which will more directly show that organic HAPs are not above the VOC emission rate.[368]

The ALJs conclude that WSEC's use of surrogates is appropriate. In setting national emissions standards for HAPs from industrial boilers, EPA used CO and filterable PM as

---

[364] WSEC Ex. 600 at 71.

[365] WSEC Ex. 500 at 64.

[366] WSEC Ex. 500 at 69.

[367] ED Ex. 15 at 531.

[368] ED Ex. 15 at 532.

surrogates for the same HAP groups that WSEC proposes to use in this case.[369] Furthermore, the Commission has also approved the use of these same surrogates for the same HAP groups in recent cases. As pointed out by Mr. Cabe, the same surrogates were disputed in the *NRG* matter.[370] The *NRG* ALJs recommended approval of the use of CO and filterable PM as surrogates for organic HAPs and non-mercury HAP metals, respectively, and the Commission agreed.[371] This same issue was also raised in the *IPA Coleto Creek* matter, except the VOC emission limit was the surrogate for organic HAPs.[372] Again, the ALJs recommended that the Commission approve the use of the surrogates, and the Commission did so on May 3, 2010.[373] Therefore, it is well established at both the federal and state level that the use of CO as a surrogate for organic HAPs and filterable PM as a surrogate for non-mercury HAP metals is appropriate. There are no other control technologies for the HAPs, and WSEC's case-by-case MACT analysis is sufficient regarding the use of these surrogates.

C. Did the MACT Analysis Consider the "Best Controlled Similar Sources"?

The MACT emission limit and control technology proposed by WSEC must "not be less stringent than the emission control which is achieved in practice by the best controlled similar source . . . ."[374] EPA and the TCEQ define the term "similar source" as "a stationary source or process that has comparable emissions and is structurally similar in design and capacity to a constructed or reconstructed major source such that the source could be controlled using the same control technology."[375] In adopting its case-by-case MACT regulations, EPA stated that "two criteria should be used to determine if a source is similar: (1) whether the two sources have

---

[369] 69 Fed. Reg. 55,218, 55,223 (Sep. 13, 2004) (regulations setting emission standards for HAPs for industrial, commercial, and institutional boilers and process heaters).

[370] *NRG* PFD at 99-102.

[371] *NRG* Order at FOF Nos. 295 and 302; COL Nos. 38-43.

[372] *IPA Coleto Creek* PFD at 40-44.

[373] *IPA Coleto Creek* Order at FOF Nos. 258 and 260 (approving use of VOC as surrogate for organic HAP emissions); COL Nos. 12-26.

[374] 40 CFR § 63.43(d)(1).

[375] 40 CFR § 63.41; 30 TAC § 116.15(10).

similar emission types, and (2) whether the sources can be controlled with the same type of control technology."[376] EPA also explained that an applicant can consider the types and concentration of constituents in a gas stream when identifying available control options using its specified emission sources as a general guide.[377]

Protestants argue that WSEC's MACT analysis is too narrow because WSEC failed to consider PCs when reviewing emissions from the best controlled similar source. SC/NCC further contends that since "EPA has made clear that MACT for new sources should include consideration of transfer technologies from other source categories," SC/NCC argues that WSEC construed the term "similar sources" too narrowly by limiting the MACT review to CFB facilities.[378]

WSEC responds that the differences between PC boilers and CFB boilers that made a comparison inappropriate for BACT likewise make a comparison inappropriate for MACT. According to WSEC, section 112(d)(10) of the FCAA allows EPA to "distinguish among classes, types, and sizes of sources within a category or subcategory" in setting MACT standards. WSEC asserts that, in 2004, EPA proposed different mercury MACT emission standards for different sources based on process type and coal rank, such as bituminous, subbituminous, lignite, or waste coal. In further support of its argument, WSEC quoted from the Federal Register where EPA explained the unique nature of CFBs and why they can be considered a distinct type of boiler.[379] However, SC/NCC points out that WSEC omitted language from the Federal Register. SC/NCC contends that this omitted language shows that EPA determined from test results that there is no substantial difference between mercury emissions from CFBs and from similarly-fueled conventionally-fired units, such as PCs.

---

[376] 61 Fed. Reg. at 68,394.

[377] 61 Fed. Reg. at 68,394.

[378] SC/NCC Closing at 46, *citing* 61 Fed. Reg. at 68,394.

[379] WSEC Closing at 116 quoting 69 Fed. Reg. 4,652, 4,666 (Jan. 30, 2004).

Therefore, according to SC/NCC, EPA did not establish a separate subcategory for CFB units in its proposed nationwide MACT standards for solid fuel-fired power plants.[380]

After reviewing the evidence, the ALJs conclude that WSEC did properly evaluate the best controlled similar sources in its MACT analysis. Just as with a BACT analysis, it is an appropriate comparison to review facilities with similar combustion technology in a MACT analysis. Flue gases from CFBs and PCs have different concentrations of pollutants and different physical properties. Furthermore, the type of fuel burned has a major impact on the amount and type of pollutants emitted from the facility. Therefore, it is important that similar facilities burn the same fuel using the same combustion technology.

This approach has been approved by the Commission in a previous application.[381] The similar source issue was argued in the *IPA Coleto Creek* matter. In that case, IPA sought a permit for a PC facility. The protestants in *IPA Coleto Creek*, including Sierra Club and EDF, argued that IPA's MACT analysis should not be limited to PC boilers but should also include CFBs and IGCC technology.[382] IPA argued that, like BACT, a MACT analysis should focus on similar combustion technology. The *IPA Coleto Creek* ALJs agreed with IPA and found that Unit 4 of the Walter E. Scott, Jr. Energy Center in Iowa is the best example of the MACT floor for facilities burning subbituminous coal.[383] The Commission agreed and issued its order concluding that IPA's MACT analysis complied with all regulations.[384]

Regardless of the parties' stated positions on the breadth of the term "similar sources," a review of WSEC's application indicates that WSEC did consider PCs in its MACT analysis. For example, in its MACT analysis for mercury, WSEC stated that for mercury, the lowest mercury emission limit that it could identify "for *any* boiler that primarily burns subbituminous coal" was

---

[380] SC/NCC Closing at 51-52 quoting 69 Fed. Reg. at 4,666.

[381] *See, IPA Coleto Creek* PFD at 44-45, 48.

[382] *IPA Coleto Creek* PFD at 44-45.

[383] *IPA Coleto Creek* PFD at 48.

[384] *IPA Coleto Creek* May 3, 2010 order, COL Nos. 24-26.

Unit 4 for the Walter R. Scott, Jr. Energy Center, the same facility IPA argued was a source similar to its proposed PC facility.[385] WSEC also considered the most stringent mercury emission limit "for *any* boiler that burns primarily bituminous coal."[386] The ALJs will discuss other examples of WSEC's consideration of PCs in its MACT analysis elsewhere in the PFD.

The Commission has determined that evaluating facilities with similar combustion processes is sufficient to determine the best controlled similar source in a MACT analysis. Even though WSEC asserts that PCs are not sources similar to CFBs due to the differences in the methods of combustion and the composition of the flue gases, WSEC reviewed PCs in its MACT analysis in evaluating the best controlled similar sources for some of the HAPs. Therefore, WSEC's MACT analysis was sufficient in regard to the consideration of best controlled similar sources.

D. Sufficiency of WSEC's MACT Review

1. Overview

Protestants argue that WSEC simply took the results of its BACT analysis and used it for its MACT analysis. According to Protestants, BACT and case-by-case MACT are not equivalent and require different analyses. SC/NCC also focuses on the brevity of Mr. DiSorbo's MACT analysis and the failure of WSEC's witnesses to rebut Mr. Powers' testimony with specifics, relying only on general conclusions without factual support.

Regarding the MACT floor, Protestants complain that WSEC assumed that permitted levels in the RBLC reflect achievable levels for purposes of a MACT floor analysis. Protestants assert that WSEC should review stack test results because these clearly show what is achieved in practice since actual emissions levels are typically lower than the emission limits.

---

[385] WSEC Ex. 104 at 30 (emphasis added).

[386] WSEC Ex. 104 at 30.

Regarding the beyond-the-floor analysis, Protestants assert that the analysis was not sufficient and relied only on anecdotal and unsupported claims regarding costs and control. Furthermore, according to Protestants, the ED and WSEC did not conduct an analysis "of possible technologies or limits that are achievable, despite the fact that they may not yet have been achieved."[387]

In response, WSEC acknowledges that BACT and MACT require different analyses and affirms that it performed an independent, case-by-case MACT analysis. Also, WSEC points out that the Commission stated in its preamble to the adoption of its MACT rules:

> The commission believes in most cases that BACT determinations will exceed the requirements of case-by-case MACT determinations as required in 40 CFR Part 63 Subpart B, Requirements for Control Technology. In cases where the Part 63 MACT determination is more restrictive than BACT as required in Chapter 116, the commission intends to comply with 40 CFR Part 63, Subpart B . . . . If a case-by-case MACT determination is more restrictive than BACT, the affected source will be required to meet the MACT requirements.[388]

WSEC argues that it prepared a two-step MACT analysis even though WSEC will be subject to EPA's nationwide MACT standards due in November 2011, which may make its MACT determinations moot.

In discussing the actual MACT review, WSEC explained that Mr. DiSorbo first established the MACT floor, which is the most stringent emission limitation achieved in practice by the best controlled similar source. WSEC asserts that Mr. DiSorbo then looked at other methods to reduce emissions to a greater degree, considering cost and non-air quality health and environmental impacts and energy requirements.[389]

---

[387] SC/NCC Closing at 55.

[388] 23 Tex. Reg. 6973, 6980 (Jul. 3, 1998).

[389] WSEC Ex. 100 at 72.

Mr. Cabe testified that he reviewed Mr. DiSorbo's MACT analysis and it was very straightforward and similar in every material respect to previous MACT analyses approved by the Commission. Mr. Cabe stated that, in preparing the MACT analysis, Mr. DiSorbo consulted other BACT and MACT determinations, regulatory information, construction and operating permits, permit applications, unit operating histories, emissions testing histories, available literature, CFB vendor information, and other EPA MACT analyses and standards.[390]

The parties' general positions regarding WSEC's MACT analysis were also discussed in the context of the analysis for the individual HAP categories. Therefore, the ALJs will address these arguments as they relate to the individual MACT analysis.

2. Sufficiency of Mercury MACT Analysis

As previously stated, WSEC considered any boiler burning sub- and bituminous coal in determining the MACT floor for mercury. For subbituminous coal, WSEC determined that the PC, Unit 4 of the Walter Scott, Jr. Energy Center, represented the best controlled similar source,[391] with a limit of 1.7×10^{-6} lb/MMBtu. For those facilities burning bituminous coal, the units at the Brayton Point Station have achieved an emission limit of approximately 0.86×10^{-6} lb/MMBtu and this represents the MACT floor.[392] Calculating a removal efficiency of 90 percent, WSEC concluded that 0.86×10^{-6} lb/MMBtu is the MACT floor for mercury at the WSEC facility. For pet coke, WSEC states that there are limited numbers of compliance demonstrations for similar facilities. However, since pet coke typically has a lower mercury concentration than bituminous coal, a boiler burning a blend of pet coke and bituminous coal should be able to achieve the MACT limit established for bituminous coal only.

---

[390] WSEC Ex. 600 at 69.

[391] WSEC does not identify Unit 4 of the Walter Scott, Jr. Energy Center as a PC boiler. However, Unit 4 is a PC boiler, according to Mr. Powers. SC/NCC Ex. 200 at 85.

[392] WSEC Ex. 104 at 30-31.

To determine whether there is a beyond-the-floor limit that is achievable for the WSEC facility, WSEC concluded that the technology used by Unit 4 at the Walter Scott, Jr. Energy Center and at the Brayton Point Station represents the most effective technology in controlling mercury emissions. Therefore, the MACT floor is the most stringent limit that is achievable for the WSEC facility. As required by 40 CFR § 63.43(d)(4), WSEC points out that the 0.86×10^{-6} lb/MMBtu (0.86 lb/TBtu) emission limit is more stringent than the new source MACT EPA proposed in 40 CFR Part 63, Subpart UUUUU in 2004.[393]

In his analysis, the ED determined that WSEC's proposed emission limit is the MACT floor for mercury because it has been achieved in practice at the Brayton Point Station. Although VCHEC has a lower limit of 0.09×10^{-6} lb/MMBtu, this limit has not been achieved in practice, according to the ED. The VCHEC limit also represents a 99 percent control efficiency for a coal with an average mercury content of 0.11 parts per million by weight (ppmw) mercury, whereas WSEC's Illinois coal is estimated to contain 0.50 ppmw of mercury. For these reasons, the ED concluded that the VCHEC limit is not an appropriate MACT limit for WSEC.[394]

Regarding the beyond-the-floor analysis, the ED determined that WSEC proposed the most effective emission control available for mercury reduction. Furthermore, long-term data is not available to show that long-term results are equal to or better than the available short-term test results. The ED concluded that these factors, in conjunction with Special Condition No. 45, did not justify a lower MACT limit.[395]

Protestants challenge WSEC's mercury MACT analysis. Mr. Powers argues that WSEC failed to establish a proper MACT floor because WSEC limited its analysis to CFBs burning bituminous coal. Mr. Powers cites to numerous facilities with purportedly lower emissions rates than that proposed by WSEC as a MACT limit.[396] Regarding WSEC's beyond-the-floor

---

[393] 69 Fed. Reg. at 4,720 (proposed 40 CFR 63.999(a)(1)(i) or (ii)).

[394] ED Ex. 1 at 33-34.

[395] ED Ex. 1 at 34.

[396] SC/NCC Ex. 200 at 83-86.

analysis, Mr. Powers contends that WSEC failed to consider that other facilities were achieving 99 percent mercury removal rates even though none of the facilities utilized activated carbon injection for additional mercury removal.[397] Mr. Powers argues that WSEC's beyond-the-floor analysis was deficient because it failed to consider the design of the activated carbon injection and the sorbent used to achieve higher rates of mercury removal. Mr. Powers also alleges that WSEC should have considered cleaner fuels in its beyond-the-floor analysis, as well.[398]

Dr. Sahu makes similar arguments. Dr. Sahu argued that the VCHEC limit should not have been disregarded in the MACT floor analysis. He also stated that setting a MACT floor based on the use of coal instead of pet coke is improper since pet coke has a lower mercury content. He argued that a weighted mercury limit should have been proposed. He also argued that WSEC should have provided more technical detail in its beyond-the-floor analysis regarding the design of its activated carbon injection.[399]

We conclude that WSEC's proposed limit for mercury is MACT for the WSEC facility. WSEC reviewed permit limits for "any boilers" that burned sub- or bituminous coal to determine the mercury emission limit that was achieved in practice. Furthermore, WSEC is proposing the most effective method to reduce mercury emissions. Other than fuels with lower mercury content, Protestants do not identify another method to achieve further mercury reductions. However, the level of mercury emissions is directly tied to the amount of mercury in the fuel, and the fuel choice was a fundamental business decision made by WSEC. To address the differences in mercury content in pet coke and coal, Dr. Sahu suggested that a weighted average mercury limit be used based on the actual amount of each fuel burned and the expected 90 percent control efficiency. But, Dr. Sahu did not identify other permits where this type of weighted limit had been used or explain how such a weighted limit would be more stringent than the limit proposed by WSEC.

---

[397] SC/NCC Ex. 200 at 86.

[398] SC/NCC Ex. 200 at 88.

[399] EDF Ex. 1 at 72.

In addition, we agree with the ED's analysis of why the VCHEC mercury limits are not MACT for this facility based on mercury content of the fuel, removal efficiency, and lack of demonstrated compliance.[400] Regarding the sufficiency of technical details, the Commission has rejected similar arguments that additional technical details are necessary for a MACT beyond-the-floor analysis.[401] Therefore, the ALJs conclude that WSEC's proposed limit for mercury represents MACT for this facility.

3. Sufficency of MACT Analysis for Non-Mercury HAP Metals

WSEC asserts that PM air pollution control devices are the only identified control technology for non-mercury HAP metals. As previously discussed, WSEC proposes to use a filterable PM emission limit as a surrogate for non-mercury HAP metals as EPA has done for MACT emission standards for other source categories emitting HAP metals, such as for the integrated iron and steel industry.[402]

WSEC stated that its "BACT analysis . . . present[ed] an evaluation of [PM] emissions from coal-fired CFB and PC boilers identified from a RBLC database search."[403] WSEC proposed a total PM emission limit of 0.011 lb/MMBtu as the MACT floor for non-mercury HAP metals.

In the beyond-the-floor analysis, WSEC stated:

> The available literature was reviewed to determine whether a "beyond-the-floor" MACT emission limit is appropriate to establish a MACT limit for the emissions of non-mercury HAP metals from the CFB boilers. The review identified PM emission limits as low as 0.01 lb/MMBtu on CFB boilers; however, these limits

---

[400] *See*, ED Ex. 1 at 33-34.

[401] *See IPA Coleto Creek* PFD at 46-48 and Order at COL Nos. 24-26.

[402] WSEC Ex. 104 at 32.

[403] WSEC Ex. 102 at 157.

> were not established for the purpose of controlling HAP metals, and are therefore not considered appropriate for use in setting a lower MACT limit.[404]

Based on this analysis, WSEC stated that an emission limit of 0.011 lb/MMBtu for filterable PM should be established as the surrogate MACT limit for emissions of non-mercury HAP metals for CFB boilers.

