ARCHITECT OF THE CAPITOL

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March 28, 2012

Ms. Diana Esher
Director, Air Protection Division
US EPA Region III
1650 Arch Street (3AP00)
Philadelphia, PA 19103-2029

Dear Ms. Esher:

Per our previous communications with Ms. Kathleen Cox, enclosed please find two (2) copies of the air permit application to construct and operate a cogeneration plant at the U.S. Capitol Power Plant (CPP) of the Architect of the Capitol (AOC). A detailed application report and emission calculations are included as part of this submission. The submittal materials include all narratives, forms and emissions calculations provided to the District Department of the Environment (DDOE).

If you have any questions, or require additional information please feel free to contact me at 202.226.3864.

Sincerely,

C Potter

Christopher Potter
Acting Director, Utilities and Power
Architect of the Capitol
U.S. Capitol Power Plant
202.226.3864

cc: Sherry Deskins, AOC Environmental; Pete Kushner, AOC Legal Counsel; file

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COGENERATION PROJECT APPLICATION REPORT

Architect of the Capitol - Capitol Power Plant

ARCHITECT OF THE CAPITOL

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March 2012

Trinity Consultants

Environmental solutions delivered uncommonly well

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1. INTRODUCTION

The Capitol Power Plant (CPP) is submitting this permit to construct application to the District Department of the Environment (DDOE) and the U.S. Environmental Protection Agency (EPA) to install a cogeneration system at its facility. CPP is located at 25 New Jersey and E Street Southeast, Washington, D.C. The CPP was originally placed in operation in 1910 to supply steam for heating and electricity solely for the U.S. Capitol. In the ensuing years, additional facilities were added to the power plant load, increasing the demand for steam and chilled water to cool the buildings. In 1951, the CPP eliminated electrical energy production. Currently, the CPP serves 23 facilities throughout Capitol Hill, including the House and Senate office buildings, the Supreme Court, and the Library of Congress. In addition, the CPP also provides heating and cooling to the U.S. Government Printing Office, Union Station, and the Postal Square Building.

As part of the September 2009 Architect of the Capitol's (AOC's)/CPP's strategic long-term energy plan, cogeneration has been identified as a significant energy savings solution that can be implemented at this facility. This plan identifies cogeneration with electricity for direct consumption by the CPP. The cogeneration project will include two (2) combustion turbines (CTs) rated at 7.5 megawatts (MW) each and two (2) Heat Recovery Steam Generation (HRSG) units rated at approximately 71.9 million British thermal units per hour (MMBtu/hr) each. This permit application is being filed with the DDOE to obtain an air permit to construct for the addition of cogeneration at CPP.

This application contains the following sections:

Section 2: Project Description
Section 3: Regulatory Review
Section 4: Emissions Calculation Methodology
Appendix A: Application Forms
Appendix B: Emissions Calculations
Appendix C: Plantwide Applicability Limit (PAL) Application
Appendix D: Existing Plant Regulatory Applicability
Appendix E: Nonattainment PAL Baseline Period Selection

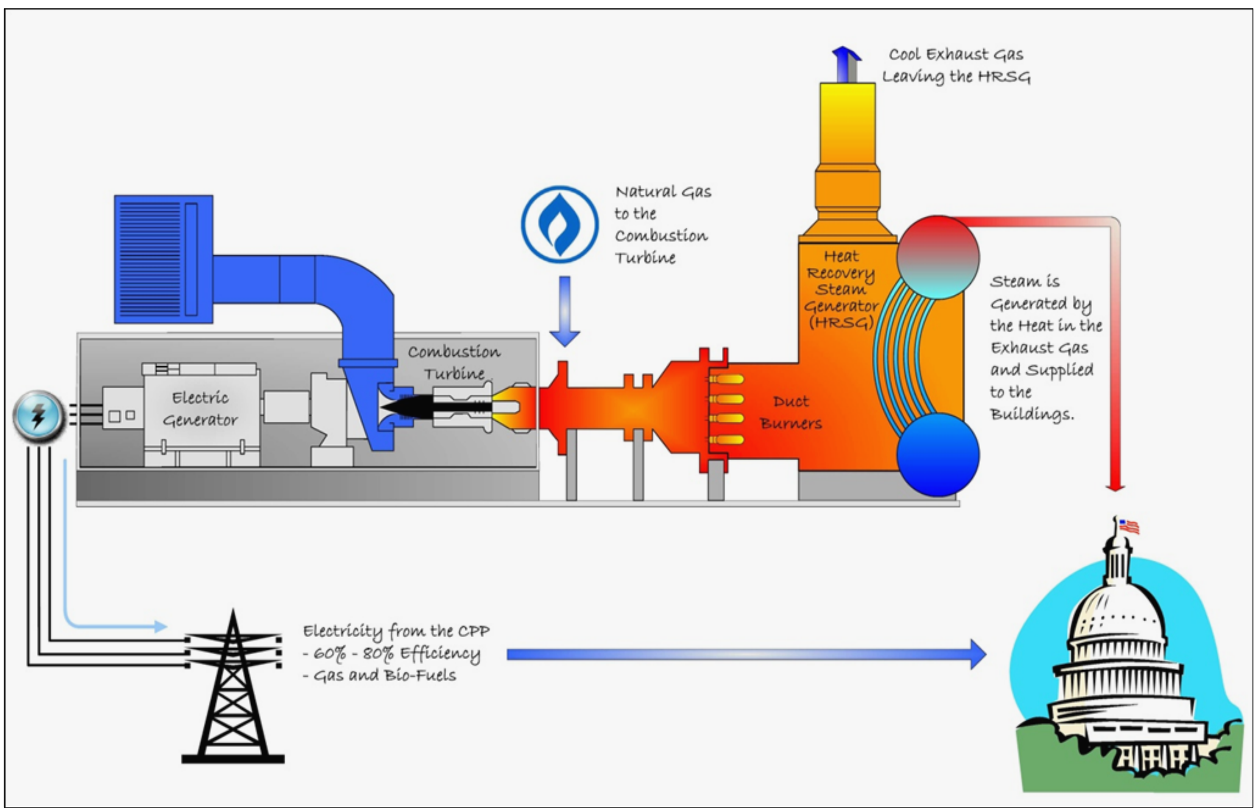
The proposed Cogeneration Plant at the CPP will use natural gas and ultra low sulfur diesel oil in two combustion turbines in order to very efficiently generate both electricity and heat for steam. The full design includes two (2) CTs rated at 7.5 MW each and two (2) HRSG units rated at approximately 71.9 MMBtu/hr each. These combustion turbines are inherently more energy efficient and have lower emissions intensity than the current boilers at CPP. As such, the project has the potential to reduce the CPP's current potential to emit of NO_x by up to approximately 80 percent.

Electrical power generated from the CTs would be fed into the CPP's electrical distribution system for consumption within the limits of the CPP facility for most of the year. The CPP electrical needs during the winter will be less than the Cogeneration Plant produces and the excess electricity will be fed to the other buildings within the AOC's portfolio for financial benefit.

Each turbine set will use a HRSG for the production of steam. Maximum steam generation production will be 180,000 pounds per hour and will reduce the need to utilize existing boiler capacity at the facility. Most of the new facility will be housed in an existing structure (i.e., the East Plant) which will be augmented.

Figure 2-1 shows a flow diagram of the proposed cogeneration system. Note that although there is only one CT and one HRSG unit shown in this diagram, two of each of the units will be installed at the CPP.

Figure 2-1. Flow Diagram of Cogeneration Plant



This section contains a review of the Federal and District of Columbia regulations that are potentially applicable to the proposed cogeneration project.

3.1. NEW SOURCE REVIEW

The federal New Source Review (NSR) program is comprised of two distinct pre-construction permitting programs: 1) Prevention of Significant Deterioration (PSD) for attainment pollutants; and 2) Nonattainment New Source Review (NA NSR) for nonattainment pollutants.

3.1.1. Overview of Major NSR Permitting Programs

PSD permitting may apply to facilities located in attainment areas for a specified criteria pollutant. Projects that are either new major stationary sources or modifications to existing major sources resulting in a significant emissions increase and a significant net emissions increase of an attainment pollutant are subject to the PSD permitting program.

NA NSR permitting may apply to facilities located in areas that are designated in Title 40 of the Code of Federal Regulations Part 81 (40 CFR 81) as not in attainment with the National Ambient Air Quality Standard (NAAQS) for a specific criteria pollutant (i.e., areas referred to as nonattainment areas). Projects that are either new major stationary sources or modifications to existing major sources resulting in a significant emissions increase and a significant net emissions increase of a nonattainment pollutant are regulated under the NA NSR program.

The requirements of the PSD permitting program are currently enforced in the District of Columbia by EPA.[1] NA NSR permitting requirements are specified in Title 20 of the District Code of Municipal Regulations Section 204 (20 DCMR 204).[2] DDOE also has additional authority to issue Chapter 2 permits under 20 DCMR 201.1.

3.1.2. NAAQS Attainment Status

The CPP is located in the District of Columbia which is classified by U.S. EPA as "attainment" for all criteria pollutants, except for particulate matter with a diameter less than 2.5 microns ($PM_{2.5}$) and ozone [where nitrogen oxides [NO_x] and volatile organic compounds [VOC] are regulated precursors].[3] As such, $PM_{2.5}$ and ozone precursors (NO_x and VOC) are regulated under the NA NSR program. All other criteria pollutants are regulated under the PSD program.

3.1.3. PSD Applicability

This section evaluates the applicability of the project to the PSD regulations in 40 CFR §52.21. PSD applicability was evaluated for the following PSD pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter (PM), particulate matter with a diameter less than ten (10) microns (PM_{10}), lead (Pb), sulfuric acid (H_2SO_4), and greenhouse gases (regulated as carbon dioxide equivalent [CO_2e]). Other PSD pollutants include hydrogen sulfide and total reduced sulfur, which could be emitted from the sources being permitted in this action.

[1] 40 CFR §52.499.

[2] DDOE is currently revising 20 DCMR 204 to accommodate both NSR Reform provision and implementation $PM_{2.5}$ NA NSR requirements. However, until 20 DCMR 204 is revised in final form, $PM_{2.5}$ NA NSR permitting requirements would be regulated under 40 CFR 51, Appendix S.

[3] 40 CFR §81.309.

Based on our knowledge of the process, we believe that these compounds are emitted in quantities well below the NSR significant thresholds. Therefore, these emissions have been considered insignificant for this project. The proposed changes do not use or are not expected to emit any other NSR regulated pollutants (e.g., CFCs).

3.1.3.1. Major Source Status

Section 52.21(b)(1)(i)(a) of 40 CFR lists the PSD source categories with a 100 ton per year (tpy) "major" source threshold. Fossil fuel boilers or combination thereof of more than 250 MMBtu/hr heat input are one of the 28 source categories identified. Sources on this list are also required to include fugitive emissions in determining whether the source is a "major stationary source."

The CPP is subject to a 100 tpy threshold for classification as a PSD major source. Based on the potential to emit for attainment pollutants, the CPP exceeds the 100 tpy threshold for SO_2, NO_2, PM, and CO, and is therefore considered an existing major source with respect to the PSD program for all attainment pollutants.

3.1.3.2. PSD Applicability Determination

If an existing major source proposes to undergo a physical or operational change, the applicant must review projected emissions associated with the proposed project to determine if the project is considered a major modification. If the proposed project results in a significant emissions increase by itself, then the "net emissions increase" must be determined. The "net emissions increase" takes into account not only emissions increases from the proposed project, but also any other increases and decreases in actual emissions at the stationary source that are contemporaneous with the proposed project and are otherwise creditable.

If the project's emissions increase and the net emissions increase are both significant for any regulated air pollutant, then PSD permitting is required. That is, the permit application requirements for PSD only apply to those pollutants that result in a significant emissions increase and a significant net emissions increase. Table 3-1 identifies the applicable significant emission rates (SERs) with regard to whether a project e.g., modification) is considered major. It should be noted that 40 CFR §52.21(b)(20)(i) also requires that fugitive emissions be included in calculating whether a project will cause a significant emissions increase and a significant net emissions increase for those emission units that are part of the source categories on the "List of 28."

Table 3-1. PSD Significant Emission Rates

Pollutant	Significant Emission Rate (Tons/Year)
CO	100
NO_2	40
SO_2	40
PM_{10}	15
PM	25
CO_2e	75,000
Lead (Pb)	0.6
Sulfuric Acid Mist	7
Fluorides	3

The first step in this analysis is to determine the emissions increases of PSD regulated pollutants from the new and modified emissions units and any other plant-wide emissions increases (e.g., debottlenecking increases) that may occur as a direct result of the proposed project. For this analysis, the emissions increases for the project will occur from the construction of the new cogeneration plant. This is discussed in the project description contained in Section 2 of the application report.

An emissions increase is defined as the amount by which the new level of emissions associated with the proposed project exceeds the old or baseline levels (i.e., the emissions from existing operations prior to the change associated with the proposed project). For existing emission units (other than an electric utility steam generating unit), 40 CFR §52.21(b)(48)(ii) defines "baseline actual emissions" as the average rate, in tons per year, at which an emissions unit actually emitted the pollutant. This baseline period is to be based on any consecutive 24-month period selected by the owner/operator within the 10-year period immediately preceding the date that construction begins on the proposed project or the date that a complete permit application is received by the Administrator or permitting authority, whichever is earlier. If the project involves multiple emission units, then only one 24-month period can be used to determine baseline actual emissions for all emissions units being changed as part of the proposed project; however, according to 40 CFR §52.21(b)(48)(ii)(d), this 24-month period may differ for each NSR pollutant. For new emission units (e.g., the CTs and HRSGs in the proposed project), 40 CFR §52.21(b)(48)(iii) defines the baseline emissions for each new unit to be zero.

To determine the emissions increase for the project, the difference between the baseline actual emissions and the expected new level of emissions after the change is computed. The NSR provisions under 40 CFR §52.21(a)(2)(iv) allow for the new level of emissions to be based on either the projected future actual emissions (for existing units only) or the future potential emissions (for new and existing units) after the change. For this analysis, the "actual-to-potential test" has been utilized in accordance with 40 CFR §52.21(a)(2)(iv)(d) to estimate the new level of emissions.

As shown in Table 3-2, the proposed Cogeneration Project project emission changes (without considering contemporaneous emissions changes) result in a significant emission increase for the following regulated pollutants: CO_2e, PM_{10}, and NO_2. Therefore, emissions netting would be required under a traditional PSD applicability review. However, as is discussed in the next section, the CPP is pursuing the establishment of a Plantwide Applicability Limit (PAL) for each of these pollutants to allow for the proposed project and will therefore not be subject to PSD review for these pollutants.

For emissions of lead, H_2SO_4, SO_2, PM, CO, and fluorides, the project does not result in a significant emission increase; therefore, these pollutants are not subject to PSD review.

Table 3-2. PSD Netting Applicability

Pollutant	Cogen Emissions (tpy)	PSD SER (tpy)	Trigger Netting Analysis
CO	95.6	100	No
NO_2	118.4	40	Yes
SO_2	8.4	40	No
PM_{10}	22.8	15	Yes
PM	22.8	25	No
CO_2e	158,186	75,000	Yes
Lead (Pb)	~0	0.6	No
H_2SO_4	0.6	7	No
Fluorides	0	3	No

3.1.3.3. PSD Plantwide Applicability Limitation

A PAL is a voluntary and pollutant-specific source-wide cap on baseline actual emissions (plus the applicable NSR SER) that allows a facility to make changes at an existing major source without triggering major NSR review for that pollutant, as long as site-wide emissions of that pollutant remain less than the PAL. A PAL provides a facility with the added flexibility to facilitate the source's ability to respond rapidly to changing market conditions, while enhancing the environmental protection afforded under the major NSR program (through the voluntary reduction of emissions from current allowable emissions to PAL levels). The PAL is referred to as an "Actuals PAL."

Under 40 CFR §52.21(aa)(6), the PAL is set as the site-wide baseline actual emissions of the PAL pollutant plus an amount at or just below the NSR SER (e.g., 15 tpy for PM_{10}). Because the PAL is being incorporated into this federally enforceable permit, the facility will not be subject to major NSR permitting requirements for the 10-year duration of the PAL, as long as the facility-wide emissions of that pollutant remain less than the PAL levels.

The CPP is proposing to establish a PAL for NO_2, PM_{10}, and GHG as allowed by the NSR provisions. In reviewing the past years' operations at the CPP, Table 3-3 summarizes the baseline years that were selected for each applicable pollutant. The baseline years are based on a detailed review of existing representative emissions factors, as well as production and operating data provided in emission inventory reports. As a result of this application, the CPP will establish a PAL for PM_{10} at 42.8 tpy, CO_2e at 203,816 tpy and NO_2 at 248.1 tpy. The procedure to determine the PAL limits as well as the required elements of a PAL application are included in Appendix C. CPP requests that the PAL effective date be set to the date of the Chapter 2 permit issuance.

Table 3-3. PSD Actuals PALs Levels

Pollutant	Baseline Actual Emissions [BAE](tpy)	BAE Two-Year Period Selected	PSD SER (tpy)	PAL (tpy)
NO_2	208.1	Nov. 2002 – Oct. 2004	40	248.1
PM_{10}	27.8	Aug, 2004 – July 2006	15	42.8
CO_2e	128,816	Nov. 2002 – Oct. 2004	75,000	203,816

3.1.3.4. PSD Applicability Results

As shown in Table 3-2, project emissions of lead, H_2SO_4, SO_2, PM, CO, and fluorides were determined to not result in a significant emission increase; therefore, these pollutants are not subject to PSD review. While project emissions of CO_2e, PM_{10}, and NO_2 are greater than the SERs, the CPP is pursuing to establish a PAL for each pollutant rather than to pursue emissions netting. By maintaining compliance with the PAL, as outlined in Section 3.1.3.3, these pollutants will not be subject to PSD review. As such, the cogeneration project will not be subject to PSD review.

3.1.4. NA NSR Applicability

This section evaluates the applicability of the project with regards to the District of Columbia's NA NSR program that is currently contained in 20 DCMR 204. As outlined in Section 3.1.2, NA NSR applicability was evaluated for the following nonattainment pollutants: ozone (regulated as NO_x and VOC), $PM_{2.5}$, and SO_2, as a $PM_{2.5}$ precursor.

3.1.4.1. Major Source Status

Under the NA NSR program in Washington, D.C., a source is considered major for ozone if the site-wide potential to emit for either VOC or NO_x exceeds 25 tpy per 20 DCMR 199.1 (definition of major stationary source). Furthermore, due to Washington, D.C.'s current nonattainment status with respect to the annual $PM_{2.5}$ standard, the $PM_{2.5}$ NA NSR major source threshold is 100 tpy of direct $PM_{2.5.}$ As stated in the preamble to the $PM_{2.5}$ NSR Implementation Rule[4], the 100 tpy NA NSR major source threshold is to be applied "*to each relevant pollutant individually, that is to direct $PM_{2.5}$ emissions and to emissions of each pollutant indentified as a $PM_{2.5}$ precursor.*" The definition of a regulated NSR

[4] Federal Register, Volume 73, No. 96, May 16, 2008, p. 28331.

pollutant[5] states that, *"sulfur dioxide is a precursor to $PM_{2.5}$ in all $PM_{2.5}$ non-attainment areas."* This provision means that stationary sources that have a potential to emit more than 100 tpy of sulfur dioxide would trigger NA NSR as a $PM_{2.5}$ precursor. Therefore, SO_2 is the only regulated $PM_{2.5}$ precursor at this time in Washington, D.C. [6]

CPP is currently a major source for all District of Columbia nonattainment pollutants.

3.1.4.2. NA NSR Applicability Determination

If an existing major source proposes to undergo a physical or operational change, the applicant must review projected emissions associated with the proposed project to determine if the project is considered a major modification. Similar to the PSD program, if the proposed project results in a significant emissions increase by itself, then the "net emissions increase" must be determined. The "net emissions increase" takes into account not only emissions increases from the proposed project, but also any other increases and decreases in actual emissions at the stationary source that are contemporaneous with the proposed project and are otherwise creditable. If the project's emissions increase and the net emissions increase are both significant for any regulated air pollutant, then NA NSR permitting is required.

Table 3-4 identifies the applicable significant emission rates (SERs) with regard to whether a project (i.e., modification) is considered major.

Table 3-4. NA NSR Significant Emission Rates

Pollutant	Significant Emission Rate (Tons/Year)
VOC	25
NO_x	25
SO_2	40
$PM_{2.5}$	10

The first step in this analysis is to determine the emissions increases of NA NSR regulated pollutants from the new and modified emissions units and any other plant-wide emissions increases (e.g., debottlenecking increases) that may occur as a direct result of the proposed project. For this analysis, the emissions increases for the project will occur from the construction of the new cogeneration plant.

An emissions increase is defined as the amount by which the new level of emissions associated with the proposed project exceeds the old or baseline levels (i.e., the emissions from existing operations prior to the change associated with the proposed project). For new emission units (e.g., the CTs and HRSGs in the proposed project), the baseline emissions are defined as zero. The baseline actual emissions for existing operations are defined as the average rate at which the unit actually emitted the pollutant during a two (2) year period preceding the start of construction and which is representative of normal operation. Since the only project emissions sources are "new", the baseline was set to 0 tpy for this analysis.

To determine the emissions increase, the difference between the baseline actual emissions and the expected new level of emissions after the change is computed. Typically, the new level of emissions is based on either the projected future actual emissions (for existing units only) or the future potential emissions (for new and existing units) after the change. For this analysis, the "actual-to-potential test" has been utilized to estimate the new level of emissions.

[5] 40 CFR 51, Appendix S.

[6] DDOE's efforts to revise 20 DCMR 204 may add NO_x as precursor. Note that NO_x is already regulated as an ozone precursor.

As shown in Table 3-5, the proposed Cogeneration Project (without considering contemporaneous emissions changes) results in a significant emission increase for the following regulated pollutants: $PM_{2.5}$, and NO_x. Therefore, emissions netting would be required under a traditional NA NSR applicability review. However, as is discussed in the next section, the CPP is pursuing the establishment of a PAL for each of these pollutants to allow for the proposed project and will therefore not be subject to NA NSR review for these pollutants.

For emissions of SO_2 and VOC, the project does not result in a significant emission increase; therefore, these pollutants are not subject to NA NSR review.

Table 3-5. NA NSR Netting Applicability

Pollutant	Cogen Emissions (tpy)	NA NSR SER (tpy)	Trigger Netting Analysis
VOC	13.3	25	No
NO_x	118.4	25	Yes
SO_2	8.4	40	No
$PM_{2.5}$	22.8	10	Yes

3.1.4.3. NA NSR Plantwide Applicability Limitation

As noted in Section 3.1.3.3, a PAL is a voluntary and pollutant-specific source-wide cap on baseline actual emissions (plus the applicable NSR SER) that allows a facility to make changes at an existing major source without triggering major NSR review for that pollutant, as long as site-wide emissions of that pollutant remain less than the PAL.

A PAL is set as the site-wide baseline actual emissions of the PAL pollutant plus an amount at or just below the NSR SER (e.g., 10 tpy for $PM_{2.5}$). Because the PAL is being incorporated into this federally enforceable permit, the facility will not be subject to major NSR permitting requirements for the 5-year duration of the PAL, as long as the facility-wide emissions of that pollutant remain less than the PAL levels.

The CPP is proposing to establish a PAL for NO_x and $PM_{2.5}$. In reviewing the past years' operations at the CPP, Table 3-6 summarizes the baseline years that were selected for each applicable pollutant. The baseline years are based on a detailed review of existing representative emissions factors, as well as production and operating data provided in emission inventory reports. As a result of this application, the CPP will establish a PAL for $PM_{2.5}$ at 35.4 tpy and NO_x at 196.7 tpy. The procedure to determine the PAL limits as well as the required elements of a PAL application are detailed further in Appendix C. CPP requests that the PAL effective date be set to the date of the Chapter 2 permit issuance.

Table 3-6. NA NSR Actuals PALs Levels

Pollutant	Baseline Actual Emissions [BAE](tpy)	BAE Two-Year Period Selected	NA NSR SER (tpy)	PAL (tpy)
NO_X	171.7	Feb. 2007-Jan. 2009	25	196.7
$PM_{2.5}$	25.4	Feb. 2007-Jan. 2009	10	35.4

3.1.4.4. NA NSR Applicability Results

As shown in Table 3-5, project emissions of SO_2 and VOC will result in a significant emission increase; therefore, these pollutants are not subject to NA NSR review. While project emissions of $PM_{2.5}$ and NO_x are greater than the SERs, the CPP is pursuing to establish a PAL for each pollutant rather than pursuing emissions netting. By maintaining compliance with the PAL, as outlined in Section 3.1.4.3, these pollutants will not be subject to NA NSR review. As such, the cogeneration project will not be subject to NA NSR review.

3.2. NEW SOURCE PERFORMANCE STANDARDS

New Source Performance Standards (NSPS), located in 40 CFR 60, require new, modified, or reconstructed sources in applicable source categories to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. Any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except as noted. The CTs and HRSGs are potentially subject to NSPS Subpart KKKK Standards of Performance for Stationary Combustion Turbines and NSPS Dc Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. A detailed evaluation of NSPS Subparts KKKK, Dc and Kb is provided below.

3.2.1. NSPS Subpart KKKK

NSPS Subpart KKKK Standards of Performance for Stationary Combustion Turbines establishes NO_x and SO_2 emission limits for combustion turbines which commenced construction after February 18, 2005 and have a heat input at peak load equal to or greater than 10 MMBtu/hr. This subpart does apply to emissions from any associated HRSG units and duct burners. Per 40 CFR §60.4305(b), turbines regulated under NSPS Subpart KKKK are exempt from the requirements of NSPS Subpart GG. Likewise, HRSGs and duct burners regulated under NSPS Subpart KKKK are exempted from the requirements of NSPS Subparts Da, Db, and Dc.

The cogeneration project includes two CTs that have a heat input greater than 10 MMBtu/hr and will be constructed after February 18, 2005. As such, the CTs and their associated HRSGs will be subject to the requirements under NSPS Subpart KKKK. The CTs will be subject to the following emission limits for NO_x:

- Firing natural gas - 25 parts per million (ppm) NO_x at 15 percent O_2 or 290 nanogram per Joule (ng/J) of useful output (1.2 lb/MWh)
- Firing diesel oil - 74 ppm NO_x at 15 percent O_2 or 460 ng/J of useful output (3.6 lb/MWh)

For SO_2, the turbines are subject to either a limit of 0.90 pounds per megawatt-hour (lb/MWh) gross output or must combust a fuel which does not exceed 0.060 lb SO_2/MMBtu heat input. The CTs/HRSGs will meet the SO_2 limit by burning natural gas or ultra low sulfur fuel when liquid fuel is used. Also, the CPP will ensure that it will be in compliance with all the requirements of NSPS Subpart KKKK including the monitoring, reporting, and recordkeeping requirements.

3.2.2. NSPS Subpart Dc (Not Applicable)

Per 40 CFR 60.4305(b), the HRSGs to be installed as part of the cogeneration project are not subject to NSPS Subpart Dc Standards of Performance for Small Industrial, Commercial, Institutional Steam Generating Units since they are regulated under NSPS Subpart KKKK.

3.2.3. NSPS Subpart GG (Not Applicable)

The new CTs to be installed as part of the cogeneration project are not subject to NSPS Subpart GG standards per 40 CFR 60.4305(b) since they are subject to NSPS Subpart KKKK.

3.3. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

National Emissions Standards for Hazardous Air Pollutants (NESHAP) are emission standards for hazardous air pollutants (HAPs) and are generally only applicable to major sources of HAP. However, U.S. EPA has recently been promulgating regulations for HAP emissions from area sources. Part 61 NESHAP standards are defined for specific pollutants while Part 63 NESHAP standards are for source categories where allowable emission limits are established on the basis of a Maximum Achievable Control Technology (MACT) determination for a particular source. A HAP major source is defined as having potential emissions in excess of 25 tpy for total HAPs and/or potential emissions in excess of 10 tpy for any individual HAP. NESHAPs apply to sources in specifically regulated industrial source categories [CAA Section 112(d)] or on a case-by-case basis [Section 112(g)] for facilities not regulated as a specific industrial source type.

Currently, CPP is a major source of HAPs. However, CPP expects to become an area source of HAPs after this project is implemented and is requesting that DDOE include such provisions in the permit for cogeneration. CPP requests that such provisions be effective as of the first substantive compliance date under NESHAP DDDDD and YYYY.

Based on the type of operations at the CPP and the type of HAPs being emitted, there are no applicable 40 CFR 61 regulations apart from the generally applicable standards, such as the NESHAP for Asbestos (40 CFR 61 Subpart M). This application will not review the applicability of these generally applicable regulations. The following sections evaluate applicability to relevant 40 CFR 63 standards.

3.3.1. NESHAP Subpart DDDDD (Not Applicable)

40 CFR 63 Subpart DDDDD or Major Source Boiler MACT applies to industrial, commercial, and institutional boilers and process heaters at major sources of HAPs. As a future area source of HAPs, the CPP will not be subject to the requirements of the Major Source Boiler MACT.

3.3.2. NESHAP Subpart JJJJJJ (Not Applicable)

As a future area source of HAP, the boilers at the CPP will be subject to 40 CFR 63 Subpart JJJJJJ or Area Source Boiler MACT. Area Source Boiler MACT was finalized on March 21, 2011. However, due to the extensive comments received during the public comment period, the rule was reproposed. The reproposed rule was published on December 23, 2011. In both the current version of the rule as well as the reproposed rule, HRSGs are classified as waste heat boilers in that they recover normally unused energy and convert it to usable heat. The reproposed rule further clarifies that the definition of waste heat boiler applies to both fired and unfired waste heat boilers. In both rulings, waste heat boilers are not included in the definition of boiler and, therefore, the HRSGs are not subject to the Area Source Boiler MACT.

3.3.3. NESHAP Subpart YYYY (Not Applicable)

NESHAP Subpart YYYY National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines establishes formaldehyde emission limits for CTs which commenced construction or reconstruction after January 14, 2003 at major sources of HAPs. As a result of this permitting action, the CPP will be a minor source of HAPs and CPP is requesting that provisions be included in the permit to this effect. As such, the turbines will not be subject to Subpart YYYY.

3.4. ACID RAIN PROGRAM

The Acid Rain Program regulates SO_2 and NO_x emissions. The program is codified in 40 CFR Parts 72 – 78. Per 40 CFR §72.6(b)(4)(ii), a new cogeneration unit is exempt from the Acid Rain Program if it supplies equal to or less than one-third its potential electrical output capacity or equal to or less than 219,000 MWe-hrs actual electric output on an annual basis to any utility power distribution system for sale (on a gross basis). However, if in any three calendar year period after November 15, 1990, a cogeneration unit sells to a utility power distribution system an annual average of more than one-third of its potential electrical output capacity and more than 219,000 MWe-hrs actual electric output (on a gross basis), that cogeneration unit shall be an affected unit, subject to the requirements of the Acid Rain Program.

The CTs to be included at CPP are each rated at 7.5 MW. As such, even if the CTs ran for the entire year and sold all electrical output, the total sold would not exceed the 219,000 MWe-hrs threshold. As such, the Acid Rain Program does not apply to the project.

3.5. TRANSPORT RULE

The Transport Rule or Cross-State Air Pollution Rule was published in the Federal Register on August 8, 2011 and was subsequently stayed on December 30, 2011. As written, the rule focuses on reducing the cross state transport of ozone and $PM_{2.5}$ emissions in 27 eastern states and D.C. The rule, codified in 40 CFR 97, applies to Electric Generating Units (EGUs), boilers and turbines serving a generator rated at 25 MW or more producing electricity for sale. The rule does not apply to qualifying cogeneration units as defined in 40 CFR §97.504(b)(1). Based on the proposed operation of the cogeneration units and the capacities of the units, they will not be subject to the requirements of the Transport Rule. Similarly, the requirements of the NO_X Budget Trading rule, also codified in 40 CFR 97, do not apply to the cogeneration units per 40 CFR 97.4(a)(1)(ii)(C) which exempts cogeneration unit with a capacity below 25 MW from the requirements of this rule. Accordingly, these requirements do not apply to the planned cogeneration units at CPP.

3.6. DISTRICT OF COLUMBIA REGULATIONS

This section evaluates the applicability of the District of Columbia environmental regulations, codified in District of Columbia Municipal Regulations, Title 20 (20 DCMR), with regard to the cogeneration project.

3.6.1. Chapter 2 – General and Non-attainment Area Permits

The cogeneration project consists of two CTs and two HRSGs that are subject to the requirement for obtaining an air permit to construct per 20 DCMR 200.1 and 200.4 Accordingly, CPP is providing this permit application to satisfy the requirements of this Chapter.

3.6.2. Chapter 3 – Operating Permits

The cogeneration project consists of two CTs and two HRSGs that are subject to NSPS and NESHAP requirements as noted above. Since these requirements are codified under Sections 111 and 112 of the Clean Air Act and the CPP is considered a major source, the CPP will need an operating permit in accordance with 20 DCMR 300.1 for the new sources upon completion of construction of the units. The CPP will comply with this requirement by modifying its current Title V permit to include the new units after the construction permit is issued and within twelve (12) months of commencing operation.

3.6.3. Chapter 5 – Source Monitoring and Testing

Chapter 5 specifies the monitoring, testing, recordkeeping and reporting requirements applicable to sources located in the District of Columbia. The CPP currently maintains written records of the amount of emissions from its emissions sources in accordance with 20 DCMR 500.2 and submits this information to the DDOE in accordance with 20 DCMR 500.9. The CPP will continue to do so after the cogeneration system is installed. Other requirements of Chapter 5 generally apply to the CPP and the CPP complies with them as required by its permits or per the direction of the DDOE.