The ED's MACT analysis is similar to its BACT analysis but went on to state that non-mercury HAP metals are a constituent of filterable PM. The ED's MACT analysis relied on the same permit limits it analyzed for BACT. The ED concluded, that based on the differences in fuels, the slightly higher filterable PM limit of 0.011 lb/MMBtu is the appropriate MACT limit for non-mercury HAP metals.[405]

In addition to the use of filterable PM as a surrogate, Protestants claim that WSEC failed to identify the best controlled similar source and proposed filterable PM limits that are less stringent than other CFBs. Furthermore, Mr. Powers contends that stack testing shows that the JEA Northside CFB achieved much lower filterable PM limits than that proposed by WSEC in its MACT analysis.[406] Mr. Powers also argues that WSEC failed to address other technologies to control non-mercury HAP metals in its beyond-the-floor analysis. Referring to WSEC's language in its beyond-the-floor analysis that filterable PM limits are not set to control HAP metals, Protestants argue that the reason a limit is set is not relevant because the best performing similar source "requires neither an intentional action nor deliberate strategy to reduce emissions."[407]

The ALJs have reviewed WSEC's MACT analysis for non-mercury HAP metals and find that it is very similar to its BACT analysis. WSEC's MACT analysis does not identify which facility represents the best controlled similar source nor provides any discussion on what

---

[404] WSEC Ex. 104 at 32.

[405] ED Ex. 1 at 34-35.

[406] SC/NCC Ex. 200 at 76-77.

[407] SC/NCC Closing at 59 quoting *Sierra Club v. EPA*, 479 F.3d 875, 882-83 (D.C. Cir. 2007).

emission limit has been achieved in practice. In addition, although WSEC's MACT analysis states that both CFBs and PCs were reviewed in its BACT analysis,[408] a review of the BACT analysis shows that only CFBs from the RBLC were evaluated.[409] Nevertheless, as previously discussed in this PFD, a comparison of the filterable PM limits for CFBs and PCs is not appropriate.

Furthermore, WSEC's MACT beyond-the-floor analysis is simply unclear. As quoted above, WSEC asserts that its review of available literature identified "PM emission limits as low as 0.01 lb/MMBtu on CFB boilers; however, these limits were not established for the purpose of controlling HAP metals, and are therefore not considered appropriate for use in setting a lower MACT limit."[410] Since no PM emission limit is established to control HAP metals, it is unclear why a filterable PM limit would be appropriate for a MACT floor but is somehow inappropriate for a beyond-the-floor limit. The original reason the PM limit was established does not seem relevant since WSEC proposes to use the limit as a surrogate.

One reason for the brevity of WSEC's MACT analysis for this particular group of HAPs may be that the relevant limits and control technologies were addressed in the BACT analysis for the surrogate filterable PM limit. Also, the brevity may also be attributed to the limited availability of control technologies. As stated by Mr. Shell, once a developer determines the type of facility it proposes to construct, the list of control technologies is "fairly obvious."[411] The ALJs have already discussed in their BACT analysis why other technologies, such as wet ESP, are not appropriate for a CFB to control filterable PM emissions. Therefore, there may be no new information to discuss in the MACT analysis for non-mercury HAP metals since the most stringent emission limit was determined in the BACT analysis for filterable PM.

---

[408] WSEC Ex. 104 at 32.

[409] WSEC Ex. 102 at 157.

[410] WSEC Ex. 104 at 32.

[411] WSEC Ex. 500 at 15.

Nevertheless, we do not agree with WSEC's unexplained conclusion that a filterable PM limit is sufficient as a surrogate MACT floor but is not appropriate for a beyond-the-floor analysis. In our discussion of BACT for filterable PM, we concluded that 0.010 lb/MMBtu is BACT. Therefore, we recommend that the appropriate MACT limit for non-mercury HAP metals is the filterable PM limit, 0.010 lb/MMBtu.

4. Sufficiency of MACT Analysis for Acid Gases, HCl and HF

According to WSEC, the combustion of trace quantities of chlorine and fluorine in the fuel results in the formation of the HAPs HCl and HF. Therefore, the amount of HCl and HF in the flue gas is dependent on the amount of chlorine and fluorine in the fuel.

Regarding BACT, the ALJs determined that WSEC's proposed emissions limits were BACT for HCl and HF. However, we cannot determine from the record whether the emissions limits also represent MACT for these pollutants.

In its MACT analysis, WSEC identified the Cross Generating Station in South Carolina as having the most stringent HCl limit for any boiler burning primarily bituminous coal and completing initial compliance testing.[412] The HCl limit at the facility is 0.0024 lb/MMBtu. WSEC contacted vendors to select a technically-achievable HCl limit. These vendors indicated that the lowest emission rate they could commit to is based on a 98 percent removal of the chlorine in the fuel. WSEC stated that for the coals it is considering, this 98 percent removal efficiency corresponds to a 0.0032 lb/MMBtu and that this limit is "not significantly different than the lowest identified permitted rate [at] a coal fired facility."[413] WSEC asserts that 0.0032

[412] WSEC does not state whether the Cross Generating Station is a CFB or PC. However, the ED did not identify this facility in its BACT review of recently-issued permits to CFBs. Therefore, the ALJs assume that the Cross Generating Station is a PC or some type of facility using a different method of combustion.

[413] WSEC Ex. 104 at 33.

lb/MMBtu is substantially equivalent to the lowest rate demonstrated in practice. Unlike its BACT analysis, WSEC's MACT analysis does not propose a different HCl limit when burning pet coke.

For HF, WSEC identified the Springerville Generating Station in Arizona as having the most stringent demonstrated HF emission limit for any boiler that burns coal.[414] The HF limit at this facility is 0.00044 lb/MMBtu and corresponds to a control efficiency of about 95 percent and is based on the use of coal with a fluoride content of 86 ppmw or less. Applying the same control efficiency to the HF emission calculations and based on average fluoride concentrations of the coal to be burned, WSEC calculated an annual average HF emission rate of 0.0003 lb/MMBtu. WSEC states that the 95 percent removal represents the MACT floor for the CFB boilers. WSEC's MACT analysis does not propose a different HF limit when burning pet coke.[415]

In its beyond-the-floor analysis, WSEC stated that lower HCl and HF emissions may be achievable through the use of wet ESP. However, WSEC asserts that the amount of the reductions is unknown since there are no performance data for a similar existing unit. WSEC argues that, due the already low levels achievable through its proposed technology and the high capital cost of a wet ESP, use of the technology would not be cost effective.

The ED's proposed limits for HCl and HF differ from those proposed by WSEC. The limits in Mr. Hamilton's testimony also differ from the limits in the draft permit. For HCl, Mr. Hamilton based his MACT analyses on WSEC's proposed 98 percent removal efficiency for HCl and a 95 percent removal efficiency for HF. Unlike WSEC's MACT analysis, Mr. Hamilton proposed different limits for coal and pet coke that are based on 3-hour stack tests.[416] He also testified that "[t]he annual average limits are lower, based on the average

---

[414] As with the Cross Generating Station, WSEC does not state whether the Springerville Generating Station is a CFB or PC. We similarly assume that the Springerville Generating Station is a PC or some type of facility using a different method of combustion.

[415] WSEC Ex. 104 at 33.

[416] WSEC proposes one MACT limit for both fuels based on an annual average.

concentration of chlorine and fluorine in the fuel being lower than the maximum value."[417] Mr. Hamilton notes that WSEC's MACT analysis evaluated other recently permitted coal-fired EUSGUs and found that the proposed limits are consistent with units that have been tested. Therefore, according to Mr. Hamilton, "[t]he emission limits [proposed by the ED] reflect MACT."[418]

Protestants disagree with the ED's and WSEC's MACT analysis for HCl and HF. SC/NCC claims that WSEC failed to consider all EUSGUs burning solid fossil fuel because HCl and HF from these sources can be controlled by the same types of control technologies. SC/NCC points out that WSEC relied only on permitted limits and not on actual testing data. Even if reliance on permitted limits was sufficient for MACT, SC/NCC contends that there are many facilities with lower limits than those proposed by WSEC.

The ALJs have reviewed the evidence in the record regarding HCl and HF limits. Given that the amount of HCl and HF emitted from a facility is dependent on the amount of chlorine and fluorine in the fuel, the removal efficiency rate is an important factor in determining MACT for these two pollutants. While Protestants cite to other facilities with lower permitted emission limits, Protestants do not identify the removal efficiencies employed by those facilities nor the chlorine and fluorine content of the fuels burned. The ALJs conclude that for these pollutants, it is not sufficient to focus entirely on the permit limits and test results. The chlorine and fluorine content of the fuels and removal efficiencies must also be factored in to arrive at MACT limits, as was done by WSEC and the ED.

We have already determined that the proposed HCL and HF emissions limits are BACT. That being said, the evidence regarding whether the limits satisfiy the requirements for MACT is inconsistent and confusing. The table below summarizes the evidence as found by the ALJs. All limits for HCl and HF are based on a 98 percent removal efficiency and a 95 percent removal efficiency, respectively.

---

[417] ED Ex. 1 at 35.

[418] ED Ex. 1 at 35.

	WSEC BACT (annual average) lb/MMBtu[419]	WSEC MACT[420] (annual average) lb/MMBtu[421]	ED's Testimony (3-hour stack test) lb/MMBtu[422]	Draft Permit (3-hour average) lb/MMBtu[423]
HCl (coke)	0.0032	0.0032	0.0018	0.0013
HCl (coal)	0.005	0.0032	0.0067	0.005
HF (coke)	0.0001	0.0003	0.00040	0.0004
HF (coal)	0.0003	0.0003	0.0034	0.0003

A review of the above table shows the following inconsistencies between WSEC's BACT and MACT analyses, the ED's testimony, and the limits in the draft permit.

- Unlike its BACT analysis, WSEC does not propose different limits for the acid gases based upon the type of fuel used, although the draft permit does set out separate limits for each fuel.
- WSEC's BACT limit for HF while burning pet coke is lower than the corresponding MACT limit.
- The HF limit for pet coke in the draft permit is higher than either of WSEC's MACT or BACT limit, probably due to the short-term compliance period in the draft permit.
- The HCl short-term limit for coke in the draft permit is lower than WSEC's MACT long-term HCl limit.
- Mr. Hamilton testified to permit limits that are not the same as those in the draft permit.
- It is not clear whether the short-term limits in the draft permit can be derived from the long-term limits proposed by WSEC.

---

[419] WSEC Ex. 104 at 24. The limits in the BACT section of the application are annual limits. In its closing, WSEC represents that the specified 3-hour limits found in the draft permit are BACT. WSEC Closing at 102-04.

[420] WSEC Ex. 104 at 34.

[421] WSEC Ex. 104 at 29.

[422] ED Ex. 1 at 35.

[423] ED Ex. 14 at 475.

With the differences in the proposed emissions limits, we cannot determine what is MACT for HCl and HF. The parties may explain in their exceptions whether the short-term limits in the draft permit were calculated from or are consistent with the long-term limits in the MACT analysis, assuming such an explanation can be made from the current evidentiary record.

The removal efficiencies of 98 percent for HCl and 95 percent for HF represent MACT for these two pollutants. While a wet ESP may result in lower HCL and HF emissions, it is not known whether lower emissions are achievable because there is no performance data for a similar existing unit.[424] Therefore, emission limits that are based on these removal efficiencies and the chlorine and fluorine content of the fuels represent MACT for this facility. However, at this time, the ALJs cannot determine what those limits are because of the inconsistencies between WSEC's MACT analysis, the ED's testimony, and the limits in the draft permit.

5. Sufficiency of MACT Analysis for Organic HAPs

According to WSEC, coal- and pet coke-fired EUSGUs emit organic HAPs due to incomplete combustion of the fuel. This is the same mechanism that produces VOCs and CO. As previously discussed, WSEC proposes to use CO as a surrogate for organic HAPs, a surrogate approved by the Commission.

WSEC asserts that its CO BACT limit of 0.11 lb/MMBtu is the MACT floor. In its beyond-the-floor analysis, WSEC argues that the MACT floor represents the most stringent limit achievable because the best controlled similar sources all use good combustion practices to control CO emissions. WSEC argues that organic HAPs are within that category. According to WSEC, good combustion practices are the most effective of all identified control technologies for emissions of HAPs and CO, irrespective of cost.

---

[424] WSEC Ex. 104 at 34.

The ED restated his BACT analysis in his MACT analysis for organic HAPs.[425] In addition, the ED considered other emissions standards proposed by EPA pursuant to section 112(d) of the FCAA. According to the ED, although EPA has not yet proposed to regulate organic HAPs from EUSGUs, EPA has proposed a CO limit as an industrial boiler MACT standard of 0.33 lb/MMBtu as MACT.[426] This is higher than the 0.11 lb/MMBtu WSEC proposes as a CO emission limit, based on a 3-hour average. Therefore, the ED contends that the proposed CO limit is MACT for organic HAPs.

Protestants disagree. In addition to the surrogate and similar source issues, Mr. Powers testified that WSEC's proposed MACT floor should not be based simply on permitted limits unless the limits approximate what is actually achieved in practice. SC/NCC points to 15 stack tests for the Cedar Bay CFB in Florida that show that facility achieved a CO emission rate of 0.05 lb/MMBtu based on a 3-hour average between 2003 and 2008. Mr. Powers also states that the MACT floor for normal operations is a CO emission limit no higher than 0.063 lb/MMBtu, about half of WSEC's proposed limit.[427]

In its discussion regarding the CO BACT limit, Mr. Shell testified that it was inappropriate to rely on isolated stack tests from one facility to determine an emission limitation for another facility. Mr. Shell also pointed out that even Mr. Powers' stack tests show that the Cedar Bay facility exceeded his proposed 0.05 lb/MMBtu limit at least two times.[428]

We have the same concerns with the MACT analysis for organic HAPs as we do with the non-mercury HAP metals analysis discussed previously in this PFD. Both MACT analyses rely on a surrogate, and that surrogate was subject to an extensive BACT review. Those BACT reviews, as modified by our recommendations, determined the most stringent limit for the surrogates. The corresponding MACT reviews for the HAPs rely heavily on the surrogates'

---

[425] *Compare* ED Ex. 1 at 35-37 *with* ED Ex. 15 at 516-17.

[426] ED Ex. 1 at 36.

[427] SC/NCC Ex. 200 at 81.

[428] WSEC Ex. 500 at 68.

BACT reviews, possibly because the most stringent limits for the surrogates were determined in the BACT analysis. As previously stated, the brevity of the organic HAPs' MACT analysis may be due to the detailed BACT analysis for the surrogate.

We conclude that our previously recommended CO limit of 0.10 lb/MMBtu, based on a 12-month rolling average, is MACT for organic HAPs. There is no separate control technology to reduce organic HAPs, and utilization of good combustion practices is the only method to reduce CO, VOCs, and organic HAPs.

Regarding a lower limit based on stack test data from the Cedar Bay facility, it appears SC/NCC is proposing a limit of 0.063 lb/MMBtu as the MACT floor. Mr. Powers testified:

> The CFB boilers located at the Cedar Bay facility in Florida . . . routinely achieve a lower carbon monoxide rate than proposed as MACT for organic HAPs. Fifteen stack tests conducted between 2003 and 2008 demonstrate that Cedar Bay achieved a carbon monoxide emission rate of 0.05 lb/MMBtu based on a 3-hour average. . . . Thus, the CO MACT floor limit for normal operation is a carbon monoxide emission limit no higher than 0.063 lb/MMBtu. This is about half of the value (0.11 lb/MMBtu) proposed by WSEC as a MACT limit for organic HAPs.[429]

However, we again conclude that reliance on stack test results, without more, is not determinative of the appropriateness of a proposed MACT limit. Given that organic HAP formation is dependent on operating conditions and combustion practices, simply reviewing stack test data without an analysis of the operational conditions under which the data was generated creates an incomplete picture. Therefore, we do not recommend a lower CO limit based on isolated stack test results. The ALJs conclude that 0.10 lb/MMBtu limit is the proper MACT limit for this HAP category.

---

[429] SC/NCC Ex. 200 at 81.

6. Start Up, Shut Down, and Maintenance

SC/NCC argues that Special Condition No. 10 exempts WSEC's emissions from meeting MACT limits during start up and shut down. SC/NCC contends that this provision violates the FCAA that requires emission standards to apply continuously.

WSEC argues that heat input is in a state of flux when a unit is ramping up or down. Since some of the control technologies require a warm-up period before they can be used, the Commission typically does not require compliance with the lb/MMBtu performance standards during that time. However, according to WSEC, it will be required to comply with the lb/hr emission rates listed in the draft MAERT found in the draft permit.[430] WSEC asserts that these lb/hr emission rates are calculated directly from the BACT/MACT-based lb/MMBtu standards in Special Condition No. 10 using a MMBtu/hr conversion factor.[431] WSEC also asserts that the lb/hr emission rates formed the basis of WSEC's modeling.

We agree with WSEC. According to the explanation given by WSEC, the start up and shut down emissions will be governed by performance standards calculated from its MACT and BACT limits, as set out in the MAERT.

XIII. PERMIT CONDITIONS

A. Special Condition 45

The draft permit contains Special Condition No. 45 which provides:

> Within 60 days after completing the first annual compliance sampling required by Special Condition No. 32, the holder of this permit shall submit a request to adjust the performance standards for the control of H_2SO_4, HCl, HF, Hg, VOC, and front half and total PM/PM_{10} identified in Special Condition No. 10.B to reflect the results of the sampling of these compounds conducted to that date, with appropriate consideration given for data variability. The adjustment on a

[430] *See* ED Ex. 14 at 500-02.

[431] DiSorbo, Tr. I at 164-65.

> pollutant-by-pollutant basis to the performance standard for the control of H_2SO_4, HCl, HF, Hg, VOC, or front half and total PM/PM_{10} shall only be required if the average of the sampling for any such pollutant is 50 percent or less of the currently permitted value. At a minimum, this submittal shall include the Initial Demonstration of Compliance sampling required by this permit and the first annual compliance sampling required by Special Condition No. 32.[432]

This condition is also referred to as the "optimization clause."

Protestants argue that both WSEC and the ED use Special Condition No. 45 as justification for proposing a numerical emission limit that exceeds BACT. They contend that this is demonstrated by the ED's admission in its Response to Comments that, for certain pollutants, the test data reviewed indicates that it is "likely" or "expected" that actual emissions will be more than 50 percent lower than the permit limits. EDF construes this as a concession that the permitted limits are not BACT because they are more than double the expected emissions. EDF also identifies evidence in the record where the ED relied upon Special Condition No. 45 as justification for failing to propose numerical limits that are BACT.[433] Although the FCAA requires a pre-construction determination of BACT, Special Condition 45 allows for a post-construction determination, for which there is no legal foundation.