3.6.4. Chapter 6 – Particulates

Chapter 6 regulates particulate emissions from stationary sources in the District of Columbia. This chapter contains requirements that generally apply to the CPP, like Open Burning under Section 604, and Control of Fugitive Dust under Section 605. The CPP is currently in compliance with these requirements and will continue to comply with them, as applicable.

3.6.4.1. 20 DCMR 600 – Fuel-Burning Particulate Emissions

20 DCMR 600.1 applies to all fuel-burning equipment and sets forth a particulate emission rate which is calculated per the equation in 20 DCMR 600.1 based on heat input rating of the unit. The cogeneration project is subject to the requirements of this regulation and will comply with this regulation through the firing of natural gas and ultra low sulfur diesel oil.

3.6.4.2. 20 DCMR 606 – Visible Emissions

20 DCMR 606.1 contains visible emission limits for fuel-burning equipment placed in operation after January 1, 1977. This regulation requires no visible emissions from stationary sources at any time, except for opacity no greater than forty percent (40%) (unaveraged) for two minutes in any sixty minute period and for an aggregate of twelve minutes in any twenty-four hour period during start-up, cleaning, soot blowing, adjustment of combustion controls, or malfunction of equipment. CPP will comply with these emission standards.

3.6.5. Chapter 7 – Volatile Organic Compounds

The requirements of this chapter do not apply to the cogeneration project based on the types of sources proposed to be installed and the source categories listed in the chapter.

3.6.6. Chapter 8 – Asbestos, Sulfur, and Nitrogen Oxides

3.6.6.1. 20 DCMR 801 – Sulfur Content in Fuel Oils

Per 20 DCMR 801.1, fuel oil which is purchased, sold, transported, or otherwise used cannot contain more than one percent (1%) sulfur by weight, if it is to be burned in D.C. The fuel to be burned in proposed project will be subject to this regulation. The CPP will demonstrate compliance with this requirement by testing diesel oil for sulfur content.

3.6.6.2. 20 DCMR 803 – Sulfur Process Emissions

The emission of SO_2 in excess of 0.05% by volume is prohibited per 20 DCMR 803.1. This requirement is applicable to the cogeneration project. Compliance with this requirement will be assured through the burning of natural gas and ultra low sulfur diesel oil.

3.6.6.3. 20 DCMR 804 – Nitrogen Oxide Emissions

The NO_X emission limits set forth in 20 DCMR 804.1 apply to fossil fuel-fired steam generating units rated for more than 100 MMBtu/hr. This section does not apply to the cogeneration project since the HRSGs are rated at 71.9 MMBtu/hr each, and the turbines are not considered steam generating units.

3.6.6.4. 20 DCMR 805 – Reasonably Available Control Technology for Major Sources of the Oxides of Nitrogen

Per 20 DCMR 805.1(a)(1), fossil-fuel fired steam-generating units having an energy input capacity of 20 MMBtu/hr or more and stationary combustion turbines having an energy input capacity of 100 MMBtu/hr or more are subject to provisions for reasonably available control technology (RACT) for NO_X. The cogeneration project consists of two CTs rated at 7.5 MW each (~25.6 MMBtu/hr) and two HRSGs rated at 71.9 MMBtu/hr each. As such, only the HRSGs will be subject to the requirements of 20 DCMR 805. One applicable portion of the NO_X RACT is the combustion adjustment process for fossil-fuel-fired steam-generating units larger than 20 MMBtu/hr per 20 DCMR 805.5(a). The emission limitations listed in 20 DCMR 805.5(b) and 20 DCMR 805.5(c) do not apply to the HRSGs as the units combust a combination of diesel oil and natural gas, and because the units have capacities below 100 MMBtu/hr. Nonetheless, a modern cogeneration system, as designed, would satisfy RACT. To comply with the applicable provisions of RACT, the CPP will adjust the combustion process (as required) every year prior to May 1st. The combustion adjustment process will be conducted in accordance with the requirements of 20 DCMR 805.8. Also required by 20 DCMR 805.3(b), the CPP will submit a notification to the DDOE that it will comply with these requirements.

4. EMISSIONS CALCULATION METHODOLOGY

In general, potential emissions from the two CTs and HRSG units were calculated based on vendor data, engineering estimates, published emission factors and other available data. Potential to emit (PTE) was calculated assuming that both CTs and both HRSG units operate 8,760 hours per year. Emissions were calculated for two fuel scenarios: 1) 8,760 hours per year combusting natural gas with no diesel oil combustion; and 2) 720 hours per year of diesel oil combustion and the remaining 8,040 hours on natural gas. The higher of these two scenarios is considered the PTE for each pollutant.

The following sections provide details on the calculation methodologies used for calculating potential emissions from the proposed Cogeneration Plant. Emission calculations are provided in Appendix B.

4.1. SULFUR EMISSIONS

Emissions of SO_2 and H_2SO_4 were calculated using a mass balance approach. Using the sulfur content of each fuel, the amount of sulfur burned in the units on an hourly basis was calculated for each fuel. Sulfur content was based on vendor information for natural gas and on the specifications of ultra low sulfur diesel oil. This amount was converted to SO_2 using the molecular weights of sulfur and SO_2. Emissions of H_2SO_4 were then calculated using an estimated oxidation rate of 5 percent and assuming all SO_3 is converted to H_2SO_4.

4.2. GREENHOUSE GAS EMISSIONS

In order to be consistent with future reporting requirements, greenhouse gas (GHG) emissions were calculated according to the procedures in the Greenhouse Gas Mandatory Reporting Rule (40 CFR 98). Specifically, emission factors for combustion of diesel oil and natural gas in stationary combustion units from Tables C-1 and C-2 from 40 CFR 98 Subpart C were used. Emissions of individual GHGs (i.e. CO_2, CH_4, and N_2O) were converted to CO_2e using Global Warming Potentials (GWPs) from Table A-1 from 40 CFR 98 Subpart A.

4.3. EMISSIONS OF OTHER CRITERIA POLLUTANTS

Emissions of CO, PM, PM_{10}, $PM_{2.5}$, NO_X, and VOC were calculated based on engineering estimates which considered input from the vendor. From this data, an hourly emission rate for combined CT and HRSG operation was developed and used to calculate PTE.

Emissions of the remaining criteria pollutants and HAPs were calculated using emission factors published in U.S. EPA's *AP-42 - Compilation of Air Pollutant Emission Factors* (AP-42). AP-42 Section 3.1 *Stationary Gas Turbines* was used for calculating pollutant emissions from the CTs. AP-42 Sections 1.3 and 1.4 were used for fuel oil and natural gas combustion in the HRSG units, respectively.

4.3.1. Insignificant Emissions

Emissions of fluorides, H_2S, and total reduced sulfur are expected to be negligible and unquantifiable for the types of fuel and equipment involved in this project.

APPENDIX A

Application Forms

GOVERNMENT OF THE DISTRICT OF COLUMBIA
District Department of the Environment
Air Quality Division

APPLICATION FOR PERMIT TO CONSTRUCT/OPERATE INTERNAL COMBUSTION ENGINE

(1a) U.S. Capitol Power Plant
Business license name of organization application registration

(1b) United States, acting by and through the Architect of the Capitol
Name of owner(s) or principal partner(s) of above organization

(2) U.S. Capitol Building, Washington, DC 20515
Mailing address of (1b) (No., Street, City, State, Zip)

(3) U.S. Capitol Power Plant, 25 E Street S.E., Washington, DC 20003
Equipment location address

(4a) C Potter
Signature of owner / operator

(4b) Acting Director, Utilities and Power
Official Title

(4c) 202.226.3864
Emergency Phone Number

(4d) Christopher Potter
Type or print name of owner/operator

(5) Engine type: ☐ Reciprocating ☒ Turbine ☐ Other: ______

(6) Fuel type: Natural Gas and Diesel Oil ☒ % Sulfur: 2 gr /100 scf, 0.0015 % by weight

(7) Rated fuel consumption: 76,863 scf/hr and 543 gal/hr [gal/hr or CF/hr]

(8) Engine is used for: ☒ Routine operational use ☐ Emergency or back-up use only *Note: If the unit is to be used in a load response program or for peak shaving, please check "Routine operational use".*

(9) Rated electrical output: 7,500 kW Rated mechanical output: N/A HP @ N/A RPM

(10) Stack height above ground, ft TBD Inner diameter at exit, ft: 4.5

Exit gas volume, cfm: 76,340 Gas temperature at exit, deg F: 290

Distance of stack from nearest property boundary (ft): TBD

(11) Date of application: 2/10/2012

(12) Date construction/installation began or is planned to begin: July 2012

(13) Date construction/installation completed (if applicable): October 2014

(14) Emissions: **See Appendix B of application report for detailed emissions data.

Pollutant	Emission Factor (lb/gal or lb/CF or lb/hp-hr)	Operating Rate (gal/hr or CF/hr or hp and max hours operation)	Emission Rate (lb/hr)	Maximum Uncontrolled Emissions (Tons/yr)
PM (Total)				
SO_X				
NO_X				
VOC				
CO				

Basis of estimates: See Appendix B and Section 4 of the application report.

(15) Operating limitations or other comments, if applicable:

Unit is limited to 720 hours of operation on diesel with the remainder on natural gas.

NOTE:

1. **Please attach a copy of manufacturer's specifications for the unit and any other appropriate supporting documentation.**

2. **Deviations from approved plans and specifications are not permissible without securing the formal approval of District Department of the Environment, Air Quality Division, Permitting and Enforcement Branch.**

3. **The complete application and applicable supporting document must be submitted to the following address:**

Branch Chief
Permitting and Enforcement Branch
Air Quality Division
1200 First Street NE
5th Floor
Washington, DC 20002-3323

GOVERNMENT OF THE DISTRICT OF COLUMBIA
District Department of the Environment
Air Quality Division

APPLICATION FOR PERMIT TO CONSTRUCT/OPERATE INTERNAL COMBUSTION ENGINE

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(4a) C Potter
Signature of owner / operator

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Official Title

(4c) 202.226.3864
Emergency Phone Number

(4d) Christopher Potter
Type or print name of owner/operator

(5) Engine type: ☐ Reciprocating ☒ Turbine ☐ Other: ______

(6) Fuel type: Natural Gas and Diesel Oil ☒ % Sulfur: 2 gr /100 scf, 0.0015 % by weight

(7) Rated fuel consumption: 76,863 scf/hr and 543 gal/hr [gal/hr or CF/hr]

(8) Engine is used for: ☒ Routine operational use ☐ Emergency or back-up use only *Note: If the unit is to be used in a load response program or for peak shaving, please check "Routine operational use".*

(9) Rated electrical output: 7,500 kW Rated mechanical output: N/A HP @ N/A RPM

(10) Stack height above ground, ft TBD Inner diameter at exit, ft: 4.5

Exit gas volume, cfm: 76,340 Gas temperature at exit, deg F: 290

Distance of stack from nearest property boundary (ft): TBD

(11) Date of application: 2/10/2012

(12) Date construction/installation began or is planned to begin: July 2012

(13) Date construction/installation completed (if applicable): October 2014

(14) Emissions: **See Appendix B of application report for detailed emissions data.

Pollutant	Emission Factor (lb/gal or lb/CF or lb/hp-hr)	Operating Rate (gal/hr or CF/hr or hp and max hours operation)	Emission Rate (lb/hr)	Maximum Uncontrolled Emissions (Tons/yr)
PM (Total)				
SO_X				
NO_X				
VOC				
CO				

Basis of estimates: See Appendix B and Section 4 of the application report.

(15) Operating limitations or other comments, if applicable:

Unit is limited to 720 hours of operation on diesel with the remainder on natural gas.

NOTE:

1. **Please attach a copy of manufacturer's specifications for the unit and any other appropriate supporting documentation.**
2. **Deviations from approved plans and specifications are not permissible without securing the formal approval of District Department of the Environment, Air Quality Division, Permitting and Enforcement Branch.**
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Permitting and Enforcement Branch
Air Quality Division
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5th Floor
Washington, DC 20002-3323

GOVERNMENT OF THE DISTRICT OF COLUMBIA
District Department of the Environment
Air Quality Division

APPLICATION FOR PERMIT TO CONSTRUCT / OPERATE A BOILER OR OTHER EXTERNAL COMBUSTION EQUIPMENT

(1a) U.S. Capitol Power Plant
Business license name of organization applying for registration

(1b) United States, acting by and through the Architect of the Capitol
Name of owner(s) or principal partners(s) of above organization

(2a) U.S. Capitol Building, Washington, DC 20515
Mailing address of (1b) (No., Street, City, State, Zip)

(2b) U.S. Capitol Building, Washington, DC 20515
Mailing address of (1b) (No., Street, City, State, Zip)

(3) U.S. Capitol Power Plant, 25 E Street, SE, Washington, DC 20003
Equipment location address

(4a) C. Potter
Signature of owner/operator

(4b) Acting Director, Utilities and Power
Official Title

(4c) Christopher Potter
Type or print name above

(4d) 202.226.3864
Emergency phone number

(5) Type of Application (check one):
Heat Recovery Steam Generation
Unit #1 Construction Application

☐ Initial application (Existing unit)   ☒ New Unit (To be installed)   ☐ Change in (Exiting unit)   ☐ Change owner (Registered unit)

(6) Major activity at this location (check one)

☐ Mining ☐ Quarry ☐ Contract Construction ☐ Manufacturing ☒ Other Steam Plant (specify)

☐ Public Services ☐ Retail/Wholesale Trade ☐ School or Church ☐ Hospital or Lab ☐ Offices

☐ Laundry / Dry Cleaner ☐ Hotel / Motel ☐ Entertainment (theatre, etc) ☐ Warehouse ☐ Nursing Home

☐ Residential Apartments ______ Numbers of units fuel burning equipments ☐ Other ______ Specify

(7) Date of Application: 2/10/2012 | Date Construction began: 07/12 | Date Completed: 10/14

(8) Primary fuel burning in this unit (check one)

☒ Natural Gas ☐ LP Gas ☐ Other Gas ☐ Diesel Fuel ☐ Oil #2 ☐ Oil #4 ☐ Wood

Quantity / year 629,807 MMBtu/yr
(specify units)

(9) Secondary fuel burned in this unit (check one)

☐ Natural Gas ☐ LP Gas ☐ Other Gas ☒ Diesel Fuel ☐ Oil #2 ☐ Oil #4 ☐ Wood

Quantity / year 49,151 MMBtu/yr
(specify units)

(10) Fuel oil property, if applicable

%Ash: N/A %Sulfur: 2 gr /100scf, 0.0015 % by weight Heat Content (BTU/fuel unit): 137,000 Btu/gal, 1,020 Btu/scf

(11) Type of oil burner, if applicable: TBD

☐ Steam Atom ☐ Air Atom ☐ Pressure or Gun type ☐ Other

(12) Furnace volume (ft^3): TBD (12a)Boiler type: ☐ Fire tube ☒ Water Tube

(13) Size of combustion unit (Maximum firing rate): 71.9 Million BTU/hour(gas)
68.3 Million BTU/hour(oil)

Amount of fuel used: Gas (10^6 ft^3/hr) 0.07 Oil (gals/hr) 498.3

(14) Gas cleaning or emission control device: N/A

(15) Estimated efficiency of control device: N/A %

(16) Stack height above ground, (ft): TBD Inner diameter at exit, (ft): 4.5

Exit gas temperature, deg F: 290 Exit gas velocity, ft\s: ~80

Exit gas moisture content, %: 20 Exit gas volume through stack, acfm: 76,340

(17) Emissions: **See Appendix B of application report for detailed emissions data.

Pollutants	Emission Factor (lb/gal or lb CF)*	Emission Rate (lb/hr)	Maximum Uncontrolled Emissions (Tons/yr)	Emission Controlled Efficiency (%)	Maximum Controlled Emissions (Tons/yr)
PM (Total)					
SO_x					
NO_x					
VOC					
CO					

* Note that other methods of calculating emissions (such as through the use of lb/mmBTU emission factors with the fuel usage rate and the heat content of the fuel) may be employed other than those envisioned by this table. If another method is used, you may develop a supplemental table for use in place of this table for application purposes.

Basis of estimates: See Appendix B and Section 4 of the application report.

(18) Emergency Episode Procedures:

How do you intent to comply with the requirements for reduced emissions during an air pollution episode?

Alert: N/A

Warning: N/A

Emergency: N/A

(19) Plans for permanent reduction of emissions: (Note that if control device installation of equipment modification is to occur at a later date, a separate permit application must be submitted):

Date of planned reductions: N/A

NOTE

Deviations from approved plans and specifications are not permissible without securing the formal approval of District Department of the Environment, Air Quality Division, Permitting and Enforcement Branch.

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Permitting and Enforcement Branch
Air Quality Division
1200 First Street, NE
5th Floor
Washington, DC 20002-3323

GOVERNMENT OF THE DISTRICT OF COLUMBIA
District Department of the Environment
Air Quality Division

APPLICATION FOR PERMIT TO CONSTRUCT / OPERATE A BOILER OR OTHER EXTERNAL COMBUSTION EQUIPMENT

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Business license name of organization applying for registration

(1b) United States, acting by and through the Architect of the Capitol
Name of owner(s) or principal partners(s) of above organization

(2a) U.S. Capitol Building, Washington, DC 20515
Mailing address of (1b) (No., Street, City, State, Zip)

(2b) U.S. Capitol Building, Washington, DC 20515
Mailing address of (1b) (No., Street, City, State, Zip)

(3) U.S. Capitol Power Plant, 25 E Street, SE, Washington, DC 20003
Equipment location address

(4a) C Potter
Signature of owner/operator

(4b) Acting Director, Utilities and Power
Official Title

(4c) Christopher Potter
Type or print name above

(4d) 202.226.3864
Emergency phone number

(5) Type of Application (check one):
Heat Recovery Steam Generation
Unit #2 Construction Application

☐ Initial application (Existing unit) ☒ New Unit (To be installed) ☐ Change in (Exiting unit) ☐ Change owner (Registered unit)

(6) Major activity at this location (check one)
☐ Mining ☐ Quarry ☐ Contract Construction ☐ Manufacturing ☒ Other Steam Plant (specify)
☐ Public Services ☐ Retail/Wholesale Trade ☐ School or Church ☐ Hospital or Lab ☐ Offices
☐ Laundry / Dry Cleaner ☐ Hotel / Motel ☐ Entertainment (theatre, etc) ☐ Warehouse ☐ Nursing Home
☐ Residential Apartments ____________ Numbers of units fuel burning equipments ☐ Other ________ Specify

(7) Date of Application: 2/10/2012 Date Construction began: 07/12 Date Completed: 10/14

(8) Primary fuel burning in this unit (check one)

☒ Natural Gas ☐ LP Gas ☐ Other Gas ☐ Diesel Fuel ☐ Oil #2 ☐ Oil #4 ☐ Wood

Quantity / year 629,807 MMBtu/yr
(specify units)

(9) Secondary fuel burned in this unit (check one)

☐ Natural Gas ☐ LP Gas ☐ Other Gas ☒ Diesel Fuel ☐ Oil #2 ☐ Oil #4 ☐ Wood

Quantity / year 49,151 MMBtu/yr
(specify units)

(10) Fuel oil property, if applicable

%Ash: N/A %Sulfur: 2 gr /100scf, 0.0015 % by weight Heat Content (BTU/fuel unit): 137,000 Btu/gal, 1,020 Btu/scf

(11) Type of oil burner, if applicable: TBD

☐ Steam Atom ☐ Air Atom ☐ Pressure or Gun type ☐ Other

(12) Furnace volume (ft^3): TBD (12a)Boiler type: ☐Fire tube ☒Water Tube

(13) Size of combustion unit (Maximum firing rate): 71.9 Million BTU/hour
68.3 Million BTU/hour(oil)

Amount of fuel used: Gas (10^6 ft^3/hr) 0.07 Oil (gals/hr) 498.3

(14) Gas cleaning or emission control device: N/A

(15) Estimated efficiency of control device: N/A %

(16) Stack height above ground, (ft): TBD Inner diameter at exit, (ft): 4.5

Exit gas temperature, deg F: 290 Exit gas velocity, ft\s: ~80

Exit gas moisture content, %: 20 Exit gas volume through stack, acfm: 76,340

(17) Emissions: **See Appendix B of application report for detailed emissions data.

Pollutants	Emission Factor (lb/gal or lb CF)*	Emission Rate (lb/hr)	Maximum Uncontrolled Emissions (Tons/yr)	Emission Controlled Efficiency (%)	Maximum Controlled Emissions (Tons/yr)
PM (Total)					
SO_x					
NO_x					
VOC					
CO					

* Note that other methods of calculating emissions (such as through the use of lb/mmBTU emission factors with the fuel usage rate and the heat content of the fuel) may be employed other than those envisioned by this table. If another method is used, you may develop a supplemental table for use in place of this table for application purposes.

Basis of estimates: See Appendix B and Section 4 of the application report.

(18) Emergency Episode Procedures:

How do you intent to comply with the requirements for reduced emissions during an air pollution episode?

Alert: N/A

Warning: N/A

Emergency: N/A

(19) Plans for permanent reduction of emissions: (Note that if control device installation of equipment modification is to occur at a later date, a separate permit application must be submitted):

Date of planned reductions: N/A

NOTE

Deviations from approved plans and specifications are not permissible without securing the formal approval of District Department of the Environment, Air Quality Division, Permitting and Enforcement Branch.

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Branch Chief
Permitting and Enforcement Branch
Air Quality Division
1200 First Street, NE
5th Floor
Washington, DC 20002-3323

APPENDIX B

Emissions Calculations

Architect of the Capitol
Cogeneration Project
CTG/HRSG

Criteria Pollutant Potential Emissions Calculations

Basis:

Number of Combustion Turbines/HRSGs	2		
Sulfur Content of Fuel			
Natural Gas	2	gr/100 scf	[1]
Diesel Oil	0.015	%	[2]
Heat Content of Fuel			
Natural Gas	1020	Btu/scf	[3]
Diesel Oil	137000	Btu/gal	[4]
Heat Input			
CT - Gas	78.40	MMBtu/hr	[5]
CT - Diesel Oil	74.37	MMBtu/hr	[5]
HRSG - Gas	71.9	MMBtu/hr	[5]
HRSG - Diesel Oil	68.3	MMBtu/hr	[5]
Hours of Operation			
CT/HRSG - Gas	8,760	hr/yr	
CT/HRSG - Diesel Oil	720	hr/yr	

Calculations:

Pollutant	Combustion Turbines				HRSGs				CT/HRSG Combined				Total PTE[6]	
	Natural Gas		Diesel Oil		Natural Gas		Diesel Oil		Natural Gas		Diesel Oil		100% on Gas	Gas & 720 Hrs Oil
	Em. Factor (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor (lb/MMBtu)	Em. Rate (lb/hr/unit)	(tpy)	(tpy)
CO	--	--	--	--	--	--	--	--	--	10.48 [5]	--	15.80 [5]	91.8	95.6
NO_x	--	--	--	--	--	--	--	--	--	11.84 [5]	--	32.29 [5]	103.7	118.4
TSP[7]	--	--	--	--	--	--	--	--	--	2.32 [5]	--	5.82 [5]	20.3	22.8
PM_{10}[7]	--	--	--	--	--	--	--	--	--	2.32 [5]	--	5.82 [5]	20.3	22.8
$PM_{2.5}$[7]	--	--	--	--	--	--	--	--	--	2.32 [5]	--	5.82 [5]	20.3	22.8
SO_2	--	0.439	--	1.157	--	0.403	--	1.062	--	0.84 [8]	--	2.22 [8]	7.4	8.4
VOC	--	--	--	--	--	--	--	--	--	1.30 [5]	--	4.00 [5]	11.4	13.3
H_2SO_4	--	--	--	--	--	--	--	--	--	0.06 [9]	--	0.17 [9]	0.6	0.6
Lead	0 [10]	0	1.4E-05 [11]	1.04E-03	4.90E-07 [12]	3.52E-05	9.00E-06 [13]	6.14E-04	--	3.52E-05	--	1.66E-03	0.0003	0.001
Fluorides	0 [10]	0	0 [10]	0	0 [10]	0	0 [10]	0	--	0.00	--	0.00	0	0
H_2S	0 [10]	0	0 [10]	0	0 [10]	0	0 [10]	0	--	0.00	--	0.00	0	0
Total Reduced Sulfur	0 [10]	0	0 [10]	0	0 [10]	0	0 [10]	0	--	0.00	--	0.00	0	0
CO_2	117 [14]	9.16E+03	163 [14]	1.21E+04	117 [14]	8.40E+03	163 [14]	1.11E+04	--	1.76E+04	--	2.33E+04	153,895.0	157,991.2
CH_4	2.20E-03 [15]	1.73E-01	6.61E-03 [15]	4.92E-01	2.20E-03 [15]	1.59E-01	6.61E-03 [15]	4.51E-01	--	0.33	--	0.94	2.9	3.3
N_2O	2.20E-04 [15]	1.73E-02	1.32E-03 [15]	9.84E-02	2.20E-04 [15]	1.59E-02	1.32E-03 [15]	9.03E-02	--	0.03	--	0.19	0.3	0.4
CO_2e[16]	--	--	--	--	--	--	--	--	--	NA	--	NA	154,045.9	158,186.1

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Criteria Pollutant Potential Emissions Calculations

Notes:

1. Sulfur content of natural gas based on information from vendors.
2. Sulfur content of diesel oil based on ultra low sulfur diesel.
3. US EPA, AP-42, Section 1.4
4. US EPA, AP-42, Appendix A
5. Based on performance data at 100% load, 59 °F, and 95% Relative Humidity

6. PTE Total based on the higher of firing either 8,760 hours per year on natural gas or 8,040 hours per year on natural gas with 720 hours per year on diesel oil.
7. Includes both filterable and condensible particulate matter.
8. SO_2 emission rate for natural gas and fuel oil are provided in the "SO_2 NG" and "SO_2 FO" tabs of this spreadsheet.
9. Assumed the following percent SO_2 oxidation rate. Assumed all SO_3 converted to H_2SO_4.
   SO_2 oxidation rate 5 %(v)
10. Emissions are insignificant and assumed to be negligible.
11. US EPA, AP-42, Table 3.1-2a
12. US EPA, AP-42, Table 1.4-2
13. US EPA, AP-42, Table 1.3-10
14. Table C-1 to Subpart C of 40 CFR Part 98 - Default CO_2 Emission Factors and High Heat Values for Various types of Fuel
15. Table C-2 to Subpart C of 40 CFR Part 98 - Default CH_4 and N_2O Emission Factors for Various Types of Fuel
16. CO_2 equivalents (CO_2e) based on the global warming potential for applicable pollutant as listed in Table A-1 to Subpart A of 40 CFR Part 98 - Global Warming Potentials.

CO_2	1
CH_4	21
N_2O	310

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HAPs Emissions Calculations

Basis:

Number of Combustion Turbines	2		
Number of HRSGs	2		
Heat Content of Fuel			
Natural Gas	1020	Btu/scf	[1]
Diesel Oil	137000	Btu/gal	[2]
Heat Input			
CT - Gas	78.4	MMBtu/hr	[3]
CT - Diesel Oil	74.4	MMBtu/hr	[3]
HRSG - Gas	71.9	MMBtu/hr	[3]
HRSG - Diesel Oil	68.3	MMBtu/hr	[3]
Hours of Operation			
CT - Gas	8,760	hr/yr	
CT - Diesel Oil	720	hr/yr	
HRSG - Gas	8,760	hr/yr	
HRSG - Diesel Oil	720	hr/yr	

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HAPs Emissions Calculations

Calculations:

Pollutant	Combustion Turbines				HRSGs				Total PTE	
	Natural Gas		Diesel Oil		Natural Gas		Diesel Oil		100% on Gas (tpy)	Gas & 720 Hrs Oil (tpy)
	Em. Factor [4] (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor [5] (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor [6] (lb/MMBtu)	Em. Rate (lb/hr/unit)	Em. Factor [7] (lb/MMBtu)	Em. Rate (lb/hr/unit)		
1,1,1-Trichloroethane							1.72E-06	1.18E-04	0.00E+00	8.47E-05
1,3-Butadiene	4.30E-07	3.37E-05	1.60E-05	1.19E-03					2.95E-04	1.13E-03
Acetaldehyde	4.00E-05	3.14E-03							2.75E-02	2.52E-02
Acrolein	6.40E-06	5.02E-04							4.40E-03	4.03E-03
Arsenic			1.10E-05	8.18E-04	1.96E-07	1.41E-05	4.00E-06	2.73E-04	1.23E-04	8.99E-04
Benzene	1.20E-05	9.41E-04	5.50E-05	4.09E-03	2.06E-06	1.48E-04	1.56E-06	1.07E-04	9.54E-03	1.18E-02
Beryllium			3.10E-07	2.31E-05	1.18E-08	8.46E-07	3.00E-06	2.05E-04	7.41E-06	1.71E-04
Cadmium			4.80E-06	3.57E-04	1.08E-06	7.75E-05	3.00E-06	2.05E-04	6.79E-04	1.03E-03
Chromium			1.10E-05	8.18E-04	1.37E-06	9.87E-05	3.00E-06	2.05E-04	8.64E-04	1.53E-03
Cobalt					8.24E-08	5.92E-06			5.19E-05	4.76E-05
Dichlorobenzene					1.18E-06	8.46E-05			7.41E-04	6.80E-04
Ethylbenzene	3.20E-05	2.51E-03					4.64E-07	3.17E-05	2.20E-02	2.02E-02
Formaldehyde	7.10E-04	5.57E-02	2.80E-04	2.08E-02	7.35E-05	5.29E-03	4.45E-04	3.04E-02	5.34E-01	5.27E-01
Hexane					1.76E-03	1.27E-01			1.11E+00	1.02E+00
Lead			1.40E-05	1.04E-03	4.90E-07	3.52E-05	9.00E-06	6.14E-04	3.09E-04	1.48E-03
Manganese			7.90E-04	5.88E-02	3.73E-07	2.68E-05	6.00E-06	4.10E-04	2.35E-04	4.28E-02
Mercury			1.20E-06	8.92E-05	2.55E-07	1.83E-05	3.00E-06	2.05E-04	1.61E-04	3.59E-04
Naphthalene	1.30E-06	1.02E-04	3.50E-05	2.60E-03	5.98E-07	4.30E-05	8.25E-06	5.63E-04	1.27E-03	3.44E-03
Nickel			4.60E-06	3.42E-04	2.06E-06	1.48E-04	3.00E-06	2.05E-04	1.30E-03	1.58E-03
PAH	2.20E-06	1.72E-04	4.00E-05	2.97E-03					1.51E-03	3.53E-03
POM					8.65E-08	6.22E-06	2.41E-05	1.64E-03	5.45E-05	1.23E-03
Propylene Oxides	2.90E-05	2.27E-03							1.99E-02	1.83E-02
Selenium			2.50E-05	1.86E-03	2.35E-08	1.69E-06	1.50E-05	1.02E-03	1.48E-05	2.09E-03
Toluene	1.30E-04	1.02E-02			3.33E-06	2.40E-04	4.53E-05	3.09E-03	9.14E-02	8.61E-02
Xylenes	6.40E-05	5.02E-03					7.96E-07	5.43E-05	4.40E-02	4.04E-02
Total Emissions									**1.9**	**1.8**

Notes:

1. US EPA, AP-42, Section 1.4
2. US EPA, AP-42, Appendix A
3. Based on performance data at 100% load, 59 °F, and 95% Relative Humidity
4. Emission factors as contained in Table 3.1-3 of AP-42 for natural gas fired stationary gas turbines.
5. Emission factors as contained in Table 3.1-4 and Table 3.1-5 of AP-42 for distillate fuel oil fired turbines.
6. Emission factors as contained in Table 1.4-2, Table 1.4-3, and Table 1.4-4 of AP-42 for external natural gas combustion.
7. Emission factors as contained in Table 1.3-8, Table 1.3-9, and Table 1.3-10 of AP-42 for external fuel oil combustion.

AOC Cogeneration Project
Combustion Turbine and HRSG SO_2 Emissions Calculation

Natural Gas Fuel

Basis:

Combustion Turbine

Fuel Flow	78.40	mmBtu/hr [1]
Heating Value	1,020	Btu/scf [2]
Sulfur Content	2.00	grains/100 scf [3]

HRSG

Fuel Flow	71.90	mmBtu/hr [1]
Heating Value	1,020	Btu/scf [2]
Sulfur Content	2.00	grains/100 scf [3]

SO_2 Emissions	Mass Rate (lb/hr/unit)
CT (2 grains/100 scf)	0.44
HRSG (2 grains/100 scf)	0.40

Notes:
1. Based on performance data at 100% load, 59 °F, and 95% Relative Humidity.
2. US EPA, AP-42, Section 1.4
3. Sulfur content of natural gas based on information from vendors.

AOC Cogeneration Project
Combustion Turbine and HRSG SO_2 Emissions Calculation

Diesel Oil

Basis:

Combustion Turbine

Fuel Burn Rate	74.37	mmBtu/hr [1]
Heating Value	137,000	Btu/gal [2]
Fuel Burn Rate	543	gal/hr
Sulfur Content	0.015	percent [3]
Density	7.11	lb/gal [4]

HRSG

Fuel Burn Rate	68.3	mmBtu/hr [1]
Heating Value	137,000	Btu/gal [2]
Fuel Burn Rate	498.3	gal/hr
Sulfur Content	0.015	percent [3]
Density	7.11	lb/gal [4]

SO_2 Emissions	Mass Rate (lb/hr/unit)
Combustion Turbine	1.16
HRSG	1.06

Notes:
1. Based on performance data at 100% load, 59 °F, and 95% Relative Humidity.
2. US EPA, AP-42, Appendix A
3. Sulfur content of fuel oil based on ultra low sulfur diesel.
4. Average of fuel analyses conducted by SGS on 4/1/11, 5/17/11, and 9/7/11.

APPENDIX C

PAL Application

The key components of the PAL regulations are outlined in this section. The regulatory requirements are cited and summarized, followed with the CPP's approach for addressing and complying with the requirements. In accordance with 40 CFR 52.21(aa)(3), the PAL application shall contain all the requirements outlined in this Appendix.

C.1. PAL APPLICATION REQUIREMENTS AND CALCULATION METHODOLOGY

40 CFR 52.21(aa)(3)(i) states that the PAL application shall contain:

A list of all emissions units at the source designated as small, significant or major based on their potential to emit. In addition, the owner or operator of the source shall indicate which, if any, Federal or State applicable requirements, emission limitations or work practices apply to each unit. An emission unit is small if its potential to emit is less than the significant level (SER) for that PAL pollutant. An emission unit is considered major if its potential to emit is greater than the major source threshold for the PAL pollutant and is considered significant if the potential to emit is less than the major source threshold but greater than the significant level.

A complete list of emission sources and ID numbers is provided in Table C-1. A detailed regulatory applicability analysis is included in Section 3.0 in the report for the new emission sources and Appendix D for the existing emission sources.

Table C-1. List of Emission Sources, Emission Source IDs, and Source Status

Emission Unit	ID No.	NO_X	NO_2	PM_{10}	$PM_{2.5}$	CO_2e
Boiler 1	B1	Major	Major	Significant	Significant	Major
Boiler 2	B2	Major	Major	Significant	Significant	Major
Boiler 3	B3	Major	Major	Small	Small	Small
Boiler 4	B4	Major	Significant	Small	Small	Small
Boiler 5	B5	Major	Significant	Small	Small	Small
Boiler 6	B6	Major	Significant	Small	Small	Small
Boiler 7	B7	Major	Significant	Small	Small	Small
Ash Handling	N/A	N/A	N/A	Small	Small	N/A
Coal Handling	N/A	N/A	N/A	Small	Small	N/A
Cooling Towers	N/A	N/A	N/A	Significant	Significant	N/A
Miscellaneous Combustion (engines)	N/A	Small	Small	Small	Small	Small
Combustion Turbine 1	CT1	Major	Small	Small	Small	Small
Combustion Turbine 2	CT2	Major	Small	Small	Small	Small
Heat Recovery Steam Generation Unit 1	HRSG1	Major	Small	Small	Small	Small
Heat Recovery Steam Generation Unit 2	HRSG2	Major	Small	Small	Small	Small

The requirements for performing the baseline calculations are codified in 40 CFR 52.21(aa)(3)(ii).

Calculations of the baseline actual emissions (with supporting documentation). Baseline actual emissions are to include emissions associated not only with operation of the unit, but also emissions associated with startup, shutdown and malfunction.

Baseline actual emissions are defined in 40 CFR §52.21 as the average rate of emissions (in tons per year) of a regulated NSR pollutant (in this case NO_2, PM_{10}, and CO_2e) actually emitted over a consecutive 24-month period and within the most recent 10 years prior to the submittal of an application for a PAL permit. The CPP is also proposing NO_x and $PM_{2.5}$ actuals PALs. However, the baseline actual emissions for NO_x and $PM_{2.5}$ will be determined by reviewing the average rate of emissions actually emitted over a consecutive 24-month period and within most recent

5 years. Please note that the CPP conservatively assumes that the emissions of NO_x and NO_2 are equal and measures both emissions using the CEMS units. As such, while the regulatory requirements mandate separate actuals PALs for these pollutants, the actuals PAL for both pollutants will be dictated by the more conservative nonattainment methodology (i.e., baseline period).

Fugitive emissions and emissions due to startup, shutdown, and malfunctions are included in the baseline actual emission estimates in this application. This section provides details of the calculation methodologies and sources of historical data used in the baseline actual emissions calculations for the units that are currently operating at the CPP. The actuals PAL level is the sum of the baseline actual emissions for each emissions unit at the source during a 24 month period minus any units that have been permanently shutdown after the selected 24-month period, plus the significant emission level for the PAL pollutant.

Furthermore, in addressing the requirement of 40 CFR 52.21(aa)(3)(iii), CPP will utilize the procedures outlined in the following sections (pertaining to baseline emissions calculations) for demonstrating compliance with the PAL. CPP will convert the monitoring data to monthly emissions and annual emissions based on a 12-month rolling total for each month as required by 40 CFR 52.21(aa)(13)(i).

C.1.1. NO_2/NO_X Emission Calculations for Boilers

NO_2/NO_X emissions for each of the seven boilers were calculated on a monthly basis using fuel usage data, results of fuel samples analyses, and output from the CEMS.

C.1.1.1. NO_2/NO_X Emissions – Sources of Historical Data

Consumption of natural gas, coal, and fuel oil in each of the seven boilers at the CPP was needed to calculate NO_2/NO_X emissions. Fuel usage is required to be reported in quarterly reports that the CPP submits to the DDOE. These reports were used as the main source of fuel usage data for the actuals PAL baseline emission calculations.[7] In cases where information in quarterly reports was insufficient, incorrect, or missing, other sources of data were utilized, such as the daily plant reports.

The high heating value of each fuel was also needed to calculate NO_2/NO_X emissions. Coal and fuel oil are required by the CPP's Title V permit to be sampled and analyzed on a quarterly basis. The results of these analyses were utilized for the baseline actual emissions calculations. All months in each quarter were assumed to have the same high heating value. In the event that data was not available for a quarter, the best available approximation (typically data from the quarter immediately before or after) was used to fill the missing data.

Natural gas is not required to be tested per the CPP's Title V permit. As such, the high heating value was based on values historically used in annual emissions reports. Prior to 2010, the CPP used a constant high heating value of 1,023 British thermal units per standard cubic foot (Btu/scf). Beginning in 2010, the CPP has used a high heating value of 1,020 Btu/scf. These default values were used for the appropriate years in the actuals PAL baseline actual emissions calculations.

Emission factors for NO_2/NO_X were taken from readings of the CEMS on each stack. Boilers 1 and 2 are based on the emission factor for the east stack. Boilers 3 through 7 are based on the emission factor for the west stack. Emission factors are an average for the month and are not dependent on fuel. Where full reports from the CEMS were available, monthly emission factors, in pounds per million British thermal units (lb/MMBtu), were used. When CEMS reports

[7] As reported to DDOE in January 2011, there are known errors in natural gas usage in Boiler 3. Historical natural gas usage has been appropriately adjusted to account for previous inconsistencies and errors in the reported meter readings.

were not available, quarterly average emission factors, as reported in the quarterly reports, were used. It should be noted that the CEMS captures emissions data during all types of operation including startup, shutdown, and malfunction (SSM) and all of this data is included in the average NO_2/NO_X factors.

C.1.1.2. NO_2/NO_X Emissions – Calculation Methodology

Emissions of NO_2/NO_X for each boiler were calculated using the amount of fuel combusted, fuel high heating value, and emission factor from CEMS data.[8] Monthly emissions were calculated according to the following equation:

$$NO_2 \text{ or } \mathrm{NO_x} = fuel \times EF \times HHV \times \frac{1}{2000}$$

Where:

NO_2 or NO_x	=	monthly emissions of NO_2 or NO_X	(tons/month)
fuel	=	amount of fuel combusted in month	(tons, scf or gallons/month)
EF	=	NO_2 emission factor	(lb/MMBtu)
HHV	=	high heating value of fuel	(MMBtu/ton, scf or gallon)
1/2000	=	conversion from pounds to tons	(tons/pound)

C.1.2. Particulate Emission Calculations for Boilers

Emissions of PM_{10} and $PM_{2.5}$ from the boilers were calculated to develop a baseline for establishing an actuals PAL level for these pollutants. Particulate emissions were based on historical fuel usage, fuel analysis data, and published emission factors. The same fuel consumption and fuel analysis data as was used for calculating NO_2/NO_X emissions was used in the particulate emission calculations.

C.1.2.1 Particulate Emissions – Emission Factors

Emission factors specific to the CPP's boilers for particulates are not available. As such, the particulates emissions calculations were based on published emission factors for the boilers. Emission factors were taken from U.S. EPA's *AP-42 - Compilation of Air Pollutant Emission Factors* (AP-42). For the CPP's boilers, emission factors were used from AP-42 Chapter 1, "External Combustion Sources", Sections 1.1, 1.3, and 1.4 for coal combustion, fuel oil combustion, and natural gas combustion, respectively. Emissions were calculated for total particulate (filterable + condensable).

Per AP-42, for natural gas combustion, all particulate matter is assumed to be $PM_{2.5}$.[9] As such, the emission factors for natural gas are the same for PM_{10} and $PM_{2.5}$. For coal and fuel oil combustion, fuel-specific particle size distributions in AP-42 were used to determine the fraction of particulate which is PM_{10} and $PM_{2.5}$.

C.1.2.2 Particulate Emissions – Calculation Methodology

PM_{10} and $PM_{2.5}$ emissions for each boiler were calculated using the same algorithm as NO_2/NO_X. Monthly particulate emissions were based on fuel consumption, high heating value, and published emission factors according to the following equation:

$$PM = fuel \times EF \times HHV \times \frac{1}{2000}$$

[8] Note that the baseline emissions for NO_x and NO_2 associated with the selected PAL baseline period were adjusted to reflect the 10 tpy NO_x limitation for Boiler 3 from Air Permit #4296.

[9] AP-42, Table 1.4-2 (7/98)

Where:

PM	=	monthly emissions of PM_{10} or $PM_{2.5}$	(tons/month)
fuel	=	amount of fuel combusted in month	(tons, scf or gallons/month)
EF	=	PM_{10} or $PM_{2.5}$ emission factor	(lb/MMBtu)
HHV	=	high heating value of fuel	(MMBtu/ton, scf or gallon)
1/2000	=	conversion from pounds to tons	(tons/pound)

Note that not all emission factors in AP-42 are in the correct units of pounds per million British thermal units. Emission factors were first converted to these units prior to utilizing the above equation. SSM emissions will be minimized through proper operation and maintenance of the boilers.

C.1.3 Greenhouse Gas Emission Calculations for Boilers

GHG emissions were calculated for the boilers according to the methodology in 40 CFR 98, *Mandatory Greenhouse Gas Reporting*. Emissions for each boiler were based on fuel consumption, results of fuel analyses, and emission factors from 40 CFR 98. The same fuel consumption and fuel analysis data as was used for calculating NO_2/NO_X and particulate emissions was used in the GHG emission calculations. The actuals PAL for GHG emissions is based on emissions of CO_2e.

C.1.3.1 Greenhouse Gas Emissions – Emission Factors

Emissions of three greenhouse gases were calculated for determining total GHG emissions: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Fuel-specific emission factors for each of these pollutants were taken from Tables C-1 and C-2 of Subpart C, *General Stationary Fuel Combustion Sources*, of 40 CFR 98. The three emission factors for each fuel were then combined into a single CO_2e emission factor using the global warming potential (GWP) of each pollutant. GWP values were obtained from Table A-1 of Subpart A, *General Provisions*, of 40 CFR 98. The following formula was used to calculate the CO_2e emission factor:

$$EF_{CO2e} = EF_{CO2} \times GWP_{CO2} + EF_{CH4} \times GWP_{CH4} + EF_{N2O} \times GWP_{N2O}$$

Where:

EF_{CO2e}	=	CO_2e emission factor	(kg/MMBtu)
EF_{CO2}	=	CO_2 emission factor	(kg/MMBtu)
GWP_{CO2}	=	global warming potential of CO_2	(dimensionless)
EF_{CH4}	=	CH_4 emission factor	(kg/MMBtu)
GWP_{CH4}	=	global warming potential of CH_4	(dimensionless)
EF_{N2O}	=	N_2O emission factor	(kg/MMBtu)
GWP_{N2O}	=	global warming potential of N_2O	(dimensionless)

C.1.3.2 Greenhouse Gas Emissions – Calculation Methodology

Emissions of CO_2e from each boiler were calculated using fuel consumption data, results of fuel analyses, and the calculated CO_2e emission factors. SSM emissions will be minimized through proper operation and maintenance of the boilers. Monthly emissions were calculated according to the following equation:

$$CO_2e = fuel \times EF \times HHV \times 2.2046 \times \frac{1}{2000}$$

Where:

CO_2e	=	monthly emissions of CO_2e	(tons/month)
fuel	=	amount of fuel combusted in month	(tons, scf or gallons/month)
EF	=	CO_2e emission factor	(kg/MMBtu)
HHV	=	high heating value of fuel	(MMBtu/ton, scf or gallon)
2.2046	=	conversion from kilograms to pounds	(pounds/kilogram)

1/2000 = conversion from pounds to tons (tons/pound)

C.1.4. Emission Calculations for Other Sources

Besides the seven boilers, emissions from the cooling towers, ash handling, and coal handling were quantified and included in the baseline actual emissions. These sources only produce particulate emissions. As such, only PM_{10} and $PM_{2.5}$ emission were calculated.

C.1.4.1. Cooling Tower Emissions[10]

Particulate emissions from the West Refrigeration Plant cooling tower (West cooling tower) and the West Refrigeration Plant Expansion cooling tower (West Expansion cooling tower) were calculated on a weekly basis.[11] The West Expansion cooling tower was only put into operation in late 2006/early 2007. As such, there are only five years of emissions included in the baseline actual emissions calculations for this unit.

C.1.4.2. Cooling Towers – Sources of Historical Data

Calculating emissions from the cooling towers required information on the flow rate of water through the tower and total dissolved solids (TDS) concentration. The flow rate through each cooling tower was determined through information available in CPP's senior management daily summary reports. The total chilled water flow rate for each tower is reported in daily summary reports which are completed on all week days which are not federal holidays. All available flow rate values for each tower were used to calculate an average flow rate for each tower for each week. It was assumed that this average weekly flow rate was representative of the entire week and occurred for seven days a week, 24 hours a day.

TDS concentration data is available on a weekly basis from reports prepared by General Electric (GE). However, there are periods of missing historical data due to missing reports or the monitoring equipment malfunctioning. In the event of missing data, the best available estimate based on information from adjacent weeks or the other tower was used to fill the gaps.

Annual emissions from the cooling towers which are reported to DDOE in the annual emissions report were based on the maximum TDS concentration and maximum flow rate (based on pump rated capacities) from the entire year. This resulted in a worst-case emission estimate. Calculating cooling tower emissions on a weekly basis using each TDS data value, even when using the missing data procedures, provided a significantly lower estimate of emissions. For calculating an actuals PAL baseline, lower emissions are considered to be more conservative. As such, the weekly values were summarized on a monthly basis and utilized to calculate the actuals PAL baseline PM_{10} and $PM_{2.5}$ emissions from the cooling towers.

C.1.4.3 Cooling Towers – Calculation Methodology

Emissions from the West and West Expansion cooling towers were calculated on a weekly basis using flow rate and TDS concentration information from historical files and the methodology in AP-42 Section 13.4, *Wet Cooling Towers*. Methods described below are very conservative and assume that once water evaporates, all remaining solid particles are smaller than 2.5 microns. This approach is used to be consistent with emissions calculation methodologies used in current annual emission reports submitted to the DDOE.

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[10] Due to the lack of availability of historical data, emissions could only be calculated for the cooling towers from October 2004 onward.

[11] Emissions were not calculated for the East Refrigeration Plant cooling tower since this unit is no longer in operation and therefore emissions cannot be used in developing an actuals PAL baseline.

AP-42 includes factors for induced draft loss and natural draft loss. Both towers are induced draft cooling towers. However, the fans are not operated at all times the towers are in use. To account for both factors, the CPP uses a total draft loss factor that is based on 50 percent of the induced draft factor and 50 percent of the natural draft factor. This draft factor (in pounds per 1,000 gallons) was then converted to gallons per minute (gpm) based on the density of water and circulating water flow rate using the following equation:

$$L_{drift} = \frac{CWFR \times L_{draft}}{1{,}000 \times \rho_{H2O}}$$

Where:

L_{drift}	=	drift loss	(gpm)
CWFR	=	circulating water flow rate	(gpm)
L_{draft}	=	draft loss factor	(lb/1,000 gal)
ρ_{H2O}	=	density of water (8.345)	(lb/gal)
1,000	=	constant	(1,000 gal/kgal)

TDS concentration is used to calculate an emission factor for PM_{10} and $PM_{2.5}$. Since it is being assumed that all solid particles are less than 2.5 microns, the two emission factors are equivalent. The following equation was used to calculate the emission factor:

$$EF_{PM} = \frac{TDS \times 3.78}{453.6 \times 1{,}000}$$

Where:

EF_{PM}	=	particulate emission factor	(lb/gal)
TDS	=	total dissolved solids concentration	(ppm)
3.78	=	conversion from ppm to grams/gallon	((grams/gallon)/ppm)
453.6	=	conversion from grams to pounds	(grams/pound)
1,000	=	constant	(1,000 gal/kgal)

This emission factor and the calculated drift loss are then used to calculate particulate emissions on a weekly basis according to the following equation:

$$PM = EF_{PM} \times L_{drift} \times 60 \times 24 \times 7$$

Where:

PM	=	weekly emissions of PM_{10} or $PM_{2.5}$	(lb/week)
EF_{PM}	=	particulate emission factor	(lb/gal)
L_{drift}	=	drift loss	(gpm)
60	=	conversion from minutes to hours	(minutes/hour)
24	=	conversion from hours to days	(hours/day)
7	=	conversion from days to weeks	(days/week)

Once weekly emissions were calculated, monthly emissions were quantified by adding the emissions for all weeks in that month. Since several weeks in a year span two months, emissions were included in the month in which the Monday of that week fell. As actuals PAL baselines are calculated based on a 24-month average and weekly emissions are relatively small, the error introduced through this assumption is very minimal.

C.1.5. Ash Handling Emissions

Emissions from ash handling were calculated based on ash throughput and the calculation methodologies in AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles*. The only emissions produced by ash handling operations are particulates. As such, emissions of PM_{10} and $PM_{2.5}$ were quantified. Similar to the emissions calculation methodology in the annual emissions reports submitted to the DDOE, ash handling was calculated using a constant throughput of 0.6 tons of ash per hour and assuming a baghouse control efficiency of 98 percent. Monthly coal consumption and coal fuel analysis results were also utilized. The same fuel consumption and fuel analysis data as was used for calculating NO_2/NO_X, particulate, and GHG emissions was used in these emission calculations.

Hours of operation were calculated based on monthly coal consumption in Boilers 1 and 2 according to the following equation:

$$H = \frac{Coal \times HHV}{HI}$$

Where:

H	=	monthly hours of operation	(hours/month)
Coal	=	coal consumption	(ton/month)
HHV	=	coal higher heating value	(MMBtu/ton)
HI	=	rated heat input of Boilers 1 & 2 on coal (160)	(MMBtu/hr)

Emission factors are based on moisture content, average wind speed, and a dimensionless particle size multiplier. The mean moisture content of landfilled fly ash was based on an AP-42 value. Average wind speed was based on the annual average from the past 45 years at Washington National Airport. Emissions were then calculated according to the following equation:

$$PM = EF \times ash \times H \times N \times (100 - \eta) \times \frac{1}{2000}$$

Where:

PM	=	monthly emissions of PM_{10} or $PM_{2.5}$	(tons/month)
EF	=	PM_{10} or $PM_{2.5}$ emission factor	(lb/ton)
ash	=	ash throughput (tons/hour)	
H	=	monthly hours of operation	(hours/month)
N	=	number of transfers (1)	(dimensionless)
η	=	baghouse control efficiency	(%)
1/2000	=	conversion from pounds to tons	(pounds/ton)

C.1.6. Coal Handling Emissions

Coal handling emissions were also calculated using AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles*. The only emissions produced by coal handling operations are particulates. As such, emissions of PM_{10} and $PM_{2.5}$ were quantified.

Throughput for coal handling was based on historical records. From October 2003 onward, plant fuel tracking reports and/or coal delivery receipts were available and used to determine monthly coal handling throughput. Prior to October 2003, this data was not available. As such, the monthly coal handling throughput was based on the amount of coal combusted each month.

Emission factors for coal handling were calculated using the same methods as for ash handling. For coal handling, the moisture content was based on the mean moisture content for a coal power plant provided in AP-42. There are three transfer points and there is no method of control for coal handling (i.e., zero control efficiency).

C.1.7. Other Unquantified Emission Sources

In calculating the actuals PAL baseline actual emissions, a few smaller emission sources were not quantified. This was done due to the small size and quantity of emissions and due to lack of sufficient historical data to quantify monthly emissions for the past 10 years. Omitted sources include one diesel-fired emergency generator (6.58 MMBtu/hr), one diesel-fired emergency fire pump (2.1 MMBtu/hr), one diesel-fired air compressor (0.74 MMBtu/hr), two diesel-fired portable generators (0.25 MMBtu/hr, each), and fuel oil-fired coal car burners (0.04 MMBtu/hr). Fugitive particulate emissions from wind erosion of the coal storage piles were also not quantified as these emissions are considered insignificant.

C.2. GENERAL REQUIREMENTS FOR ESTABLISHING A PAL

To establish an actuals PAL at a major stationary source, the requirements of 40 CFR §52.21(aa)(4)(i)(a) through (g) as outlined below must be met. The CPP has reviewed and has addressed each of the requirements listed in 40 CFR §52.21(aa)(4)(i)(a) through (g) in the text below.

(a)The PAL shall impose an annual emission limitation in tons per year that is enforceable as a practical matter, for the entire major stationary source. For each month during the PAL effective period after the first 12 months of establishing a PAL, the major stationary source owner or operator shall show that the sum of the monthly emissions from each emissions unit under the PAL for the previous 12 consecutive months is less than the PAL (a 12-month average, rolled monthly). For each month during the first 11 months from the PAL effective date, the major stationary source owner or operator shall show that the sum of the preceding monthly emissions from the PAL effective date for each emissions unit under the PAL is less than the PAL.

The CPP will monitor the actuals PAL levels on a monthly basis and in accordance with the terms and conditions issued in the permit. In addition, monitoring, recordkeeping and reporting have been proposed in Sections C-5, C-6, and C-7 to provide information to determine the compliance status of the facility on a 12-month rolling basis.

(b) The PAL shall be established in a PAL permit that meets the public participation requirements in paragraph (aa)(5) of this section.

40 CFR §52.21(aa)(5) requires that the PAL permit have at least a 30-day comment period for receiving public comments. The public will have the opportunity to comment on the draft permit per the requirements of 20 DCMR 206.5. Additionally, since the CPP is a Title V source and will remain so after this project, the public will have another opportunity to comment on the draft operating permit after the CPP submits an operating permit application to the DDOE (within 12 months of commencing operation). As such, the requirements of 40 CFR §52.21(aa)(5) will be met.

(c) The PAL permit shall contain all the requirements of paragraph (aa)(7) of this section.

Since this requirement specifies the contents of the PAL permit, it has been separately addressed in Section C-3. below.

(d) The PAL shall include fugitive emissions, to the extent quantifiable, from all emissions units that emit or have the potential to emit the PAL pollutant at the major stationary source.

The emission quantification procedures that have been set up for the CPP facility include the quantification of all fugitive emissions. Since the main emissions sources at the CPP include combustion sources, the fugitive emissions are limited to ash and coal handling operations and cooling towers.

(e) Each PAL shall regulate emissions of only one pollutant.

The CPP has requested different actuals PALs for NO_2, NO_x, PM_{10}, $PM_{2.5}$, and CO_2e. As such, each PAL will exclusively regulate emissions of one pollutant.

(f) Each PAL shall have a PAL effective period of 10 years.

The CPP requests that the actuals PAL be issued for a term of 10 years, except nonattainment NSR actuals PALs which have an effective period of 5 years.

(g) The owner or operator of the major stationary source with a PAL shall comply with the monitoring, recordkeeping, and reporting requirements provided in paragraphs (aa)(12) through (14) of this section for each emissions unit under the PAL through the PAL effective period.

As noted above, these requirements have been separately addressed in Sections C-5 through C-7 of this application.

C.3. SETTING THE ACTUALS PAL LEVELS

40 CFR §52.21(aa)(6) lists provisions for determining the actuals PAL level. The rule has procedures for existing sources and for new sources that were built after the 24-month baseline period. As described in Section C-1, the actuals PAL levels will be defined on a 10-year basis for NO_2, PM_{10}, and GHGs, and on a 5-year basis for NO_x and $PM_{2.5}$. This section describes the procedures that were utilized to set the actuals PAL levels for the PAL pollutants.

C.3.1. Existing Operations

For existing operations, the following requirements are found in 40 CFR §52.21(aa)(6)(i);

Except as provided in paragraph (aa)(6)(ii) of this section, the plan shall provide that the actuals PAL level for a major stationary source shall be established as the sum of the baseline actual emissions (as defined in paragraph (b)(48) of this section) of the PAL pollutant for each emissions unit at the source; plus an amount equal to the applicable significant level for the PAL pollutant under paragraph (b)(23) of this section or under the Act, whichever is lower. When establishing the actuals PAL level, for a PAL pollutant, only one consecutive 24-month period must be used to determine the baseline actual emissions for all existing emissions units. However, a different consecutive 24-month period may be used for each different PAL pollutant. Emissions associated with units that were permanently shut down after this 24-month period must be subtracted from the PAL level. The reviewing authority shall specify a reduced PAL level(s) (in tons/yr) in the PAL permit to become effective on the future compliance date(s) of any applicable Federal or State regulatory requirement(s) that the reviewing authority is aware of prior to issuance of the PAL permit. For instance, if the source owner or operator will be required to reduce emissions from industrial boilers in half from baseline emissions of 60 ppm NO_x to a new rule limit of 30 ppm, then the permit shall contain a future effective PAL level that is equal to the current PAL level reduced by half of the original baseline emissions of such unit(s).

The CPP is requesting different actuals PALs for NO_x, NO_2, PM_{10}, $PM_{2.5}$, and CO_2e. The CPP has reviewed the reported emissions and fuel usages from the past 10 years and has calculated (or recalculated) the emissions for the past 10 years (5 years for NO_x and $PM_{2.5}$) for all the subject pollutants to ensure consistency in the data. Justification for the baseline period selection under the nonattainment NSR actual PALs is included as Appendix E. Upon performing the calculations with the methodologies explained in Section C-1, the CPP has selected the following values for the baseline actual emissions and the actuals PAL levels, as presented in Table C-2:

Table C-2. Actuals PALs Levels

Pollutant	Baseline Selection Period	Baseline Actual Emissions (tpy)	SER[12] (tpy)	Actuals PAL Level (tpy)
NO_x	February 2007 – January 2009	171.7	25	196.7
NO_2	November 2002 – October 2004	208.1	40	248.1
PM_{10}	December 2006 – November 2008	27.9	15	42.9
$PM_{2.5}$	February 2007 – January 2009	25.5	10	35.5
CO_2e	November 2002 – October 2004	128,816	75,000	203,816

C.3.1.1. Newly Constructed Operations

Other than the proposed cogeneration project, there are no emission sources at the CPP that do not fall within the 24 month period that was used to develop baseline actual emissions for the existing emission sources. As such, the actuals PAL baseline is determined by the existing emission units at the CPP.

C.4. CONTENTS OF THE PAL PERMIT

The regulations provided in 40 CFR §52.21(aa)(7)(i) through (x) list the elements that are required for a PAL permit. The CPP has reviewed and has addressed each of the requirements listed in 40 §52.21(aa)(7)(i) through (x) in the text below to ensure that this application adequately addresses each of the required elements.

(i) The PAL pollutant and the applicable source-wide emission limitation in tons per year.

The CPP has provided the PAL pollutants, and has proposed the source-wide emission limits in Table C-2 above.

(ii) The PAL permit effective date and the expiration date of the PAL (PAL effective period).

The permit issuing authority, the DDOE, will establish the above dates through the issuance of the permit.

(iii) Specification in the PAL permit that if a major stationary source owner or operator applies to renew a PAL in accordance with paragraph (aa)(10) of this section before the end of the PAL effective period, then the PAL shall not expire at the end of the PAL effective period. It shall remain in effect until a revised PAL permit is issued by the reviewing authority.

The above component is a required condition of the permit to be issued by the DDOE. The CPP will adhere to the PAL permit renewal requirements as presented in the rule.

(iv) A requirement that emission calculations for compliance purposes include emissions from startups, shutdowns and malfunctions.

Based on the nature of the methods that are used to calculate the emissions (CEMS for NO_x and NO_2 and appropriate factors for the other pollutants), emissions that occur during startups, shutdowns, and malfunctions are captured in the emission calculation procedures. As such, the CPP will meet the requirement to include startup, shutdown and malfunction emissions in the compliance demonstration.

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[12] The SERs are defined under 40 CFR §52.21(b)(23)(i), except for the GHG SER that is defined in 40 CFR §52.21(b)(49)(iii).

(v) A requirement that, once the PAL expires, the major stationary source is subject to the requirements of paragraph (aa)(9) of this section.

Paragraph (aa)(9) of 40 CFR §52.21 codifies the requirements that apply to the facility upon expiration of a PAL permit if the PAL permit is not renewed. The above component of the rule will be a required condition of the permit.

(vi) The calculation procedures that the major stationary source owner or operator shall use to convert the monitoring system data to monthly emissions and annual emissions based on a 12-month rolling total for each month as required by paragraph (aa)(13)(i) of this section.

The calculation procedures are listed in Sections 4 and C-1 of this application. Data utilized to quantify emissions will be kept on file for a minimum of 5 years.

(vii) A requirement that the major stationary source owner or operator monitor all emissions units in accordance with the provisions under paragraph (aa)(12) of this section.

The CPP has listed its monitoring procedures in Section C-5 of this application.

(viii) A requirement to retain the records required under paragraph (aa)(13) of this section on site. Such records may be retained in an electronic format.

All individual monitoring records used to demonstrate compliance with the PAL will be kept onsite for 5 years from the date of the record. In addition, each annual certification of compliance and the PAL permit application will be kept on file for a minimum of the PAL permit effective period plus 5 years.

(ix) A requirement to submit the reports required under paragraph (aa)(14) of this section by the required deadlines.

The CPP will submit all compliance reports on or prior to the dates established within the permit.

(x) Any other requirements that the Administrator deems necessary to implement and enforce the PAL.

The CPP will review the draft permit and will comply with all reasonable permit requirements and will comment on any unreasonable requirements.

C.5. MONITORING REQUIREMENTS FOR A PAL

The regulations specify required PAL monitoring procedures in 40 CFR §52.21(aa)(12)(i) through (ix). The CPP has reviewed and has addressed the requirements listed in 40 CFR §52.21(aa)(12)(i) through (ix) in the text below that is pertinent to the proposed actuals PAL that is included in this application to ensure that this application adequately addresses each of the required elements.

(i) General requirements.

(a) Each PAL permit must contain enforceable requirements for the monitoring system that accurately determines plantwide emissions of the PAL pollutant in terms of mass per unit of time. Any monitoring system authorized for use in the PAL permit must be based on sound science and meet generally acceptable scientific procedures for data quality and manipulation. Additionally, the information generated by such system must meet minimum legal requirements for admissibility in a judicial proceeding to enforce the PAL permit.

(b) The PAL monitoring system must employ one or more of the four general monitoring approaches meeting the minimum requirements set forth in paragraphs (aa)(12)(ii) (a) through (d) of this section and must be approved by the Administrator.

(c) Notwithstanding paragraph (aa)(12)(i)(b) of this section, you may also employ an alternative monitoring approach that meets paragraph (aa)(12)(i)(a) of this section if approved by the Administrator.

(d) Failure to use a monitoring system that meets the requirements of this section renders the PAL invalid.

(ii) Minimum performance requirements for approved monitoring approaches. The following are acceptable general monitoring approaches when conducted in accordance with the minimum requirements in paragraphs (aa)(12)(iii) through (ix) of this section:

(a) Mass balance calculations for activities using coatings or solvents;

(b) CEMS;

(c) CPMS or PEMS; and

(d) Emission factors.

(iii) Mass balance calculations. An owner or operator using mass balance calculations to monitor PAL pollutant emissions from activities using coating or solvents shall meet the following requirements:

(a) Provide a demonstrated means of validating the published content of the PAL pollutant that is contained in or created by all materials used in or at the emissions unit;

(b) Assume that the emissions unit emits all of the PAL pollutant that is contained in or created by any raw material or fuel used in or at the emissions unit, if it cannot otherwise be accounted for in the process; and

(c) Where the vendor of a material or fuel, which is used in or at the emissions unit, publishes a range of pollutant content from such material, the owner or operator must use the highest value of the range to calculate the PAL pollutant emissions unless the Administrator determines there is site-specific data or a site-specific monitoring program to support another content within the range.

(iv) CEMS. An owner or operator using CEMS to monitor PAL pollutant emissions shall meet the following requirements:

(a) CEMS must comply with applicable Performance Specifications found in 40 CFR part 60, appendix B; and

(b) CEMS must sample, analyze, and record data at least every 15 minutes while the emissions unit is operating.