WSEC argues that Special Condition No. 45 is not a substitute for the BACT analysis, although it does provide some appropriate comfort about the outcome of the BACT analysis. WSEC points to the testimony of Mr. Hamilton when he stated that the inclusion of Special Condition No. 45 in the draft permit did not change the BACT determination.[434] WSEC contends that no other permitting authorities require post-startup tightening of permit limits and some allow post-startup loosening of limits. WSEC asserts that Protestants' complaints about a permit provision that allows a permit to be more stringent is neither based in logic or on any statutory or regulatory requirement.

---

[432] ED Ex. 14 at 496.

[433] EDF Closing at 41, *citing* ED Ex. 17 at 38, ED Ex. 17 at 39-40.

[434] WSEC Closing at 119 *citing* Tr. V at 1117.

The ED defends the use of Special Condition No. 45 in his draft permit. He states that regardless of Special Condition No. 45, the limits in the permit reflect BACT. He also argues that in the *Prairie State* EAB decision, the EAB upheld the use of an optimization clause in prior cases based on post-construction performance data.[435] According to the ED, the permitting authority in *Prairie State* issued a permit with a higher BACT limit for total PM when other facilities had lower permit limits. The ED states that the EAB upheld the permitting decision when there was scientific uncertainty regarding the achievable PM_{10} limit. The ED represents that the EAB concluded that an adjustable limit is a reasonable approach if constrained by certain parameters. The ED contends that his determination of BACT was based on the same considerations that were upheld by the EAB.

We conclude that the use of Special Condition No. 45 is not a substitute for BACT. The witnesses for WSEC and the ED testified, that in their expert opinion, the limits they proposed were BACT. However, scientific uncertainty and the lack of permits and reliable test results make determination of BACT difficult. Special Condition No. 45 allows for permit limits to be adjusted downward if actual emission levels prove to be less than the permitted limit. Although Special Condition No. 45 may have been a factor in forming an opinion regarding BACT, it was not a substitute or a justification for the BACT determination.

B. Monitoring Provisions

To monitor compliance with applicable standards for PM, VOCs, H_2SO_4, HCl, and HF, WSEC will conduct periodic stack sampling,[436] install bag break detectors,[437] and monitor the pressure drop across the baghouse to ensure that it is operating according to manufacturer

---

[435] ED Response to Closing Arguments at 18 *citing In re: Prairie State Generating Co.*, No. 05-05, slip op. at 112 (EAB Aug 24, 2006).

[436] ED Ex. 14 at 474 (Special Condition 10.B) and 489-90 (Special Condition 32).

[437] Shell, Tr. VI at 1273.

guidelines.[438] Additionally, WSEC will use a continuous opacity monitoring system (COMS) to aid compliance with PM emission limits.[439]

Protestants contend that PM CEMS are necessary to demonstrate compliance. Protestants rely on a letter from EPA for their position that PM CEMS is technically feasible and adequately demonstrated. On April 14, 2009, EPA submitted a comment letter that "[w]e *recommend* that TCEQ consider requiring [PM CEMS] to monitor filterable PM."[440] EPA stated that PM CEMS would provide a greater degree of confidence that the PM control device is operating as intended. According to EPA, PM CEMS: (1) has been adequately demonstrated; (2) has been successfully used in other industries; and (3) has demonstrated that its costs are comparable to PM COMS. WSEC points out that in EPA's more recent February 10, 2010 letter, EPA did not recommend PM CEMS again.[441]

WSEC and the ED respond that neither Texas nor federal law requires WSEC to monitor PM emissions with a CEMS. WSEC also asserts that there are many problems with PM CEMS that make WSEC's chosen compliance demonstration technology preferable. Mr. Shell testified that he had seen PM CEMS report negative numbers.[442] He also stated that bag leak detectors have an advantage over PM CEMS because they provide immediate feedback to the operator regarding the location of a bag break and this allows for an immediate response.[443]

Mr. Cabe testified that PM CEMS does not provide a direct measure of PM emissions and that an operator cannot conduct meaningful and frequent calibration checks.[444] He also

---

[438] ED Ex 14 at 19 (Special Condition No. 33.A).

[439] ED ED 14 at 16 (Special Condition No. 27).

[440] EDF Ex. 8, No. 1 (emphasis added).

[441] EDF Ex. 133.

[442] Shell, Tr. VI at 1273.

[443] Shell, Tr. VI at 1274.

[444] WSEC Ex. 600 at 75.

stated that EPA's regulations allow excessive variability that creates the possibility of false positives or apparent emission violations attributable to instrument measurement error.[445]

Although there is evidence in the record that PM CEMS may be adequately demonstrated and technically feasible, there is also evidence in the record that PM CEMS has serious drawbacks regarding its accuracy and use. However, there is no TCEQ rule or EPA regulation that requires the use of PM CEMS. Therefore, we do not find that WSEC must be required to install PM CEMS.

XIV. PAL PERMIT

EDF argues that the Commission may not issue a PAL permit to WSEC until EPA approves the Commission's PAL rules as part of the SIP. We reject this argument.

In this case, the parties do not dispute the Commission's authority to adopt the PAL rules, nor do they dispute that EPA has yet to determine whether the rules comply with the SIP. Similarly, in its public comments, EPA Region 6 has expressed no legal challenge to the Commission's authority to grant the WSEC application under the current PAL rules. Instead, EPA Region 6 restated a policy that, if the WSEC application were approved, then the Commission would be obligated to ensure that WSEC's operation of the facility would continue to meet "all requirements of the currently approved SIP . . . ."[446] And, in keeping with that obligation, EPA Region 6 restated the Commission's obligation to ensure that, if WSEC were to change some aspect of its facility's emissions, then the Commission would be required to ensure that WSEC demonstrates compliance with the SIP-approved requirements of existing Texas law.[447]

---

[445] WSEC Ex. 600 at 75-76.

[446] EDF Ex. 8.

[447] *Id.*

Among these statements and status reports, we find no legal issue that requires our review. EDF's request that WSEC's application for a PAL permit be denied because EPA has not yet made a final determination about the Texas PAL rules does not rise to the level of a legal issue. WSEC's evidence supports its application for a PAL permit under existing law. WSEC proposed no action (or declined to take any action) that would constitute noncompliance (or potential noncompliance) with the PAL rules. Thus, we deny EDF's requested relief on this point.

XV. TRANSCRIPT COSTS

The ALJs previously ordered WSEC to arrange and pay for the transcription of the record. The reporter generated an original transcript to the ALJs and two copies to the TCEQ's Chief Clerk. EDF and SC/NCC argue that WSEC should bear the transcript costs, and WSEC argues that the three nonstatutory parties should share the costs equally.[448] We agree that the three parties should share the transcript costs equally.

The Commission's rules set out the factors (shown in the accompanying table) for consideration of how to allocate the costs of reporting and transcription among the parties.[449] Below are the ALJs' recommendations regarding their assessment of the factors:

Criteria From Section 80.23(d)(1)	Analysis
The party who requested the transcript.	Not applicable. The ALJs required the court reporter and transcript, so no specific party actually requested it.
The financial ability of the party to pay the costs.	There is no specific evidence on the financial status of the various parties.
The extent to which the party participated in the hearing.	All of the parties participated in the hearing. Although WSEC presented the most number of direct witnesses and the only rebuttal

[448] The Commission's rules provide that the Commission will not assess transcript costs against the ED or OPIC. 30 TAC § 80.23(d)(2).

[449] 30 TAC § 80.23(d)(1).

Criteria From Section 80.23(d)(1)	Analysis
	witnesses, all parties actively cross-examined the witnesses.
The relative benefits to the various parties of having a transcript.	All parties relied on the transcript in their closing arguments and replies.
Budgetary constraints of a state or federal administrative agency participating in the proceeding.	Not applicable. None of the parties involved against whom costs could be assessed is a state or federal agency.
In rate proceedings, the extent to which the expense of the rate proceeding is included in the utility's allowable expenses.	Not applicable. This is not a rate case.
Any other factor which is relevant to a just and reasonable assessment of costs.	WSEC requested direct referral of its Application. Protestants defined the issues. Each party benefitted from a hearing transcript.

We recommend that the Commission allocate all of the transcript costs among the three non-statutory parties equally: 1/3 to WSEC; 1/3 to EDF; and 1/3 to SC/NCC. Kennedy Reporting Service, Inc. charged $7,529.75 for its services.[450] The ALJs recommend that EDF and SC/NCC reimburse WSEC $2,509.91 each.

XVI. CONCLUSIONS AND RECOMMENDATIONS

As stated in this PFD, the ALJs cannot recommend issuance of the permit for three reasons. First, in its air dispersion modeling, WSEC relied on data that the TCEQ's website stated did not meet quality assurance criteria and was not to be used for any regulatory purpose. Second, a state health effects review was not conducted for coal dust. The ED has conducted a coal dust review for other applications for coal-fired power plants, and the evidence in this case indicates that the ESL for coal dust would be exceeded. Therefore, we cannot conclude that the the public health will be protected, as required by section 382.0518(b)(2) of the Texas Health and Safety Code. Third, as explained in the PFD, we were unable to determine the appropriate MACT emissions limits for HCl and HF. On all other issues, we conclude that WSEC has met its burden of proof as we have explained in in this PFD.

[450] WSEC Closing, Att. 2.

To address these deficiencies, we recommend that any order issued by the Commission require WSEC to conduct a revised air dispersion modeling regarding ozone, provide an analysis addressing the health effects review of coal dust, and clarify the appropriate emissions limits for HCl and HF, if necessary. We also recommend that any ordering provision include a 180-day deadline for the submission of this additional information.

Regarding our review of WSEC's BACT and MACT analyses, the following table summarizes our recommendations regarding the appropriate emissions limits, as previously set out in the PFD.

Pollutant	Performance Standard (lb/MMBtu)	Compliance Averaging Period
NO_x	0.10	Hourly
	0.070	30-day rolling
SO_2 (coke)	0.114	30-day rolling
SO_2 (coal)	0.063	30-day rolling
CO	0.10	12-month rolling
Hg	0.86×10^{-6}	12-month rolling
Filterable PM/PM_{10}	0.010	3-hour average
PM/PM_{10} total (coke)	0.016/0.033	3-hour average
PM/PM_{10} total (coal)	0.016/0.025	3-hour average
$PM/PM_{2.5}$ total (coke)	0.016/0.026	3-hour average
$PM/PM_{2.5}$ total (coal)	0.016/0.018	3-hour average
VOC	0.0050	3-hour average
H_2SO_4 (coke)	0.0045/0.016	3-hour average
H_2SO_4 (coal)	0.0045/0.012	3-hour average

Although the proposed removal efficiencies are MACT and the emissions limits satisfies BACT, we are unable to make a recommendation on whether the following emissions limits for HCl and HF satisfy MACT.

Pollutant	Performance Standard (lb/MMBtu)	Compliance Demonstration Period
HCl (coke)	0.0013	3-hour average
HCl (coal)	0.005	3-hour average
HF (coke)	0.0004	3-hour average
HF (coal)	0.0003	3-hour average

SIGNED July 2, 2010.

PAUL D. KEEPER
ADMINISTRATIVE LAW JUDGE
STATE OFFICE OF ADMINISTRATIVE HEARINGS

KERRIE JO QUALTHROUGH
ADMINISTRATIVE LAW JUDGE
STATE OFFICE OF ADMINISTRATIVE HEARINGS

ATTACHMENT A

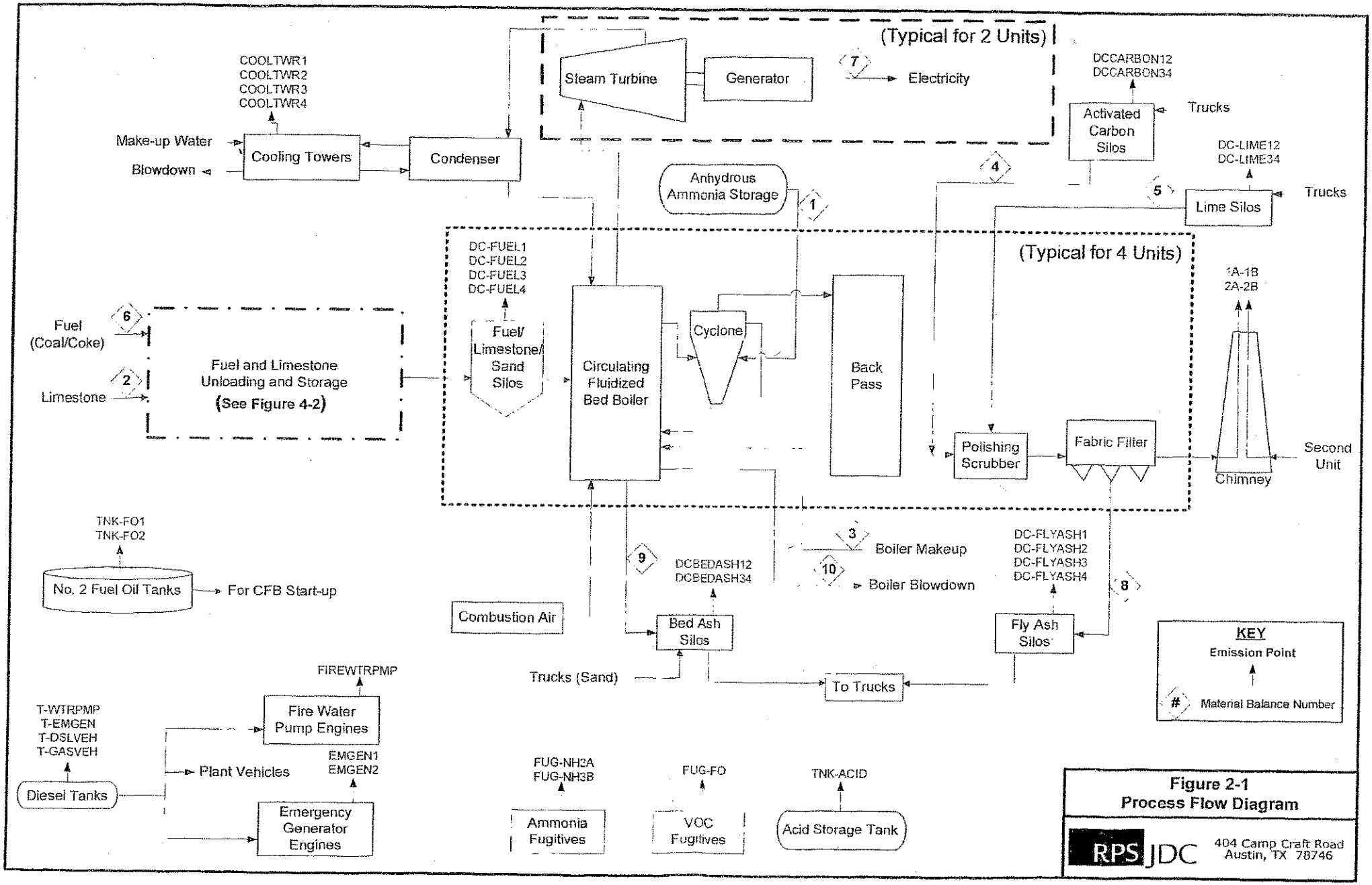
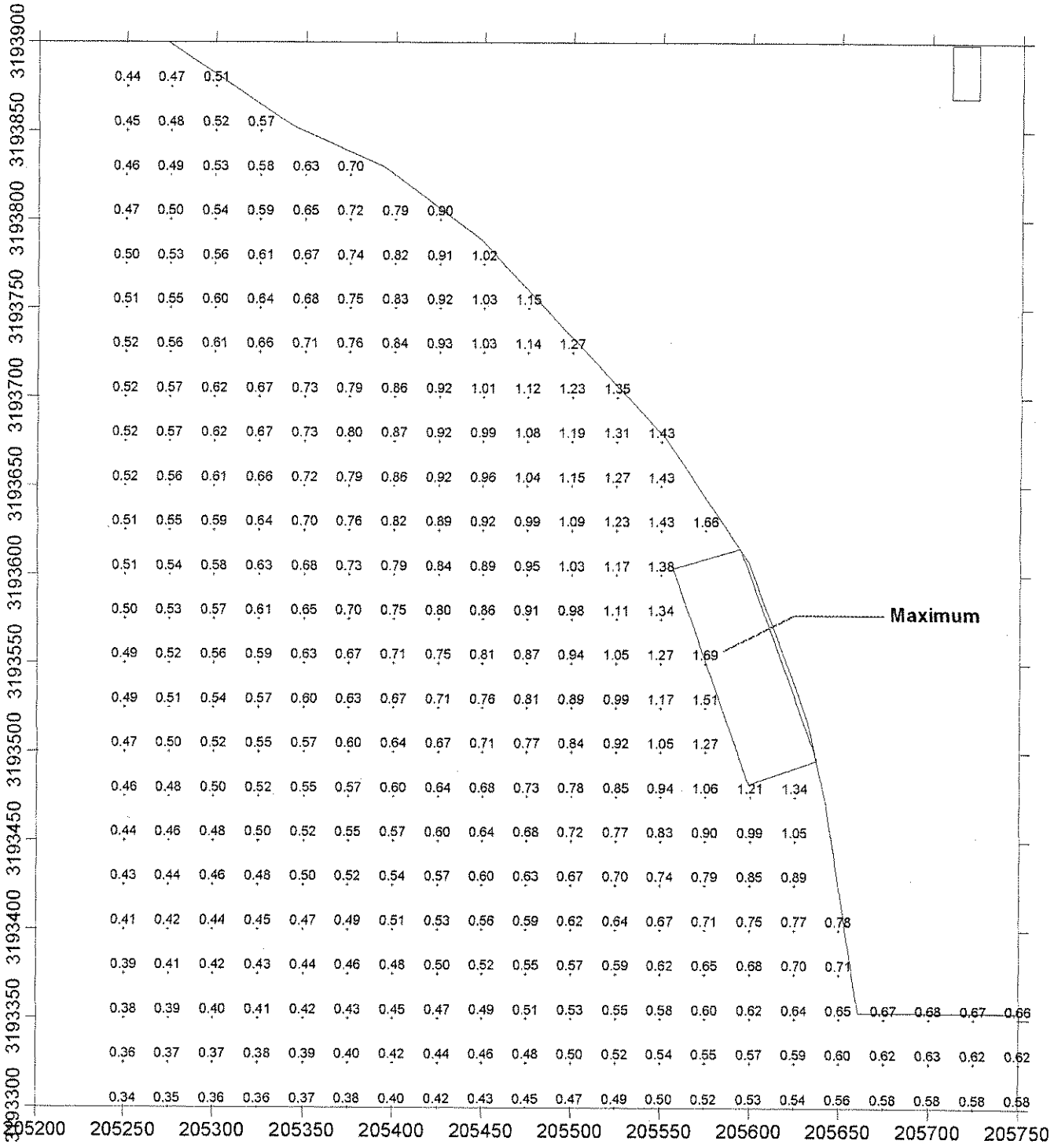