(v) CPMS or PEMS. An owner or operator using CPMS or PEMS to monitor PAL pollutant emissions shall meet the following requirements:

(a) The CPMS or the PEMS must be based on current site-specific data demonstrating a correlation between the monitored parameter(s) and the PAL pollutant emissions across the range of operation of the emissions unit; and

(b) Each CPMS or PEMS must sample, analyze, and record data at least every 15 minutes, or at another less frequent interval approved by the Administrator, while the emissions unit is operating.

(vi)Emission factors. An owner or operator using emission factors to monitor PAL pollutant emissions shall meet the following requirements:

(a) All emission factors shall be adjusted, if appropriate, to account for the degree of uncertainty or limitations in the factors' development;

(b) The emissions unit shall operate within the designated range of use for the emission factor, if applicable; and

(c) If technically practicable, the owner or operator of a significant emissions unit that relies on an emission factor to calculate PAL pollutant emissions shall conduct validation testing to determine a site-specific emission factor within 6 months of PAL permit issuance, unless the Administrator determines that testing is not required.

The CPP has utilized a combination of the methodologies noted in the rule for calculating and monitoring the emissions from its emission sources. The CPP boilers and the proposed cogeneration units are considered "significant emission units" for a few of the PAL pollutants per the definition of 40 CFR 52.21(aa)(2)(xi). For these units, the CPP cannot use AP-42 factor for monitoring these pollutants and will need to either use CEMS data or establish a site-specific emission factor within six months of PAL permit issuance. The CPP uses CEMS to monitor NO_x and NO_2 emissions from its existing boilers. The CPP has or will conduct validation testing to determine a site-specific emission factor within six months of PAL permit issuance where indicated in Table C-3 below. For the rest of the pollutants, the CPP will use the emission factors from the vendor and will supplement those emission factors with AP-42 and Greenhouse Gas Mandatory Reporting Rule emission factors where the vendor cannot provide the information. Table C-3 below summarizes the CPP's approach.

Table C-3. Source of Emission Factors for PAL Monitoring

Emission Unit	NO_X	NO_2	PM_{10}	$PM_{2.5}$	CO_2e
Boiler 1	CEMS	CEMS	Site-Specific	Site-Specific	EPA Mandatory Reporting Rule with Site-Specific Fuel Data
Boiler 2	CEMS	CEMS	Site-Specific	Site-Specific	EPA Mandatory Reporting Rule with Site-Specific Fuel Data
Boiler 3	CEMS	CEMS	AP-42	AP-42	EPA Mandatory Reporting Rule
Boiler 4	CEMS	CEMS	AP-42	AP-42	EPA Mandatory Reporting Rule
Boiler 5	CEMS	CEMS	AP-42	AP-42	EPA Mandatory Reporting Rule
Boiler 6	CEMS	CEMS	AP-42	AP-42	EPA Mandatory Reporting Rule
Boiler 7	CEMS	CEMS	AP-42	AP-42	EPA Mandatory Reporting Rule
Ash Handling	N/A	N/A	AP-42	AP-42	N/A
Coal Handling	N/A	N/A	AP-42	AP-42	N/A
Cooling Towers	N/A	N/A	AP-42 and Site-specific	AP-42 and Site-specific	N/A

Emission Unit	NO_X	NO_2	PM_{10}	$PM_{2.5}$	CO_2e
Miscellaneous Combustion (engines)	AP-42	AP-42	AP-42	AP-42	EPA Mandatory Reporting Rule[13]
Turbine 1	Site-Specific	Site-Specific	Manufacturer	Manufacturer	EPA Mandatory Reporting Rule
Turbine 2	Site-Specific	Site-Specific	Manufacturer	Manufacturer	EPA Mandatory Reporting Rule
HRSG 1	Site-Specific	Site-Specific	Manufacturer	Manufacturer	EPA Mandatory Reporting Rule
HRSG 2	Site-Specific	Site-Specific	Manufacturer	Manufacturer	EPA Mandatory Reporting Rule

(vii) A source owner or operator must record and report maximum potential emissions without considering enforceable emission limitations or operational restrictions for an emissions unit during any period of time that there is no monitoring data, unless another method for determining emissions during such periods is specified in the PAL permit.

The CPP has monitoring systems in place to monitor and record actual data and will continue to do so after installing the cogeneration units. In the unforeseen event actual data cannot be retrieved or is lost, the CPP will assume that the emissions during such event will be emitted at the potential emission levels (or enforceable emissions limitation or operational restriction).

(viii) Notwithstanding the requirements in paragraphs (aa)(12)(iii) through (vii) of this section, where an owner or operator of an emissions unit cannot demonstrate a correlation between the monitored parameter(s) and the PAL pollutant emissions rate at all operating points of the emissions unit, the Administrator shall, at the time of permit issuance:

(a) Establish default value(s) for determining compliance with the PAL based on the highest potential emissions reasonably estimated at such operating point(s); or

(b) Determine that operation of the emissions unit during operating conditions when there is no correlation between monitored parameter(s) and the PAL pollutant emissions is a violation of the PAL.

This section is not applicable to the actuals PAL levels as proposed in this application.

(ix) Re-validation. All data used to establish the PAL pollutant must be re-validated through performance testing or other scientifically valid means approved by the Administrator. Such testing must occur at least once every 5 years after issuance of the PAL.

Where required, CPP will conduct the re-validation at least every 5 years.

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[13] EPA Mandatory Reporting Rule (MRR) calculation methodologies will be utilized for this equipment despite not having to report these sources under the MRR.

C.6. RECORDKEEPING REQUIREMENTS FOR A PAL

The regulations specify required PAL recordkeeping procedures in 40 CFR §52.21(aa)(13)(i) through (ii). The CPP has reviewed and has addressed the requirements listed in 40 CFR §52.21(aa)(13)(i) through (ii) in the text below that is pertinent to the proposed actuals PALs included in this application to ensure that this application adequately addresses each of the required elements.

(i) The PAL permit shall require an owner or operator to retain a copy of all records necessary to determine compliance with any requirement of paragraph (aa) of this section and of the PAL, including a determination of each emissions unit's 12-month rolling total emissions, for 5 years from the date of such record.

(ii) The PAL permit shall require an owner or operator to retain a copy of the following records, for the duration of the PAL effective period plus 5 years:

(a) A copy of the PAL permit application and any applications for revisions to the PAL; and

(b) Each annual certification of compliance pursuant to title V and the data relied on in certifying the compliance.

The records listed in (a) and (b) above will be kept for the duration of the PAL permit effective period plus five years. All other records will be maintained for 5 years from the date of such a record.

C.7. REPORTING REQUIREMENTS FOR A PAL

The regulations specify required PAL reporting procedures in 40 CFR §52.21(aa)(14)(i) through (iii). The CPP has reviewed and has addressed the requirements listed in 40 CFR §52.21(aa)(14)(i) through (iii) in the text below that are pertinent to the proposed actuals PALs. This information is included in this application to ensure that the application adequately addresses each of the required elements.

The owner or operator shall submit semi-annual monitoring reports and prompt deviation reports to the Administrator in accordance with the applicable title V operating permit program. The reports shall meet the requirements in paragraphs (aa)(14)(i) through (iii) of this section.

(i) Semi-annual report. The semi-annual report shall be submitted to the Administrator within 30 days of the end of each reporting period. This report shall contain the information required in paragraphs (a)(14)(i)(a) through (g) of this section.

(a) The identification of owner and operator and the permit number.

(b) Total annual emissions (tons/year) based on a 12-month rolling total for each month in the reporting period recorded pursuant to paragraph (aa)(13)(i) of this section.

(c) All data relied upon, including, but not limited to, any Quality Assurance or Quality Control data, in calculating the monthly and annual PAL pollutant emissions.

(d) A list of any emissions units modified or added to the major stationary source during the preceding 6-month period.

(e) The number, duration, and cause of any deviations or monitoring malfunctions (other than the time associated with zero and span calibration checks), and any corrective action taken.

(f) A notification of a shutdown of any monitoring system, whether the shutdown was permanent or temporary, the reason for the shutdown, the anticipated date that the monitoring system will be fully operational or replaced with another monitoring system, and whether the emissions unit monitored by the monitoring system continued to operate, and the calculation of the emissions of the pollutant or the number determined by method included in the permit, as provided by paragraph (aa)(12)(vii) of this section.

(g) A signed statement by the responsible official (as defined by the applicable title V operating permit program) certifying the truth, accuracy, and completeness of the information provided in the report.

The CPP will submit the required semiannual reports along with its Title V semiannual reports after the PAL permit is issued. The CPP requests that the DDOE incorporate these requirements into the CPP's Title V permit upon commencement of operation of the cogeneration units. The CPP will send a separate Title V permit application for this purpose within 12 months of commencing operation of the cogeneration emission sources.

(ii) Deviation report. The major stationary source owner or operator shall promptly submit reports of any deviations or exceedance of the PAL requirements, including periods where no monitoring is available. A report submitted pursuant to §70.6(a)(3)(iii)(B) of this chapter shall satisfy this reporting requirement. The deviation reports shall be submitted within the time limits prescribed by the applicable program implementing §70.6(a)(3)(iii)(B) of this chapter. The reports shall contain the following information:

(a) The identification of owner and operator and the permit number;

(b) The PAL requirement that experienced the deviation or that was exceeded;

(c) Emissions resulting from the deviation or the exceedance; and

(d) A signed statement by the responsible official (as defined by the applicable title V operating permit program) certifying the truth, accuracy, and completeness of the information provided in the report.

The CPP will submit the required deviation reports along with its Title V deviation reports. The CPP requests that the DDOE incorporate these requirements into the CPP's Title V permit upon commencement of operation of the cogeneration units. The CPP will send a separate Title V permit application for this purpose within 12 months of commencing operation of the cogeneration emission sources.

(iii) Re-validation results. The owner or operator shall submit to the Administrator the results of any re-validation test or method within three months after completion of such test or method.

As noted above, the CPP will perform these tests as necessary and will submit the results to the DDOE within three months of the test date.

PAL Baseline Summaries

NO_X Baseline Emissions

Emission Unit	Actual Emissions (tpy) Feb. 07 - Jan. 08	Feb. 08 - Jan. 09	Average (tpy)
Boiler 1	63.90	61.12	62.51
Boiler 2	103.68	48.11	75.90
Boiler 3[1]	10.00	10.00	10.00
Boiler 4	4.58	7.33	5.95
Boiler 5	7.02	7.26	7.14
Boiler 6	2.47	4.61	3.54
Boiler 7	5.51	7.87	6.69
Total	***197.15***	***146.29***	***171.72***

NO_2 Baseline Emissions

Emission Unit	Actual Emissions (tpy) Nov. 02 - Oct. 03	Nov. 03 - Oct. 04	Average (tpy)
Boiler 1	85.08	104.12	94.60
Boiler 2	85.92	91.14	88.53
Boiler 3[1]	10.00	10.00	10.00
Boiler 4	6.54	3.25	4.89
Boiler 5	5.57	2.73	4.15
Boiler 6	4.30	1.32	2.81
Boiler 7	5.94	0.22	3.08
Total	***203.35***	***212.77***	***208.06***

$PM_{2.5}$ Baseline Emissions

Emission Unit	Actual Emissions (tpy) Feb. 07 - Jan. 08	Feb. 08 - Jan. 09	Average (tpy)
Boiler 1	5.92	6.03	5.98
Boiler 2	9.61	4.38	6.99
Boiler 3	0.93	1.40	1.16
Boiler 4	0.32	0.52	0.42
Boiler 5	0.48	0.48	0.48
Boiler 6	0.15	0.30	0.23
Boiler 7	0.38	0.53	0.46
West Cooling Tower	4.65	3.25	3.95
West Expansion Cooling Tower	5.38	6.09	5.73
Ash Handling	0.00	0.00	0.00
Coal Handling	0.00	0.00	0.00
Total	***27.83***	***22.97***	***25.40***

1. Baseline emissions for NO_x and NO_2 from Boiler 3 were adjusted to reflect the 10 tpy limitation from Air Permit #4296.

PAL Baseline Summaries

PM_{10} Baseline Emissions

Emission Unit	Actual Emissions (tpy) Aug. 04 - July 05	Actual Emissions (tpy) Aug. 05 - July 06	Average (tpy)
Boiler 1	13.83	3.37	8.60
Boiler 2	9.27	9.04	9.16
Boiler 3	0.20	0.85	0.52
Boiler 4	0.14	0.19	0.16
Boiler 5	0.26	0.83	0.55
Boiler 6	0.16	0.45	0.30
Boiler 7	0.07	0.06	0.07
West Cooling Tower	5.19	11.58	8.38
West Expansion Cooling Tower	0.00	0.00	0.00
Ash Handling	0.00	0.00	0.00
Coal Handling	0.05	0.02	0.03
Total	***29.17***	***26.39***	***27.78***

CO_2e Baseline Emissions

Emission Unit	Actual Emissions (tpy) Nov. 02 - Oct. 03	Actual Emissions (tpy) Nov. 03 - Oct. 04	Average (tpy)
Boiler 1	40,373	53,439	46,906
Boiler 2	44,074	46,560	45,317
Boiler 3	22,001	15,355	18,678
Boiler 4	6,718	3,618	5,168
Boiler 5	6,970	3,210	5,090
Boiler 6	5,743	1,616	3,679
Boiler 7	7,652	303	3,978
Total	***133,531***	***124,100***	***128,816***

PAL Baselines and Limits Summary

PAL Baselines - Maximum 24-Month Rolling Average Emissions

Lookback Period	NO_x (tpy)	NO_2 (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	CO_2 (tpy)
5 Years	171.72	--	25.40	--	--
(Period Ending)	Jan-09	--	Jan-09	--	--
10 Years	---	208.06	--	27.78	128,816
(Period Ending)	--	Oct-04	--	Jul-06	Oct-04

PAL Limits (Baseline + SER)

Lookback Period	NO_x (tpy)	NO_2 (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	CO_2 (tpy)
SER	25	40	10	15	75,000
5 Years	196.72	--	35.40	--	--
10 Years	--	248.06	--	42.78	203,816
PAL Selected	196.72	248.06	35.40	42.78	203,816

NO_x Baseline Emission Calculations

Boiler Fuel Consumption Data[1,2]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
	1 Natural Gas	SCF	9,477,028	31,177,028	28,325,024	34,453,959	22,998,045	15,969,013	4,529,032	9,573,998	0	769,013	5,733,040	8,104,594	16,739,980	26,183,187	19,225,513	10,551,124	21,519,941	10,167,155	0	0	84,156	3,284,668	3,412,515	1,073,118
	1 Coal	Tons	696	2,642	1,928	1,661	1,864	312	0	0	0	0	401	699	1,210	2,267	2,157	1,482	2,775	1,380	0	0	0	964	1,552	1,891
	2 Natural Gas	SCF	4,982,991	25,917,009	26,211,046	20,952,004	15,427,957	11,164,027	5,895,992	3,774,976	14,030,987	17,726,979	11,843,011	9,125,122	14,243,402	20,600,000	16,420,723	9,195,894	7,927,370	7,329,521	323,167	0	1,396,412	2,547,852	1,094,506	145,259
	2 Coal	Tons	587	2,395	1,752	1,626	1,871	357	0	0	0	1,111	1,356	628	1,385	3,732	2,431	1,353	492	1,164	0	0	188	1,025	912	1,333
	3 Natural Gas	SCF	44,970,968	3,309,873	4,652,004	0	398,045	24,166,960	35,665,982	39,766,960	32,204,985	574,976	0	26,275,660	4,521,017	2,375,367	14,928,837	64,078,201	13,870,968	18,174,389	70,170,186	67,661,095	601,925	72,930	68,666	43,011
	3 Oil	Gallons	0	125	194,648	281,248	96,872	502	48,627	12,741	0	116,356	13,153													
	4 Natural Gas	SCF	6,726,979	7,147,996	6,738,025	6,064,027	6,278,983	4,035,973	7,144,966	4,914,956	13,574,976	4,879,961	0	14,409,580	4,463,343	747,019	661,095	7,868,035	15,748,485	9,396,285	11,935,777	4,812,121	268,540	439,943	1,075,166	236,852
	4 Oil	Gallons	0	1,863	18,602	44,526	16,242	5,412	36,107	2,389	0	3,936	21,207	0	0	0	0	0	0	0	0	0	1,262	9,131	3,965	1,131
	5 Natural Gas	SCF	0	0	0	0	0	0	0	0	0	0	0	5,407,625	6,493,646	2,998,729	7,156,989	2,479,961	13,008,211	2,441,056	1,334,702	699,609	846,998	41,233	904,540	78,006
	5 Oil	Gallons	67,747	66,008	88,132	60,995	36,285	138,668	81,413	26,568	1,344	0	0	5,357	0	0	0	0	0	0	0	0	3,575	28,142	8,848	43,284
	6 Natural Gas	SCF	0	0	0	0	0	0	0	0	0	0	0	0	0	639,785	6,941,935	265,298	4,946,530	130,890	123,949	118,866	177,546	598,793	430,150	334,604
	6 Oil	Gallons	34,429	55,144	31,399	21,869	32,779	92,244	70,490	14,126	62,629	34,006	19,768	2,896	0	0	0	0	0	0	0	0	10,792	35,505	8,132	13,500
	7 Natural Gas	SCF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	617,791
	7 Oil	Gallons	110,232	98,171	103,292	41,240	19,625	43,579	80,743	7,981	2,788	33,611	78,140	14,581	2,740	5,025	5,628	3,111	678	0	0	0	0	0	0	7,470

Fuel Heat Content Data[3]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
	1 Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
	1 Coal	mmbtu/ton	2.86E+01	2.86E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.65E+01	2.65E+01	2.65E+01	2.85E+01	2.85E+01	2.85E+01	2.89E+01	2.89E+01	2.89E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01
	2 Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
	2 Coal	mmbtu/ton	2.86E+01	2.86E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.65E+01	2.65E+01	2.65E+01	2.85E+01	2.85E+01	2.85E+01	2.89E+01	2.89E+01	2.89E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01
	3 Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
	3 Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
	4 Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
	4 Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
	5 Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
	5 Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
	6 Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
	6 Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
	7 Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
	7 Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01

Calculated Monthly Heat Input[4]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
	1 Natural Gas	mmbtu	9,695	31,894	28,977	35,246	23,527	16,336	4,633	9,794	0	787	5,865	8,291	17,125	26,785	19,668	10,794	22,015	10,401	0	0	86	3,360	3,491	1,098
	1 Coal	mmbtu	19,915	75,598	54,961	47,362	53,150	8,882	0	0	0	0	10,625	19,927	34,511	64,664	62,298	42,803	80,148	39,543	0	0	0	27,642	44,495	54,197
	2 Natural Gas	mmbtu	5,098	26,513	26,814	21,434	15,783	11,421	6,032	3,862	14,354	18,135	12,115	9,335	14,571	21,074	16,798	9,407	8,110	7,498	331	0	1,429	2,606	1,120	149
	2 Coal	mmbtu	16,796	68,531	49,957	46,364	53,335	10,179	0	0	0	29,437	35,929	17,899	39,491	106,452	70,212	39,077	14,210	33,353	0	0	5,374	29,386	26,125	38,215
	3 Natural Gas	mmbtu	46,005	3,386	4,759	0	407	24,723	36,486	40,682	32,946	588	0	26,880	4,625	2,430	15,272	65,552	14,190	18,592	71,784	69,217	616	75	70	44
	3 Oil	mmbtu	0	18	28,224	40,781	14,046	70	6,764	1,772	0	19,932	2,253	0	0	0	0	0	0	0	0	0	0	0	0	0
	4 Natural Gas	mmbtu	6,882	7,312	6,893	6,204	6,423	4,129	7,309	5,028	13,887	4,992	0	14,741	4,566	764	676	8,049	16,111	9,612	12,210	4,923	275	450	1,100	242
	4 Oil	mmbtu	0	266	2,697	6,456	2,355	753	5,022	332	0	674	3,633	0	0	0	0	0	0	0	0	0	167	1,209	525	149
	5 Natural Gas	mmbtu	0	0	0	0	0	0	0	0	0	0	0	5,532	6,643	3,068	7,322	2,537	13,307	2,497	1,365	716	866	42	925	80
	5 Oil	mmbtu	9,687	9,438	12,779	8,844	5,261	19,289	11,325	3,696	230	0	0	707	0	0	0	0	0	0	0	0	474	3,728	1,172	5,708
	6 Natural Gas	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	655	7,102	271	5,060	134	127	122	182	613	440	342
	6 Oil	mmbtu	4,923	7,885	4,553	3,171	4,753	12,831	9,805	1,965	10,728	5,825	3,386	382	0	0	0	0	0	0	0	0	1,429	4,703	1,077	1,780
	7 Natural Gas	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	632
	7 Oil	mmbtu	15,762	14,037	14,977	5,980	2,846	6,062	11,231	1,110	478	5,758	13,385	1,925	362	663	742	410	89	0	0	0	0	0	0	985
Total			**134,763**	**244,879**	**235,590**	**221,842**	**181,887**	**114,675**	**98,608**	**68,241**	**72,623**	**86,128**	**87,191**	**105,619**	**121,894**	**226,554**	**200,091**	**178,901**	**173,240**	**121,631**	**85,817**	**74,977**	**10,898**	**73,814**	**80,541**	**103,621**

NO_x Baseline Emission Calculations

NO_x Emission Factors[5]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	lb/mmbtu	0.3632	0.3805	0.3774	0.3773	0.3754	0.3000	0.3000	0.3000	0.2500	0.2500	0.2500	0.3779	0.3946	0.3995	0.3942	0.3832	0.3690	0.3400	0.3400	0.3400	0.3557	0.3735	0.3003	0.3216
1	Coal	lb/mmbtu	0.3632	0.3805	0.3774	0.3773	0.3754	0.3000	0.3000	0.3000	0.2500	0.2500	0.2500	0.3779	0.3946	0.3995	0.3942	0.3832	0.3690	0.3400	0.3400	0.3400	0.3557	0.3735	0.3003	0.3216
2	Natural Gas	lb/mmbtu	0.3632	0.3805	0.3774	0.3773	0.3754	0.3000	0.3000	0.3000	0.2500	0.2500	0.2500	0.3779	0.3946	0.3995	0.3942	0.3832	0.3690	0.3400	0.3400	0.3400	0.3557	0.3735	0.3003	0.3216
2	Coal	lb/mmbtu	0.3632	0.3805	0.3774	0.3773	0.3754	0.3000	0.3000	0.3000	0.2500	0.2500	0.2500	0.3779	0.3946	0.3995	0.3942	0.3832	0.3690	0.3400	0.3400	0.3400	0.3557	0.3735	0.3003	0.3216
3	Natural Gas	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
3	Oil	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
4	Natural Gas	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
4	Oil	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
5	Natural Gas	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
5	Oil	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
6	Natural Gas	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
6	Oil	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
7	Natural Gas	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100
7	Oil	lb/mmbtu	0.1227	0.1386	0.1464	0.1506	0.1218	0.1200	0.1200	0.1200	0.1100	0.1100	0.1100	0.1049	0.0965	0.1170	0.1113	0.1244	0.1104	0.1000	0.1000	0.1000	0.1009	0.1115	0.0995	0.1100

NO_x Emissions in Pounds[6]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	lb	3,521	12,134	10,935	13,297	8,832	4,901	1,390	2,938	0	197	1,466	3,133	6,757	10,701	7,754	4,136	8,123	3,536	0	0	31	1,255	1,048	353
1	Coal	lb	7,233	28,762	20,741	17,868	19,952	2,665	0	0	0	0	2,656	7,529	13,617	25,834	24,560	16,401	29,573	13,444	0	0	0	10,325	13,360	17,430
2	Natural Gas	lb	1,851	10,087	10,119	8,086	5,925	3,426	1,809	1,159	3,588	4,534	3,029	3,527	5,749	8,419	6,623	3,605	2,992	2,549	112	0	508	974	336	48
2	Coal	lb	6,100	26,073	18,853	17,491	20,022	3,054	0	0	0	7,359	8,982	6,763	15,582	42,528	27,680	14,973	5,243	11,340	0	0	1,911	10,976	7,844	12,290
3	Natural Gas	lb	5,647	469	697	0	50	2,967	4,378	4,882	3,624	65	0	2,819	446	284	1,699	8,154	1,567	1,859	7,178	6,922	62	8	7	5
3	Oil	lb	0	2	4,133	6,140	1,711	8	812	213	0	2,192	248	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	lb	845	1,013	1,009	934	782	495	877	603	1,528	549	0	1,546	441	89	75	1,001	1,779	961	1,221	492	28	50	109	27
4	Oil	lb	0	37	395	972	287	90	603	40	0	74	400	0	0	0	0	0	0	0	0	0	17	135	52	16
5	Natural Gas	lb	0	0	0	0	0	0	0	0	0	0	0	580	641	359	815	316	1,469	250	137	72	87	5	92	9
5	Oil	lb	1,189	1,308	1,871	1,332	641	2,315	1,359	443	25	0	0	74	0	0	0	0	0	0	0	0	48	416	117	628
6	Natural Gas	lb	0	0	0	0	0	0	0	0	0	0	0	0	0	77	790	34	559	13	13	12	18	68	44	38
6	Oil	lb	604	1,093	667	477	579	1,540	1,177	236	1,180	641	372	40	0	0	0	0	0	0	0	0	144	524	107	196
7	Natural Gas	lb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70
7	Oil	lb	1,935	1,945	2,193	900	347	727	1,348	133	53	633	1,472	202	35	78	83	51	10	0	0	0	0	0	0	108

NO_x Emissions in Tons[7]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	tons	1.76	6.07	5.47	6.65	4.42	2.45	0.69	1.47	0.00	0.10	0.73	1.57	3.38	5.35	3.88	2.07	4.06	1.77	0.00	0.00	0.02	0.63	0.52	0.18
1	Coal	tons	3.62	14.38	10.37	8.93	9.98	1.33	0.00	0.00	0.00	0.00	1.33	3.76	6.81	12.92	12.28	8.20	14.79	6.72	0.00	0.00	0.00	5.16	6.68	8.72
2	Natural Gas	tons	0.93	5.04	5.06	4.04	2.96	1.71	0.90	0.58	1.79	2.27	1.51	1.76	2.87	4.21	3.31	1.80	1.50	1.27	0.06	0.00	0.25	0.49	0.17	0.02
2	Coal	tons	3.05	13.04	9.43	8.75	10.01	1.53	0.00	0.00	0.00	3.68	4.49	3.38	7.79	21.26	13.84	7.49	2.62	5.67	0.00	0.00	0.96	5.49	3.92	6.15
3	Natural Gas	tons	2.82	0.23	0.35	0.00	0.02	1.48	2.19	2.44	1.81	0.03	0.00	1.41	0.22	0.14	0.85	4.08	0.78	0.93	3.59	3.46	0.03	0.00	0.00	0.00
3	Oil	tons	0.00	0.00	2.07	3.07	0.86	0.00	0.41	0.11	0.00	1.10	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Natural Gas	tons	0.42	0.51	0.50	0.47	0.39	0.25	0.44	0.30	0.76	0.27	0.00	0.77	0.22	0.04	0.04	0.50	0.89	0.48	0.61	0.25	0.01	0.03	0.05	0.01
4	Oil	tons	0.00	0.02	0.20	0.49	0.14	0.05	0.30	0.02	0.00	0.04	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.07	0.03	0.01
5	Natural Gas	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.32	0.18	0.41	0.16	0.73	0.12	0.07	0.04	0.04	0.00	0.05	0.00
5	Oil	tons	0.59	0.65	0.94	0.67	0.32	1.16	0.68	0.22	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.21	0.06	0.31
6	Natural Gas	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.40	0.02	0.28	0.01	0.01	0.01	0.01	0.03	0.02	0.02
6	Oil	tons	0.30	0.55	0.33	0.24	0.29	0.77	0.59	0.12	0.59	0.32	0.19	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.26	0.05	0.10
7	Natural Gas	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
7	Oil	tons	0.97	0.97	1.10	0.45	0.17	0.36	0.67	0.07	0.03	0.32	0.74	0.10	0.02	0.04	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Total			14.46	41.46	35.81	33.75	29.56	11.09	6.88	5.32	5.00	8.12	9.31	13.11	21.63	44.18	35.04	24.34	25.66	16.98	4.33	3.75	1.43	12.37	11.56	15.61

NO_x Baseline Emission Calculations

Boiler Fuel Consumption Data[1,2]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	SCF	15,858,260	6,204,301	669,599	116,325	0	0	0	0	2,335,288	5,338,221	2,289,345	16,361,681	15,858,260	6,204,301	11,610,948	14,767,351	0	0	0	0	2,891,496	18,945,259	8,509,286	11,167,155
1	Coal	Tons	1,731	1,281	0	0	0	0	0	0	769	1,788	2,292	2,022	1,731	1,281	1,377	0	0	0	0	0	178	1,675	1,231	2,357
2	Natural Gas	SCF	11,659,824	8,611,926	9,383,187	7,132,942	12,397,849	17,519,062	5,749,756	0	1,104,594	11,766,373	13,542,522	13,286,413	11,659,824	8,611,926	12,694,037	0	0	0	0	0	1,737,048	8,224,829	11,747,801	14,454,545
2	Coal	Tons	1,780	2,176	2,016	1,998	1,538	978	508	0	0	1,306	1,584	1,992	1,780	2,176	0	0	0	0	0	0	0	2	1,351	1,806
3	Natural Gas	SCF	260,020	16,911,046	34,754,643	4,150,538	7,293,255	11,827,957	28,445,748	39,589,443	29,227,761	1,075,269	28,836,755	41,484,985	34,089,537	21,940,669	28,641,251	41,446,725	43,792,766	38,621,701	42,317,693	28,519,062	37,145,650	27,077,224	19,941,349	5,083,089
3	Oil	Gallons																								
4	Natural Gas	SCF	0	3,086,999	12,814,272	17,657,869	6,062,561	8,217,009	13,991,202	15,224,829	2,434,018	4,764,418	328,446	23,460	0	3,086,999	10,393,939	14,843,597	16,833,822	17,472,141	7,181,818	7,624,633	15,969,697	15,044,966	7,291,300	2,668,622
4	Oil	Gallons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184	0	87,232	36
5	Natural Gas	SCF	16,714,565	10,555,230	7,978,495	6,928,641	11,761,486	15,399,804	1,779,081	3,810,362	17,672,532	16,670,577	2,666,667	13,945,259	16,714,565	10,555,230	8,966,764	13,621,701	2,229,717	3,651,026	9,473,118	14,686,217	12,131,965	10,173,021	9,516,129	13,428,152
5	Oil	Gallons	0	0	1,181	0	0	0	726	0	0	0	0	0	0	0	0	59	0	0	0	0	87	0	3,339	0
6	Natural Gas	SCF	9,615,836	7,226,784	3,956,989	0	0	0	0	0	0	978	12,520,039	7,241,447	9,615,836	7,226,784	4,172,043	2,308,895	473,118	2,366,569	1,817,204	11,120,235	3,891,496	5,352,884	14,926,686	14,955,034
6	Oil	Gallons	0	0	7	0	0	0	0	0	0	27	592	0	0	0	0	0	0	0	0	0	129	0	0	0
7	Natural Gas	SCF	3,848,485	4,886,608	3,299,120	12,153,470	8,615,836	6,285,435	15,520,039	12,435,973	10,796,676	7,735,093	14,271,750	0	3,848,485	4,886,608	0	2,493,646	16,281,525	17,935,484	16,426,197	13,977,517	18,099,707	12,946,237	14,044,966	17,871,945
7	Oil	Gallons	785	1,705	0	0	0	0	0	0	0	0	0	0	785	1,705	0	607	0	0	0	18	167	0	0	0

Fuel Heat Content Data[3]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
1	Coal	mmbtu/ton	2.82E+01	2.82E+01	2.81E+01	2.81E+01	2.81E+01	2.76E+01	2.76E+01	2.76E+01	2.82E+01	2.82E+01	2.82E+01	2.83E+01	2.83E+01	2.83E+01	2.88E+01	2.88E+01	2.88E+01	2.86E+01	2.86E+01	2.86E+01	2.78E+01	2.78E+01	2.78E+01	2.80E+01
2	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
2	Coal	mmbtu/ton	2.82E+01	2.82E+01	2.81E+01	2.81E+01	2.81E+01	2.76E+01	2.76E+01	2.76E+01	2.82E+01	2.82E+01	2.82E+01	2.83E+01	2.83E+01	2.83E+01	2.88E+01	2.88E+01	2.88E+01	2.86E+01	2.86E+01	2.86E+01	2.78E+01	2.78E+01	2.78E+01	2.80E+01
3	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
3	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
4	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
4	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
5	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
5	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
6	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
6	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
7	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
7	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01

Calculated Monthly Heat Input[4]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	mmbtu	16,223	6,347	685	119	0	0	0	0	2,389	5,461	2,342	16,738	16,223	6,347	11,878	15,107	0	0	0	0	2,958	19,381	8,705	11,424
1	Coal	mmbtu	48,873	36,168	0	0	0	0	0	0	21,673	50,393	64,598	57,186	48,956	36,229	39,669	0	0	0	0	0	4,949	46,568	34,224	66,038
2	Natural Gas	mmbtu	11,928	8,810	9,599	7,297	12,683	17,922	5,882	0	1,130	12,037	13,854	13,592	11,928	8,810	12,986	0	0	0	0	0	1,777	8,414	12,018	14,787
2	Coal	mmbtu	50,257	61,437	56,581	56,076	43,166	27,030	14,040	0	0	36,808	44,643	56,338	50,342	61,542	0	0	0	0	0	0	0	56	37,561	50,601
3	Natural Gas	mmbtu	266	17,300	35,554	4,246	7,461	12,100	29,100	40,500	29,900	1,100	29,500	42,439	34,874	22,445	29,300	42,400	44,800	39,510	43,291	29,175	38,000	27,700	20,400	5,200
3	Oil	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	mmbtu	0	3,158	13,109	18,064	6,202	8,406	14,313	15,575	2,490	4,874	336	24	0	3,158	10,633	15,185	17,221	17,874	7,347	7,800	16,337	15,391	7,459	2,730
4	Oil	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	12,026	5
5	Natural Gas	mmbtu	17,099	10,798	8,162	7,088	12,032	15,754	1,820	3,898	18,079	17,054	2,728	14,266	17,099	10,798	9,173	13,935	2,281	3,735	9,691	15,024	12,411	10,407	9,735	13,737
5	Oil	mmbtu	0	0	164	0	0	0	100	0	0	0	0	0	0	0	0	8	0	0	0	0	12	0	460	0
6	Natural Gas	mmbtu	9,837	7,393	4,048	0	0	0	0	0	0	1	12,808	7,408	9,837	7,393	4,268	2,362	484	2,421	1,859	11,376	3,981	5,476	15,270	15,299
6	Oil	mmbtu	0	0	1	0	0	0	0	0	0	4	82	0	0	0	0	0	0	0	0	0	18	0	0	0
7	Natural Gas	mmbtu	3,937	4,999	3,375	12,433	8,814	6,430	15,877	12,722	11,045	7,913	14,600	0	3,937	4,999	0	2,551	16,656	18,348	16,804	14,299	18,516	13,244	14,368	18,283
7	Oil	mmbtu	109	237	0	0	0	0	0	0	0	0	0	0	108	235	0	84	0	0	0	3	23	0	0	0
Total			**158,529**	**156,647**	**131,278**	**105,323**	**90,358**	**87,642**	**81,133**	**72,695**	**86,706**	**135,645**	**185,492**	**207,991**	**193,304**	**161,956**	**117,907**	**91,633**	**81,442**	**81,888**	**78,992**	**77,677**	**99,007**	**146,637**	**172,226**	**198,104**

NO_x Baseline Emission Calculations

NO_x Emission Factors[5]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	lb/mmbtu	0.3970	0.3860	0.3750	0.3680	0.3320	0.2770	0.3270	0.3020	0.3360	0.3880	0.3960	0.3920	0.3770	0.3450	0.2270	0.1140	0.1936	0.0000	0.0000	0.0000	0.1910	0.3620	0.3630	0.3690
1	Coal	lb/mmbtu	0.3970	0.3860	0.3750	0.3680	0.3320	0.2770	0.3270	0.3020	0.3360	0.3880	0.3960	0.3920	0.3770	0.3450	0.2270	0.1140	0.1936	0.0000	0.0000	0.0000	0.1910	0.3620	0.3630	0.3690
2	Natural Gas	lb/mmbtu	0.3970	0.3860	0.3750	0.3680	0.3320	0.2770	0.3270	0.3020	0.3360	0.3880	0.3960	0.3920	0.3770	0.3450	0.2270	0.1140	0.1936	0.0000	0.0000	0.0000	0.1910	0.3620	0.3630	0.3690
2	Coal	lb/mmbtu	0.3970	0.3860	0.3750	0.3680	0.3320	0.2770	0.3270	0.3020	0.3360	0.3880	0.3960	0.3920	0.3770	0.3450	0.2270	0.1140	0.1936	0.0000	0.0000	0.0000	0.1910	0.3620	0.3630	0.3690
3	Natural Gas	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
3	Oil	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
4	Natural Gas	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
4	Oil	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
5	Natural Gas	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
5	Oil	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
6	Natural Gas	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
6	Oil	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
7	Natural Gas	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190
7	Oil	lb/mmbtu	0.1140	0.1160	0.1160	0.1040	0.0990	0.0970	0.1020	0.1080	0.1060	0.1050	0.1220	0.1230	0.1240	0.1170	0.1110	0.1090	0.1060	0.1030	0.1060	0.1030	0.1100	0.1090	0.1230	0.1190

NO_x Emissions in Pounds[6]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	lb	6,441	2,450	257	44	0	0	0	0	803	2,119	927	6,561	6,116	2,190	2,696	1,722	0	0	0	0	565	7,016	3,160	4,215
1	Coal	lb	19,403	13,961	0	0	0	0	0	0	7,282	19,552	25,581	22,417	18,456	12,499	9,005	0	0	0	0	0	945	16,858	12,423	24,368
2	Natural Gas	lb	4,735	3,401	3,600	2,685	4,211	4,964	1,923	0	380	4,670	5,486	5,328	4,497	3,039	2,948	0	0	0	0	0	339	3,046	4,363	5,456
2	Coal	lb	19,952	23,715	21,218	20,636	14,331	7,487	4,591	0	0	14,282	17,679	22,084	18,979	21,232	0	0	0	0	0	0	0	20	13,634	18,672
3	Natural Gas	lb	30	2,007	4,124	442	739	1,174	2,968	4,374	3,169	116	3,599	5,220	4,324	2,626	3,252	4,622	4,749	4,070	4,589	3,005	4,180	3,019	2,509	619
3	Oil	lb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	lb	0	366	1,521	1,879	614	815	1,460	1,682	264	512	41	3	0	369	1,180	1,655	1,825	1,841	779	803	1,797	1,678	917	325
4	Oil	lb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1,479	1
5	Natural Gas	lb	1,949	1,253	947	737	1,191	1,528	186	421	1,916	1,791	333	1,755	2,120	1,263	1,018	1,519	242	385	1,027	1,547	1,365	1,134	1,197	1,635
5	Oil	lb	0	0	19	0	0	0	10	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	57	0
6	Natural Gas	lb	1,121	858	470	0	0	0	0	0	0	0	1,563	911	1,220	865	474	257	51	249	197	1,172	438	597	1,878	1,821
6	Oil	lb	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	2	0	0	0
7	Natural Gas	lb	449	580	392	1,293	873	624	1,619	1,374	1,171	831	1,781	0	488	585	0	278	1,766	1,890	1,781	1,473	2,037	1,444	1,767	2,176
7	Oil	lb	12	27	0	0	0	0	0	0	0	0	0	0	13	28	0	9	0	0	0	0	3	0	0	0

NO_x Emissions in Tons[7]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	tons	3.22	1.22	0.13	0.02	0.00	0.00	0.00	0.00	0.40	1.06	0.46	3.28	3.06	1.09	1.35	0.86	0.00	0.00	0.00	0.00	0.28	3.51	1.58	2.11
1	Coal	tons	9.70	6.98	0.00	0.00	0.00	0.00	0.00	0.00	3.64	9.78	12.79	11.21	9.23	6.25	4.50	0.00	0.00	0.00	0.00	0.00	0.47	8.43	6.21	12.18
2	Natural Gas	tons	2.37	1.70	1.80	1.34	2.11	2.48	0.96	0.00	0.19	2.34	2.74	2.66	2.25	1.52	1.47	0.00	0.00	0.00	0.00	0.00	0.17	1.52	2.18	2.73
2	Coal	tons	9.98	11.86	10.61	10.32	7.17	3.74	2.30	0.00	0.00	7.14	8.84	11.04	9.49	10.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	6.82	9.34
3	Natural Gas	tons	0.02	1.00	2.06	0.22	0.37	0.59	1.48	2.19	1.58	0.06	1.80	2.61	2.16	1.31	1.63	2.31	2.37	2.03	2.29	1.50	2.09	1.51	1.25	0.31
3	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Natural Gas	tons	0.00	0.18	0.76	0.94	0.31	0.41	0.73	0.84	0.13	0.26	0.02	0.00	0.00	0.18	0.59	0.83	0.91	0.92	0.39	0.40	0.90	0.84	0.46	0.16
4	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00
5	Natural Gas	tons	0.97	0.63	0.47	0.37	0.60	0.76	0.09	0.21	0.96	0.90	0.17	0.88	1.06	0.63	0.51	0.76	0.12	0.19	0.51	0.77	0.68	0.57	0.60	0.82
5	Oil	tons	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
6	Natural Gas	tons	0.56	0.43	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.46	0.61	0.43	0.24	0.13	0.03	0.12	0.10	0.59	0.22	0.30	0.94	0.91
6	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Natural Gas	tons	0.22	0.29	0.20	0.65	0.44	0.31	0.81	0.69	0.59	0.42	0.89	0.00	0.24	0.29	0.00	0.14	0.88	0.94	0.89	0.74	1.02	0.72	0.88	1.09
7	Oil	tons	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			27.05	24.31	16.27	13.86	10.98	8.30	6.38	3.93	7.49	21.94	28.50	32.14	28.11	22.35	10.29	5.03	4.32	4.22	4.19	4.00	5.84	17.41	21.69	29.64

NO_x Baseline Emission Calculations

1. Boiler fuel consumption values are from quarterly reports submitted to DDOE.
2. Fuel oil usage in Boiler 3 is set to zero after September 2003.
3. Heat content for coal and fuel oil taken from quarterly fuel sampling results. Heat content of natural gas based on default value CPP was using during that timeframe (i.e., 1023 Btu/scf prior to 2010).
4. Heat input to boiler calculated as follows:
   Heat Input (MMBtu coal) = Fuel Usage (tons) x Heat Content (MMBtu/ton)
   Heat Input (MMBtu gas) = Fuel Usage (scf) x Heat Content (MMBtu/scf)
   Heat Input (MMBtu oil) = Fuel Usage (gallons) x Heat Content (MMBtu/gallon)
5. Emission factors are monthly average values from CEMS data. Where monthly data is not available, the quarterly average value as reported in quarterly reports was used.
6. Emissions in pounds calculated as follows:
   NO_x (lb) = EF (lb/MMBtu) x Heat Input (MMBtu)
7. Pounds converted to tons as follows:
   NO_x (tons) = NO_x(lb) x 1/2000 (tons/lb)
8. 24-month rolling emissions are for the 24-month period ending with the month shown. Emissions shown are calculated as the sum of 24-months of emissions divided by 2. Baseline emissions for NOx and NO2 were adjusted downward in the summary tables to reflect the 10 tpy limitation from Air Permit #4296.

$PM_{2.5}$ Baseline Emission Calculations

Boiler Fuel Consumption Data[1,2]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	SCF	15,858,260	6,204,301	669,599	116,325	0	0	0	0	2,335,288	5,338,221	2,289,345	16,361,681	15,858,260	6,204,301	11,610,948	14,767,351	0	0	0	0	2,891,496	18,945,259	8,509,286	11,167,155
1	Coal	Tons	1,731	1,281	0	0	0	0	0	0	769	1,788	2,292	2,022	1,731	1,281	1,377	0	0	0	0	0	178	1,675	1,231	2,357
2	Natural Gas	SCF	11,659,824	8,611,926	9,383,187	7,132,942	12,397,849	17,519,062	5,749,756	0	1,104,594	11,766,373	13,542,522	13,286,413	11,659,824	8,611,926	12,694,037	0	0	0	0	0	1,737,048	8,224,829	11,747,801	14,454,545
2	Coal	Tons	1,780	2,176	2,016	1,998	1,538	978	508	0	0	1,306	1,584	1,992	1,780	2,176	0	0	0	0	0	0	0	2	1,351	1,806
3	Natural Gas	SCF	260,020	16,911,046	34,754,643	4,150,538	7,293,255	11,827,957	28,445,748	39,589,443	29,227,761	1,075,269	28,836,755	41,484,985	34,089,537	21,940,669	28,641,251	41,446,725	43,792,766	38,621,701	42,317,693	28,519,062	37,145,650	27,077,224	19,941,349	5,083,089
3	Oil	Gallons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	SCF	0	3,086,999	12,814,272	17,657,869	6,062,561	8,217,009	13,991,202	15,224,829	2,434,018	4,764,418	328,446	23,460	0	3,086,999	10,393,939	14,843,597	16,833,822	17,472,141	7,181,818	7,624,633	15,969,697	15,044,966	7,291,300	2,668,622
4	Oil	Gallons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184	0	87,232	36
5	Natural Gas	SCF	16,714,565	10,555,230	7,978,495	6,928,641	11,761,486	15,399,804	1,779,081	3,810,362	17,672,532	16,670,577	2,666,667	13,945,259	16,714,565	10,555,230	8,966,764	13,621,701	2,229,717	3,651,026	9,473,118	14,686,217	12,131,965	10,173,021	9,516,129	13,428,152
5	Oil	Gallons	0	0	1,181	0	0	0	726	0	0	0	0	0	0	0	0	59	0	0	0	0	87	0	3,339	0
6	Natural Gas	SCF	9,615,836	7,226,784	3,956,989	0	0	0	0	0	0	978	12,520,039	7,241,447	9,615,836	7,226,784	4,172,043	2,308,895	473,118	2,366,569	1,817,204	11,120,235	3,891,496	5,352,884	14,926,686	14,955,034
6	Oil	Gallons	0	0	7	0	0	0	0	0	0	27	592	0	0	0	0	0	0	0	0	0	129	0	0	0
7	Natural Gas	SCF	3,848,485	4,886,608	3,299,120	12,153,470	8,615,836	6,285,435	15,520,039	12,435,973	10,796,676	7,735,093	14,271,750	0	3,848,485	4,886,608	0	2,493,646	16,281,525	17,935,484	16,426,197	13,977,517	18,099,707	12,946,237	14,044,966	17,871,945
7	Oil	Gallons	785	1,705	0	0	0	0	0	0	0	0	0	0	785	1,705	0	607	0	0	0	18	167	0	0	0

Fuel Heat Content Data[3]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
1	Coal	mmbtu/ton	2.82E+01	2.82E+01	2.81E+01	2.81E+01	2.81E+01	2.76E+01	2.76E+01	2.76E+01	2.82E+01	2.82E+01	2.82E+01	2.83E+01	2.83E+01	2.83E+01	2.88E+01	2.88E+01	2.88E+01	2.86E+01	2.86E+01	2.86E+01	2.78E+01	2.78E+01	2.78E+01	2.80E+01
2	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
2	Coal	mmbtu/ton	2.82E+01	2.82E+01	2.81E+01	2.81E+01	2.81E+01	2.76E+01	2.76E+01	2.76E+01	2.82E+01	2.82E+01	2.82E+01	2.83E+01	2.83E+01	2.83E+01	2.88E+01	2.88E+01	2.88E+01	2.86E+01	2.86E+01	2.86E+01	2.78E+01	2.78E+01	2.78E+01	2.80E+01
3	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
3	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
4	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
4	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
5	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
5	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
6	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
6	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01
7	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
7	Oil	mmbtu/gallon	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.38E-01	1.38E-01	1.38E-01	1.36E-01

Calculated Monthly Heat Input[4]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	mmbtu	16,223	6,347	685	119	0	0	0	0	2,389	5,461	2,342	16,738	16,223	6,347	11,878	15,107	0	0	0	0	2,958	19,381	8,705	11,424
1	Coal	mmbtu	48,873	36,168	0	0	0	0	0	0	21,673	50,393	64,598	57,186	48,956	36,229	39,669	0	0	0	0	0	4,949	46,568	34,224	66,038
2	Natural Gas	mmbtu	11,928	8,810	9,599	7,297	12,683	17,922	5,882	0	1,130	12,037	13,854	13,592	11,928	8,810	12,986	0	0	0	0	0	1,777	8,414	12,018	14,787
2	Coal	mmbtu	50,257	61,437	56,581	56,076	43,166	27,030	14,040	0	0	36,808	44,643	56,338	50,342	61,542	0	0	0	0	0	0	0	56	37,561	50,601
3	Natural Gas	mmbtu	266	17,300	35,554	4,246	7,461	12,100	29,100	40,500	29,900	1,100	29,500	42,439	34,874	22,445	29,300	42,400	44,800	39,510	43,291	29,175	38,000	27,700	20,400	5,200
3	Oil	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	mmbtu	0	3,158	13,109	18,064	6,202	8,406	14,313	15,575	2,490	4,874	336	24	0	3,158	10,633	15,185	17,221	17,874	7,347	7,800	16,337	15,391	7,459	2,730
4	Oil	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	12,026	5
5	Natural Gas	mmbtu	17,099	10,798	8,162	7,088	12,032	15,754	1,820	3,898	18,079	17,054	2,728	14,266	17,099	10,798	9,173	13,935	2,281	3,735	9,691	15,024	12,411	10,407	9,735	13,737
5	Oil	mmbtu	0	0	164	0	0	0	100	0	0	0	0	0	0	0	0	8	0	0	0	0	12	0	460	0
6	Natural Gas	mmbtu	9,837	7,393	4,048	0	0	0	0	0	0	1	12,808	7,408	9,837	7,393	4,268	2,362	484	2,421	1,859	11,376	3,981	5,476	15,270	15,299
6	Oil	mmbtu	0	0	1	0	0	0	0	0	0	4	82	0	0	0	0	0	0	0	0	0	18	0	0	0
7	Natural Gas	mmbtu	3,937	4,999	3,375	12,433	8,814	6,430	15,877	12,722	11,045	7,913	14,600	0	3,937	4,999	0	2,551	16,656	18,348	16,804	14,299	18,516	13,244	14,368	18,283
7	Oil	mmbtu	109	237	0	0	0	0	0	0	0	0	0	0	108	235	0	84	0	0	0	3	23	0	0	0

$PM_{2.5}$ Baseline Emission Calculations

$PM_{2.5}$ Emission Factors[5,6]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
1	Coal	lb/mmbtu	0.0411	0.0411	0.0411	0.0411	0.0411	0.0412	0.0412	0.0412	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0412	0.0412	0.0412	0.0411
2	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
2	Coal	lb/mmbtu	0.0411	0.0411	0.0411	0.0411	0.0411	0.0412	0.0412	0.0412	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0411	0.0412	0.0412	0.0412	0.0411
3	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
3	Oil	lb/mmbtu	0.0111	0.0111	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0114
4	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
4	Oil	lb/mmbtu	0.0111	0.0111	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0114
5	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
5	Oil	lb/mmbtu	0.0111	0.0111	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0114
6	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
6	Oil	lb/mmbtu	0.0111	0.0111	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0114
7	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
7	Oil	lb/mmbtu	0.0111	0.0111	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111	0.0112	0.0112	0.0112	0.0114

$PM_{2.5}$ Emissions in Pounds[7]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	lb	120.52	47.15	5.09	0.88	0.00	0.00	0.00	0.00	17.75	40.57	17.40	124.35	120.52	47.15	88.24	112.23	0.00	0.00	0.00	0.00	21.98	143.98	64.67	84.87
1	Coal	lb	2,010.31	1,487.70	0.00	0.00	0.00	0.00	0.00	0.00	891.55	2,072.94	2,657.25	2,352.15	2,013.64	1,490.16	1,630.81	0.00	0.00	0.00	0.00	0.00	203.65	1,916.33	1,408.36	2,716.96
2	Natural Gas	lb	88.61	65.45	71.31	54.21	94.22	133.14	43.70	0.00	8.39	89.42	102.92	100.98	88.61	65.45	96.47	0.00	0.00	0.00	0.00	0.00	13.20	62.51	89.28	109.85
2	Coal	lb	2,067.22	2,527.12	2,327.75	2,306.97	1,775.84	1,112.49	577.86	0.00	0.00	1,514.12	1,836.43	2,317.25	2,070.64	2,531.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.29	1,545.65	2,081.81
3	Natural Gas	lb	1.98	128.52	264.14	31.54	55.43	89.89	216.19	300.88	222.13	8.17	219.16	315.29	259.08	166.75	217.67	315.00	332.83	293.52	321.61	216.74	282.31	205.79	151.55	38.63
3	Oil	lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Natural Gas	lb	0.00	23.46	97.39	134.20	46.08	62.45	106.33	115.71	18.50	36.21	2.50	0.18	0.00	23.46	78.99	112.81	127.94	132.79	54.58	57.95	121.37	114.34	55.41	20.28
4	Oil	lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	135.21	0.06
5	Natural Gas	lb	127.03	80.22	60.64	52.66	89.39	117.04	13.52	28.96	134.31	126.70	20.27	105.98	127.03	80.22	68.15	103.52	16.95	27.75	72.00	111.62	92.20	77.31	72.32	102.05
5	Oil	lb	0.00	0.00	1.83	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.13	0.00	5.18	0.00
6	Natural Gas	lb	73.08	54.92	30.07	0.00	0.00	0.00	0.00	0.00	0.00	0.01	95.15	55.03	73.08	54.92	31.71	17.55	3.60	17.99	13.81	84.51	29.58	40.68	113.44	113.66
6	Oil	lb	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00
7	Natural Gas	lb	29.25	37.14	25.07	92.37	65.48	47.77	117.95	94.51	82.05	58.79	108.47	0.00	29.25	37.14	0.00	18.95	123.74	136.31	124.84	106.23	137.56	98.39	106.74	135.83
7	Oil	lb	1.22	2.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22	2.64	0.00	0.94	0.00	0.00	0.00	0.03	0.26	0.00	0.00	0.00

$PM_{2.5}$ Emissions in Tons[8,9]

Boiler	Fuel	Unit	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Natural Gas	tons	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.06	0.06	0.02	0.04	0.06	0.00	0.00	0.00	0.00	0.01	0.07	0.03	0.04
1	Coal	tons	1.01	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.45	1.04	1.33	1.18	1.01	0.75	0.82	0.00	0.00	0.00	0.00	0.00	0.10	0.96	0.70	1.36
2	Natural Gas	tons	0.04	0.03	0.04	0.03	0.05	0.07	0.02	0.00	0.00	0.04	0.05	0.05	0.04	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.04	0.05
2	Coal	tons	1.03	1.26	1.16	1.15	0.89	0.56	0.29	0.00	0.00	0.76	0.92	1.16	1.04	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.04
3	Natural Gas	tons	0.00	0.06	0.13	0.02	0.03	0.04	0.11	0.15	0.11	0.00	0.11	0.16	0.13	0.08	0.11	0.16	0.17	0.15	0.16	0.11	0.14	0.10	0.08	0.02
3	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Natural Gas	tons	0.00	0.01	0.05	0.07	0.02	0.03	0.05	0.06	0.01	0.02	0.00	0.00	0.00	0.01	0.04	0.06	0.06	0.07	0.03	0.03	0.06	0.06	0.03	0.01
4	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00
5	Natural Gas	tons	0.06	0.04	0.03	0.03	0.04	0.06	0.01	0.01	0.07	0.06	0.01	0.05	0.06	0.04	0.03	0.05	0.01	0.01	0.04	0.06	0.05	0.04	0.04	0.05
5	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Natural Gas	tons	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.03	0.04	0.03	0.02	0.01	0.00	0.01	0.01	0.04	0.01	0.02	0.06	0.06
6	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Natural Gas	tons	0.01	0.02	0.01	0.05	0.03	0.02	0.06	0.05	0.04	0.03	0.05	0.00	0.01	0.02	0.00	0.01	0.06	0.07	0.06	0.05	0.07	0.05	0.05	0.07
7	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Tower		tons	0.00	0.00	0.09	0.79	1.01	1.19	0.64	0.54	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.93	0.63	0.68	0.43	0.02	0.00	0.03	0.27
Exp. Tower		tons	0.28	0.53	0.68	0.08	0.21	0.30	0.46	0.48	0.62	0.56	0.68	0.52	0.50	0.69	0.63	0.49	0.50	0.52	0.33	0.62	0.66	0.63	0.52	0.01
Ash Handling		tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coal Handling		tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			2.54	2.75	2.21	2.20	2.28	2.27	1.64	1.28	1.70	2.53	3.21	3.21	2.89	2.94	1.73	1.08	1.74	1.45	1.30	1.34	1.13	1.97	2.42	2.98

$PM_{2.5}$ Baseline Emission Calculations

1. Boiler fuel consumption values are from quarterly reports submitted to DDOE.
2. Fuel oil usage in Boiler 3 is set to zero after September 2003.
3. Heat content for coal and fuel oil taken from quarterly fuel sampling results. Heat content of natural gas based on default value CPP was using during that timeframe (i.e., 1023 Btu/scf prior to 2010).
4. Heat input to boiler calculated as follows:
   Heat Input (MMBtu coal) = Fuel Usage (tons) x Heat Content (MMBtu/ton)
   Heat Input (MMBtu gas) = Fuel Usage (scf) x Heat Content (MMBtu/scf)
   Heat Input (MMBtu oil) = Fuel Usage (gallons) x Heat Content (MMBtu/gallon)
5. Emission factors for $PM_{2.5}$ from AP-42

	Filterable $PM_{2.5}$			Condensable $PM_{2.5}$			Total $PM_{2.5}$		
Fuel	EF	Units	Source	EF	Units	Source	EF	Units	Source
Coal	0.032	lb/ton	AP-42 Table 1.1-9	0.04	lb/MMBtu	AP-42 Table 1.1-5	--	--	--
Oil	0.25	lb/Mgal	AP-42 Table 1.3-6	1.3	lb/Mgal	AP-42 Table 1.3-2	1.55	lb/Mgal	--
Gas	1.9	lb/MMscf	AP-42 Table 1.4-2	5.7	lb/MMscf	AP-42 Table 1.4-2	7.6	lb/MMscf	AP-42 Table 1.4-2

6. Emission factors converted to lb/MMBtu as follows:
   EF (lb/MMBtu coal) = [EF (lb/ton) / Coal Heat Content (MMBtu/ton)] + EF (lb/MMBtu)
   EF (lb/MMBtu oil) = EF (lb/Mgal) / 1000 (gal/Mgal) / Oil Heat Content (MMBtu/gal)
   EF (lb/MMBtu gas) = EF (lb/MMscf) / 10^6 (scf/MMscf) / Gas Heat Content (MMBtu/scf)
7. Emissions in pounds calculated as follows:
   $PM_{2.5}$ (lb) = EF (lb/MMBtu) x Heat Input (MMBtu)
8. Pounds converted to tons as follows:
   $PM_{2.5}$ (tons) = $PM_{2.5}$(lb) x 1/2000 (tons/lb)
9. Details of cooling tower, ash handling, and coal handling emission calculations provided separately.
10. 24-month rolling emissions are for the 24-month period ending with the month shown. Emissions shown are calculated as the sum of 24-months of emissions divided by 2.

PM_{10} Baseline Emission Calculations

Boiler Fuel Consumption Data[1,2]

Boiler	Fuel	Unit	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1	Natural Gas	SCF	3,284,668	3,412,515	1,073,118	8,335,191	7,927,859	984,311	20,616	9,365	0	31,281	7,863,148	0	0	0	5,942,326	10,969,990	3,410,557	1,506,354	0	0	10,753	0	0	0
1	Coal	Tons	964	1,552	1,891	737	2,013	2,168	2,722	3,019	2,801	3,223	1,387	0	0	0	653	2,000	2,232	653	0	0	0	0	0	0
2	Natural Gas	SCF	2,547,852	1,094,506	145,259	1,856,989	4,949,365	408,719	100,831	28,788	0	160,313	2,389,052	1,184,751	0	2,148,583	15,521,994	20,505,376	10,672,532	9,586,510	7,511,241	8,689,150	8,667,644	12,535,679	10,646,139	0
2	Coal	Tons	1,025	912	1,333	1,451	2,156	2,142	1,791	2,487	1,100	38	661	6	0	344	1,340	891	1,270	1,501	2,103	2,263	1,386	1,578	1,588	0
3	Natural Gas	SCF	72,930	68,666	43,011	2,691,105	472,141	7,302	6,618	0	0	0	0	48,093,842	42,228,739	35,483,871	0	0	18,377,322	34,701,857	38,807,429	36,656,891	13,196,481	2,932,551	0	0
3	Oil	Gallons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	SCF	439,943	1,075,166	236,852	6,513,978	3,638,514	757,654	517,654	193,294	1,098,729	2,744,868	1,203,324	665,689	7,338,221	10,337,243	828,935	1,613,881	4,373,412	1,104,594	2,520,039	2,060,606	5,532,747	1,909,091	1,089,932	567,937
4	Oil	Gallons	9,131	3,965	1,131	2,039	43	43,951	501	0	0	0	0	0	0	0	0	0	356	24,096	7,293	0	0	0	0	0
5	Natural Gas	SCF	41,233	904,540	78,006	3,102,151	17,911,632	821,769	556,422	688,915	747,801	1,456,500	5,014,663	9,159,335	237,537	10,414,467	14,679,374	6,859,238	9,891,496	992,180	12,572,825	8,763,441	24,008,798	22,919,844	22,096,774	17,810,362
5	Oil	Gallons	28,142	8,848	43,284	1,963	37	10,101	1,975	0	0	0	0	0	0	0	0	369	10,981	154,311	59,367	0	0	0	0	0
6	Natural Gas	SCF	598,793	430,150	334,604	4,376,051	4,369,013	357,077	562,483	400,714	1,107,527	504,399	4,049,853	4,662,757	13,515,152	453,568	9,011,730	37,866,080	7,582,600	2,236,559	8,344,086	14,718,475	8,440,860	6,553,275	398,827	8,360,704
6	Oil	Gallons	35,505	8,132	13,500	7,871	0	247	35	0	0	0	0	0	0	0	0	0	57	655	235	0	0	0	0	0
7	Natural Gas	SCF	0	0	617,791	1,543,500	4,410,166	197,097	256,569	172,014	530,792	213,099	478,006	260,020	2,383,187	797,654	2,000,000	2,121,212	1,650,049	892,473	742,913	890,518	134,897	0	13,685	523,949
7	Oil	Gallons	0	0	7,470	1,190	4,403	20,052	3,193	0	0	0	0	0	0	0	26	300	3,480	3,639	8,103	7	0	0	0	6

Fuel Heat Content Data[3]

Boiler	Fuel	Unit	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
1	Coal	mmbtu/ton	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.88E+01	2.88E+01	2.88E+01	2.87E+01	2.87E+01	2.87E+01	2.90E+01	2.90E+01	2.90E+01	2.78E+01	2.78E+01	2.78E+01	2.88E+01	2.88E+01	2.88E+01	2.85E+01	2.85E+01	2.85E+01	2.84E+01
2	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
2	Coal	mmbtu/ton	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.88E+01	2.88E+01	2.88E+01	2.87E+01	2.87E+01	2.87E+01	2.90E+01	2.90E+01	2.90E+01	2.78E+01	2.78E+01	2.78E+01	2.88E+01	2.88E+01	2.88E+01	2.85E+01	2.85E+01	2.85E+01	2.84E+01
3	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
3	Oil	mmbtu/gallon	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.37E-01
4	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
4	Oil	mmbtu/gallon	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.37E-01
5	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
5	Oil	mmbtu/gallon	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.37E-01
6	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
6	Oil	mmbtu/gallon	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.37E-01
7	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
7	Oil	mmbtu/gallon	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.39E-01	1.37E-01

Calculated Monthly Heat Input[4]

Boiler	Fuel	Unit	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1	Natural Gas	mmbtu	3,360	3,491	1,098	8,527	8,110	1,007	21	10	0	32	8,044	0	0	0	6,079	11,222	3,489	1,541	0	0	11	0	0	0
1	Coal	mmbtu	27,642	44,495	54,197	21,132	57,682	62,360	78,309	86,853	80,260	92,352	39,743	0	0	0	18,148	55,584	62,032	18,835	0	0	0	0	0	0
2	Natural Gas	mmbtu	2,606	1,120	149	1,900	5,063	418	103	29	0	164	2,444	1,212	0	2,198	15,879	20,977	10,918	9,807	7,684	8,889	8,867	12,824	10,891	0
2	Coal	mmbtu	29,386	26,125	38,215	41,597	61,804	61,624	51,526	71,558	31,519	1,089	18,940	174	0	9,963	37,241	24,763	35,296	43,295	60,659	65,274	39,446	44,910	45,194	0
3	Natural Gas	mmbtu	75	70	44	2,753	483	7	7	0	0	0	0	49,200	43,200	36,300	0	0	18,800	35,500	39,700	37,500	13,500	3,000	0	0
3	Oil	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	mmbtu	450	1,100	242	6,664	3,722	775	530	198	1,124	2,808	1,231	681	7,507	10,575	848	1,651	4,474	1,130	2,578	2,108	5,660	1,953	1,115	581
4	Oil	mmbtu	1,209	525	149	269	6	5,805	66	0	0	0	0	0	0	0	0	0	50	3,339	1,011	0	0	0	0	0
5	Natural Gas	mmbtu	42	925	80	3,174	18,324	841	569	705	765	1,490	5,130	9,370	243	10,654	15,017	7,017	10,119	1,015	12,862	8,965	24,561	23,447	22,605	18,220
5	Oil	mmbtu	3,728	1,172	5,708	259	5	1,334	261	0	0	0	0	0	0	0	0	51	1,530	21,384	8,227	0	0	0	0	0
6	Natural Gas	mmbtu	613	440	342	4,477	4,470	365	575	410	1,133	516	4,143	4,770	13,826	464	9,219	38,737	7,757	2,288	8,536	15,057	8,635	6,704	408	8,553
6	Oil	mmbtu	4,703	1,077	1,780	1,038	0	33	5	0	0	0	0	0	0	0	0	0	8	91	33	0	0	0	0	0
7	Natural Gas	mmbtu	0	0	632	1,579	4,512	202	262	176	543	218	489	266	2,438	816	2,046	2,170	1,688	913	760	911	138	0	14	536
7	Oil	mmbtu	0	0	985	157	581	2,648	422	0	0	0	0	0	0	0	4	42	485	504	1,123	1	0	0	0	1

PM_{10} Baseline Emission Calculations

PM_{10} Emission Factors[5,6]