Figure 2-1
Process Flow Diagram

RPS JDC
404 Camp Craft Road
Austin, TX 78746

ATTACHMENT B



White Stallion Exhibit 213

ATTACHMENT C

Acronym	Full Name
$\mu g/m^3$	Micrograms per Cubic Meter
ALJ	Administrative Law Judge
AOCT	Any Other Control Technology besides the one proposed by the applicant or approved by the permitting authority
BACT	Best Available Control Technology
CAIR	Clean Air Interstate Rule
CAMR	Clean Air Mercury Rule
CCND	Calhoun County Navigation District
CEMS	Continuous Emission Monitoring Systems
CFB	Circulating Fluidized Boilers
CO	Carbon Monoxide
COMS	Continuous Opacity Monitoring System
EAB	Environmental Appeals Board
ED	Executive Director
EDF	Environmental Defense Fund
EKMA	Empirical Kinetics Modeling Approach
EPA	Environmental Protection Agency
ESL	Effects Screening Levels
ESP	Electrostatic Precipitator
EUSGU	Electric Utility Steam Generating Unit
FCAA	Federal Clean Air Act
FGD	Flue Gas Desulfurization
GLC	Ground-level Concentration
H2H	High, Second-Highest
H_2S	Hydrogen Sulfide
H_2SO_4	Sulfuric Acid
HAP	Hazardous Air Pollution
HCl	Hydrogen Chloride
HF	Hydrogen Fluoride
Hg	Mercury
IEPA	Illinois Environmental Protection Agency
IGCC	Integrated Gasification Combined Cycle
kW	Kilowatt
LAER	Lowest Achievable Emission Rate
lb/MMBtu	Pounds per Million British Thermal Units
LBEC	Las Brisas Energy Center
$\mu g/m^3$	Micrograms per Cubic Meter
MACT	Maximum Achievable Control Technology
MAERT	Maximum Allowable Emission Rate Table
MMBtu/hr	Millions of British Thermal Units per Hour
MW	Megawatt
NAAQS	National Ambient Air Quality Standards

ATTACHMENT C

Acronym	Full Name
NESHAPS	National Emission Standards for Hazardous Air Pollutants and New Source Performance Standards
NH_3	Ammonia
NNSR	Nonattainment New Source Review
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards. Standards of Performance for New Stationary Sources
NSR	New Source Review
OPIC	Office of Public Interest Counsel
PAL	Plant-wide Applicability Limit
PC	Pulverized Coal
PDS	Preliminary Determination Summary
PFD	Proposal for Decision
PM	Particulate matter
$PM_{2.5}$	Particulate Matter of less than 2.5 microns in diameter
PM_4	Particulate Matter of less than 4 microns in diameter
PM_{10}	Particulate Matter of less than 10 microns in diameter
ppb	Parts Per Billion
ppmv	Parts Per Million by Volume
ppmw	Parts Per Million by Weight
PSD	Prevention of Significant Deterioration
RACT	Reasonably Available Control Technology
RBLC	RACT/BACT/LAER Clearinghouse
RG	Regulatory Guidance
RTC	Response to Comments
SAM	Sulfuric acide mist
SC/NCC	Sierra Club/No Coal Coalition
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SNCR	Selective Non-Catalytic Reduction
SO_2	Sulfur Dioxide
SOAH	State Office of Administrative Hearings
TAC	Texas Administrative Code
TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Quality
TDS	Total dissolved solids
VCHEC	Virginia City Hybrid Energy Center
VOC	Volatile Organic Compounds
WLGD	Whatever the Last Guy Did
WSEC	White Stallion Energy Center

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

On _____, the Texas Commission on Environmental Quality (TCEQ or Commission) considered the application of White Stallion Energy Center LLC for Air Quality Permit Nos. 86088, HAP28, PAL26, and PSD-TX-1160. A Proposal for Decision (PFD) was presented by Paul Keeper and Kerrie Jo Qualtrough, Administrative Law Judges (ALJs) with the State Office of Administrative Hearings (SOAH), who conducted a contested case hearing in this case from February 10 through 18, 2010, in Austin, Texas.

After considering the ALJs' PFD, the Commission adopts the following Findings of Fact and Conclusions of Law:

I. FINDINGS OF FACT

Proposed Facility

1. On September 5, 2008, White Stallion Energy Center, LLC (WSEC) filed an application with the Texas Commission on Environmental Quality (TCEQ or Commission) for four permits (Permits) to construct and operate a new 1,200 net megawatt (MW) electric generation plant in Matagorda County, Texas.
2. There are no schools located within 3,000 feet of the proposed WSEC site.
3. WSEC proposes to construct and operate a new steam-electric utility generating facility using four circulating fluidized bed (CFB) boilers. A CFB boiler relies on high pressure air to improve combustion as the fuel moves across a surface of limestone.

4. WSEC proposes four water-cooled cooling towers, each with a cooling water circulation design of 161,000 gallons per minute.

5. The fuel and the limestone for the CFB beds will be delivered by barge, rail, or truck. The materials will be transported from the delivery site by partially enclosed conveyors to large stockpiles for storage. Activated carbon for mercury control, lime for sulfur dioxide (SO_2) control, and sand for CFB bed stabilization will be delivered by railcar or truck. The fly ash and boiler bottom ash solid wastes will be stored in silos near the boilers, loaded into trucks, and sent to an on-site landfill.

6. Emission control technologies will include selective non-catalytic reduction (SNCR), dry flue gas desulfurization (FGD), fabric filter baghouse, activated carbon injection, and good combustion practices.

7. The project will include seven liquid fuel storage tanks, a tank for the storage of acid for water treatment, and pressurized storage tanks for ammonia to be used for the control of nitrogen oxides (NO_x).

8. Combustion-type support facilities include two 2,800 kilowatt (kW) emergency electric generation engines and one 250 horsepower fire water-pump engine. Each engine will be limited to operate no more than 500 hours per year.

9. WSEC evaluated several alternative technologies, including integrated gasification combined cycle (IGCC) technology and pulverized coal (PC) boilers, before selecting CFB boilers fired by petroleum coke (pet coke) and coal as the appropriate means to meet its business objectives.

10. For the proposed WSEC facility, each CFB boiler will have a design maximum heat input of 3,300 million British thermal units per hour (MMBtu/hr). The gross electric output of the four generators will be about 1,320 MW. The net output—about 1,200 MW—is the difference between the power generated and the power required to operate the facility.

11. In addition to the CFB boilers, WSEC's ancillary equipment includes two diesel-fired emergency generators to provide electricity to WSEC in case of power failure; a diesel-fired pump engine to provide water in the event of a fire; various tanks to store ammonia for the SNCR system, acid for water-conditioning and pH control, No. 2 fuel oil for CFB boiler startup, and fuel for motor vehicles associated with the plant; cooling towers; and equipment associated with the receipt, handling, storage and processing of pet coke, coal, limestone, lime, activated carbon, sand and combustion by-products.

12. The proposed fuels are bituminous coal from the Illinois Basin and pet coke, a carbonaceous, high-ash byproduct of oil refining with a high heat content.

13. Low-sulfur distillate fuel oil is proposed as the CFB startup fuel.

14. On September 11, 2008, the Executive Director (ED) declared the application administratively complete.

15. On October 1, 2008, WSEC published a Notice of Receipt of Application and Intent to Obtain Air Permit.

16. Between December 22, 2008, and February 16, 2009, WSEC supplemented the application.

17. On March 9, 2009, the Commission referred the matter to the State Office of Administrative Hearings (SOAH) to conduct a contested case hearing and to issue a proposal for decision (PFD).

18. On March 13, 2009, the ED concluded that the application was technically complete, issued a draft permit, and recommended that the application be approved.

19. On March 15, 2009, WSEC published a combined Notice of Application and Preliminary Decision, Notice of Public Meeting, and Notice of Hearing. On March 30, 2009, a public meeting was held in Bay City, Texas.

20. By letter dated April 14, 2009, the U.S. Environmental Protection Agency (EPA) Region 6 submitted to TCEQ comments on the Draft Permit in which it: (1) recommended that TCEQ consider requiring continuous emission monitoring systems (CEMS) for particulate matter emissions; (2) asked TCEQ to reconcile a permit condition stating that compliance with the Plant-wide Applicability Limits (PAL) will be demonstrated with CEMS and the fact that PM CEMS were not required by the draft permit; (3) notified TCEQ that EPA was currently reviewing TCEQ's PAL rules and had not yet taken action to approve or disapprove them as part of Texas's State Implementation Plan (SIP); (4) asked TCEQ to request that WSEC forward to EPA Region 6 a final copy of the Startup/Shutdown written plan, when prepared; and (5) expressed concern about TCEQ's guidance for evaluating ozone impacts, and asked TCEQ to provide to EPA Region 6 photochemical modeling demonstrating what the effect of WSEC's emissions would be on specific ozone monitors in the Houston area.

21. On April 20, 2009, Administrative Law Judge (ALJ) Paul Keeper convened a preliminary hearing in Bay City, Texas. No party contested either notice or jurisdiction and jurisdiction was established.

22. At the preliminary hearing, the ALJ granted party status to the Environmental Defense Fund (EDF), the Sierra Club (SC), and the No Coal Coalition (NCC). SC and NCC shared counsel, and the ALJ treated SC and NCC as a single party for administrative purposes.

23. On October 2, 2009, the ED issued responses to public comments and a revised draft permit.

24. On February 10, 2010, ALJs Keeper and Kerrie Jo Qualtrough convened the hearing on the merits. On February 18, 2010, the ALJs adjourned the hearing.

25. Representatives of the parties at the hearing were:

Party	Status	Counsel
WSEC	Applicant	Eric Groten and Patrick Lee
EDF	Protestant	Tom Weber and Paul Tough
SC/NCC	Protestant	Layla Mansuri and Christina Mann
OPIC	Statutory	Scott Humphrey
ED	Statutory	Booker Harrison and Ben Rhem

26. The parties filed written closing arguments and briefs, responses, and proposed findings of fact and conclusions of law. On May 5, 2010, the ALJs closed the administrative record.

Completeness of the Application

27. WSEC's Application is for an air quality permit that would also satisfy the permitting requirements for PSD, case-by-case Maximum Achievable Control Technology (MACT), and PAL permitting requirements.

28. TCEQ assigned the Draft Permit State Air Quality Permit No. 86088, HAP Permit No. 28, PAL Permit No. 26, and PSD Permit No. PSD-TX-1160.

29. WSEC's application includes a complete Form PI-1 General Application signed by Randy Bird, an authorized WSEC representative. The application was also signed and sealed by Shanon DiSorbo, a Texas registered professional engineer.

30. WSEC paid the $75,000 permit fee.

31. WSEC provided all supplemental information required by TCEQ's PI-1 Form.

32. WSEC's Application addresses all sources of air emissions from WSEC that are subject to permitting under TCEQ's rules.

33. WSEC's Application includes a list of all facilities to be included in the PAL and their potential to emit and expected maximum capacity. The calculation procedures to be used to determine monthly and 12-month rolling emissions, and the monitoring and recordkeeping to be used to meet the requirements of 30 TEX. ADMIN. CODE (TAC) § 116.186, are also included in the Application.

34. The ED reviewed WSEC's Application to determine whether it complied with all applicable rules and policies and documented the conclusions of that review in an internal report called the "Construction Permit Source Analysis & Technical Review."

Emissions

35. WSEC's facility may emit NO_X, carbon monoxide (CO), SO_2, particulate matter (PM), including PM_{10} and $PM_{2.5}$, volatile organic compounds (VOC), lead, sulfuric acid (H_2SO_4), hydrogen fluoride (HF), ammonia (NH_3), hydrogen chloride (HCl), and mercury (Hg).

Location

36. The proposed facility will be located in Matagorda County, Texas. Matagorda County currently attains all national ambient air quality standards (NAAQS).

37. Matagorda County is adjacent to the Houston-Galveston-Brazoria nonattainment area. The region is a nonattainment area for many of the air quality measures, including NO_X, ozone (severe nonattainment), and other federally defined pollutants.

WSEC's Multiple Proposed Site Plans

38. WSEC has three pending applications: the current application under this docket number; an application for a wastewater discharge permit filed with the TCEQ; and a dredge and fill application filed with the United States Corps of Engineers. WSEC included a site plan with each application.

39. The site plan included with the application under this docket number is the site plan that is relevant to the issues in this contested case hearing.

30 TAC § 116.111(a)(2)(A): Protection of public health and welfare

40. WSEC performed atmospheric dispersion modeling to demonstrate that emissions from WSEC will be protective of public health and welfare.

41. Atmospheric dispersion modeling is the use of the scientific principles of atmospheric dispersion, embodied in a computerized mathematical model, to predict the maximum concentrations of emissions released from a source in the downwind ambient air.

42. WSEC used the American Meteorological Society/Environmental Protection Agency Regulatory Model, or "AERMOD," Version 07026. AERMOD is the latest generation of atmospheric dispersion models suitable for industrial sources, and is the model recommended by TCEQ.

43. TCEQ Staff performed an audit of the modeling report submitted by WSEC and determined that the modeling performed was acceptable for all types of regulatory review and for all pollutants.

44. WSEC modeled all emission sources associated with WSEC, but did not model road dust emissions.

45. TCEQ's modeling guidance explains the difficulties of accurately modeling road dust emissions, noting that "[c]ombined with worst-case operating scenarios, the modeling tool will overpredict concentrations, particularly in the vicinity of the source, and may incorrectly identify road emissions as the major cause of air pollution at a site."

46. WSEC's application includes barges or ships and the dockside vessel emissions must be included as an emission source. The barge unloading area is an area about 80 meters long and 30 meters wide.

47. The Commission's Air Quality Modeling Guidelines require the placement of receptors along property lines where possible and appropriate.

48. Fuel-laden barges would arrive at WSEC's proposed barge unloading facility on the Colorado River. Their cargo would be lifted and placed on a hopper and then moved by conveyors to storage sites. For each of these land-based events, WSEC modeled the land-based emissions using land-based receptors.

49. WSEC measured emissions from a 25-meter buffer zone surrounding the barges as they are unloading.

50. The TCEQ's Dockside Guidance Document's "set distance" approach for analyzing off-site receptors over water requires the placement of receptors beginning at a distance of 25 meters from the edge of the source instead of on the actual property line.

51. WSEC made proper use of the Dockside Guidance Document in relying on a 25-meter buffer zone.

52. Modeling of road dust emissions for averaging periods less than annual is not necessary.

53. Modeling of road dust emissions for an annual averaging period is not necessary if the emissions will not be generated in association with the transport, storage, or transfer of road-base aggregate materials, and the applicant plans to use best management practices to control any road dust emissions.

54. WSEC will be transporting no aggregate materials at WSEC site and will be required to use best management practices for minimizing dust, such as paving and cleaning all permanent plant roads.

55. WSEC assumed that the worst-case meteorological conditions for dispersion would occur simultaneously with the worst-case emissions scenario.

56. WSEC's modeling assumed that all emissions sources at WSEC would be operating simultaneously.

NAAQS Analysis

57. NAAQS are set by EPA and represent ambient concentrations at which no adverse health or welfare impacts are expected to occur.

58. EPA has set both primary and secondary NAAQS.

59. Primary or "health-based" NAAQS are set to protect the health of even the most sensitive individuals with an adequate margin of safety. Sensitive individuals include children, the elderly, and people with a pre-existing medical condition.

60. Secondary or "welfare-based" NAAQS are set to protect against welfare effects such as decreased visibility, effects on climate, effects on crops and other vegetation, effects on wildlife, and effects on the economy.

61. EPA has established primary and secondary NAAQS for six pollutants, referred to as the "criteria" pollutants: SO_2, two different size categories of particulate matter (PM_{10}, consisting of particles with diameters less than 10 microns, and $PM_{2.5}$, consisting of

particles with diameters less than 2.5 microns), ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), and lead.

62. WSEC directly modeled its emissions of SO_2, NO_2, CO, lead and PM_{10} for the purpose of demonstrating compliance with the NAAQS.

63. An applicant is not required to evaluate background concentrations of a particular criteria pollutant if the maximum modeled concentration of that pollutant is below the corresponding NAAQS de minimis level, in which case it is appropriate to conclude that the source's emissions of that pollutant will not cause any adverse health or welfare effects.

64. WSEC's modeling showed maximum concentrations exceeding the NAAQS *de minimis* levels for SO_2, NO_2 and PM_{10}. For these pollutants, WSEC considered the influence of other sources in the area by modeling non-WSEC emissions along with WSEC emissions, and also adding a conservative ambient background concentration to the modeled results.