Boiler	Fuel	Unit	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
1	Coal	lb/mmbtu	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0426	0.0426	0.0426	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425
2	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
2	Coal	lb/mmbtu	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0426	0.0426	0.0426	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425	0.0425
3	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
3	Oil	lb/mmbtu	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0165	0.0165	0.0165	0.0166	0.0166	0.0166	0.0166	0.0166	0.0166	0.0168
4	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
4	Oil	lb/mmbtu	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0165	0.0165	0.0165	0.0166	0.0166	0.0166	0.0166	0.0166	0.0166	0.0168
5	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
5	Oil	lb/mmbtu	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0165	0.0165	0.0165	0.0166	0.0166	0.0166	0.0166	0.0166	0.0166	0.0168
6	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
6	Oil	lb/mmbtu	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0165	0.0165	0.0165	0.0166	0.0166	0.0166	0.0166	0.0166	0.0166	0.0168
7	Natural Gas	lb/mmbtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
7	Oil	lb/mmbtu	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174	0.0165	0.0165	0.0165	0.0166	0.0166	0.0166	0.0166	0.0166	0.0166	0.0168

PM_{10} Emissions in Pounds[7]

Boiler	Fuel	Unit	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1	Natural Gas	lb	24.96	25.94	8.16	63.35	60.25	7.48	0.16	0.07	0.00	0.24	59.76	0.00	0.00	0.00	45.16	83.37	25.92	11.45	0.00	0.00	0.08	0.00	0.00	0.00
1	Coal	lb	1,175.13	1,891.57	2,304.02	898.39	2,452.19	2,650.49	3,328.37	3,691.51	3,412.07	3,926.13	1,689.59	0.00	0.00	0.00	772.94	2,367.36	2,641.97	800.42	0.00	0.00	0.00	0.00	0.00	0.00
2	Natural Gas	lb	19.36	8.32	1.10	14.11	37.62	3.11	0.77	0.22	0.00	1.22	18.16	9.00	0.00	16.33	117.97	155.84	81.11	72.86	57.09	66.04	65.87	95.27	80.91	0.00
2	Coal	lb	1,249.25	1,110.64	1,624.60	1,768.38	2,627.41	2,619.19	2,190.01	3,041.39	1,339.98	46.29	805.20	7.38	0.00	423.29	1,586.13	1,054.66	1,503.27	1,839.87	2,577.77	2,773.89	1,677.61	1,910.01	1,922.12	0.00
3	Natural Gas	lb	0.55	0.52	0.33	20.45	3.59	0.06	0.05	0.00	0.00	0.00	0.00	365.51	320.94	269.68	0.00	0.00	139.67	263.73	294.94	278.59	100.29	22.29	0.00	0.00
3	Oil	lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Natural Gas	lb	3.34	8.17	1.80	49.51	27.65	5.76	3.93	1.47	8.35	20.86	9.15	5.06	55.77	78.56	6.30	12.27	33.24	8.39	19.15	15.66	42.05	14.51	8.28	4.32
4	Oil	lb	21.00	9.12	2.60	4.69	0.10	101.09	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	55.42	16.77	0.00	0.00	0.00	0.00	0.00
5	Natural Gas	lb	0.31	6.87	0.59	23.58	136.13	6.25	4.23	5.24	5.68	11.07	38.11	69.61	1.81	79.15	111.56	52.13	75.18	7.54	95.55	66.60	182.47	174.19	167.94	135.36
5	Oil	lb	64.73	20.35	99.55	4.52	0.09	23.23	4.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	25.26	354.92	136.54	0.00	0.00	0.00	0.00	0.00
6	Natural Gas	lb	4.55	3.27	2.54	33.26	33.20	2.71	4.27	3.05	8.42	3.83	30.78	35.44	102.72	3.45	68.49	287.78	57.63	17.00	63.42	111.86	64.15	49.80	3.03	63.54
6	Oil	lb	81.66	18.70	31.05	18.10	0.00	0.57	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	1.51	0.54	0.00	0.00	0.00	0.00	0.00
7	Natural Gas	lb	0.00	0.00	4.70	11.73	33.52	1.50	1.95	1.31	4.03	1.62	3.63	1.98	18.11	6.06	15.20	16.12	12.54	6.78	5.65	6.77	1.03	0.00	0.10	3.98
7	Oil	lb	0.00	0.00	17.18	2.74	10.13	46.12	7.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.69	8.00	8.37	18.64	0.02	0.00	0.00	0.00	0.01

PM_{10} Emissions in Tons[8,9]

Boiler	Fuel	Unit	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1	Natural Gas	tons	0.01	0.01	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.02	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1	Coal	tons	0.59	0.95	1.15	0.45	1.23	1.33	1.66	1.85	1.71	1.96	0.84	0.00	0.00	0.00	0.39	1.18	1.32	0.40	0.00	0.00	0.00	0.00	0.00	0.00
2	Natural Gas	tons	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.06	0.08	0.04	0.04	0.03	0.03	0.03	0.05	0.04	0.00
2	Coal	tons	0.62	0.56	0.81	0.88	1.31	1.31	1.10	1.52	0.67	0.02	0.40	0.00	0.00	0.21	0.79	0.53	0.75	0.92	1.29	1.39	0.84	0.96	0.96	0.00
3	Natural Gas	tons	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.16	0.13	0.00	0.00	0.07	0.13	0.15	0.14	0.05	0.01	0.00	0.00
3	Oil	tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Natural Gas	tons	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.04	0.00	0.01	0.02	0.00	0.01	0.01	0.02	0.01	0.00	0.00
4	Oil	tons	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00
5	Natural Gas	tons	0.00	0.00	0.00	0.01	0.07	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.00	0.04	0.06	0.03	0.04	0.00	0.05	0.03	0.09	0.09	0.08	0.07
5	Oil	tons	0.03	0.01	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.18	0.07	0.00	0.00	0.00	0.00	0.00
6	Natural Gas	tons	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.00	0.03	0.14	0.03	0.01	0.03	0.06	0.03	0.02	0.00	0.03
6	Oil	tons	0.04	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Natural Gas	tons	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Oil	tons	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
West Tower		tons	--	--	1.07	0.98	0.47	0.28	0.00	0.07	0.24	0.58	0.74	0.76	1.12	1.05	1.26	0.77	0.50	0.87	0.64	0.72	0.79	1.19	1.07	1.59
Exp. Tower		tons	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ash Handling		tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coal Handling		tons	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			1.32	1.56	3.12	2.44	3.18	3.02	2.78	3.44	2.63	2.59	2.07	1.00	1.37	1.49	2.62	2.79	2.81	2.60	2.29	2.38	1.86	2.33	2.16	1.70

PM_{10} Baseline Emission Calculations

1. Boiler fuel consumption values are from quarterly reports submitted to DDOE.
2. Fuel oil usage in Boiler 3 is set to zero after September 2003.
3. Heat content for coal and fuel oil taken from quarterly fuel sampling results. Heat content of natural gas based on default value CPP was using during that timeframe (i.e., 1023 Btu/scf prior to 2010).
4. Heat input to boiler calculated as follows:
   Heat Input (MMBtu coal) = Fuel Usage (tons) x Heat Content (MMBtu/ton)
   Heat Input (MMBtu gas) = Fuel Usage (scf) x Heat Content (MMBtu/scf)
   Heat Input (MMBtu oil) = Fuel Usage (gallons) x Heat Content (MMBtu/gallon)
5. Emission factors for PM_{10} from AP-42

	Filterable PM_{10}			Condensable PM_{10}			Total PM_{10}		
Fuel	EF	Units	Source	EF	Units	Source	EF	Units	Source
Coal	0.072	lb/ton	AP-42 Table 1.1-9	0.04	lb/MMBtu	AP-42 Table 1.1-5	--	--	--
Oil	1	lb/Mgal	AP-42 Table 1.3-6	1.3	lb/Mgal	AP-42 Table 1.3-2	2.3	lb/Mgal	--
Gas	1.9	lb/MMscf	AP-42 Table 1.4-2	5.7	lb/MMscf	AP-42 Table 1.4-2	7.6	lb/MMscf	AP-42 Table 1.4-2

6. Emission factors converted to lb/MMBtu as follows:
   EF (lb/MMBtu coal) = [EF (lb/ton) / Coal Heat Content (MMBtu/ton)] + EF (lb/MMBtu)
   EF (lb/MMBtu oil) = EF (lb/Mgal) / 1000 (gal/Mgal) / Oil Heat Content (MMBtu/gal)
   EF (lb/MMBtu gas) = EF (lb/MMscf) / 10^6 (scf/MMscf) / Gas Heat Content (MMBtu/scf)
7. Emissions in pounds calculated as follows:
   PM_{10} (lb) = EF (lb/MMBtu) x Heat Input (MMBtu)
8. Pounds converted to tons as follows:
   PM_{10} (tons) = PM_{10} (lb) x 1/2000 (tons/lb)
9. Details of cooling tower, ash handling, and coal handling emission calculations provided separately.
10. 24-month rolling emissions are for the 24-month period ending with the month shown. Emissions shown are calculated as the sum of 24-months of emissions divided by 2.

CO_2e Baseline Emission Calculations

Boiler Fuel Consumption Data[1,2]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	SCF	9,477,028	31,177,028	28,325,024	34,453,959	22,998,045	15,969,013	4,529,032	9,573,998	0	769,013	5,733,040	8,104,594	16,739,980	26,183,187	19,225,513	10,551,124	21,519,941	10,167,155	0	0	84,156	3,284,668	3,412,515	1,073,118
1	Coal	Tons	696	2,642	1,928	1,661	1,864	312	0	0	0	0	401	699	1,210	2,267	2,157	1,482	2,775	1,380	0	0	0	964	1,552	1,891
2	Natural Gas	SCF	4,982,991	25,917,009	26,211,046	20,952,004	15,427,957	11,164,027	5,895,992	3,774,976	14,030,987	17,726,979	11,843,011	9,125,122	14,243,402	20,600,000	16,420,723	9,195,894	7,927,370	7,329,521	323,167	0	1,396,412	2,547,852	1,094,506	145,259
2	Coal	Tons	587	2,395	1,752	1,626	1,871	357	0	0	0	1,111	1,356	628	1,385	3,732	2,431	1,353	492	1,164	0	0	188	1,025	912	1,333
3	Natural Gas	SCF	44,970,968	3,309,873	4,652,004	0	398,045	24,166,960	35,665,982	39,766,960	32,204,985	574,976	0	26,275,660	4,521,017	2,375,367	14,928,837	64,078,201	13,870,968	18,174,389	70,170,186	67,661,095	601,925	72,930	68,666	43,011
3	Oil	Gallons	0	125	194,648	281,248	96,872	502	48,627	12,741	0	116,356	13,153	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	SCF	6,726,979	7,147,996	6,738,025	6,064,027	6,278,983	4,035,973	7,144,966	4,914,956	13,574,976	4,879,961	0	14,409,580	4,463,343	747,019	661,095	7,868,035	15,748,485	9,396,285	11,935,777	4,812,121	268,540	439,943	1,075,166	236,852
4	Oil	Gallons	0	1,863	18,602	44,526	16,242	5,412	36,107	2,389	0	3,936	21,207	0	0	0	0	0	0	0	0	0	1,262	9,131	3,965	1,131
5	Natural Gas	SCF	0	0	0	0	0	0	0	0	0	0	0	5,407,625	6,493,646	2,998,729	7,156,989	2,479,961	13,008,211	2,441,056	1,334,702	699,609	846,998	41,233	904,540	78,006
5	Oil	Gallons	67,747	66,008	88,132	60,995	36,285	138,668	81,413	26,568	1,344	0	0	5,357	0	0	0	0	0	0	0	0	3,575	28,142	8,848	43,284
6	Natural Gas	SCF	0	0	0	0	0	0	0	0	0	0	0	0	0	639,785	6,941,935	265,298	4,946,530	130,890	123,949	118,866	177,546	598,793	430,150	334,604
6	Oil	Gallons	34,429	55,144	31,399	21,869	32,779	92,244	70,490	14,126	62,629	34,006	19,768	2,896	0	0	0	0	0	0	0	0	10,792	35,505	8,132	13,500
7	Natural Gas	SCF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	617,791
7	Oil	Gallons	110,232	98,171	103,292	41,240	19,625	43,579	80,743	7,981	2,788	33,611	78,140	14,581	2,740	5,025	5,628	3,111	678	0	0	0	0	0	0	7,470

Fuel Heat Content Data[3]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
1	Coal	mmbtu/ton	2.86E+01	2.86E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.65E+01	2.65E+01	2.65E+01	2.85E+01	2.85E+01	2.85E+01	2.89E+01	2.89E+01	2.89E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01
2	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
2	Coal	mmbtu/ton	2.86E+01	2.86E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.85E+01	2.65E+01	2.65E+01	2.65E+01	2.85E+01	2.85E+01	2.85E+01	2.89E+01	2.89E+01	2.89E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01	2.87E+01
3	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
3	Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
4	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
4	Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
5	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
5	Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
6	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
6	Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01
7	Natural Gas	mmbtu/scf	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
7	Oil	mmbtu/gallon	1.43E-01	1.43E-01	1.45E-01	1.45E-01	1.45E-01	1.39E-01	1.39E-01	1.39E-01	1.71E-01	1.71E-01	1.71E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01	1.32E-01

Calculated Monthly Heat Input[4]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	mmbtu	9,695	31,894	28,977	35,246	23,527	16,336	4,633	9,794	0	787	5,865	8,291	17,125	26,785	19,668	10,794	22,015	10,401	0	0	86	3,360	3,491	1,098
1	Coal	mmbtu	19,915	75,598	54,961	47,362	53,150	8,882	0	0	0	0	10,625	19,927	34,511	64,664	62,298	42,803	80,148	39,543	0	0	0	27,642	44,495	54,197
2	Natural Gas	mmbtu	5,098	26,513	26,814	21,434	15,783	11,421	6,032	3,862	14,354	18,135	12,115	9,335	14,571	21,074	16,798	9,407	8,110	7,498	331	0	1,429	2,606	1,120	149
2	Coal	mmbtu	16,796	68,531	49,957	46,364	53,335	10,179	0	0	0	29,437	35,929	17,899	39,491	106,452	70,212	39,077	14,210	33,353	0	0	5,374	29,386	26,125	38,215
3	Natural Gas	mmbtu	46,005	3,386	4,759	0	407	24,723	36,486	40,682	32,946	588	0	26,880	4,625	2,430	15,272	65,552	14,190	18,592	71,784	69,217	616	75	70	44
3	Oil	mmbtu	0	18	28,224	40,781	14,046	70	6,764	1,772	0	19,932	2,253	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	mmbtu	6,882	7,312	6,893	6,204	6,423	4,129	7,309	5,028	13,887	4,992	0	14,741	4,566	764	676	8,049	16,111	9,612	12,210	4,923	275	450	1,100	242
4	Oil	mmbtu	0	266	2,697	6,456	2,355	753	5,022	332	0	674	3,633	0	0	0	0	0	0	0	0	0	167	1,209	525	149
5	Natural Gas	mmbtu	0	0	0	0	0	0	0	0	0	0	0	5,532	6,643	3,068	7,322	2,537	13,307	2,497	1,365	716	866	42	925	80
5	Oil	mmbtu	9,687	9,438	12,779	8,844	5,261	19,289	11,325	3,696	230	0	0	707	0	0	0	0	0	0	0	0	474	3,728	1,172	5,708
6	Natural Gas	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	655	7,102	271	5,060	134	127	122	182	613	440	342
6	Oil	mmbtu	4,923	7,885	4,553	3,171	4,753	12,831	9,805	1,965	10,728	5,825	3,386	382	0	0	0	0	0	0	0	0	1,429	4,703	1,077	1,780
7	Natural Gas	mmbtu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	632
7	Oil	mmbtu	15,762	14,037	14,977	5,980	2,846	6,062	11,231	1,110	478	5,758	13,385	1,925	362	663	742	410	89	0	0	0	0	0	0	985

CO_2e Baseline Emission Calculations

CO_2e Emission Factors[5,6,7]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	lb/mmbtu	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
1	Coal	lb/mmbtu	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51
2	Natural Gas	lb/mmbtu	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
2	Coal	lb/mmbtu	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51	207.51
3	Natural Gas	lb/mmbtu	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
3	Oil	lb/mmbtu	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60
4	Natural Gas	lb/mmbtu	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
4	Oil	lb/mmbtu	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60
5	Natural Gas	lb/mmbtu	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
5	Oil	lb/mmbtu	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60
6	Natural Gas	lb/mmbtu	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
6	Oil	lb/mmbtu	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60
7	Natural Gas	lb/mmbtu	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00	117.00
7	Oil	lb/mmbtu	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60	163.60

CO_2e Emissions in Pounds[8]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	lb	1,134,340	3,731,690	3,390,324	4,123,918	2,752,719	1,911,388	542,096	1,145,946	0	92,046	686,208	970,068	2,003,668	3,133,960	2,301,171	1,262,902	2,575,799	1,216,943	0	0	10,073	393,154	408,456	128,445
1	Coal	lb	4,132,681	15,687,560	11,405,033	9,828,150	11,029,303	1,843,148	0	0	0	0	2,204,798	4,135,072	7,161,499	13,418,562	12,927,705	8,882,178	16,631,609	8,205,563	0	0	0	5,736,100	9,233,240	11,246,544
2	Natural Gas	lb	596,432	3,102,100	3,137,294	2,507,821	1,846,628	1,336,263	705,712	451,840	1,679,419	2,121,806	1,417,532	1,092,219	1,704,844	2,465,688	1,965,455	1,100,690	948,855	877,297	38,681	0	167,142	304,962	131,005	17,387
2	Coal	lb	3,485,465	14,220,934	10,366,598	9,621,055	11,067,764	2,112,372	0	0	0	6,108,554	7,455,624	3,714,225	8,194,971	22,090,019	14,569,889	8,109,033	2,948,739	6,921,214	0	0	1,115,197	6,097,900	5,421,347	7,930,095
3	Natural Gas	lb	5,382,737	396,171	556,815	0	47,643	2,892,630	4,268,989	4,759,850	3,854,730	68,821	0	3,145,028	541,137	284,316	1,786,886	7,669,750	1,660,266	2,175,358	8,398,921	8,098,599	72,047	8,729	8,219	5,148
3	Oil	lb	0	2,924	4,617,473	6,671,812	2,298,014	11,424	1,106,601	289,946	0	3,260,863	368,611	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	lb	805,176	855,569	806,498	725,825	751,554	483,080	855,207	588,289	1,624,838	584,100	0	1,724,734	534,234	89,413	79,129	941,753	1,884,993	1,124,675	1,428,636	575,980	32,143	52,658	128,690	28,350
4	Oil	lb	0	43,581	441,280	1,056,253	385,295	123,160	821,684	54,366	0	110,306	594,324	0	0	0	0	0	0	0	0	0	27,349	197,867	85,914	24,406
5	Natural Gas	lb	0	0	0	0	0	0	0	0	0	0	0	647,258	777,248	358,929	856,646	296,835	1,556,999	292,179	159,755	83,739	101,380	4,935	108,268	9,337
5	Oil	lb	1,584,796	1,544,116	2,090,682	1,446,934	860,759	3,155,657	1,852,709	604,606	37,665	0	0	115,686	0	0	0	0	0	0	0	0	77,480	609,864	191,745	933,764
6	Natural Gas	lb	0	0	0	0	0	0	0	0	0	0	0	0	0	76,578	830,905	31,754	592,068	15,667	14,836	14,228	21,251	71,672	51,486	40,050
6	Oil	lb	805,393	1,289,976	744,852	518,780	777,589	2,099,189	1,604,135	321,464	1,755,170	953,014	553,996	62,540	0	0	0	0	0	0	0	0	233,866	769,423	176,237	291,245
7	Natural Gas	lb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73,946
7	Oil	lb	2,578,641	2,296,500	2,450,310	978,302	465,548	991,724	1,837,462	181,623	78,133	941,944	2,189,864	314,882	59,171	108,517	121,406	67,110	14,626	0	0	0	0	0	0	161,150

CO_2e Emissions in Tons[9]

Boiler	Fuel	Unit	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04
1	Natural Gas	tons	567	1,866	1,695	2,062	1,376	956	271	573	0	46	343	485	1,002	1,567	1,151	631	1,288	608	0	0	5	197	204	64
1	Coal	tons	2,066	7,844	5,703	4,914	5,515	922	0	0	0	0	1,102	2,068	3,581	6,709	6,464	4,441	8,316	4,103	0	0	0	2,868	4,617	5,623
2	Natural Gas	tons	298	1,551	1,569	1,254	923	668	353	226	840	1,061	709	546	852	1,233	983	550	474	439	19	0	84	152	66	9
2	Coal	tons	1,743	7,110	5,183	4,811	5,534	1,056	0	0	0	3,054	3,728	1,857	4,097	11,045	7,285	4,055	1,474	3,461	0	0	558	3,049	2,711	3,965
3	Natural Gas	tons	2,691	198	278	0	24	1,446	2,134	2,380	1,927	34	0	1,573	271	142	893	3,835	830	1,088	4,199	4,049	36	4	4	3
3	Oil	tons	0	1	2,309	3,336	1,149	6	553	145	0	1,630	184	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Natural Gas	tons	403	428	403	363	376	242	428	294	812	292	0	862	267	45	40	471	942	562	714	288	16	26	64	14
4	Oil	tons	0	22	221	528	193	62	411	27	0	55	297	0	0	0	0	0	0	0	0	0	14	99	43	12
5	Natural Gas	tons	0	0	0	0	0	0	0	0	0	0	0	324	389	179	428	148	778	146	80	42	51	2	54	5
5	Oil	tons	792	772	1,045	723	430	1,578	926	302	19	0	0	58	0	0	0	0	0	0	0	0	39	305	96	467
6	Natural Gas	tons	0	0	0	0	0	0	0	0	0	0	0	0	0	38	415	16	296	8	7	7	11	36	26	20
6	Oil	tons	403	645	372	259	389	1,050	802	161	878	477	277	31	0	0	0	0	0	0	0	0	117	385	88	146
7	Natural Gas	tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
7	Oil	tons	1,289	1,148	1,225	489	233	496	919	91	39	471	1,095	157	30	54	61	34	7	0	0	0	0	0	0	81
Total			10,253	21,586	20,004	18,739	16,141	8,480	6,797	4,199	4,515	7,121	7,735	7,961	10,488	21,013	17,720	14,181	14,407	10,414	5,020	4,386	929	7,124	7,972	10,445

CO_2e Baseline Emission Calculations

1. Boiler fuel consumption values are from quarterly reports submitted to DDOE.
2. Fuel oil usage in Boiler 3 is set to zero after September 2003.

3. Heat content for coal and fuel oil taken from quarterly fuel sampling results. Heat content of natural gas based on default value CPP was using during that timeframe (i.e., 1023 Btu/scf prior to 2010).
4. Heat input to boiler calculated as follows:

   Heat Input (MMBtu coal) = Fuel Usage (tons) x Heat Content (MMBtu/ton)
   Heat Input (MMBtu gas) = Fuel Usage (scf) x Heat Content (MMBtu/scf)
   Heat Input (MMBtu oil) = Fuel Usage (gallons) x Heat Content (MMBtu/gallon)

5. Emission factors from 40 CFR 98 Supart C Tables C-1 and C-2.

Pollutant	Coal	Oil	Gas	Units
CO_2	93.4	73.96	53.02	kg/mmbtu
CH_4	1.10E-02	3.00E-03	1.00E-03	kg/mmbtu
N_2O	1.60E-03	6.00E-04	1.00E-04	kg/mmbtu

6. Emission factors for CO_2, CH_4, and N_2O converted to single CO_2e emission factor using global warming potentials (GWP) from 40 CFR 98 Subpart A Table A-1 and the following formula.

Pollutant	GWP
CO_2	1
CH_4	21
N_2O	310

   EF_{CO2e} (kg/MMBtu) = [EF_{CO2} (kg/MMBtu) * GWP_{CO2e}] + [EF_{CH4} (kg/MMBtu) * GWP_{CH4}] + [EF_{N2O} (kg/MMBtu) * GWP_{N2O}]

7. Emission factor coverted to lb/MMBtu using the conversion factor: 2.2046 lb/kg
8. Emissions in pounds calculated as follows:

   CO_2e (lb) = EF (lb/MMBtu) x Heat Input (MMBtu)

9. Pounds converted to tons as follows:

   CO_ce (tons) = CO_2e (lb) x 1/2000 (tons/lb)

10. 24-month rolling emissions are for the 24-month period ending with the month shown. Emissions shown are calculated as the sum of 24-months of emissions divided by 2.

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	10/4/04	10/11/04	10/18/04	10/25/04	11/1/04	11/8/04	11/15/04	11/22/04	11/29/04	12/6/04	12/13/04	12/20/04	12/27/04	1/3/05	1/10/05	1/17/05	1/24/05	1/31/05	2/7/05	2/14/05	2/21/05	2/28/05	3/7/05	3/14/05	3/21/05	3/28/05
West	Monday	gal/min	37,862		28,500	23,500	25,200	25,000	25,000	26,800	23,500	25,000	24,000	23,000	22,400	21,600	21,500		22,000	0	0	0		0	0	0	0	11,000
West Exp.	Monday	gal/min																										
West	Tuesday	gal/min	33,000	35,363	29,000	23,600	25,500	24,000	26,000	25,500	31,500	24,000	23,500	23,500	21,800	20,000	20,510	21,200	22,400	0	0	0	0	0	0	0	0	13,341
West Exp.	Tuesday	gal/min																										
West	Wednesday	gal/min	36,000	36,376	29,500	24,500	26,000	24,000	26,552	25,500	24,850	31,130	23,500	23,500	21,500	15,500	21,700	21,600	18,000	0	0	0	0	0	0	0	0	11,500
West Exp.	Wednesday	gal/min																										
West	Thursday	gal/min	35,200	36,376	28,500	23,500	25,000		26,552		24,500	31,000	23,500	24,000	21,800	17,500	21,000			0	0	0	0	0	0	0	0	11,725
West Exp.	Thursday	gal/min																										
West	Friday	gal/min	35,405	37,524	23,525	25,143	25,000	24,000	25,000	23,500	24,500	31,000	24,000			21,500	18,600	17,700	0	0	0	0	0	0	0	0	0	13,500
West Exp.	Friday	gal/min																										
West Weekly Average:			35,493	36,410	27,805	24,049	25,340	24,250	25,821	25,325	25,770	28,426	23,700	23,500	21,875	19,220	20,662	20,167	15,600	0	0	0	0	0	0	0	0	12,213
Expansion Weekly Average:			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	10/4/04	10/11/04	10/18/04	10/25/04	11/1/04	11/8/04	11/15/04	11/22/04	11/29/04	12/6/04	12/13/04	12/20/04	12/27/04	1/3/05	1/10/05	1/17/05	1/24/05	1/31/05	2/7/05	2/14/05	2/21/05	2/28/05	3/7/05	3/14/05	3/21/05	3/28/05
West	Conductivity	µS/cm	2,892	2,892	2,892	2,892	2,950	2,798	2,793	2,146	2,336	2,013	1,062	1,502	1,810	1,269	1,292	1,218	1,215	568	1,828	1,828	1,828	1,828	1,828	1,828	1,828	1,828
West Exp.	Conductivity	µS/cm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
West	TDS	ppm	1,938	1,938	1,938	1,938	1,977	1,875	1,871	1,438	1,565	1,349	712	1,006	1,213	850	866	816	814	381	1,225	1,225	1,225	1,225	1,225	1,225	1,225	1,225
West Exp.	TDS	ppm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Drift Loss[8,9,10]

Tower	Data	Units	10/4/04	10/11/04	10/18/04	10/25/04	11/1/04	11/8/04	11/15/04	11/22/04	11/29/04	12/6/04	12/13/04	12/20/04	12/27/04	1/3/05	1/10/05	1/17/05	1/24/05	1/31/05	2/7/05	2/14/05	2/21/05	2/28/05	3/7/05	3/14/05	3/21/05	3/28/05
West	Drift Loss	gal/min	3.77	3.87	2.95	2.55	2.69	2.58	2.74	2.69	2.74	3.02	2.52	2.50	2.32	2.04	2.19	2.14	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30
West Exp.	Drift Loss	gal/min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emission Factors[11,12]

Tower	Data	Units	10/4/04	10/11/04	10/18/04	10/25/04	11/1/04	11/8/04	11/15/04	11/22/04	11/29/04	12/6/04	12/13/04	12/20/04	12/27/04	1/3/05	1/10/05	1/17/05	1/24/05	1/31/05	2/7/05	2/14/05	2/21/05	2/28/05	3/7/05	3/14/05	3/21/05	3/28/05
West	PM_{10} EF	lb/gal	0.0161	0.0161	0.0161	0.0161	0.0165	0.0156	0.0156	0.0120	0.0130	0.0112	0.0059	0.0084	0.0101	0.0071	0.0072	0.0068	0.0068	0.0032	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102
West Exp.	PM_{10} EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West	$PM_{2.5}$ EF	lb/gal	0.0161	0.0161	0.0161	0.0161	0.0165	0.0156	0.0156	0.0120	0.0130	0.0112	0.0059	0.0084	0.0101	0.0071	0.0072	0.0068	0.0068	0.0032	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102
West Exp.	$PM_{2.5}$ EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Hourly Emissions[13]

Tower	Data	Units	10/4/04	10/11/04	10/18/04	10/25/04	11/1/04	11/8/04	11/15/04	11/22/04	11/29/04	12/6/04	12/13/04	12/20/04	12/27/04	1/3/05	1/10/05	1/17/05	1/24/05	1/31/05	2/7/05	2/14/05	2/21/05	2/28/05	3/7/05	3/14/05	3/21/05	3/28/05
West	PM_{10}	lb/hr	3.65	3.75	2.86	2.48	2.66	2.41	2.57	1.93	2.14	2.04	0.90	1.26	1.41	0.87	0.95	0.87	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79
West Exp.	PM_{10}	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/hr	3.65	3.75	2.86	2.48	2.66	2.41	2.57	1.93	2.14	2.04	0.90	1.26	1.41	0.87	0.95	0.87	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79
West Exp.	$PM_{2.5}$	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Weekly Emissions[14,15]

Tower	Data	Units	10/4/04	10/11/04	10/18/04	10/25/04	11/1/04	11/8/04	11/15/04	11/22/04	11/29/04	12/6/04	12/13/04	12/20/04	12/27/04	1/3/05	1/10/05	1/17/05	1/24/05	1/31/05	2/7/05	2/14/05	2/21/05	2/28/05	3/7/05	3/14/05	3/21/05	3/28/05
West	PM_{10}	lb/week	613.69	629.54	480.76	415.81	446.93	405.66	431.17	324.93	359.91	342.11	150.48	211.03	236.72	145.82	159.60	146.85	113.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	133.49
West Exp.	PM_{10}	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/week	613.69	629.54	480.76	415.81	446.93	405.66	431.17	324.93	359.91	342.11	150.48	211.03	236.72	145.82	159.60	146.85	113.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	133.49
West Exp.	$PM_{2.5}$	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	4/4/05	4/11/05	4/18/05	4/25/05	5/2/05	5/9/05	5/16/05	5/23/05	5/30/05	6/6/05	6/13/05	6/20/05	6/27/05	7/4/05	7/11/05	7/18/05	7/25/05	8/1/05	8/8/05	8/15/05	8/22/05	8/29/05	9/5/05	9/12/05	9/19/05	9/26/05
West	Monday	gal/min	13,200	13,400	14,460	13,800	13,844	14,460	13,800	27,431		35,500	36,376	30,500	37,334		38,245	32,702	34,800	26,000	36,376	39,156	38,706	36,862		38,706	39,146	39,146
West Exp.	Monday	gal/min																										
West	Tuesday	gal/min	13,200	14,460	12,522	14,460	13,200	13,585	15,000	21,000	37,200	36,000	35,418	37,700	36,800	38,200	40,300	35,289	33,392	37,000	37,000	38,245	36,376	36,862	37,500	38,245	40,889	36,562
West Exp.	Tuesday	gal/min																										
West	Wednesday	gal/min	13,100	14,400	12,522	13,500	13,200	13,200	27,500	16,000	37,200	36,500	37,128	37,334	38,400	38,200	40,789	32,311	40,423	35,400	37,334	37,795	36,500	38,245	37,339	39,500	35,900	36,376
West Exp.	Wednesday	gal/min																										
West	Thursday	gal/min	14,000	13,100	13,200	13,844	13,500	13,200	33,376	27,522	35,363	36,862	37,128	37,700	34,405	35,418	31,095	32,224	23,612	38,245	36,376	37,795	38,500	38,710	36,800	34,405	37,795	37,000
West Exp.	Thursday	gal/min																										
West	Friday	gal/min	14,000	13,100	13,200	13,300	13,000	14,460	28,146	30,038	35,700	35,542	38,275	37,794	36,862	35,100	32,500	32,224	24,000	37,795	36,578	38,245	36,862	35,904	36,000	36,958	37,600	36,695
West Exp.	Friday	gal/min																										
		West Weekly Average:	13,500	13,692	13,181	13,781	13,349	13,781	23,564	24,398	36,366	36,081	36,865	36,206	36,760	36,730	36,586	32,950	31,245	34,888	36,733	38,247	37,389	37,317	36,910	37,563	38,266	37,156
		Expansion Weekly Average:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	4/4/05	4/11/05	4/18/05	4/25/05	5/2/05	5/9/05	5/16/05	5/23/05	5/30/05	6/6/05	6/13/05	6/20/05	6/27/05	7/4/05	7/11/05	7/18/05	7/25/05	8/1/05	8/8/05	8/15/05	8/22/05	8/29/05	9/5/05	9/12/05	9/19/05	9/26/05
West	Conductivity	µS/cm	1,204	1,306	1,646	1,708	1,680	1,720	1,724	1,753	1,760	1,720	1,801	1,780	1,495	1,683	1,870	1,950	1,877	1,803	2,000	1,990	2,190	2,160	2,200	2,200	2,500	2,450
West Exp.	Conductivity	µS/cm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
West	TDS	ppm	807	875	1,103	1,144	1,126	1,152	1,155	1,175	1,179	1,152	1,207	1,193	1,002	1,127	1,253	1,307	1,257	1,208	1,340	1,333	1,467	1,447	1,474	1,474	1,675	1,642
West Exp.	TDS	ppm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Drift Loss[8,9,10]

Tower	Data	Units	4/4/05	4/11/05	4/18/05	4/25/05	5/2/05	5/9/05	5/16/05	5/23/05	5/30/05	6/6/05	6/13/05	6/20/05	6/27/05	7/4/05	7/11/05	7/18/05	7/25/05	8/1/05	8/8/05	8/15/05	8/22/05	8/29/05	9/5/05	9/12/05	9/19/05	9/26/05
West	Drift Loss	gal/min	1.43	1.45	1.40	1.46	1.42	1.46	2.50	2.59	3.86	3.83	3.92	3.85	3.91	3.90	3.89	3.50	3.32	3.71	3.90	4.06	3.97	3.96	3.92	3.99	4.07	3.95
West Exp.	Drift Loss	gal/min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emission Factors[11,12]

Tower	Data	Units	4/4/05	4/11/05	4/18/05	4/25/05	5/2/05	5/9/05	5/16/05	5/23/05	5/30/05	6/6/05	6/13/05	6/20/05	6/27/05	7/4/05	7/11/05	7/18/05	7/25/05	8/1/05	8/8/05	8/15/05	8/22/05	8/29/05	9/5/05	9/12/05	9/19/05	9/26/05
West	PM_{10} EF	lb/gal	0.0067	0.0073	0.0092	0.0095	0.0094	0.0096	0.0096	0.0098	0.0098	0.0096	0.0101	0.0099	0.0083	0.0094	0.0104	0.0109	0.0105	0.0101	0.0112	0.0111	0.0122	0.0121	0.0123	0.0123	0.0140	0.0137
West Exp.	PM_{10} EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West	$PM_{2.5}$ EF	lb/gal	0.0067	0.0073	0.0092	0.0095	0.0094	0.0096	0.0096	0.0098	0.0098	0.0096	0.0101	0.0099	0.0083	0.0094	0.0104	0.0109	0.0105	0.0101	0.0112	0.0111	0.0122	0.0121	0.0123	0.0123	0.0140	0.0137
West Exp.	$PM_{2.5}$ EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Hourly Emissions[13]

Tower	Data	Units	4/4/05	4/11/05	4/18/05	4/25/05	5/2/05	5/9/05	5/16/05	5/23/05	5/30/05	6/6/05	6/13/05	6/20/05	6/27/05	7/4/05	7/11/05	7/18/05	7/25/05	8/1/05	8/8/05	8/15/05	8/22/05	8/29/05	9/5/05	9/12/05	9/19/05	9/26/05
West	PM_{10}	lb/hr	0.58	0.64	0.77	0.84	0.80	0.84	1.45	1.52	2.28	2.21	2.36	2.29	1.96	2.20	2.43	2.29	2.09	2.24	2.61	2.71	2.91	2.87	2.89	2.94	3.40	3.24
West Exp.	PM_{10}	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/hr	0.58	0.64	0.77	0.84	0.80	0.84	1.45	1.52	2.28	2.21	2.36	2.29	1.96	2.20	2.43	2.29	2.09	2.24	2.61	2.71	2.91	2.87	2.89	2.94	3.40	3.24
West Exp.	$PM_{2.5}$	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Weekly Emissions[14,15]

Tower	Data	Units	4/4/05	4/11/05	4/18/05	4/25/05	5/2/05	5/9/05	5/16/05	5/23/05	5/30/05	6/6/05	6/13/05	6/20/05	6/27/05	7/4/05	7/11/05	7/18/05	7/25/05	8/1/05	8/8/05	8/15/05	8/22/05	8/29/05	9/5/05	9/12/05	9/19/05	9/26/05
West	PM_{10}	lb/week	97.18	106.91	129.71	140.72	134.08	141.71	242.88	255.71	382.66	371.03	396.95	385.30	328.57	369.47	409.04	384.15	350.54	376.08	439.23	455.05	489.54	481.91	485.48	494.07	571.95	544.25
West Exp.	PM_{10}	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/week	97.18	106.91	129.71	140.72	134.08	141.71	242.88	255.71	382.66	371.03	396.95	385.30	328.57	369.47	409.04	384.15	350.54	376.08	439.23	455.05	489.54	481.91	485.48	494.07	571.95	544.25
West Exp.	$PM_{2.5}$	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	10/3/05	10/10/05	10/17/05	10/24/05	10/31/05	11/7/05	11/14/05	11/21/05	11/28/05	12/5/05	12/12/05	12/19/05	12/26/05	1/2/06	1/9/06	1/16/06	1/23/06	1/30/06	2/6/06	2/13/06	2/20/06	2/27/06	3/6/06	3/13/06	3/20/06	3/27/06
West	Monday	gal/min	36,375		28,520	27,300	35,000	28,833	28,000	23,612	23,612	23,612	23,613	23,612			26,144		23,600	26,667	26,210	23,612		23,612	24,250	23,612	27,000	22,087
West Exp.	Monday	gal/min																										
West	Tuesday	gal/min	37,334	35,877	27,600	35,102	35,904	31,000	36,000	22,000	23,612	23,612	23,000	25,800	0	26,513	26,735	23,612	26,000	26,480	25,800	23,612	23,612	25,500	24,250	26,100	23,612	23,612
West Exp.	Tuesday	gal/min																										
West	Wednesday	gal/min	38,236	36,390	36,862	35,904	35,904	37,334	35,904	23,612	23,612	26,000	23,612	23,612	0	23,612	23,612	23,612	26,461	27,000	25,500	25,000	23,612	23,600	26,800	24,964	23,612	23,612
West Exp.	Wednesday	gal/min																										
West	Thursday	gal/min	37,000	36,800	35,800	36,000	37,500	39,000	24,419		23,612	23,613	23,612	26,000	23,612	26,144	23,612	23,612	26,461	23,600	23,612	23,612	23,612	26,700	26,800	25,300	23,612	27,500
West Exp.	Thursday	gal/min																										
West	Friday	gal/min	36,376	36,736	35,800	35,800	37,500		27,000	23,612	24,000	23,613	26,000	0	23,612	26,144	23,612	27,000	25,600	27,000	23,612	23,612	26,200	26,104	26,800	22,478	23,612	26,000
West Exp.	Friday	gal/min																										
		West Weekly Average:	37,064	36,451	32,916	34,021	36,362	34,042	30,265	23,209	23,690	24,090	23,967	19,805	11,806	25,603	24,743	24,459	25,624	26,149	24,947	23,890	24,259	25,103	25,780	24,491	24,290	24,562
		Expansion Weekly Average:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	10/3/05	10/10/05	10/17/05	10/24/05	10/31/05	11/7/05	11/14/05	11/21/05	11/28/05	12/5/05	12/12/05	12/19/05	12/26/05	1/2/06	1/9/06	1/16/06	1/23/06	1/30/06	2/6/06	2/13/06	2/20/06	2/27/06	3/6/06	3/13/06	3/20/06	3/27/06
West	Conductivity	µS/cm	2,370	2,366	2,383	2,383	2,400	2,389	2,310	2,310	2,230	1,716	2,240	2,320	2,285	2,285	2,250	2,320	2,290	2,360	1,800	2,300	2,400	2,270	2,320	2,400	2,500	2,525
West Exp.	Conductivity	µS/cm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
West	TDS	ppm	1,588	1,585	1,597	1,597	1,608	1,601	1,547	1,547	1,494	1,150	1,501	1,554	1,531	1,531	1,508	1,554	1,534	1,581	1,206	1,541	1,608	1,521	1,554	1,608	1,675	1,692
West Exp.	TDS	ppm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Drift Loss[8,9,10]

Tower	Data	Units	10/3/05	10/10/05	10/17/05	10/24/05	10/31/05	11/7/05	11/14/05	11/21/05	11/28/05	12/5/05	12/12/05	12/19/05	12/26/05	1/2/06	1/9/06	1/16/06	1/23/06	1/30/06	2/6/06	2/13/06	2/20/06	2/27/06	3/6/06	3/13/06	3/20/06	3/27/06
West	Drift Loss	gal/min	3.94	3.87	3.50	3.61	3.86	3.62	3.22	2.47	2.52	2.56	2.55	2.10	1.25	2.72	2.63	2.60	2.72	2.78	2.65	2.54	2.58	2.67	2.74	2.60	2.58	2.61
West Exp.	Drift Loss	gal/min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emission Factors[11,12]

Tower	Data	Units	10/3/05	10/10/05	10/17/05	10/24/05	10/31/05	11/7/05	11/14/05	11/21/05	11/28/05	12/5/05	12/12/05	12/19/05	12/26/05	1/2/06	1/9/06	1/16/06	1/23/06	1/30/06	2/6/06	2/13/06	2/20/06	2/27/06	3/6/06	3/13/06	3/20/06	3/27/06
West	PM_{10} EF	lb/gal	0.0132	0.0132	0.0133	0.0133	0.0134	0.0133	0.0129	0.0129	0.0125	0.0096	0.0125	0.0130	0.0128	0.0128	0.0126	0.0130	0.0128	0.0132	0.0101	0.0128	0.0134	0.0127	0.0130	0.0134	0.0140	0.0141
West Exp.	PM_{10} EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West	$PM_{2.5}$ EF	lb/gal	0.0132	0.0132	0.0133	0.0133	0.0134	0.0133	0.0129	0.0129	0.0125	0.0096	0.0125	0.0130	0.0128	0.0128	0.0126	0.0130	0.0128	0.0132	0.0101	0.0128	0.0134	0.0127	0.0130	0.0134	0.0140	0.0141
West Exp.	$PM_{2.5}$ EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Hourly Emissions[13]

Tower	Data	Units	10/3/05	10/10/05	10/17/05	10/24/05	10/31/05	11/7/05	11/14/05	11/21/05	11/28/05	12/5/05	12/12/05	12/19/05	12/26/05	1/2/06	1/9/06	1/16/06	1/23/06	1/30/06	2/6/06	2/13/06	2/20/06	2/27/06	3/6/06	3/13/06	3/20/06	3/27/06
West	PM_{10}	lb/hr	3.13	3.07	2.79	2.89	3.11	2.89	2.49	1.91	1.88	1.47	1.91	1.64	0.96	2.08	1.98	2.02	2.09	2.20	1.60	1.96	2.07	2.03	2.13	2.09	2.16	2.21
West Exp.	PM_{10}	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/hr	3.13	3.07	2.79	2.89	3.11	2.89	2.49	1.91	1.88	1.47	1.91	1.64	0.96	2.08	1.98	2.02	2.09	2.20	1.60	1.96	2.07	2.03	2.13	2.09	2.16	2.21
West Exp.	$PM_{2.5}$	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Weekly Emissions[14,15]

Tower	Data	Units	10/3/05	10/10/05	10/17/05	10/24/05	10/31/05	11/7/05	11/14/05	11/21/05	11/28/05	12/5/05	12/12/05	12/19/05	12/26/05	1/2/06	1/9/06	1/16/06	1/23/06	1/30/06	2/6/06	2/13/06	2/20/06	2/27/06	3/6/06	3/13/06	3/20/06	3/27/06
West	PM_{10}	lb/week	525.18	515.62	468.97	484.71	521.75	486.22	417.89	320.47	315.84	247.15	320.98	274.70	161.29	349.77	332.84	339.26	350.83	368.96	268.47	328.51	348.09	340.69	357.58	351.42	363.05	370.80
West Exp.	PM_{10}	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/week	525.18	515.62	468.97	484.71	521.75	486.22	417.89	320.47	315.84	247.15	320.98	274.70	161.29	349.77	332.84	339.26	350.83	368.96	268.47	328.51	348.09	340.69	357.58	351.42	363.05	370.80
West Exp.	$PM_{2.5}$	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	4/3/06	4/10/06	4/17/06	4/24/06	5/1/06	5/8/06	5/15/06	5/22/06	5/29/06	6/5/06	6/12/06	6/19/06	6/26/06	7/3/06	7/10/06	7/17/06	7/24/06	7/31/06
West	Monday	gal/min	26,000	23,612	23,500	23,612	28,200	23,612	23,612	23,612		39,626	35,300	36,134	36,700	36,134	36,000	44,174	38,500	48,800
West Exp.	Monday	gal/min																		
West	Tuesday	gal/min	27,500	27,833	23,612	23,612	28,200	26,500	23,612	26,500	24,000	37,200	37,500	36,500	36,700		38,720	40,000	35,418	48,000
West Exp.	Tuesday	gal/min																		
West	Wednesday	gal/min	27,532	27,833	20,800	23,612	26,900	27,100	29,000	23,612	27,000	36,810	36,812	36,150	35,418	36,000	44,174	43,371	35,418	47,224
West Exp.	Wednesday	gal/min																		
West	Thursday	gal/min	27,000	23,612	27,300	26,500	26,900	27,500	23,612	23,600	27,000	36,810	35,418	36,812	35,418	35,418	44,174	44,956	37,456	41,742
West Exp.	Thursday	gal/min																		
West	Friday	gal/min	23,612	26,200	26,600	26,461	27,800	23,612	26,600	26,000	26,300	36,812	35,418	36,812	35,418	35,418	44,174	44,174	46,090	40,000
West Exp.	Friday	gal/min																		
		West Weekly Average:	26,329	25,818	24,362	24,759	27,600	25,665	25,287	24,665	26,075	37,452	36,090	36,482	35,931	35,743	41,448	43,335	38,576	45,153
		Expansion Weekly Average:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	4/3/06	4/10/06	4/17/06	4/24/06	5/1/06	5/8/06	5/15/06	5/22/06	5/29/06	6/5/06	6/12/06	6/19/06	6/26/06	7/3/06	7/10/06	7/17/06	7/24/06	7/31/06
West	Conductivity	μS/cm	2,580	2,600	2,620	2,660	2,570	2,560	3,221	3,221	3,881	3,141	2,400	2,480	1,725	2,570	2,630	2,820	2,494	2,520
West Exp.	Conductivity	μS/cm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
West	TDS	ppm	1,729	1,742	1,755	1,782	1,722	1,715	2,158	2,158	2,600	2,104	1,608	1,662	1,156	1,722	1,762	1,889	1,671	1,688
West Exp.	TDS	ppm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Drift Loss[8,9,10]

Tower	Data	Units	4/3/06	4/10/06	4/17/06	4/24/06	5/1/06	5/8/06	5/15/06	5/22/06	5/29/06	6/5/06	6/12/06	6/19/06	6/26/06	7/3/06	7/10/06	7/17/06	7/24/06	7/31/06
West	Drift Loss	gal/min	2.80	2.74	2.59	2.63	2.93	2.73	2.69	2.62	2.77	3.98	3.83	3.88	3.82	3.80	4.40	4.60	4.10	4.80
West Exp.	Drift Loss	gal/min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emission Factors[11,12]

Tower	Data	Units	4/3/06	4/10/06	4/17/06	4/24/06	5/1/06	5/8/06	5/15/06	5/22/06	5/29/06	6/5/06	6/12/06	6/19/06	6/26/06	7/3/06	7/10/06	7/17/06	7/24/06	7/31/06
West	PM_{10} EF	lb/gal	0.0144	0.0145	0.0146	0.0149	0.0143	0.0143	0.0180	0.0180	0.0217	0.0175	0.0134	0.0138	0.0096	0.0143	0.0147	0.0157	0.0139	0.0141
West Exp.	PM_{10} EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West	$PM_{2.5}$ EF	lb/gal	0.0144	0.0145	0.0146	0.0149	0.0143	0.0143	0.0180	0.0180	0.0217	0.0175	0.0134	0.0138	0.0096	0.0143	0.0147	0.0157	0.0139	0.0141
West Exp.	$PM_{2.5}$ EF	lb/gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Hourly Emissions[13]

Tower	Data	Units	4/3/06	4/10/06	4/17/06	4/24/06	5/1/06	5/8/06	5/15/06	5/22/06	5/29/06	6/5/06	6/12/06	6/19/06	6/26/06	7/3/06	7/10/06	7/17/06	7/24/06	7/31/06
West	PM_{10}	lb/hr	2.42	2.39	2.27	2.34	2.52	2.34	2.90	2.83	3.60	4.19	3.08	3.22	2.21	3.27	3.88	4.35	3.42	4.05
West Exp.	PM_{10}	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/hr	2.42	2.39	2.27	2.34	2.52	2.34	2.90	2.83	3.60	4.19	3.08	3.22	2.21	3.27	3.88	4.35	3.42	4.05
West Exp.	$PM_{2.5}$	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Weekly Emissions[14,15]

Tower	Data	Units	4/3/06	4/10/06	4/17/06	4/24/06	5/1/06	5/8/06	5/15/06	5/22/06	5/29/06	6/5/06	6/12/06	6/19/06	6/26/06	7/3/06	7/10/06	7/17/06	7/24/06	7/31/06
West	PM_{10}	lb/week	406.12	401.33	381.62	393.76	424.08	392.81	486.89	474.91	605.03	703.19	517.85	540.92	370.56	549.19	651.73	730.62	575.21	680.29
West Exp.	PM_{10}	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West	$PM_{2.5}$	lb/week	406.12	401.33	381.62	393.76	424.08	392.81	486.89	474.91	605.03	703.19	517.85	540.92	370.56	549.19	651.73	730.62	575.21	680.29
West Exp.	$PM_{2.5}$	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	2/5/07	2/12/07	2/19/07	2/26/07	3/5/07	3/12/07	3/19/07	3/26/07	4/2/07	4/9/07	4/16/07	4/23/07	4/30/07	5/7/07	5/14/07	5/21/07	5/28/07	6/4/07	6/11/07	6/18/07	6/25/07	7/2/07	7/9/07	7/16/07	7/23/07	7/30/07
West	Monday	gal/min	0	0		0	0	0	0	0		0	0	0	0	23,612	14,000	28,300		38,072	36,812	21,577	38,072	37,456	38,378	33,000	14,460	27,000
West Exp.	Monday	gal/min	15,500	15,870		16,010	19,403	19,195	18,265	20,800		18,900	18,450	23,685	25,893	0	9,020	0		0	0	13,456	0	0	7,670	9,365	18,040	14,870
West	Tuesday	gal/min	0	0	0	0	0	0	0	0	0	0	0	0	23,000	24,000	36,400	24,512	33,112	38,166	36,812	21,668	41,000	36,450	36,812	23,612	27,500	37,800
West Exp.	Tuesday	gal/min	15,811	15,811	15,402	17,361	17,540	19,955	21,000	28,104	24,389	18,900	20,500	27,156	18,903	0	0	0	0	8,850	5,855	12,872	7,925	0	8,330	16,247	7,724	0
West	Wednesday	gal/min	0	0	0	0	0	0	0	0	0	0	0	0	23,500	23,612	36,812	29,000	22,810	28,920	38,072	21,450	36,200		35,494	26,612	28,304	36,812
West Exp.	Wednesday	gal/min	16,909	15,711	18,552	17,361	17,560	23,203	23,536	21,000	21,927	18,196	19,999	25,604	19,500	0	0	9,800	8,955	8,660	0	13,055	9,000		7,156	18,444	14,214	0
West	Thursday	gal/min	0	0	0	0	0	0	0	0	0	0	0	23,612	24,000	25,000	36,812	23,612	23,000	38,072	37,456	28,920	24,405	36,875	29,000	23,632	27,300	36,812
West Exp.	Thursday	gal/min	15,600	15,602	19,220	19,920	17,380	31,000	23,536	21,885	20,745	20,560	24,443	0	18,750	9,250	0	9,125	9,985	0	0	9,022	15,125	0	9,250	18,074	14,561	0
West	Friday	gal/min	0	0	0	0	0	0	0	0	0	0	0	0	24,000	28,000	23,612	28,000	36,812	36,500	32,532	28,072	23,786	38,072	28,920	23,612	27,000	35,000
West Exp.	Friday	gal/min	15,750	16,352	15,240	21,700	18,474	18,883	28,176	21,670	19,500	21,230	25,610	24,970	15,922	9,000	0	9,700	0	7,750	0	8,450	14,818	0	9,308	16,407	14,465	0
		West Weekly Average:	0	0	0	0	0	0	0	0	0	0	0	4,722	18,900	24,845	29,527	26,685	28,934	35,946	36,337	24,337	32,693	37,213	33,721	26,094	24,913	34,685
		Expansion Weekly Average:	15,914	15,869	17,104	18,470	18,071	22,447	22,903	22,692	21,640	19,557	21,800	20,283	19,794	3,650	1,804	5,725	4,735	5,052	1,171	11,371	9,374	0	8,343	15,707	13,801	2,974

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	2/5/07	2/12/07	2/19/07	2/26/07	3/5/07	3/12/07	3/19/07	3/26/07	4/2/07	4/9/07	4/16/07	4/23/07	4/30/07	5/7/07	5/14/07	5/21/07	5/28/07	6/4/07	6/11/07	6/18/07	6/25/07	7/2/07	7/9/07	7/16/07	7/23/07	7/30/07
West	Conductivity	μS/cm	1,097	1,200	1,445	1,793	1,734	2,225	1,660	2,490	2,490	1,704	2,040	2,350	1,024	2,240	2,340	2,450	2,551	2,740	2,486	2,557	2,662	2,560	2,480	2,665	2,516	2,527
West Exp.	Conductivity	μS/cm	1,097	1,200	1,445	1,793	1,734	2,225	1,660	2,490	2,490	1,704	2,040	2,350	2,400	1,723	1,490	1,256	1,909	2,300	2,475	2,984	2,280	2,425	2,253	2,523	2,543	2,139
West	TDS	ppm	735	804	968	1,201	1,162	1,491	1,112	1,668	1,668	1,142	1,367	1,575	686	1,501	1,568	1,642	1,709	1,836	1,666	1,713	1,784	1,715	1,662	1,786	1,686	1,693
West Exp.	TDS	ppm	735	804	968	1,201	1,162	1,491	1,112	1,668	1,668	1,142	1,367	1,575	1,608	1,154	998	842	1,279	1,541	1,658	1,999	1,528	1,625	1,510	1,690	1,704	1,433

Drift Loss[8,9,10]

Tower	Data	Units	2/5/07	2/12/07	2/19/07	2/26/07	3/5/07	3/12/07	3/19/07	3/26/07	4/2/07	4/9/07	4/16/07	4/23/07	4/30/07	5/7/07	5/14/07	5/21/07	5/28/07	6/4/07	6/11/07	6/18/07	6/25/07	7/2/07	7/9/07	7/16/07	7/23/07	7/30/07
West	Drift Loss	gal/min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	2.01	2.64	3.14	2.83	3.07	3.82	3.86	2.59	3.47	3.95	3.58	2.77	2.65	3.68
West Exp.	Drift Loss	gal/min	1.69	1.69	1.82	1.96	1.92	2.38	2.43	2.41	2.30	2.08	2.32	2.15	2.10	0.39	0.19	0.61	0.50	0.54	0.12	1.21	1.00	0.00	0.89	1.67	1.47	0.32

Emission Factors[11,12]

Tower	Data	Units	2/5/07	2/12/07	2/19/07	2/26/07	3/5/07	3/12/07	3/19/07	3/26/07	4/2/07	4/9/07	4/16/07	4/23/07	4/30/07	5/7/07	5/14/07	5/21/07	5/28/07	6/4/07	6/11/07	6/18/07	6/25/07	7/2/07	7/9/07	7/16/07	7/23/07	7/30/07
West	PM_{10} EF	lb/gal	0.0061	0.0067	0.0081	0.0100	0.0097	0.0124	0.0093	0.0139	0.0139	0.0095	0.0114	0.0131	0.0057	0.0125	0.0131	0.0137	0.0142	0.0153	0.0139	0.0143	0.0149	0.0143	0.0138	0.0149	0.0140	0.0141
West Exp.	PM_{10} EF	lb/gal	0.0061	0.0067	0.0081	0.0100	0.0097	0.0124	0.0093	0.0139	0.0139	0.0095	0.0114	0.0131	0.0134	0.0096	0.0083	0.0070	0.0107	0.0128	0.0138	0.0167	0.0127	0.0135	0.0126	0.0141	0.0142	0.0119
West	$PM_{2.5}$ EF	lb/gal	0.0061	0.0067	0.0081	0.0100	0.0097	0.0124	0.0093	0.0139	0.0139	0.0095	0.0114	0.0131	0.0057	0.0125	0.0131	0.0137	0.0142	0.0153	0.0139	0.0143	0.0149	0.0143	0.0138	0.0149	0.0140	0.0141
West Exp.	$PM_{2.5}$ EF	lb/gal	0.0061	0.0067	0.0081	0.0100	0.0097	0.0124	0.0093	0.0139	0.0139	0.0095	0.0114	0.0131	0.0134	0.0096	0.0083	0.0070	0.0107	0.0128	0.0138	0.0167	0.0127	0.0135	0.0126	0.0141	0.0142	0.0119

Hourly Emissions[13]

Tower	Data	Units	2/5/07	2/12/07	2/19/07	2/26/07	3/5/07	3/12/07	3/19/07	3/26/07	4/2/07	4/9/07	4/16/07	4/23/07	4/30/07	5/7/07	5/14/07	5/21/07	5/28/07	6/4/07	6/11/07	6/18/07	6/25/07	7/2/07	7/9/07	7/16/07	7/23/07	7/30/07
West	PM_{10}	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.69	1.98	2.46	2.33	2.63	3.51	3.21	2.21	3.10	3.39	2.98	2.47	2.23	3.12
West Exp.	PM_{10}	lb/hr	0.62	0.68	0.88	1.18	1.12	1.78	1.35	2.01	1.92	1.19	1.58	1.70	1.69	0.22	0.10	0.26	0.32	0.41	0.10	1.21	0.76	0.00	0.67	1.41	1.25	0.23
West	$PM_{2.5}$	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.69	1.98	2.46	2.33	2.63	3.51	3.21	2.21	3.10	3.39	2.98	2.47	2.23	3.12
West Exp.	$PM_{2.5}$	lb/hr	0.62	0.68	0.88	1.18	1.12	1.78	1.35	2.01	1.92	1.19	1.58	1.70	1.69	0.22	0.10	0.26	0.32	0.41	0.10	1.21	0.76	0.00	0.67	1.41	1.25	0.23

Weekly Emissions[14,15]

Tower	Data	Units	2/5/07	2/12/07	2/19/07	2/26/07	3/5/07	3/12/07	3/19/07	3/26/07	4/2/07	4/9/07	4/16/07	4/23/07	4/30/07	5/7/07	5/14/07	5/21/07	5/28/07	6/4/07	6/11/07	6/18/07	6/25/07	7/2/07	7/9/07	7/16/07	7/23/07	7/30/07
West	PM_{10}	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.35	115.71	332.73	413.09	390.87	441.28	588.85	540.08	372.06	520.31	569.57	499.98	415.76	374.75	524.02
West Exp.	PM_{10}	lb/week	104.37	113.85	147.76	198.00	187.35	298.61	227.30	337.81	322.16	199.24	265.89	284.97	284.02	37.60	16.07	42.99	54.04	69.47	17.33	202.86	127.78	0.00	112.38	236.93	209.82	38.03
West	$PM_{2.5}$	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.35	115.71	332.73	413.09	390.87	441.28	588.85	540.08	372.06	520.31	569.57	499.98	415.76	374.75	524.02
West Exp.	$PM_{2.5}$	lb/week	104.37	113.85	147.76	198.00	187.35	298.61	227.30	337.81	322.16	199.24	265.89	284.97	284.02	37.60	16.07	42.99	54.04	69.47	17.33	202.86	127.78	0.00	112.38	236.93	209.82	38.03

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	8/6/07	8/13/07	8/20/07	8/27/07	9/3/07	9/10/07	9/17/07	9/24/07	10/1/07	10/8/07	10/15/07	10/22/07	10/29/07	11/5/07	11/12/07	11/19/07	11/26/07	12/3/07	12/10/07	12/17/07	12/24/07	12/31/07	1/7/08	1/14/08	1/21/08	1/28/08
West	Monday	gal/min	37,456	23,612	6,440	12,500		14,000	0	19,000	24,000		0	31,236	0	0		0	0	0	0	0		0	0	0		0
West Exp.	Monday	gal/min	8,055	17,738	18,000	26,600		26,500	26,670	17,500	0		19,222	0	19,458	19,444		18,000	18,834	18,556	20,500	19,065		18,900	19,361	18,900		18,224
West	Tuesday	gal/min	37,544	27,000	15,618	14,460	0	24,800	23,600	0	38,072	13,488	14,000	36,000	0	0	0	0	0	0	0	0			0	0	0	0
West Exp.	Tuesday	gal/min	9,007	0	17,696	26,531	26,864	17,000	0	28,071	0	25,210	17,000	0	19,389	19,611	21,050	19,332	18,800	18,048	20,096	18,757			19,666	18,307	18,650	18,196
West	Wednesday	gal/min	38,143	36,812	15,618	14,460	27,615	15,618	26,312	23,612	0	13,488	30,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Exp.	Wednesday	gal/min	8,122	0	17,864	25,824	15,885	17,517	0	17,250	27,793	26,171	0	27,000	19,300	19,876	21,053	19,125	18,002	17,946	20,000	18,780	18,085	18,500	19,347	19,511	18,321	18,184
West	Thursday	gal/min	24,000	36,000	37,000	12,500	27,668	15,050	23,612	15,618	14,460	0	30,100	0	0	0	0		0	0	0	0	0	0	0	0	0	0
West Exp.	Thursday	gal/min	17,558	0	0	25,500	17,045	17,447	0	18,612	26,740	27,683	0	26,642	21,000	19,784	18,973		18,300	18,050	21,500	20,000	18,474	20,082	19,333	18,321	18,800	18,700
West	Friday	gal/min	24,000	14,460	12,500	14,460	14,500	29,400	34,850	12,000	13,844	0	36,812	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Exp.	Friday	gal/min	16,980	26,756	25,700	27,364	27,000	8,700	0	24,631	26,712	18,196	0	26,878	19,902	19,014	18,300	18,987	19,001	20,138	19,865	19,200	19,764	19,000	18,543	18,335	18,668	18,016
		West Weekly Average:	32,229	27,577	17,435	13,676	17,446	19,774	21,675	14,046	18,075	6,744	22,182	13,447	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Expansion Weekly Average:	11,944	8,899	15,852	26,364	21,699	17,433	5,334	21,213	16,249	24,315	7,244	16,104	19,810	19,546	19,844	18,861	18,587	18,548	20,392	19,160	18,774	19,121	19,250	18,675	18,610	18,264

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	8/6/07	8/13/07	8/20/07	8/27/07	9/3/07	9/10/07	9/17/07	9/24/07	10/1/07	10/8/07	10/15/07	10/22/07	10/29/07	11/5/07	11/12/07	11/19/07	11/26/07	12/3/07	12/10/07	12/17/07	12/24/07	12/31/07	1/7/08	1/14/08	1/21/08	1/28/08
West	Conductivity	μS/cm	2,521	1,887	2,481	2,676	2,255	2,501	2,495	2,582	2,272	2,521	1,892	2,372	2,554	2,447	2,400	2,412	2,424	2,437	2,450	2,381	2,316	2,250	2,330	2,400	2,238	2,352
West Exp.	Conductivity	μS/cm	2,244	2,508	2,538	2,474	2,385	2,554	1,864	2,506	2,286	2,548	2,493	2,372	2,554	2,447	2,400	2,412	2,424	2,437	2,450	2,381	2,316	2,250	2,330	2,400	2,238	2,352
West	TDS	ppm	1,689	1,264	1,662	1,793	1,511	1,676	1,672	1,730	1,522	1,689	1,268	1,589	1,711	1,639	1,608	1,616	1,624	1,633	1,642	1,595	1,551	1,508	1,561	1,608	1,499	1,576
West Exp.	TDS	ppm	1,503	1,680	1,700	1,658	1,598	1,711	1,249	1,679	1,532	1,707	1,670	1,589	1,711	1,639	1,608	1,616	1,624	1,633	1,642	1,595	1,551	1,508	1,561	1,608	1,499	1,576

Drift Loss[8,9,10]

Tower	Data	Units	8/6/07	8/13/07	8/20/07	8/27/07	9/3/07	9/10/07	9/17/07	9/24/07	10/1/07	10/8/07	10/15/07	10/22/07	10/29/07	11/5/07	11/12/07	11/19/07	11/26/07	12/3/07	12/10/07	12/17/07	12/24/07	12/31/07	1/7/08	1/14/08	1/21/08	1/28/08
West	Drift Loss	gal/min	3.42	2.93	1.85	1.45	1.85	2.10	2.30	1.49	1.92	0.72	2.36	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Exp.	Drift Loss	gal/min	1.27	0.95	1.68	2.80	2.31	1.85	0.57	2.25	1.73	2.58	0.77	1.71	2.10	2.08	2.11	2.00	1.97	1.97	2.17	2.04	1.99	2.03	2.04	1.98	1.98	1.94

Emission Factors[11,12]