SO_2 NAAQS

65. SO_2 NAAQS exist for three averaging periods: 3-hour (1,300 $\mu g/m^3$), 24-hour (365 $\mu g/m^3$), and annual (80 $\mu g/m^3$).

3-hour SO_2 NAAQS

66. The maximum modeled 3-hour average SO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area was 504.9 $\mu g/m^3$.

67. The maximum modeled 3-hour average SO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area, and incorporation of a conservative background concentration, was 566 $\mu g/m^3$.

68. WSEC's emissions will not cause or contribute to an exceedance of the 3-hour SO_2 NAAQS of 1,300 $\mu g/m^3$.

24-hour SO_2 NAAQS

69. The maximum modeled 24-hour average SO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area was 79.3 $\mu g/m^3$.

70. The maximum modeled 24-hour average SO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area, and incorporation of a conservative background concentration, was 109 $\mu g/m^3$.

71. WSEC's emissions will not cause or contribute to an exceedance of the 24-hour SO_2 NAAQS of 365 $\mu g/m^3$.

Annual SO_2 NAAQS

72. The maximum modeled annual average SO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area was 6.7 $\mu g/m^3$.

73. The maximum modeled annual average SO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area, and incorporation of a conservative background concentration, was 12 $\mu g/m^3$.

74. WSEC's emissions will not cause or contribute to an exceedance of the 24-hour SO_2 NAAQS of 80 $\mu g/m^3$.

NO_2 NAAQS

75. NO_2 NAAQS exist for two averaging periods: 1-hour (100 parts per billion) and annual (100 $\mu g/m^3$).

1-hour NO_2 NAAQS

76. EPA published the 1-hour NO_2 NAAQS in the Federal Register on February 9, 2010. It became effective on April 12, 2010.

77. Rules setting forth how the 1-hour NO_2 NAAQS should be implemented, including what significant impact level should be used in evaluating 1-hour NO_2 concentrations, have not yet been established.

78. The places that are most likely to have elevated short-term NO_2 levels are near heavily travelled roadways in urbanized areas, not in rural areas such as WSEC site in Matagorda County.

79. WSEC will be located on a large tract of land, in a rural setting with no nearby heavily traveled highways.

80. WSEC's emissions will not cause or contribute to an exceedance of the 1-hour NO_2 NAAQS of 100 parts per billion.

Annual NO_2 NAAQS

81. The maximum modeled annual average NO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area was 49.9 $\mu g/m^3$.

82. The maximum modeled annual average NO_2 concentration resulting from WSEC's emissions and emissions from other sources in the area, and incorporation of a conservative background concentration, was 60 $\mu g/m^3$.

83. WSEC's emissions will not cause or contribute to an exceedance of the annual average NO_2 NAAQS of 100 $\mu g/m^3$.

CO NAAQS

84. CO NAAQS exist for two averaging periods: 1-hour (40,000 $\mu g/m^3$) and 8-hour (10,000 $\mu g/m^3$).

1-hour CO NAAQS

85. The maximum modeled 1-hour average CO concentration resulting from WSEC's emissions is 326.4 $\mu g/m^3$, which was less than the modeling de minimis level of 2,000 $\mu g/m3$.

86. WSEC's emissions will not cause or contribute to an exceedance of the 1-hour CO NAAQS of 40,000 $\mu g/m^3$.

8-hour CO NAAQS

87. The maximum modeled 8-hour average CO concentration resulting from WSEC's emissions is 177.5 $\mu g/m^3$, which was less than the modeling de minimis level of 500 $\mu g/m^3$.

88. WSEC's emissions will not cause or contribute to an exceedance of the 8-hour CO NAAQS of 10,000 $\mu g/m^3$.

Lead NAAQS

89. Lead NAAQS exist for one averaging period, 3-month (0.15 $\mu g/m^3$).

90. The maximum modeled 3-month average lead concentration resulting from WSEC's emissions was 0.00049 $\mu g/m^3$.

91. The maximum modeled 3-month average lead concentration resulting from WSEC's emissions and incorporation of a conservative background concentration was 0.10049 $\mu g/m^3$.

92. WSEC's emissions will not cause or contribute to an exceedance of the 3-month lead NAAQS of 0.15 $\mu g/m^3$.

PM_{10} NAAQS

93. PM_{10} NAAQS exist for two averaging periods: 24-hour (150 $\mu g/m^3$) and annual (50 $\mu g/m^3$).

24-hour PM_{10} NAAQS

94. The maximum modeled 24-hour average PM_{10} concentration resulting from WSEC's emissions and emissions from other sources in the area was 28.2 $\mu g/m^3$.

95. The maximum modeled 24-hour average PM_{10} concentration resulting from WSEC's emissions and emissions from other sources in the area, and incorporation of a conservative background concentration, was 79 $\mu g/m^3$.

96. WSEC's emissions will not cause or contribute to an exceedance of the 24-hour PM_{10} NAAQS of 150 $\mu g/m^3$.

Annual PM_{10} NAAQS

97. The maximum modeled annual average PM_{10} concentration resulting from WSEC's emissions and emissions from other sources in the area was 6.2 $\mu g/m^3$.

98. The maximum modeled annual average PM_{10} concentration resulting from WSEC's emissions and emissions from other sources in the area, and incorporation of a conservative background concentration, was 30 $\mu g/m^3$.

99. WSEC's emissions will not cause or contribute to an exceedance of the annual average PM_{10} NAAQS of 50 $\mu g/m^3$.

$PM_{2.5}$ NAAQS

100. Demonstration of compliance with the PM_{10} NAAQS is sufficient to demonstrate compliance with the $PM_{2.5}$ NAAQS.

101. Although it was not required, WSEC modeled anticipated $PM_{2.5}$ emissions.

102. WSEC's analysis independently demonstrated that the $PM_{2.5}$ emissions were only about 10% of the PM_{10} emissions.

103. WSEC's emissions will not cause or contribute to an exceedance of the $PM_{2.5}$ NAAQS.

Ozone NAAQS

104. Ozone is one of the criteria pollutants for which EPA has set a NAAQS.

105. EPA does not require an applicant to predict the amount of ozone that its emissions will produce.

106. WSEC used estimates based on the TCEQ's "Air Quality Modeling Guidelines," included in which are Draft Ozone Procedures. The ED relies on these Commission publications in the evaluation of applications for state and federal air quality permit applications.

107. To evaluate a source's potential ozone impacts, TCEQ requires applicants to perform an evaluation technique set forth in written guidance.

108. The written guidance requires the applicant to determine whether the ozone NAAQS is already being exceeded in the area of the plant.

109. If the ozone NAAQS is not being exceeded, then the project's potential to cause a significant change to the ozone levels in the area is evaluated based on the methane-normalized VOC-to-NO_x ratio of its emissions.

110. WSEC relied on an ozone screening software tool, Empirical Kinetics Modeling Approach (EKMA), used by the Commission as part of the Draft Ozone Procedures.

111. WSEC relied on ozone monitor data from a monitor site at Aransas Pass in San Patricio County because no ambient ozone monitoring data was available for Matagorda County.

112. WSEC determined that Matagorda County would have an average ozone concentration of 74.7 ppb, less than the EPA-adopted 8-hour ozone standard of 75 ppb.

113. The Aransas Pass monitor data was taken from a Commission-maintained web site. The Aransas Pass monitor data was subject to a footnote explaining that the data "does not meet EPA quality assurance criteria and cannot be used for regulatory purposes."

114. The Aransas Pass monitor data may not be used for the regulatory purpose of determining ozone modeling in another county.

115. WSEC did not establish its compliance with the three-step Draft Ozone Procedures because of its reliance on the Aransas Pass monitor data.

State property line analysis

116. State property line standards, also called "Chapter 112 standards" or "NGLC standards," are maximum allowable concentrations resulting from emissions originating within a source's property line.

117. State property line standards are enforced only through actual measurement, but it is TCEQ's policy to require a preconstruction modeling demonstration that they are not likely to be exceeded.

118. WSEC will emit two substances for which state property line standards exist, SO_2 and sulfuric acid mist (H_2SO_4).

SO_2 state property line standard

119. An SO_2 state property line standard exists for one averaging period, 30 minutes (1,021 $\mu g/m^3$).

120. The maximum modeled 30-minute average SO_2 concentration resulting from WSEC's emissions was 351.9 $\mu g/m^3$.

121. WSEC's emissions will not cause an exceedance of the 30-minute average SO_2 state property line standard of 1,021 $\mu g/m^3$.

H_2SO_4 state property line standards

122. H_2SO_4 state property line standards exist for two averaging periods, 1-hour (50 $\mu g/m^3$) and 24-hour (15 $\mu g/m^3$).

1-hour H_2SO_4 state property line standard

123. The maximum modeled 1-hour average H_2SO_4 concentration resulting from WSEC's emissions was 27.4 $\mu g/m^3$.

124. WSEC's emissions will not cause an exceedance of the 1-hour average H_2SO_4 state property line standard of 50 $\mu g/m^3$.

24-hour H_2SO_4 state property line standard

125. The maximum modeled 24-hour average H_2SO_4 concentration resulting from WSEC's emissions was 6.2 $\mu g/m^3$.

126. WSEC's emissions will not cause an exceedance of the 24-hour average H_2SO_4 state property line standard of 15 $\mu g/m^3$.

State property line analysis summary

127. WSEC's emissions will not cause an exceedance of any state property line standard.

ESL analysis

128. To assist in evaluating the potential for adverse health or welfare effects from exposure to air contaminants for which no ambient standards exist, TCEQ has developed approximately 4,700 guideline levels called Effects Screening Levels (ESLs).

129. Some ESLs are based on health effects, while others are based on welfare effects including odor, nuisance, vegetation damage, or materials damage such as corrosion.

130. Health-based ESLs are set by TCEQ at levels lower than levels reported to produce adverse health effects, and are set to protect the general public, including sensitive subgroups such as children, the elderly, or people with existing respiratory conditions.

131. ESLs incorporate margins of safety to take into account even the most sensitive individual, typically using 1/100th of occupational health exposure limits for short-term ESLs and 1/1000th for long-term ESLs.

132. ESLs are typically lower, or more restrictive, than comparable guidelines established by the Environmental Protection Agency and other state air pollution control agencies.

133. If a modeled air concentration of a constituent is below the ESL, adverse effects are not expected. If an air concentration of a constituent is above the ESL, it is not indicative that an adverse effect will occur, but rather that further evaluation by a toxicologist is warranted.

134. Although there exist ESLs for certain substances such as hydrogen and carbon dioxide, no modeling of them is required because they are simple asphyxiants.

135. WSEC modeled expected emissions of the following substances for which no ambient standards exist: ammonia, aluminum, arsenic, beryllium, cadmium, calcium oxide, hydrogen chloride, chromium, copper, hydrogen fluoride, iron oxide, magnesium, manganese, mercury, nickel, potassium, selenium, silicon dioxide (silica), sodium, titanium, vanadium, gasoline, diesel, coal dust, pet coke, limestone, and calcium sulfate (gypsum).

136. WSEC did not model emissions of pollutants that would be present only in trace amounts, or pollutants for which modeling was not needed to conclude that the ESL will not be exceeded. ESLs are established for long-term (annual) and short-term (one-hour average) analysis. Exceedances of short-term ESLs are evaluated in terms of the number of hours and the frequency with which an emission exceeds the standard.

137. A health effects review begins with a Tier I analysis. If a receptor does not exceed the ESL for that pollutant, then the analysis ends.

138. If a receptor exceeds the ESL, then a Tier II examination is made. In Tier II, if the pollutant occurs at an industrial receptor and the concentration of the pollutant is more than twice the maximum ground level concentration of the ESL, then a Tier III analysis is

made. In Tier II, if the pollutant occurs at a non-industrial receptor and the concentration is equal to the maximum ground level concentration of the ESL, then a Tier III analysis is made.

139. A Tier III analysis is a case-by-case review, taking into account eight factors, including surrounding land use, type of toxic effects, magnitude of concentration, frequency of exceedance, and margins of safety.

Ammonia

140. The maximum modeled 1-hour average ammonia concentration resulting from WSEC's emissions was 47.5 $\mu g/m^3$, which is below the 1-hour ESL for ammonia of 170 $\mu g/m^3$.

141. The maximum modeled annual average ammonia concentration resulting from WSEC's emissions was 0.3 $\mu g/m^3$, which is below the annual average ESL for ammonia of 17 $\mu g/m^3$.

142. No adverse health or welfare effects will result from any emissions of ammonia from WSEC.

Aluminum

143. The maximum modeled 1-hour average aluminum concentration resulting from WSEC's emissions was 3.3 $\mu g/m^3$, which is below the 1-hour ESL for aluminum of 50 $\mu g/m^3$.

144. The maximum modeled annual average aluminum concentration resulting from WSEC's emissions was 0.098 $\mu g/m^3$, which is below the annual average ESL for aluminum of 5 $\mu g/m3$.

145. No adverse health or welfare effects will result from any emissions of aluminum from WSEC.

Arsenic

146. The maximum modeled 1-hour average arsenic concentration resulting from WSEC's emissions was 0.018 $\mu g/m^3$, which is below the 1-hour ESL for arsenic of 0.1 $\mu g/m^3$.

147. The maximum modeled annual average arsenic concentration resulting from WSEC's emissions was 0.0001 $\mu g/m^3$, which is below the annual average ESL for arsenic of 0.01 $\mu g/m^3$.

148. No adverse health or welfare effects will result from any emissions of arsenic from WSEC.

Beryllium

149. The maximum modeled 1-hour average beryllium concentration resulting from WSEC's emissions was 0.003 $\mu g/m^3$, which is below the 1-hour ESL for beryllium of 0.02 $\mu g/m^3$.

150. The maximum modeled annual average beryllium concentration resulting from WSEC's emissions was 0.00003 $\mu g/m^3$, which is below the annual average ESL for beryllium of 0.002 $\mu g/m^3$.

151. No adverse health or welfare effects will result from any emissions of beryllium from WSEC.

Cadmium

152. The maximum modeled 1-hour average cadmium concentration resulting from WSEC's emissions was 0.001 $\mu g/m^3$, which is below the 1-hour ESL for cadmium of 0.1 $\mu g/m^3$.

153. The maximum modeled annual average cadmium concentration resulting from WSEC's emissions was 0.00001 $\mu g/m^3$, which is below the annual average ESL for cadmium of 0.01 $\mu g/m^3$.

154. No adverse health or welfare effects will result from any emissions of cadmium from WSEC.

Calcium oxide

155. The maximum modeled 1-hour average calcium oxide concentration resulting from WSEC's emissions was 2.85 $\mu g/m^3$, which is below the 1-hour ESL for calcium oxide of 20 $\mu g/m^3$.

156. The maximum modeled annual average calcium oxide concentration resulting from WSEC's emissions was 0.18 $\mu g/m^3$, which is below the annual average ESL for calcium oxide of 2 $\mu g/m^3$.

157. No adverse health or welfare effects will result from any emissions of calcium oxide from WSEC.

Hydrogen chloride

158. The maximum modeled 1-hour average hydrogen chloride concentration resulting from WSEC's emissions was 82 $\mu g/m^3$, which is below the 1-hour ESL for hydrogen chloride of 190 $\mu g/m^3$.

159. The maximum modeled annual average hydrogen chloride concentration resulting from WSEC's emissions was 0.15 $\mu g/m^3$, which is below the annual average ESL for hydrogen chloride of 7.5 $\mu g/m^3$.

160. No adverse health or welfare effects will result from any emissions of hydrogen chloride from WSEC.

Chromium

161. The maximum modeled 1-hour average chromium concentration resulting from WSEC's emissions was 0.026 $\mu g/m^3$, which is below the 1-hour ESL for chromium of 1 $\mu g/m^3$.

162. The maximum modeled annual average chromium concentration resulting from WSEC's emissions was 0.0003 $\mu g/m^3$, which is below the annual average ESL for chromium of 0.1 $\mu g/m^3$.

163. No adverse health or welfare effects will result from any emissions of chromium from WSEC.

Copper

164. The maximum modeled 1-hour average copper concentration resulting from WSEC's emissions was 0.005 $\mu g/m^3$, which is below the 1-hour ESL for copper of 10 $\mu g/m^3$.

165. The maximum modeled annual average copper concentration resulting from WSEC's emissions was 0.0002 $\mu g/m^3$, which is below the annual average ESL for copper of 1 $\mu g/m^3$.

166. No adverse health or welfare effects will result from any emissions of copper from WSEC.

Hydrogen fluoride

167. The maximum modeled 1-hour average hydrogen fluoride concentration resulting from WSEC's emissions was 1.9 $\mu g/m^3$, which is below the 1-hour ESL for hydrogen fluoride of 5 $\mu g/m^3$.

168. The maximum modeled annual average hydrogen fluoride concentration resulting from WSEC's emissions was 0.0122 $\mu g/m^3$, which is below the annual average ESL for hydrogen fluoride of 0.5 $\mu g/m^3$.

169. No adverse health or welfare effects will result from any emissions of hydrogen fluoride from WSEC.

Iron oxide

170. The maximum modeled 1-hour average iron oxide concentration resulting from WSEC's emissions was 8.59 $\mu g/m^3$, which is below the 1-hour ESL for iron oxide of 50 $\mu g/m^3$.

171. The maximum modeled annual average iron oxide concentration resulting from WSEC's emissions was 0.2081 $\mu g/m^3$, which is below the annual average ESL for iron oxide of 5 $\mu g/m^3$.

172. No adverse health or welfare effects will result from any emissions of iron oxide from WSEC.

Magnesium

173. The maximum modeled 1-hour average magnesium concentration resulting from WSEC's emissions was 0.16 $\mu g/m^3$, which is below the 1-hour ESL for magnesium of 50 $\mu g/m^3$.

174. The maximum modeled annual average magnesium concentration resulting from WSEC's emissions was 0.0042 $\mu g/m^3$, which is below the annual average ESL for magnesium of 5 $\mu g/m^3$.

175. No adverse health or welfare effects will result from any emissions of magnesium from WSEC.

Manganese

176. The maximum modeled 1-hour average manganese concentration resulting from WSEC's emissions was 0.250 $\mu g/m^3$, which is below the 1-hour ESL for manganese of 2 $\mu g/m^3$.

177. The maximum modeled annual average manganese concentration resulting from WSEC's emissions was 0.0005 $\mu g/m^3$, which is below the annual average ESL for manganese of 0.2 $\mu g/m^3$.

178. No adverse health or welfare effects will result from any emissions of manganese from WSEC.

Mercury

179. The maximum modeled 1-hour average mercury concentration resulting from WSEC's emissions was 0.003 $\mu g/m^3$, which is below the 1-hour ESL for mercury of 0.25 $\mu g/m^3$.

180. The maximum modeled annual average mercury concentration resulting from WSEC's emissions was 0.00004 $\mu g/m^3$, which is below the annual average ESL for mercury of 0.025 $\mu g/m^3$.

181. No adverse health or welfare effects will result from any emissions of mercury from WSEC.

Nickel

182. The maximum modeled 1-hour average nickel concentration resulting from WSEC's emissions was 0.16 $\mu g/m^3$, which is above the 1-hour ESL for nickel of 0.15 $\mu g/m^3$.

183. The maximum modeled 1-hour average nickel concentration at a sensitive receptor resulting from WSEC's emissions was less than the 1-hour ESL for nickel.

184. The maximum modeled annual average nickel concentration resulting from WSEC's emissions was 0.0100 μg/m3, which is below the annual average ESL for nickel of 0.015 $\mu g/m^3$.

185. No adverse health or welfare effects will result from any emissions of nickel from WSEC.

Potassium

186. The maximum modeled 1-hour average potassium concentration resulting from WSEC's emissions was 0.610 $\mu g/m^3$, which is below the 1-hour ESL for potassium of 50 $\mu g/m^3$

187. The maximum modeled annual average potassium concentration resulting from WSEC's emissions was 0.0163 $\mu g/m^3$, which is below the annual average ESL for potassium of 5 $\mu g/m^3$.

188. No adverse health or welfare effects will result from any emissions of potassium from WSEC.

Selenium

189. The maximum modeled 1-hour average selenium concentration resulting from WSEC's emissions was 0.003 $\mu g/m^3$, which is below the 1-hour ESL for selenium of 2 $\mu g/m^3$.

190. The maximum modeled annual average selenium concentration resulting from WSEC's emissions was 0.00005 $\mu g/m^3$, which is below the annual average ESL for selenium of 0.2 $\mu g/m^3$.

191. No adverse health or welfare effects will result from any emissions of selenium from WSEC.

Silicon dioxide (silica)

192. The maximum modeled 1-hour average silica concentration resulting from WSEC's emissions was 29.7 $\mu g/m^3$,which is above the 1-hour ESL for silica of 14 $\mu g/m^3$.

193. Modeled 1-hour average silica concentrations resulting from WSEC's emissions exceeded the 1-hour ESL for silica of $\mu g/m^3$ two hours per year.

194. The maximum modeled annual average silica concentration resulting from WSEC's emissions was 0.24 $\mu g/m^3$, which is below the annual average ESL for silica of 0.33 $\mu g/m^3$.

195. No adverse health or welfare effects will result from any emissions of silica from WSEC.

Sodium

196. The maximum modeled 1-hour average sodium concentration resulting from WSEC's emissions was 0.285 $\mu g/m^3$, which is below the 1-hour ESL for sodium of 20 $\mu g/m^3$.

197. The maximum modeled annual average sodium concentration resulting from WSEC's emissions was 0.006 $\mu g/m^3$, which is below the annual average ESL for sodium of 2 $\mu g/m^3$.

198. No adverse health or welfare effects will result from any emissions of sodium from WSEC.

Titanium

199. The maximum modeled 1-hour average titanium concentration resulting from WSEC's emissions was 0.191 $\mu g/m^3$, which is below the 1-hour ESL for titanium of 50 $\mu g/m^3$.

200. The maximum modeled annual average titanium concentration resulting from WSEC's emissions was 0.006 $\mu g/m^3$, which is below the annual average ESL for titanium of 5 $\mu g/m^3$.

201. No adverse health or welfare effects will result from any emissions of titanium from WSEC.

Vanadium

202. The maximum modeled 1-hour average vanadium concentration resulting from WSEC's emissions was 0.7 $\mu g/m^3$, which is above the 1-hour ESL for vanadium of 0.5 $\mu g/m^3$.

203. The maximum modeled 1-hour average vanadium concentration at a sensitive receptor resulting from WSEC's emissions was 0.51 $\mu g/m^3$, which is approximately 2 percent higher than the 1-hour ESL of 0.5 $\mu g/m^3$, with a frequency of occurrence of one hour per year.

204. The maximum modeled annual average vanadium concentration resulting from WSEC's emissions was 0.048 $\mu g/m^3$, which is less than the annual average ESL for vanadium of 0.05 $\mu g/m^3$.

205. No adverse health or welfare effects will result from any emissions of vanadium from WSEC.

Gasoline vapor

206. The maximum modeled 1-hour average gasoline vapor concentration resulting from WSEC's emissions was 1039 $\mu g/m^3$, which is below the 1-hour ESL for gasoline vapor of 3500 $\mu g/m^3$.

207. The maximum modeled annual average gasoline vapor concentration resulting from WSEC's emissions was 3.05 $\mu g/m^3$, which is below the annual average ESL for gasoline vapor of 350 $\mu g/m^3$.

208. No adverse health or welfare effects will result from any emissions of gasoline vapor from WSEC.

Diesel vapor

209. The maximum modeled 1-hour average diesel vapor concentration resulting from WSEC's emissions was 149 $\mu g/m^3$, which is below the 1-hour ESL for diesel vapor of 1000 $\mu g/m^3$.

210. The maximum modeled annual average diesel vapor concentration resulting from WSEC's emissions was 0.43 $\mu g/m^3$, which is below the annual average ESL for diesel vapor of 100 $\mu g/m^3$.

211. No adverse health or welfare effects will result from any emissions of diesel vapor from WSEC.

Coal Dust

212. Coal dust is a component of PM emissions.

213. The occupational standard for coal dust is an 8-hour average of 900 $\mu g/m^3$.

214. The respirable portion of coal dust emissions creates toxicological concerns.

215. WSEC adjusted the PM emissions by 50 percent to model the respirable coal dust particles.

216. The ED's permit engineer gave the ED's toxicologist a list of 23 different substances that would be emitted as pollutants by the proposed WSEC facility.

217. Coal dust was not on the list provided to the ED's toxicologist.

218. Four substances, vanadium, nickel, HCl, and silica, exhibited concentrations that were sufficiently high to require health effects Tier II or III analyses.

219. Of these four, none exceeded the short-term ESL for more than seven hours, and none exceeded the long-term ESL at all.

220. The ED's toxicologist would have conducted a state effects review for coal dust if the substance had been on the list provided.

221. The ED's toxicologist was asked to review coal dust ESLs in the applications for the *NRG* and *IPA Coleto Creek* coal-fired power plants.

222. WSEC's coal dust exceedances extend into and across the Colorado River onto the opposite bank.

223. The application's proposed off-site exceedance of established ESLs for coal dust in ambient air would not protect the public health or physical property.

Pet coke

224. Pet coke is a component of particulate matter emissions.

225. The respirable portion of pet coke emissions is of toxicological concern.

226. WSEC applied an adjustment factor of 50 percent to the PM emissions.

227. The maximum modeled 1-hour average pet coke concentration resulting from WSEC's emissions was 52 $\mu g/m^3$, which is above the 1-hour average ESL for pet coke of 50 $\mu g/m^3$.

228. The maximum 1-hour average pet coke concentration at any residence according to the modeling was 23 $\mu g/m^3$, which is below the 1-hour average ESL for pet coke of 50 $\mu g/m^3$.

229. The maximum modeled annual average pet coke concentration resulting from WSEC's emissions was 1.14 $\mu g/m^3$, which is below the annual average ESL for pet coke of 5 $\mu g/m^3$.

230. No adverse health or welfare effects will result from any emissions of pet coke from WSEC.

Limestone

231. Limestone is a component of particulate matter emissions.

232. The maximum modeled 1-hour average limestone concentration resulting from WSEC's emissions was 102 $\mu g/m^3$, which is above the 1-hour average ESL for limestone of 50 $\mu g/m^3$.

233. The maximum 1-hour average limestone concentration at any residence according to the modeling was 44 $\mu g/m^3$, which is below the 1-hour average ESL for limestone of 50 $\mu g/m^3$.

234. The maximum modeled annual average limestone concentration resulting from WSEC's emissions was 1.74 $\mu g/m^3$, which is below the annual average ESL for limestone of 5 $\mu g/m^3$.

235. No adverse health or welfare effects will result from any emissions of limestone from WSEC.

Calcium sulfate (gypsum)

236. Gypsum is a component of particulate matter emissions.

237. The maximum modeled 1-hour average gypsum concentration resulting from WSEC's emissions was 53 $\mu g/m^3$, which is above the 1-hour average ESL for gypsum of 50 $\mu g/m^3$.

238. The maximum 1-hour average gypsum concentration at any residence according to the modeling was 19 $\mu g/m^3$, which is below the 1-hour average ESL for gypsum of 50 $\mu g/m^3$.

239. The maximum modeled annual average gypsum concentration resulting from WSEC's emissions was 0.27 $\mu g/m^3$, which is below the annual average ESL for gypsum of 5 $\mu g/m^3$.

240. No adverse health or welfare effects will result from any emissions of gypsum from WSEC.

Additional findings concerning air emissions

241. Emissions of particulate matter from the CFB boilers at WSEC will not be greater than the limit established under 30 TAC § 151.153(b) of 0.3 lb/MMBtu on a two-hour average basis.

242. Emissions of particulate matter from the stationary vents at WSEC will not exceed the opacity limit of 20 percent over a six-minute period established at 30 TAC § 111.111(a)(1)(B).

243. WSEC will comply with the limits on particulate matter emissions established under 30 TAC § 111.151.

244. WSEC's diesel fuel tanks, which will supply fuel to fire the emergency engines, will only store diesel fuels that meet the Chapter 114 specifications.

245. The unloading of diesel fuel from trucks into storage tanks at WSEC will be subject to and will comply with the control, inspection, and recordkeeping requirements of Chapter 115, Subchapter C, Division 1.

246. Emissions of SO_2 from the CFB boilers at WSEC will not exceed the limit established under 30 TAC § 112.8(a) of 3.0 lb/MMBtu on a 3-hour average basis.

247. The requirement to prepare a disaster review for WSEC was triggered by the on-site storage of anhydrous ammonia, which will be used as a reagent in the SNCR NO_x emission control equipment.

248. WSEC prepared a disaster review demonstrating that the disaster potential associated with the storage of anhydrous ammonia will be minimized and that the public health and welfare will be protected.

Best Available Control Technology (BACT): 30 TAC § 116.111(a)(2)(C)

249. TCEQ defines BACT as "best available control technology with consideration given to the technical practicability and the economic reasonableness of reducing or eliminating emissions from the facility." 30 TAC § 116.10(3).

250. To implement the BACT requirement, the TCEQ developed a regulatory guidance document entitled "Evaluating Best Available Control Technology (BACT) in Air Permit Applications," also known as RG-383.

251. RG-383 describes the process to conduct and evaluate BACT proposals submitted in an NSR air permit application.

252. The TCEQ BACT evaluation is conducted using a "tiered" analysis approach, involving three different tiers.

253. A Tier I evaluation involves a comparison of an applicant's BACT proposal to the emission reduction performance levels that have been accepted as BACT in recent permit reviews involving the same process or industry.

254. Evaluation of new technical developments may also be necessary under Tier I.

255. A Tier II evaluation involves consideration of controls that have been accepted as BACT in recent permits for similar air emission streams in a different process or industry.

256. A Tier III evaluation is a detailed technical and quantitative economic analysis of all emission reduction options available for the process under review.

257. Technical practicability is established through demonstrated success of an emission reduction option based on previous use, and/or engineering evaluation of a new technology.

258. In its permitting process, TCEQ relies on EPA's draft "October 1990 New Source Review Workshop Manual Prevention of Significant Deterioration and Nonattainment Area Permitting."

259. EPA defines BACT as an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant that would be emitted from any proposed major stationary source or major modification, which the reviewing authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

260. EPA uses a "top-down" approach for BACT analysis and requires the following steps: (1) identify all potential control technologies; (2) eliminate technically infeasible options;

(3) rank remaining control technologies by control effectiveness; (4) evaluate the most effective controls and document the results; and (5) select the BACT by choosing the best technology not eliminated in step four (based upon concerns regarding collateral energy, environmental, or economic impacts).

261. In its approval of the Texas SIP and PSD program, EPA determined that Texas was not required to use its top-down approach.

262. WSEC reviewed the permit requirements in two recently TCEQ-issued permits for CFB boilers: Formosa Plastics (Formosa), TCEQ Permit No. 76044/PSD-TX-1053; and Calhoun County Navigation District (CCND), TCEQ Permit No. 45586/PSD-TX-1055.

263. WSEC's BACT analysis was done in accordance with RG-383 and included a review of the RACT/BACT/LAER Clearinghouse (RBLC) database to collect information on control technologies required of CFBs by other states.

264. WSEC considered information from vendors and engineering experts on the most realistic emissions limits available with BACT, as well as other permit applications and state websites.

265. WSEC will utilize the most stringent emissions control technology.

266. There are no new technical developments that are both technically practicable and economically reasonable that offer the potential for WSEC to further reduce its emissions.

267. Each of WSEC's CFB boilers will be equipped with all of the control technologies accepted by TCEQ as BACT for Formosa's and CCND's CFB boilers, with the addition of activated carbon injection for mercury control, which was not required by TCEQ of either Formosa or CCND, and a post-combustion scrubber, which was not required by TCEQ of CCND.

268. WSEC performed its BACT analysis under Tier I in accordance with TCEQ guidance.

269. WSEC did not consider integrated gasification combined cycle (IGCC) technology as part of its BACT analysis because IGCC would constitute redefinition of WSEC's proposed CFB power plant design.

270. WSEC's decision to use bituminous coal from the Illinois Basin and pet coke as fuel for the proposed facility was a fundamental business decision that affected the design and location of the facility.

271. Pet coke is generated in the Gulf Coast region of Texas, providing a fuel source close to WSEC's facility.

272. The local availability of pet coke was an important factor in selecting the site and design of the facility.

273. The use of Illinois Basin coal would diversify the overall mix of fuels used for power generation in Texas since other solid-fuel generation in Texas is fueled by either Texas lignite or western sub-bituminous coals from the Power River Basin.

274. The consideration of cleaner fuels during the BACT analysis would result in a redefinition of the source.

The operational and design differences between a CFB boiler and a PC boiler are substantial and the emissions streams are different.

275. In addition to the Formosa and CCND BACT determinations and the information in the RBLC, WSEC also reviewed actual permits and permit applications, as well as data from state websites and information obtained through contacts with state regulators and utility representatives.

276. WSEC sought input from engineering firms and potential equipment providers in conducting its BACT analysis.

277. The ED performed his own BACT review of WSEC's project, which included consideration of the RBLC as well as the air permits recently issued for CFBs in Texas (CCND, Formosa Plastics, and Sandow 5) and the draft permit developed for Las Brisas Energy Center.

278. The ED concluded that WSEC's control technologies and emission limits constituted BACT, and documented his reasons for approving slightly different emission rates than those listed in the RBLC for a few of the plants.

279. The specific fuel used by a combustion device affects its emission rates, and must be taken into account when setting permit limits.

280. There are several kinds of coals available, including bituminous, sub-bituminous, lignite and others. Within the bituminous category, the chemical makeup of the coal varies from basin to basin, and, to a lesser degree, from seam to seam.

281. The results of isolated stack tests conducted on emissions at other plants do not establish the emission levels achieved during all operating scenarios, and therefore should not be used to set BACT-based limits at WSEC.

NO_x

282. In conducting its BACT analysis, WSEC limited its consideration of other BACT determinations to those made for other CFB projects, and did not include consideration of PC boilers.

283. WSEC will use selective non-catalytic reduction (SNCR) for additional NO_x removal.

284. SNCR requires high temperatures in the range of 1,600° to 1,800° fahrenheit to function properly.

285. WSEC will inject ammonia into the gases leaving the boiler, which will react with NO_x to form nitrogen and water that is then emitted into the air.

286. Using SNCR technology, the BACT emission limits for NO_x are 0.10 lb/MMBtu (hourly limit) and 0.070 lb/MMBtu (30-day average).

287. WSEC's 30-day rolling average NO_x limit of 0.070 pound per million British thermal units (lb/MMBtu) is the most stringent limit for any pet coke or coal-fired CFB plant in the U.S. It also is the lowest emission rate that Alstom Power and Foster Wheeler, the two vendors that manufacture CFBs in the 300 MW range, would guarantee.

288. In addition to SNCR, WSEC and the ED investigated use of another technology to control NO_x emissions, selective catalytic reduction (SCR), which uses a catalyst bed to promote the ammonia-NO_x reactions.

289. SCR is not a new technical development—it has been in existence for decades.

290. No permitting authority has ever determined that SCR in any configuration represents BACT for a CFB.

291. There are no coal or pet coke-fired CFBs anywhere in the world that use SCR in any configuration.

292. The high-dust configuration for SCR is not technically feasible because of catalyst poisoning or deactivation by calcium oxide in the flue gas stream from the limestone introduced during combustion for sulfur emissions capture.

293. High-dust SCR on a CFB is not commercially available.

294. The only application of a tail-end SCR on a PC boiler in the U.S., the retrofitting of tail-end SCR at the Mercer power plant located within a nonattainment area in New Jersey, was the result not of a BACT determination, but of an EPA consent decree imposed to resolve violations of the Clean Air Act.

295. For the reactions to occur in an SCR, the flue gas temperature must be between 580°F and 750°F, whereas the flue gas temperature exiting a baghouse from a CFB unit is

typically 140°F. This means that the tail gas must be re-heated before treatment, with a substantial energy and emissions penalty.

296. Tail-end SCR is not technically feasible or economically reasonable.

297. A side effect of having to re-heat flue gases for treatment in a tail-end SCR would be increased emissions due to additional fuel combustion.

298. In a tail-end SCR configuration, some amount of calcium oxide still would remain in the flue gas, which would not be removed by the baghouse and would pose a risk of catalyst poisoning.

299. SNCR is an effective NO_x control for CFBs, and does not have the same problems associated with SCR.

SO_2

300. WSEC will use two systems for SO_2 control: the CFB combustion process; and a dry flue gas desulfurization (FGD). These two systems and their combined control efficiency of 99 percent are BACT for the control of SO_2.

301. The following emission limits are BACT for SO_2: 0.114 lb/MMBtu (30-day rolling average) and 0.086 lb/MMBtu (12-month average) while burning pet coke; and 0.063 lb/MMBtu (30-day rolling average) and 0.063 lb/MMBtu (12-month average) while burning coal.

302. Wet FGD is not a new technological development. Wet FGD on a CFB is not technologically practicable or economically reasonable for the control of SO_2.

303. The RBLC indicates that there are CFBs with lower permitted SO2 emission rates, but this is a function not of superior control technology performance—they all use limestone bed and a dry FGD with a combined control efficiency of less than 99%—but of lower sulfur concentrations in the fuel.

304. Fuel selection is based on availability, reliability, performance, cost, and other factors, and changing the fuel source in the course of the BACT analysis would likely throw other design considerations into question, including the economics of the project.

305. Wet FGD requires more energy and water to operate, and produces a scrubber sludge waste stream

PM

306. To control PM/PM_{10} emissions, WSEC will equip its CFB boilers with fabric filter baghouses. The injection of limestone into the boilers and use of a dry FGD will further reduce PM emissions.

307. Total PM is the sum of filterable PM and condensable PM.

308. Texas is one of a few states that sets emissions limits for total PM.

309. EPA's reference test method for condensable PM has an erratic and positive bias, and EPA proposed a new test method on March 25, 2009. EPA's proposed test method is expected to be more accurate. As of the date of the evidentiary hearing, EPA had not adopted this new test method.

310. There is scientific uncertainty in the measurement of condensable PM, a constituent of total PM.

311. There is variation in the total PM emission limits of other CFBs in the RBLC. The emission limits range from 0.012 to 0.050 lb/MMBtu, with WSEC's limits falling within that range.

312. WSEC has a vendor guarantee for 0.016 lb/MMBtu for total PM for both fuels.

313. The following emission limit is BACT for the control of filterable PM/PM_{10}: 0.010 lb/MMBtu based on a 3-hour average.

314. The following emission limit is BACT for the control of total PM: 0.016 lb/MMBtu based on a 3-hour average.

315. The following emission limit is BACT for the control of total $PM_{2.5}$: 0.016 lb/MMBtu based on a 3-hour average.

316. The use of a wet electrostatic precipitator (ESP) is not a new technological development for use on a CFB. Wet ESP is not technologically practicable or economically reasonable. A wet ESP is not BACT for the control of total PM on a CFB.

317. The technology that controls PM_{10} emissions is the same technology that controls $PM_{2.5}$. Because $PM_{2.5}$ is a percentage of PM_{10}, WSEC's control technologies will also control emissions of $PM_{2.5}$.

318. WSEC's BACT analysis properly addressed $PM_{2.5}$ emissions as a subset of PM/PM_{10}.

Lead

319. Any lead emissions from each of the CFB boilers would be in the form of particulate matter, and would be controlled by the fabric filter baghouse.

Mercury

320. WSEC will use a combination of limestone injection, a fabric filter baghouse, and activated carbon injection for the control of mercury emissions.

321. Recent Texas permits have not required the use of activated carbon injection to control mercury. Activated carbon injection is a new technology that is technically practicable and economically reasonable to control mercury emissions.

322. WSEC's control systems are BACT for the control of mercury.

323. The following emission limit is BACT for the control of mercury: 0.86×10^{-6} lb/MMBtu based on a 12-month average.

324. The mercury emission rate is directly influenced by the amount of mercury in the coal.

Ammonia

325. Emissions of ammonia from the CFB boilers will be controlled through the use of operational instrumentation systems to limit the ammonia injection rate such that the annual average ammonia slip from the SNCR system will be less than 5 parts per million by volume (dry, corrected to 3% oxygen).

CO

326. WSEC will use good combustion practices to control CO emissions. There are no other existing control measures to reduce emissions of CO.

327. The following emission limit is BACT for the control of CO: 0.10 lb/MMBtu based on a 12-month rolling average.

328. An oxidation catalyst cannot be used at a CFB plant such as WSEC because of the problem of catalyst fouling.

VOCs

329. WSEC will use good combustion practices to control VOCs.

330. The following emission limit is BACT for the control of VOCs: 0.005 lb/MMBtu based on a 3-hour average.

331. The use of an oxidation catalyst to control VOCs is not a new technology for use on a CFB.

332. Since an oxidation catalyst must be used in conjunction with an SCR, it is not technically practicable or economically reasonable to use on a CFB.

333. An oxidation catalyst is not BACT for the control of VOCs on a CFB.

H_2SO_4

334. H_2SO_4 is Sulfuric acid mist (SAM) and is an acid gas that is a component of condensable PM emissions.

335. WSEC will control H_2SO_4 through the use of a limestone bed CFB and a dry FGD, which will provide a 95 percent removal efficiency.

336. WSEC's control technology and 95 percent removal efficiency is BACT for the control of H_2SO_4 on a CFB.

337. H_2SO_4 is a constituent of condensable PM and there is uncertainty in the test methods and inaccuracies in the results.

338. The following emission limit is BACT for H_2SO_4: 0.0045 lb/MMBtu based on a 3-hour average for both fuels.

Hydrogen Chloride (HCl) and Hydrogen Fluoride (HF)

339. WSEC will control the emission of HCl and HF through the injection of limestone into the boilers and the use of polishing scrubbers.

340. These control methods will provide a 98 percent removal efficiency for the removal of HCl and 95 percent removal efficiency for the removal of HF. These removal efficiencies are BACT for the control of HCl and HF.

341. The following limits are BACT for the control of HCl: 0.0013 lb/MMBtu on a 3-hour average when firing pet coke and 0.005 lb/MMBtu on a 3-hour average when firing coal.

342. The following limits are BACT for the control of HF: 0.0004 lb/MMBtu on a 3-hour average when firing pet coke and 0.0003 lb/MMBtu on a 3-hour average when burning coal.

Control of emissions from the CFB boilers during startup

343. WSEC will be required to prepare and submit to TCEQ a written Startup, Shutdown, and Malfunction Plan, which will detail procedures for minimizing emissions during startup, including starting-up with No. 2 fuel oil and minimizing the length of time to achieve steady-state operations.

Material handling facilities

344. WSEC will minimize emissions from material handling facilities through a combination of partial or total enclosure of conveyors; use of water and/or dust suppression, where technically practical, at transfer points, conveyors, and stockpiles; and use of fabric filter baghouses where technically practical. These control methods are consistent with those approved by TCEQ for material handling emissions at recently permitted coal-fired power plants.

Diesel-fired emergency generators and fire water pump

345. WSEC will minimize emissions from the diesel-fired emergency generators and fire water pump through proper engine operation and limiting the number of annual operating hours to less than 500.

Storage tanks

346. WSEC will minimize emissions from storage tanks by using fixed roof tanks that are submerged-filled, and, with the exception of the gasoline vehicle tank, storing materials with a vapor pressure less than 0.5 psia. The tank storing gasoline for vehicles will be less than 25,000 gallons.

347. The anhydrous ammonia storage tanks are pressure tanks and will not have any emissions during normal operations.

Fugitive emissions from process equipment in ammonia service

348. WSEC will minimize fugitive emissions from process equipment in ammonia service by using an audio/visual/olfactory leak detection and repair program.

Cooling towers

349. WSEC will control PM emissions from cooling towers by minimizing the drift rate through cooling tower design and by using mist eliminators. No additional technologies are available for drift control.

350. The use of air-cooled condensers, or dry cooling, is not a technology to control emissions, but a different method of cooling the plant processes.

351. Dry cooling results in less electrical generation, higher capital costs, more noise, higher auxiliary power requirements, larger footprint requirements, and higher maintenance costs due to the large number of fans.

352. Because dry cooling creates a parasitic load, more fuel input is required to produce the same amount of electricity, and so more plant emissions are produced.

353. By replacing the wet cooling system with a dry cooling system, WSEC would be more than doubling the associated PM_{10} emissions, and increasing emissions of other pollutants as well.

30 TAC § 116.111(a)(2)(G): Performance demonstration

354. WSEC provided information sufficient to demonstrate that WSEC has been planned to operate, and can and will be operated in a manner such that the performance specified in the Application and the Draft Permit will be achieved.

355. WSEC will be required by the terms of the Draft Permit to demonstrate achievement of the performance specified in the Application once WSEC is operating.

356. WSEC will be required by the terms of the Draft Permit to perform testing of emissions from the CFB boilers and various other emission sources, and operate CEMS and COMS on the CFB boiler stacks to demonstrate continuous compliance with certain emissions and opacity limits.

357. WSEC will be required by the terms of the Draft Permit to maintain, report, and make available a variety of records related to the fuels it uses and its ongoing operations under the permit – records that will be available to TCEQ to confirm that the facilities achieve the performance represented in the Application and specified in the Draft Permit.

30 TAC § 116.111(a)(2)(H): Nonattainment review

358. WSEC will be located in Matagorda County, Texas, which is not a designated nonattainment area for any air contaminant; therefore, it is not subject to nonattainment new source review requirements.

Federal Standards of Review for Constructed or Reconstructed Major Sources of Hazardous Air Pollutants (HAPs): 30 TAC § 116.111(a)(2)(K) (Case-By-Case MACT).

359. EPA's definition states:

> Maximum achievable control technology (MACT) emission limitation for new sources means the emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major source. 40 CFR § 63.41.

360. The TCEQ's definition mirrors the EPA's definition. 30 TAC § 116.15.

361. WSEC prepared an FCAA § 112(g) case-by-case MACT analysis as part of the application and applied for a HAP Major Source Permit to establish case-by-case MACT requirements.

362. The case-by-case MACT analysis was complete and included all information necessary for the ED to render a case-by-case MACT determination for WSEC facility.

363. ED staff reviewed the case-by-case MACT analysis and determined it to be complete and in compliance with all applicable rules and policies as documented in the Administrative Record.

364. Based on the case-by-case MACT analysis contained in the Application and other information available to the ED, the ED followed the proper procedure for case-by-case MACT determination for WSEC facility as described in the Preliminary Determination Summary.

365. WSEC performed the case-by-case MACT analysis in two primary steps. In the first step, WSEC established the "MACT floor" or the most stringent limitation achieved in practice by the best controlled similar source. In the second step, WSEC performed a "beyond-the-floor" analysis of the other methods for potentially reducing emissions to a greater degree, considering such factors as the cost of achieving such emissions reductions and any non-air quality health and environmental impacts and energy requirements to establish whether further reductions are achievable.

366. WSEC's facility may emit four categories of HAPs: non-mercury HAP metals, which are emitted as PM; mercury; organic HAPs; and acid gases, which include HCl and HF.

367. WSEC developed emission limits for five pollutants, with two of these pollutants serving as surrogates for two categories of HAPs. The five specific emissions limits proposed in the MACT application are: CO, for organic HAPs; filterable PM, for non-mercury HAP metals; mercury; HCl; and HF.

368. All necessary HAPs were evaluated as part of WSEC's MACT analysis.

369. There are no technologies available for controlling emissions of any specific non-mercury metals from WSEC beyond a fabric filter baghouse.

370. WSEC will use CO as a surrogate for organic HAPs. Organic HAPs are a subset of the VOC emissions and both VOCs and CO are products of incomplete combustion. The use of CO as a surrogate for ensuring the required MACT level of control for organic HAPs is appropriate because low levels of CO in the flue gas are indicators of good combustion, and thus good indicators of the destruction of the organic HAPs. The CO emission limit represents the MACT emission limit for organic HAPs.

371. WSEC will use filterable PM as a surrogate for non-mercury HAP metals. The use of filterable PM is an appropriate surrogate for ensuring the required MACT level of control for non-mercury HAP metals because filterable PM and non-mercury HAP metals have common formation mechanisms and control techniques. The filterable PM limit will set a MACT emission limit for non-mercury HAP metals.

372. EPA and the TCEQ define the term "similar source" as "a stationary source or process that has comparable emissions and is structurally similar in design and capacity to a constructed or reconstructed major source such that the source could be controlled using the same control technology." 40 CFR § 63.41; 30 TAC § 116.15(10).

373. A MACT analysis should review facilities with similar combustion technology. Flue gases from CFBs and PCs have different concentrations of pollutants and different physical properties. The type of fuel burned has a major impact on the amount and type of pollutants emitted from the facility.

374. Evaluating facilities with similar combustion processes is sufficient to determine the best controlled similar source in a MACT analysis. WSEC properly evaluated the best controlled similar sources in its MACT analysis.

375. A removal efficiency of 90 percent and limit of 0.86×10^{-6} lb/MMBtu is MACT for the control of mercury at WSEC facility.

376. A filterable PM limit of 0.010 lb/MMBtu is MACT for the control of non-mercury HAP metals.

377. A 98 percent removal efficiency for HCL is MACT for the control of this pollutant.

378. A 95 percent removal efficiency for HF is MACT for the control of this pollutant.

379. A CO limit of 0.010 lb/MMBtu based on a 12-month average is MACT for the control of non-mercury HAP metals.

380. Utilization of good pollution control practices to meet the hourly emission limits set forth in the Maximum Allowable Emission Rate Table (MAERT) of the Draft Permit is MACT for start-up and shut down emissions from WSEC facility.

381. WSEC is required to comply with the lb/hr emission rates listed in the draft MAERT. The lb/hr emission rates in the MAERT are calculated directly from the BACT/MACT-based lb/MMBtu standards in Special Condition No. 10 using a MMBtu/hr conversion factor.

382. The ED performed a review of WSEC's case-by-case MACT analysis, and determined that WSEC will apply MACT to control HAP emissions. The results of that determination are incorporated into the terms of the Draft Permit.

Special Condition 45

383. Special Condition No. 45 is not a substitute for determining BACT and MACT. Special Condition No. 45 allows for permit limits to be adjusted downward if actual emission levels prove to be less than the permitted limit.

Monitoring Provisions

384. To monitor compliance with applicable standards for PM, VOC, H_2SO_4, HCl, and HF, WSEC will conduct periodic stack sampling, install bag break detectors, and monitor the pressure drop across the baghouse to ensure that it is operating according to

manufacturers' guidelines. WSEC will use a continuous opacity monitoring system (COMS) to aid compliance with PM emission limits.

385. Neither Texas nor federal law requires WSEC to monitor PM emissions with a CEMS.

386. Bag break detectors, which alert the operator to any problems with the functioning of the fabric filter baghouse, have an advantage over PM CEMS in that they provide immediate feedback to the operator regarding the location of a bag break, which allows for faster, more directed corrective action to shut down a particular compartment right away if necessary to minimize PM emissions.

PAL Permit

387. EPA has not determined whether the TCEQ's rules regarding plantwide area permit limits comply with the SIP. EPA Region 6 has expressed no legal challenge to the Commission's authority to grant WSEC's application under the current PAL rules.

30 TAC § 116.111(a)(2)(L): Mass cap and trade allowances

388. WSEC will not be located in the Houston-Galveston-Brazoria nonattainment area.

Compliance history

389. WSEC's compliance history is classified as "average by default" because it is a new entity.

Draft permit

390. The special conditions contained in the Draft Permit are comparable to those contained in other permits issued by the TCEQ.

391. As designed, is expected to comply with the terms of the Draft Permit.

392. The Draft Permit prescribes requirements for demonstrating initial and ongoing compliance with all applicable requirements of the permit and of the Texas Clean Air Act (TCAA).

393. Special Condition No. 45 states that, if the first annual compliance sampling after startup indicates measured emission rates below 50 percent of the limits for certain pollutants, WSEC must, within 60 days, submit a request to adjust those limits to reflect the results of the testing.

394. Inclusion of Special Condition No. 45 in the Draft Permit did not affect the BACT determination for this project.

Transcript Costs

395. The ALJs required the court reporter to prepare the transcript, and no specific party actually requested it.

396. All of the parties participated in the hearing. Although WSEC presented the most number of direct witnesses and the only rebuttal witnesses, the parties actively cross-examined each others' witnesses. All parties relied on the transcript in their closing arguments and replies. Each party benefitted from a hearing transcript.

397. The transcript costs are allocated equally among the three non-statutory parties: 1/3 to WSEC; 1/3 to EDF; and 1/3 to SC/NCC.

398. WSEC paid $7,529.75 for court reporting services. One-third of the fee for the court reporting services is $2,509.91.

Other remaining issues

399. With respect to all other contested issues and all unrefuted issues, the Application and the remainder of the evidentiary record contain sufficient factual information to satisfy all applicable statutory and regulatory requirements.

II. CONCLUSIONS OF LAW

Jurisdiction

1. The Commission has jurisdiction over WSEC's Application pursuant to TEX. HEALTH & SAFETY CODE Chapter 382 and TEX. WATER CODE Chapter 5.

2. WSEC's Application was directly referred to SOAH pursuant to TEX. WATER CODE § 5.557.

3. Pursuant to TEX. GOV'T CODE § 2003.047, SOAH has jurisdiction to conduct a hearing and to prepare a PFD in this matter.

4. Proper notice of WSEC's Application was provided pursuant to TEX. HEALTH & SAFETY CODE §§ 382.0516, 382.0517, and 382.056, 30 TAC § 39.601, *et seq.*, and TEX. GOV'T CODE §§ 2001.051 and 2001.052.

5. WSEC properly submitted a complete Application pursuant to TEX. HEALTH & SAFETY CODE §§ 382.0515 and 382.0518 and 30 TAC §§ 116.110, 116.111, 116.140, and 116.404.

Burden of Proof

6. Pursuant to 30 TAC §§ 55.210 and 80.17(a), in a contested case hearing involving an air quality permit application that has been directly referred, the burden of proof is on the applicant to prove by a preponderance of the evidence that the application satisfies all statutory and regulatory requirements.

7. Except as noted specifically in this Order, WSEC met its burden of proof that the Application satisfies all statutory and regulatory requirements.

8. WSEC did not meet its burden of proof regarding validity of the ozone monitor data, the health effects from coal dust, and the limits that satisfy MACT for HCl and HF.

TCAA Standards

9. Under Texas law, WSEC may not construct its proposed facility until it has obtained a permit from the Commission. TEX. HEALTH AND SAFETY CODE § 382.0518(a).

10. TEX. HEALTH AND SAFETY CODE § 382.0518(b) states:

> The commission shall grant within a reasonable time a permit or permit amendment to construct or modify a facility if, from the information available to the commission, including information presented at any hearing held under Section 382.056(k), the commission finds:
>
> (1) the proposed facility for which a permit, permit amendment, or a special permit is sought will use at least the best available control technology, considering the technical practicability and economic reasonableness of reducing or eliminating the emissions resulting from the facility; and
>
> (2) no indication that the emissions from the facility will contravene the intent of [the TCAA], including protection of the public's health and physical property.

11. Under the FCAA, new major sources of HAPs are prohibited from commencing construction unless the source demonstrates it will achieve an emission standard equivalent to the "maximum achievable control technology emission limitation" for each HAP emitted. 42 U.S.C. § 7412(g).

> TEX. HEALTH AND SAFETY CODE § 382.0541(a) authorizes the Commission to require certain sources to use BACT, or MACT, if it is more stringent, and to establish MACT requirements.

30 TAC § 116.111(a)(2)(A): Protection of Public Health and Welfare

12. A demonstration of compliance with the PM_{10} NAAQS suffices to demonstrate compliance with the $PM_{2.5}$ NAAQS.

13. There is no legal requirement that WSEC consult with EPA on the ozone analysis for this project.

14. Low levels of ozone precursors may be allowed to flow into an ozone nonattainment area without that contribution legally violating the "cause or contribute to" standard set forth at 40 CFR 52.21(k), as incorporated into TCEQ's rules at 30 TAC § 116.160(c)(2)(B).

15. Since WSEC relied on data in San Patricio County that does not meet quality assurance criteria and cannot be relied on for any regulatory purpose, WSEC did not meet its burden for proof that in accordance with 40 CFR 52.21(k), as incorporated into TCEQ's rules at 30 TAC § 116.160(c)(2)(B), WSEC's emissions will not cause or contribute to air pollution in violation of any NAAQS in any air quality control region, or any applicable maximum allowable increase over the baseline concentration in any area.

16. WSEC's emissions will comply with the opacity limits and particulate matter emission rates set forth in 30 TAC Chapter 111 concerning control of air pollution from visible emissions and particulate matter.

17. WSEC's emissions will comply with the sulfur compound emission requirements set forth in 30 TAC Chapter 112 concerning control of air pollution from sulfur compounds.

18. WSEC will comply with all applicable standards adopted by reference in 30 TAC Chapter 113.

19. WSEC's diesel fuel tanks will only store diesel that meets the specifications set forth in 30 TAC Chapter 114.

20. The unloading of diesel fuel from trucks into storage tanks at WSEC will comply with applicable control, inspection, and recordkeeping requirements set forth in 30 TAC Chapter 115.

21. WSEC is not subject to the rules set forth in 30 TAC Chapter 117 regarding the control of NO_X because it will not be located in an ozone nonattainment area.

22. WSEC is required to operate in compliance with any orders of the Commission relating to generalized and localized air pollution episodes under 30 TAC Chapter 118.

23. WSEC is not subject to the emission reduction plan requirements of 30 TAC Chapter 118.

24. In accordance with 30 TAC § 116.111(a)(2)(A)(i), emissions from WSEC other than coal dust and HCl and HF, will comply with all Commission rules and regulations and the intent of the TCAA, including protection of the health and property of the public.

25. WSEC is not required to evaluate any impacts from WSEC's emissions of substances that are not regulated under the TCAA, such as water vapor, nitrogen, methane, ethane, and carbon dioxide.

26. It was appropriate for WSEC to not model road emissions even for an annual averaging period.

27. The following standards or guidelines are appropriate to determine whether a source's emissions are likely to cause adverse health or welfare effects: National Ambient Air Quality Standards (NAAQS), Net Ground Level Concentration (NGLC) or "state property line" standards, and Effects Screening Levels (ESLs).

28. WSEC did not meet its burden of proof that, in accordance with 30 TAC § 116.111(a)(2)(A)(i), emissions of coal dust and HCl and HF will comply with all Commission rules and regulations and the intent of the TCAA, including protection of the health and property of the public.

29. Special Condition No. 20 of the Draft Permit should be revised to read as follows: Permanent plant roads shall be paved with a cohesive hard surface which can be and cleaned by sweeping and washing as necessary to maintain compliance with all TCEQ

rules and regulations. Other roads shall be sprinkled with water and/or surface crusting agents as necessary to maintain compliance with all TCEQ rules and regulations.

30 TAC § 116.111(a)(2)(B): Measurement of emissions

30. In accordance with 30 TAC §116.111(a)(2)(B), WSEC will have provisions for measuring the emission of air contaminants as determined by the Commission's ED.

31. WSEC will be required by the Draft Permit to properly install, operate, and maintain continuous emissions monitoring systems (CEMS) to provide a continuous demonstration of compliance with limits on emissions of NO_x, SO_2, CO, mercury and ammonia from the CFB boilers.

32. To monitor compliance with applicable standards for PM, VOC, H_2SO_4, HCl and HF, WSEC will be required by the Draft Permit to conduct periodic stack sampling and use other pollutant-specific techniques.

33. Other monitoring requirements in the Draft Permit include periodic sampling of fuel for sulfur and metals content.

34. For PM, in addition to periodic stack sampling, WSEC will install bag break detectors to monitor the pressure drop across the baghouse to ensure that it is meeting manufacturer guidelines for proper operation, and install and operate a continuous opacity monitoring system (COMS).

35. The ED considered and rejected requiring WSEC to use PM CEMS.

36. PM CEMS are an evolving technology that has not yet been required in permits in Texas.

37. PM CEMS have not been in existence long enough, or installed on enough sources, to provide a sufficient record of measurement from specific source categories to determine what limits are achievable on a continuous basis.

38. The Draft Permit's provisions for measuring emissions from WSEC are comparable to those required of similar facilities permitted by TCEQ.

39. The Draft Permit contains appropriate emissions-measuring provisions for each type of emission from each emission point, with consideration given to the relative significance of each, as well as to the measurement methods and data that were used to determine the limits, and any emissions-measurement requirements of federal programs such as the NSPS and Acid Rain Rules.

40. The methods for measuring emissions from WSEC required by the Draft Permit are adequate to assure compliance with the permit conditions and emissions limitations.

30 TAC § 116.111(a)(2)(D): New Source Performance Standards

41. In accordance with 30 TAC § 116.111(a)(2)(D), the emissions from WSEC will meet the requirements of any applicable NSPS as listed under 40 CFR Part 60, promulgated by the EPA under authority granted under Section 111 of the FCAA, as amended.

30 TAC § 116.111(a)(2)(E): National Emissions Standards for Hazardous Air Pollutants (NESHAP)

42. There are no national emissions standards for hazardous air pollutants (NESHAPs) applicable to facilities of a type including WSEC.

30 TAC § 116.111(a)(2)(F): NESHAP for Source Categories

43. The only NESHAP for source categories applicable to facilities of a type including WSEC are those set forth at 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines), which generally apply to the diesel-fired emergency generators at WSEC. However, only the initial notification requirements of those rules apply.

30 TAC § 116.111(a)(2)(G): Performance demonstration

44. In accordance with 30 TAC § 116.111(a)(2)(G), WSEC facilities will achieve the performance specified in the permit application.

30 TAC § 116.111(a)(2)(I): Prevention of Significant Deterioration

45. Except for the reliance on unapproved ozone monitor data, the lack of a health effects review for coal dust, and the inability to determine MACT for HCl and HF, in accordance with 30 TAC § 116.111(a)(2)(I), WSEC complies with all applicable requirements of Chapter 116 regarding PSD review.

46. WSEC did not comply with all applicable requirements of Chapter 116 regarding PSD review regarding reliance on unapproved ozone monitor data, the lack of a health effects review for coal dust, and the inability to determine MACT for HCl and HF.

30 TAC § 116.111(a)(2(J): Air Dispersion Modeling

47. In accordance with 30 TAC § 116.111(a)(2)(J), computerized air dispersion modeling was performed as required to determine the air impacts from WSEC.

30 TAC § 116.111(a)(2)(C): Best Available Control Technology

48. TCEQ defines BACT as, "[Best Available Control Technology] with consideration given to the technical practicability and the economic reasonableness of reducing or eliminating emissions from the facility." 30 TAC § 116.10(3).

49. The application of BACT, as defined at 40 CFR § 52.21(b)(12) or in EPA's top down methodology, would not result in more stringent emissions limits for WSEC's proposed facility.

50. In accordance with TEX. HEALTH & SAFETY CODE § 382.0518 and 30 TAC § 116.111(a)(2)(C), WSEC's facility will utilize BACT, with consideration given to

the technical practicability and economic reasonableness of reducing or eliminating emissions from its facilities.

51. There is no statutory or regulatory requirement to evaluate BACT for carbon dioxide emissions.

52. An applicant that is proposing to construct a circulating fluidized bed power plant is not required to include other electric generation technologies, such as integrated gasification/combined cycle (IGCC) technology, in its BACT analysis.

53. In the context of a Tier I review, "new technical developments" encompass only those occurring since the most recent permitting decisions.

30 TAC § 116.111(a)(2)(K): Hazardous Air Pollutants & Maximum Achievable Control Technology (MACT)

54. In accordance with 30 TAC § 116.111(a)(2)(K) and Chapter 116, Subchapter C, WSEC will utilize MACT to control emissions from the CFB boilers.

55. In accordance with 30 TAC § 116.111(a)(2)(K), WSEC has complied with all applicable requirements of Chapter 116 regarding case-by-case MACT review.

56. TCEQ rules found at 30 TAC §§ 116.400-406 implement 40 CFR Part 63, Subpart B, which govern Hazardous Air Pollutant from Constructed or Reconstructed Major Sources.

57. Under 40 CFR § 63.2, a hazardous air pollutant is "any air pollutant listed in or pursuant to section 112(b) of the [federal Clean Air Act]."

58. A "[s]ource" is "[a] point of origin of air contaminants, whether privately or publicly owned or operated. 30 TAC § 116.10(17).

59. An "affected source" is a "stationary source or group of stationary sources which, when fabricated (on-site), erected, or installed meets the criteria in §116.180(a)(1) and (2) of

this title (relating to Applicability) and for which no MACT standard has been promulgated under 40 CFR Part 63. 30 TAC § 116.15(1).

60. Major source is defined by 40 CFR § 63.2 as:

> any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, unless the Administrator establishes a lesser quantity, or in the case of radionuclides, different criteria from those specified in this sentence.

61. WSEC's facility would be a new major source of HAPs and an affected source as defined at 30 TAC § 116.15(1).

62. An affected source of HAPs is required to submit a permit application. 30 TAC § 116.404 states:

> Consistent with the requirements of 40 Code of Federal Regulations § 63.43 (concerning maximum achievable control technology determinations for constructed and reconstructed major sources), the owner or operator of a proposed affected source (as defined in §116.15(1) of this title (relating to Section 112(g) Definitions)) shall submit a permit application as described in §116.110 of this title (relating to Applicability).

63. MACT is defined by 30 TAC § 116.15(7) as:

> The emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the executive director, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major source.

64. Similarly, 40 CFR § 63.41 provides:

> *Maximum achievable control technology (MACT) emission limitation* for new sources means the emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy

requirements, determines is achievable by the constructed or reconstructed major source.

65. WSEC's facility is an affected source of HAPs for which no MACT standard is in place.

66. Under 30 TAC § 116.110, before any actual work is begun on the facility, any person who plans to construct any new facility or to engage in the modification of any existing facility which may emit air contaminants into the air of this state shall either obtain a permit under 30 TAC §116.111, or comply with an alternative requirement.

67. Except for the emissions limits for HCl and HF, based on the above Findings of Fact and Conclusions of Law, WSEC has made all demonstrations required under applicable federal and state laws and regulations, including 30 TAC § 116.404 regarding hazardous air pollutant major source permit applications, to be issued a hazardous air pollutant major source air quality permit with case-by-case MACT review.

68. In accordance with 30 TAC §§ 116.111(a)(2)(K) and 116.404, an application for a case-by-case MACT determination was properly conducted and submitted by WSEC to establish federally enforceable MACT emission limits.

69. The case-by-case MACT application for WSEC facility is complete and complies with all applicable requirements for a HAP major source permit found in 30 TAC Chapter 116 and 40 CFR Part 63 regarding MACT review, except for demonstrating emissions limits for HCl and HF that represent MACT

70. WSEC met its burden of proof regarding MACT for those HAPS other than HCl and HF.

71. WSEC's removal efficiencies for HCl and HF satisfy the requirements for MACT for the facility.

72. WSEC did not meet its burden of proof regarding whether the emissions limits for HCl and HF satisfy the requirements for MACT.

30 TAC § 116.111(a)(2)(B): Measurement of Emissions

73. In accordance with 30 TAC § 116.111(a)(2)(B), WSEC will have provisions for measuring the emission of air contaminants as determined by the ED.

30 TAC § 116.111(a)(2)(L): Mass cap and trade allowances

74. WSEC is not subject to the Mass Emissions Cap and Trade program.

WSEC's Permit

75. The special conditions in the permit are appropriately added under 30 TAC §§ 116.115(c)(1) and 116.186(c) and are consistent with the TCAA.

76. The PAL provisions of the permit are severable, meaning that their removal from the permit would have no effect on the rest of the permit terms and conditions.

77. Based on the above Findings of Fact and Conclusions of Law, WSEC has made all demonstrations required under applicable statutes and regulations, including 30 TAC § 116.111 regarding air permit applications, to be issued an air quality permit with PSD review.

78. Except for emissions of coal dust, HCl, and HF, in accordance with TEX. HEALTH & SAFETY CODE § 382.0518(b)(2), emissions from WSEC will not contravene the intent of the TCAA and will be protective of the public's health and physical property, consistent with the long-standing interpretation of the Commission's rules, regulations, and guidance.

79. Based on the above Findings of Fact and Conclusions of Law, WSEC has made all demonstrations required under applicable statutes and regulations, including 30 TAC § 116.182 regarding PAL permit applications, to be issued a PAL permit.

80. Based on the above Findings of Fact and Conclusions of Law, WSEC has made all demonstrations required under applicable statutes and regulations, including 30

TAC §§ 116.400 – 116.406 regarding HAP permit applications, to be issued a HAP permit.

81. In accordance with TEX. HEALTH & SAFETY CODE § 382.0518(b)(1), WSEC will use at least the BACT, considering the technical practicability and economic reasonableness of reducing or eliminating its emissions.

82. In accordance with TEX. HEALTH & SAFETY CODE § 382.0518(b)(2), emissions from WSEC will not contravene the intent of the TCAA and will be protective of the public's health and physical property, consistent with the long-standing interpretation of the Commission's rules, regulations, and guidance.

83. In accordance with Tex. Health & Safety Code §382.0518(b), the application for Air Quality Permit Nos. 86088, HAP28, PAL26 and PSD-TX-1160 should be approved and Air Quality Permit Nos. 86088, HAP28, PAL26 and PSD-TX-1160 should be issued with the following changes to Special Condition No. 20:

> Permanent plant roads shall be paved with a cohesive hard surface which can be and cleaned by sweeping and washing as necessary to maintain compliance with all TCEQ rules and regulations. Other roads shall be sprinkled with water and/or surface crusting agents as necessary to maintain compliance with all TCEQ rules and regulations.

Transcript Costs

84. Based on the above Findings of Fact, EDF and SC/NCC should each be required to reimburse WSEC for one-third of the total invoice, or $2,509.91 each.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, IN ACCORDANCE WITH THESE FINDINGS OF FACT AND CONCLUSIONS OF LAW, THAT:

1. Within 180 days, WSEC shall submit to the ED additional information addressing the deficiencies in its application regarding air dispersion modeling and state effects reviews.

2. Within 180 days, WSEC shall submit to the ED additional information regarding MACT for the HCl and HF

3. The ED's Response to Comments concerning WSEC's Air Permit NOs. 86088, HAP28, PAL26, and PSD-TX-1160 is adopted and approved. If there is any conflict between the Commission's Order and the ED's Response to Comments, the Commission's Order prevails.

4. EDF and SC/NCC are each required to reimburse WSEC for one-third of the total invoice, or $2,509.91 each.

5. The effective date of this Order is the date the Order is final, as provided by 30 TAC § 80.273 and TEX. GOV'T CODE § 2001.144.

6. The Chief Clerk of the Commission shall forward a copy of this Order to all parties and issue the attached permit as changed to conform to this Order.

7 All other motions, requests for specific Findings of Fact or Conclusions of Law, and other requests for general and specific relief, if not expressly granted, are denied for want of merit.

8. If any provision, sentence, clause, or phrase of this Order is for any reason held to be invalid, the invalidity of any portion shall not affect the validity of the remaining portions of this Order.

ISSUED:

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

_____

Bryan W. Shaw, Ph.D., Chairman
For the Commission