Tower	Data	Units	8/6/07	8/13/07	8/20/07	8/27/07	9/3/07	9/10/07	9/17/07	9/24/07	10/1/07	10/8/07	10/15/07	10/22/07	10/29/07	11/5/07	11/12/07	11/19/07	11/26/07	12/3/07	12/10/07	12/17/07	12/24/07	12/31/07	1/7/08	1/14/08	1/21/08	1/28/08
West	PM_{10} EF	lb/gal	0.0141	0.0105	0.0139	0.0149	0.0126	0.0140	0.0139	0.0144	0.0127	0.0141	0.0106	0.0132	0.0143	0.0137	0.0134	0.0135	0.0135	0.0136	0.0137	0.0133	0.0129	0.0126	0.0130	0.0134	0.0125	0.0131
West Exp.	PM_{10} EF	lb/gal	0.0125	0.0140	0.0142	0.0138	0.0133	0.0143	0.0104	0.0140	0.0128	0.0142	0.0139	0.0132	0.0143	0.0137	0.0134	0.0135	0.0135	0.0136	0.0137	0.0133	0.0129	0.0126	0.0130	0.0134	0.0125	0.0131
West	$PM_{2.5}$ EF	lb/gal	0.0141	0.0105	0.0139	0.0149	0.0126	0.0140	0.0139	0.0144	0.0127	0.0141	0.0106	0.0132	0.0143	0.0137	0.0134	0.0135	0.0135	0.0136	0.0137	0.0133	0.0129	0.0126	0.0130	0.0134	0.0125	0.0131
West Exp.	$PM_{2.5}$ EF	lb/gal	0.0125	0.0140	0.0142	0.0138	0.0133	0.0143	0.0104	0.0140	0.0128	0.0142	0.0139	0.0132	0.0143	0.0137	0.0134	0.0135	0.0135	0.0136	0.0137	0.0133	0.0129	0.0126	0.0130	0.0134	0.0125	0.0131

Hourly Emissions[13]

Tower	Data	Units	8/6/07	8/13/07	8/20/07	8/27/07	9/3/07	9/10/07	9/17/07	9/24/07	10/1/07	10/8/07	10/15/07	10/22/07	10/29/07	11/5/07	11/12/07	11/19/07	11/26/07	12/3/07	12/10/07	12/17/07	12/24/07	12/31/07	1/7/08	1/14/08	1/21/08	1/28/08
West	PM_{10}	lb/hr	2.89	1.85	1.54	1.30	1.40	1.76	1.92	1.29	1.46	0.61	1.49	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Exp.	PM_{10}	lb/hr	0.95	0.79	1.43	2.32	1.84	1.58	0.35	1.89	1.32	2.20	0.64	1.36	1.80	1.70	1.69	1.62	1.60	1.61	1.78	1.62	1.55	1.53	1.60	1.60	1.48	1.53
West	$PM_{2.5}$	lb/hr	2.89	1.85	1.54	1.30	1.40	1.76	1.92	1.29	1.46	0.61	1.49	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Exp.	$PM_{2.5}$	lb/hr	0.95	0.79	1.43	2.32	1.84	1.58	0.35	1.89	1.32	2.20	0.64	1.36	1.80	1.70	1.69	1.62	1.60	1.61	1.78	1.62	1.55	1.53	1.60	1.60	1.48	1.53

Weekly Emissions[14,15]

Tower	Data	Units	8/6/07	8/13/07	8/20/07	8/27/07	9/3/07	9/10/07	9/17/07	9/24/07	10/1/07	10/8/07	10/15/07	10/22/07	10/29/07	11/5/07	11/12/07	11/19/07	11/26/07	12/3/07	12/10/07	12/17/07	12/24/07	12/31/07	1/7/08	1/14/08	1/21/08	1/28/08
West	PM_{10}	lb/week	485.76	311.12	258.62	218.80	235.20	295.67	323.32	216.83	245.53	101.65	250.92	190.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Exp.	PM_{10}	lb/week	160.25	133.43	240.54	389.95	309.40	266.19	59.44	317.82	222.08	370.41	107.98	228.38	302.49	285.95	284.74	271.99	269.38	270.24	298.70	272.75	259.91	257.21	268.16	267.96	249.00	256.83
West	$PM_{2.5}$	lb/week	485.76	311.12	258.62	218.80	235.20	295.67	323.32	216.83	245.53	101.65	250.92	190.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Exp.	$PM_{2.5}$	lb/week	160.25	133.43	240.54	389.95	309.40	266.19	59.44	317.82	222.08	370.41	107.98	228.38	302.49	285.95	284.74	271.99	269.38	270.24	298.70	272.75	259.91	257.21	268.16	267.96	249.00	256.83

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	2/4/08	2/11/08	2/18/08	2/25/08	3/3/08	3/10/08	3/17/08	3/24/08	3/31/08	4/7/08	4/14/08	4/21/08	4/28/08	5/5/08	5/12/08	5/19/08	5/26/08	6/2/08	6/9/08	6/16/08	6/23/08	6/30/08	7/7/08	7/14/08	7/21/08	7/28/08
West	Monday	gal/min	0	0		0	0	0	0	0	0	0	0	0	0	0	0	10,224		23,612	19,000	24,000	24,000	23,612	27,000	10,500	24,000	23,612
West Exp.	Monday	gal/min	17,665	17,697		18,959	18,500	18,255	18,556	18,497	18,400	18,934	19,375	19,111	20,193	27,684	19,708	19,361		9,819	16,000	17,668	17,856	15,408	14,744	26,018	15,908	17,392
West	Tuesday	gal/min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,700	23,612	24,000	24,000	28,000	23,612	24,000	24,000	10,500	24,000	24,000
West Exp.	Tuesday	gal/min	19,044	18,252	18,432	19,167	19,847	18,917	18,444	18,085	19,974	18,860	20,200	19,347	18,402	27,488	21,275	9,583	9,778	9,861	23,619	9,176	8,971	10,000	15,172	25,394	15,741	17,386
West	Wednesday	gal/min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,200	28,500	24,600	24,500	23,612	24,000	27,500	24,000	12,500	24,000	23,612
West Exp.	Wednesday	gal/min	26,525	19,000	16,657	18,127	19,847	18,285	26,988	19,575	19,056	20,063	20,888	18,917	21,622	27,433	28,112	9,778	0	18,284	17,000	9,294	8,821	17,655	17,211	25,325	15,838	15,525
West	Thursday	gal/min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,200	23,612	24,000	23,612	23,612	23,612	24,000	24,000	12,500	24,000	21,000
West Exp.	Thursday	gal/min	19,209	18,987	16,657	18,168	19,000	18,709	18,978	18,141	18,628	20,582	26,300	19,042	28,400	27,572	30,363	9,930	0	17,503	17,752	9,528	17,998	9,600	17,045	26,628	9,944	16,837
West	Friday	gal/min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,612	23,500	24,000	23,612	23,612	24,000			24,500	24,000	21,000
West Exp.	Friday	gal/min	18,945	18,737	13,314	14,922	18,987	18,900	19,386	11,191	19,000	27,200	29,014	27,544	26,545	27,363	31,358	0	9,600	17,128	17,641	8,890	15,892			16,338	10,166	16,726
		West Weekly Average:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14,787	24,806	24,042	22,945	24,567	23,845	24,778	24,750	14,100	24,000	22,645
		Expansion Weekly Average:	20,278	18,535	16,265	17,869	19,236	18,613	20,470	17,098	19,012	21,128	23,155	20,792	23,032	27,508	26,163	9,730	4,845	14,519	18,402	10,911	13,908	13,166	16,043	23,941	13,519	16,773

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	2/4/08	2/11/08	2/18/08	2/25/08	3/3/08	3/10/08	3/17/08	3/24/08	3/31/08	4/7/08	4/14/08	4/21/08	4/28/08	5/5/08	5/12/08	5/19/08	5/26/08	6/2/08	6/9/08	6/16/08	6/23/08	6/30/08	7/7/08	7/14/08	7/21/08	7/28/08
West	Conductivity	μS/cm	2,384	2,223	2,227	2,231	2,450	2,300	2,512	377	382	448	568	439	395	350	341	1,197	2,682	2,548	2,577	2,581	2,656	2,575	2,433	2,545	2,498	2,451
West Exp.	Conductivity	μS/cm	2,384	2,223	2,227	2,231	2,450	2,300	2,512	2,437	2,545	2,266	2,416	2,400	2,449	2,497	2,329	2,438	2,261	2,274	2,483	2,501	2,184	2,452	2,477	2,487	2,444	2,400
West	TDS	ppm	1,597	1,489	1,492	1,495	1,642	1,541	1,683	253	256	300	381	294	264	235	228	802	1,797	1,707	1,727	1,729	1,780	1,725	1,630	1,705	1,674	1,642
West Exp.	TDS	ppm	1,597	1,489	1,492	1,495	1,642	1,541	1,683	1,633	1,705	1,518	1,619	1,608	1,640	1,673	1,560	1,633	1,515	1,524	1,664	1,676	1,463	1,643	1,660	1,666	1,637	1,608

Drift Loss[8,9,10]

Tower	Data	Units	2/4/08	2/11/08	2/18/08	2/25/08	3/3/08	3/10/08	3/17/08	3/24/08	3/31/08	4/7/08	4/14/08	4/21/08	4/28/08	5/5/08	5/12/08	5/19/08	5/26/08	6/2/08	6/9/08	6/16/08	6/23/08	6/30/08	7/7/08	7/14/08	7/21/08	7/28/08
West	Drift Loss	gal/min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	2.64	2.55	2.44	2.61	2.53	2.63	2.63	1.50	2.55	2.41
West Exp.	Drift Loss	gal/min	2.15	1.97	1.73	1.90	2.04	1.98	2.17	1.82	2.02	2.24	2.46	2.21	2.45	2.92	2.78	1.03	0.51	1.54	1.95	1.16	1.48	1.40	1.70	2.54	1.44	1.78

Emission Factors[11,12]

Tower	Data	Units	2/4/08	2/11/08	2/18/08	2/25/08	3/3/08	3/10/08	3/17/08	3/24/08	3/31/08	4/7/08	4/14/08	4/21/08	4/28/08	5/5/08	5/12/08	5/19/08	5/26/08	6/2/08	6/9/08	6/16/08	6/23/08	6/30/08	7/7/08	7/14/08	7/21/08	7/28/08
West	PM_{10} EF	lb/gal	0.0133	0.0124	0.0124	0.0125	0.0137	0.0128	0.0140	0.0021	0.0021	0.0025	0.0032	0.0025	0.0022	0.0020	0.0019	0.0067	0.0150	0.0142	0.0144	0.0144	0.0148	0.0144	0.0136	0.0142	0.0139	0.0137
West Exp.	PM_{10} EF	lb/gal	0.0133	0.0124	0.0124	0.0125	0.0137	0.0128	0.0140	0.0136	0.0142	0.0127	0.0135	0.0134	0.0137	0.0139	0.0130	0.0136	0.0126	0.0127	0.0139	0.0140	0.0122	0.0137	0.0138	0.0139	0.0136	0.0134
West	$PM_{2.5}$ EF	lb/gal	0.0133	0.0124	0.0124	0.0125	0.0137	0.0128	0.0140	0.0021	0.0021	0.0025	0.0032	0.0025	0.0022	0.0020	0.0019	0.0067	0.0150	0.0142	0.0144	0.0144	0.0148	0.0144	0.0136	0.0142	0.0139	0.0137
West Exp.	$PM_{2.5}$ EF	lb/gal	0.0133	0.0124	0.0124	0.0125	0.0137	0.0128	0.0140	0.0136	0.0142	0.0127	0.0135	0.0134	0.0137	0.0139	0.0130	0.0136	0.0126	0.0127	0.0139	0.0140	0.0122	0.0137	0.0138	0.0139	0.0136	0.0134

Hourly Emissions[13]

Tower	Data	Units	2/4/08	2/11/08	2/18/08	2/25/08	3/3/08	3/10/08	3/17/08	3/24/08	3/31/08	4/7/08	4/14/08	4/21/08	4/28/08	5/5/08	5/12/08	5/19/08	5/26/08	6/2/08	6/9/08	6/16/08	6/23/08	6/30/08	7/7/08	7/14/08	7/21/08	7/28/08
West	PM_{10}	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	2.37	2.18	2.10	2.26	2.25	2.27	2.14	1.28	2.13	1.98
West Exp.	PM_{10}	lb/hr	1.72	1.47	1.29	1.42	1.68	1.52	1.83	1.48	1.72	1.70	1.99	1.78	2.01	2.44	2.17	0.84	0.39	1.17	1.63	0.97	1.08	1.15	1.41	2.12	1.18	1.43
West	$PM_{2.5}$	lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	2.37	2.18	2.10	2.26	2.25	2.27	2.14	1.28	2.13	1.98
West Exp.	$PM_{2.5}$	lb/hr	1.72	1.47	1.29	1.42	1.68	1.52	1.83	1.48	1.72	1.70	1.99	1.78	2.01	2.44	2.17	0.84	0.39	1.17	1.63	0.97	1.08	1.15	1.41	2.12	1.18	1.43

Weekly Emissions[14,15]

Tower	Data	Units	2/4/08	2/11/08	2/18/08	2/25/08	3/3/08	3/10/08	3/17/08	3/24/08	3/31/08	4/7/08	4/14/08	4/21/08	4/28/08	5/5/08	5/12/08	5/19/08	5/26/08	6/2/08	6/9/08	6/16/08	6/23/08	6/30/08	7/7/08	7/14/08	7/21/08	7/28/08
West	PM_{10}	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.82	397.76	366.26	353.51	379.10	378.64	381.46	360.02	214.54	358.43	331.83
West Exp.	PM_{10}	lb/week	289.02	246.34	216.56	238.34	281.77	255.95	307.43	249.12	289.28	286.23	334.47	298.34	337.17	410.66	364.31	141.83	65.49	197.39	273.19	163.15	181.60	193.01	237.58	355.97	197.50	240.68
West	$PM_{2.5}$	lb/week	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.82	397.76	366.26	353.51	379.10	378.64	381.46	360.02	214.54	358.43	331.83
West Exp.	$PM_{2.5}$	lb/week	289.02	246.34	216.56	238.34	281.77	255.95	307.43	249.12	289.28	286.23	334.47	298.34	337.17	410.66	364.31	141.83	65.49	197.39	273.19	163.15	181.60	193.01	237.58	355.97	197.50	240.68

Cooling Tower Emission Calculations[1,2]

Daily Cooling Tower Flow Rates[3]

Plant	Day	Units	8/4/08	8/11/08	8/18/08	8/25/08	9/1/08	9/8/08	9/15/08	9/22/08	9/29/08	10/6/08	10/13/08	10/20/08	10/27/08	11/3/08	11/10/08	11/17/08	11/24/08	12/1/08	12/8/08	12/15/08	12/22/08	12/29/08	1/5/09	1/12/09	1/19/09	1/26/09
West	Monday	gal/min	25,000	21,000	24,000	14,618		11,300	12,000	13,200	10,320	13,200		0	0	0		0	0	0	0	0	0	0	13,200	16,166		14,730
West Exp.	Monday	gal/min	16,144	8,765	8,971	9,556		18,168	17,503	17,243	17,600	9,140		21,913	20,706	20,956		20,318	19,999	20,429	19,042	20,263	21,253	13,730	9,932	0		0
West	Tuesday	gal/min	24,000	27,000	24,000	24,000	24,000	11,300	0	11,383	13,200	12,200	0	0	0	0		0	0	0	0	13,200	0	0	13,500	15,000	15,000	15,000
West Exp.	Tuesday	gal/min	15,200	8,750	9,167	8,516	13,203	17,261	18,917	18,571	17,433	10,200	27,348	20,387	19,972	21,525		20,221	19,680	19,805	19,042	9,542	13,592	20,208	0	0	0	0
West	Wednesday	gal/min	24,000	23,612	24,000	24,684	24,000	0	0	13,200	12,500	0	0	0	0	0	0	0	0	0	0	12,500	0	0	13,500	15,230	15,000	15,000
West Exp.	Wednesday	gal/min	16,988	9,001	8,848	9,467	9,556	19,999	19,000	10,033	17,433	20,124	27,750	21,532	19,195	21,844	21,831	19,028	20,667	19,850	20,431	10,721	19,740	19,968	0	0	0	0
West	Thursday	gal/min	23,612	26,841	24,000	24,000	23,612	0	0	13,200	13,200	0	0	0	0	0	0	0		0	0	12,500			15,500	15,000	15,000	15,000
West Exp.	Thursday	gal/min	8,821	9,098	9,944	9,436	16,573	27,322	16,917	9,972	10,166	28,100	27,183	20,290	19,308	21,927	21,261	19,882		20,457	20,431	10,230			0	0	0	0
West	Friday	gal/min	28,000	23,612	24,000	0	21,055	0	0	12,500	14,000	0		0		11,806	0	0	0	0	0	12,500		0	16,166	15,000	15,000	15,000
West Exp.	Friday	gal/min	9,000	9,043	8,904	27,239	16,145	26,712	23,800	10,000	10,000	26,795		20,859		17,860	22,995	19,833	19,800	19,819	20,082	10,568		19,460	0	0	0	0
		West Weekly Average:	24,922	24,413	24,000	17,460	23,167	4,520	2,400	12,697	12,644	5,080	0	0	0	2,361	0	0	0	0	0	10,140	0	0	14,373	15,279	15,000	14,946
		Expansion Weekly Average:	13,231	8,931	9,167	12,843	13,869	21,892	19,227	13,164	14,526	18,872	27,427	20,996	19,795	20,822	22,029	19,856	20,037	20,072	19,806	12,265	18,195	18,342	1,986	0	0	0

Total Dissolved Solids Data[4,5,6,7]

Tower	Data	Units	8/4/08	8/11/08	8/18/08	8/25/08	9/1/08	9/8/08	9/15/08	9/22/08	9/29/08	10/6/08	10/13/08	10/20/08	10/27/08	11/3/08	11/10/08	11/17/08	11/24/08	12/1/08	12/8/08	12/15/08	12/22/08	12/29/08	1/5/09	1/12/09	1/19/09	1/26/09
West	Conductivity	µS/cm	2,405	2,538	2,542	2,574	2,560	2,546	2,573	2,600	2,620	1,332	562	538	506	534	860	2,526	2,536	2,546	2,400	1,062	749	435	1,232	2,028	783	1,994
West Exp.	Conductivity	µS/cm	2,451	2,558	2,476	2,459	2,486	2,512	2,446	2,380	2,700	2,623	2,654	2,644	2,134	2,580	2,585	2,526	2,536	2,546	2,400	1,660	1,222	1,749	853	2,028	783	1,994
West	TDS	ppm	1,611	1,700	1,703	1,725	1,715	1,706	1,724	1,742	1,755	892	377	360	339	358	576	1,692	1,699	1,706	1,608	712	502	292	825	1,359	525	1,336
West Exp.	TDS	ppm	1,642	1,714	1,659	1,648	1,665	1,683	1,639	1,595	1,809	1,757	1,778	1,771	1,430	1,729	1,732	1,692	1,699	1,706	1,608	1,112	819	1,172	572	1,359	525	1,336

Drift Loss[8,9,10]

Tower	Data	Units	8/4/08	8/11/08	8/18/08	8/25/08	9/1/08	9/8/08	9/15/08	9/22/08	9/29/08	10/6/08	10/13/08	10/20/08	10/27/08	11/3/08	11/10/08	11/17/08	11/24/08	12/1/08	12/8/08	12/15/08	12/22/08	12/29/08	1/5/09	1/12/09	1/19/09	1/26/09
West	Drift Loss	gal/min	2.65	2.59	2.55	1.85	2.46	0.48	0.25	1.35	1.34	0.54	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	1.08	0.00	0.00	1.53	1.62	1.59	1.59
West Exp.	Drift Loss	gal/min	1.41	0.95	0.97	1.36	1.47	2.33	2.04	1.40	1.54	2.00	2.91	2.23	2.10	2.21	2.34	2.11	2.13	2.13	2.10	1.30	1.93	1.95	0.21	0.00	0.00	0.00

Emission Factors[11,12]

Tower	Data	Units	8/4/08	8/11/08	8/18/08	8/25/08	9/1/08	9/8/08	9/15/08	9/22/08	9/29/08	10/6/08	10/13/08	10/20/08	10/27/08	11/3/08	11/10/08	11/17/08	11/24/08	12/1/08	12/8/08	12/15/08	12/22/08	12/29/08	1/5/09	1/12/09	1/19/09	1/26/09
West	PM_{10} EF	lb/gal	0.0134	0.0142	0.0142	0.0144	0.0143	0.0142	0.0144	0.0145	0.0146	0.0074	0.0031	0.0030	0.0028	0.0030	0.0048	0.0141	0.0142	0.0142	0.0134	0.0059	0.0042	0.0024	0.0069	0.0113	0.0044	0.0111
West Exp.	PM_{10} EF	lb/gal	0.0137	0.0143	0.0138	0.0137	0.0139	0.0140	0.0137	0.0133	0.0151	0.0146	0.0148	0.0148	0.0119	0.0144	0.0144	0.0141	0.0142	0.0142	0.0134	0.0093	0.0068	0.0098	0.0048	0.0113	0.0044	0.0111
West	$PM_{2.5}$ EF	lb/gal	0.0134	0.0142	0.0142	0.0144	0.0143	0.0142	0.0144	0.0145	0.0146	0.0074	0.0031	0.0030	0.0028	0.0030	0.0048	0.0141	0.0142	0.0142	0.0134	0.0059	0.0042	0.0024	0.0069	0.0113	0.0044	0.0111
West Exp.	$PM_{2.5}$ EF	lb/gal	0.0137	0.0143	0.0138	0.0137	0.0139	0.0140	0.0137	0.0133	0.0151	0.0146	0.0148	0.0148	0.0119	0.0144	0.0144	0.0141	0.0142	0.0142	0.0134	0.0093	0.0068	0.0098	0.0048	0.0113	0.0044	0.0111

Hourly Emissions[13]

Tower	Data	Units	8/4/08	8/11/08	8/18/08	8/25/08	9/1/08	9/8/08	9/15/08	9/22/08	9/29/08	10/6/08	10/13/08	10/20/08	10/27/08	11/3/08	11/10/08	11/17/08	11/24/08	12/1/08	12/8/08	12/15/08	12/22/08	12/29/08	1/5/09	1/12/09	1/19/09	1/26/09
West	PM_{10}	lb/hr	2.13	2.21	2.17	1.60	2.11	0.41	0.22	1.17	1.18	0.24	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.63	1.10	0.42	1.06
West Exp.	PM_{10}	lb/hr	1.15	0.81	0.81	1.12	1.23	1.96	1.67	1.11	1.40	1.76	2.59	1.98	1.50	1.91	2.03	1.78	1.81	1.82	1.69	0.72	0.79	1.14	0.06	0.00	0.00	0.00
West	$PM_{2.5}$	lb/hr	2.13	2.21	2.17	1.60	2.11	0.41	0.22	1.17	1.18	0.24	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.63	1.10	0.42	1.06
West Exp.	$PM_{2.5}$	lb/hr	1.15	0.81	0.81	1.12	1.23	1.96	1.67	1.11	1.40	1.76	2.59	1.98	1.50	1.91	2.03	1.78	1.81	1.82	1.69	0.72	0.79	1.14	0.06	0.00	0.00	0.00

Weekly Emissions[14,15]

Tower	Data	Units	8/4/08	8/11/08	8/18/08	8/25/08	9/1/08	9/8/08	9/15/08	9/22/08	9/29/08	10/6/08	10/13/08	10/20/08	10/27/08	11/3/08	11/10/08	11/17/08	11/24/08	12/1/08	12/8/08	12/15/08	12/22/08	12/29/08	1/5/09	1/12/09	1/19/09	1/26/09
West	PM_{10}	lb/week	358.35	370.44	364.75	268.70	354.58	68.80	36.92	197.36	198.06	40.46	0.00	0.00	0.00	7.54	0.00	0.00	0.00	0.00	0.00	64.38	0.00	0.00	105.84	185.26	70.22	178.18
West Exp.	PM_{10}	lb/week	193.88	136.59	135.70	188.81	206.10	328.79	281.18	187.31	234.49	295.95	435.20	331.90	252.56	321.19	340.46	299.88	303.79	305.53	284.19	121.72	132.93	191.79	10.13	0.00	0.00	0.00
West	$PM_{2.5}$	lb/week	358.35	370.44	364.75	268.70	354.58	68.80	36.92	197.36	198.06	40.46	0.00	0.00	0.00	7.54	0.00	0.00	0.00	0.00	0.00	64.38	0.00	0.00	105.84	185.26	70.22	178.18
West Exp.	$PM_{2.5}$	lb/week	193.88	136.59	135.70	188.81	206.10	328.79	281.18	187.31	234.49	295.95	435.20	331.90	252.56	321.19	340.46	299.88	303.79	305.53	284.19	121.72	132.93	191.79	10.13	0.00	0.00	0.00

Cooling Tower Emission Calculations[1,2]

1. Data is not available for the entire 10-year lookback period, emission only calculated starting in October 2004.
2. West Expansion Tower was not in operation until November 2006, emissions calculated beginning at this time.
3. Cooling tower daily flow rates from Senior Management Daily Reports. Data recorded on week days with the exception of holidays. A blank indicates there is no record for that day, a zero indicates the tower was not operating on that day.
4. Total dissolved solids data is from weekly reports prepared by GE.
5. Missing total dissolved solids data filled according to the following procedures:
   - If only one week is missing, fill using average of week immediately before and after.
   - If multiple weeks are missing, fill using value from other tower.

   - Before West Expansion tower was built, if less than a month of data is missing, fill using average of weeks immediately before and after data gap.
   - Chemistry reports begin in late October 2004 and baselines use single October 2004 value for entire month.
   - For 8 week data gap in early 2005, filled using average of all available data from 2005 since other tower not in use and week immediately before has a very low value compared to the average.
6. Dates shown are Monday of each week. Reports are typically taken on Wednesday but may be for any day during the week of the date shown.
7. Conductivity reported by GE is converted to TDS in ppm using the conversion factor: 0.67 ppm/[µS/cm]
8. Density of water is assumed to be: 8.345 lb/gal
9. Draft loss factor for cooling towers is calculated as the average induced draft and natural draft loss factors in AP-42 Table 13.4-1 since towers are equipped with fans but they are not always operated.

Induced Draft Loss	1.7	lb/Mgal
Natural Draft Loss	0.073	lb/Mgal
Average Draft Loss	0.8865	lb/Mgal

10. Drift loss is calculated according to the following equation:
   $Loss_{drift}$ (gal/min) = Flow Rate (gal/min) * $Loss_{draft}$ (lb/Mgal) / [1,000 (gal/Mgal) / Density of Water (lb/gal)]
11. Emission factors calculated according to the following equation:
   EF (lb/gal) = TDS (ppm) * 3.78 (grams/gal-ppm) / [453.6 (grams/lb) * 1,000]
12. These calculations conservatively assume that once water evaporates, all remaining solid particles are smaller than 2.5 microns.
13. Hourly emissions calculated as follows:
   PM (lb/hr) = EF (lb/gal) * $Loss_{drift}$ (gal/min) * 60 (min/hour)

14. Emissions calculated assuming arithmetic average of available flow rate data for each week is flow rate for entire week and tower operates at that flow rate for 7 days a week, 24 hours a day.
15. Hourly emissions converted to weekly emissions as follows:
   PM (lb/week) = PM (lb/hr) * 24 (hr/day) * 7 (days/week)

16. Monthly emissions calculated as the sum of weekly emissions in that month. All emissions from each week are associated with the month the Monday of that week falls in.

Ash Handling Emission Calculations

Hours of Operation Calculation[1,2,3]

Boiler	Fuel	Units	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1	Coal	tons	964	1,552	1,891	737	2,013	2,168	2,722	3,019	2,801	3,223	1,387	0	0	0	653	2,000	2,232	653	0	0	0	0	0	0
2	Coal	tons	1,025	912	1,333	1,451	2,156	2,142	1,791	2,487	1,100	38	661	6	0	344	1,340	891	1,270	1,501	2,103	2,263	1,386	1,578	1,588	0
1	Coal	MMBtu/ton	28.662	28.662	28.662	28.662	28.662	28.768	28.768	28.768	28.654	28.654	28.654	28.962	28.962	28.962	27.792	27.792	27.792	28.844	28.844	28.844	28.46	28.46	28.46	28.402
2	Coal	MMBtu/ton	28.662	28.662	28.662	28.662	28.662	28.768	28.768	28.768	28.654	28.654	28.654	28.962	28.962	28.962	27.792	27.792	27.792	28.844	28.844	28.844	28.46	28.46	28.46	28.402
1	Coal	MMBtu/hr	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
2	Coal	MMBtu/hr	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
1	Coal	hours	172.8	278.1	338.7	132.1	360.5	389.8	489.4	542.8	501.6	577.2	248.4	0.0	0.0	0.0	113.4	347.4	387.7	117.7	0.0	0.0	0.0	0.0	0.0	0.0
2	Coal	hours	183.7	163.3	238.8	260.0	386.3	385.1	322.0	447.2	197.0	6.8	118.4	1.1	0.0	62.3	232.8	154.8	220.6	270.6	379.1	408.0	246.5	280.7	282.5	0.0

Hours of Operation Correction[4]

Boiler	Fuel	Units	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
1+2	Coal	hours	356.4	441.4	577.6	392.1	746.8	774.9	811.5	990.1	698.6	584.0	366.8	1.1	0.0	62.3	346.2	502.2	608.3	388.3	379.1	408.0	246.5	280.7	282.5	0.0
Monthly Maximum		days	31	30	31	30	31	31	28	31	30	31	30	31	31	30	31	30	31	31	28	31	30	31	30	31
Monthly Maximum		hours	744	720	744	720	744	744	672	744	720	744	720	744	744	720	744	720	744	744	672	744	720	744	720	744
1+2	Coal	hours	356.4	441.4	577.6	392.1	744.0	744.0	672.0	744.0	698.6	584.0	366.8	1.1	0.0	62.3	346.2	502.2	608.3	388.3	379.1	408.0	246.5	280.7	282.5	0.0

Ash Handling Emissions[5,6,7,8]

Process	Data	Units	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
Ash Handling	Throughput	tons/hr	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Ash Handling	PM_{10}	lb/ton	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05
Ash Handling	$PM_{2.5}$	lb/ton	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05
Ash Handling	PM_{10}	lb	2.85E-04	3.52E-04	4.61E-04	3.13E-04	5.94E-04	5.94E-04	5.37E-04	5.94E-04	5.58E-04	4.66E-04	2.93E-04	8.67E-07	0.00E+00	4.97E-05	2.76E-04	4.01E-04	4.86E-04	3.10E-04	3.03E-04	3.26E-04	1.97E-04	2.24E-04	2.26E-04	0.00E+00
Ash Handling	$PM_{2.5}$	lb	4.31E-05	5.34E-05	6.98E-05	4.74E-05	9.00E-05	9.00E-05	8.13E-05	9.00E-05	8.45E-05	7.06E-05	4.44E-05	1.31E-07	0.00E+00	7.53E-06	4.19E-05	6.07E-05	7.36E-05	4.70E-05	4.58E-05	4.93E-05	2.98E-05	3.39E-05	3.42E-05	0.00E+00
Ash Handling	PM_{10}	tons	1.42E-07	1.76E-07	2.31E-07	1.57E-07	2.97E-07	2.97E-07	2.68E-07	2.97E-07	2.79E-07	2.33E-07	1.46E-07	4.34E-10	0.00E+00	2.49E-08	1.38E-07	2.01E-07	2.43E-07	1.55E-07	1.51E-07	1.63E-07	9.84E-08	1.12E-07	1.13E-07	0.00E+00
Ash Handling	$PM_{2.5}$	tons	2.16E-08	2.67E-08	3.49E-08	2.37E-08	4.50E-08	4.50E-08	4.06E-08	4.50E-08	4.22E-08	3.53E-08	2.22E-08	6.57E-11	0.00E+00	3.77E-09	2.09E-08	3.04E-08	3.68E-08	2.35E-08	2.29E-08	2.47E-08	1.49E-08	1.70E-08	1.71E-08	0.00E+00

Ash Handling Emission Calculations

Hours of Operation Calculation[1,2,3]

Boiler	Fuel	Units	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1	Coal	tons	1,731	1,281	0	0	0	0	0	0	769	1,788	2,292	2,022	1,731	1,281	1,377	0	0	0	0	0	178	1,675	1,231	2,357
2	Coal	tons	1,780	2,176	2,016	1,998	1,538	978	508	0	0	1,306	1,584	1,992	1,780	2,176	0	0	0	0	0	0	0	2	1,351	1,806
1	Coal	MMBtu/ton	28.234	28.234	28.066	28.066	28.066	27.638	27.638	27.638	28.184	28.184	28.184	28.282	28.282	28.282	28.808	28.808	28.808	28.582	28.582	28.582	27.802	27.802	27.802	28.018
2	Coal	MMBtu/ton	28.234	28.234	28.066	28.066	28.066	27.638	27.638	27.638	28.184	28.184	28.184	28.282	28.282	28.282	28.808	28.808	28.808	28.582	28.582	28.582	27.802	27.802	27.802	28.018
1	Coal	MMBtu/hr	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
2	Coal	MMBtu/hr	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160
1	Coal	hours	305.5	226.0	0.0	0.0	0.0	0.0	0.0	0.0	135.5	315.0	403.7	357.4	306.0	226.4	247.9	0.0	0.0	0.0	0.0	0.0	30.9	291.1	213.9	412.7
2	Coal	hours	314.1	384.0	353.6	350.5	269.8	168.9	87.8	0.0	0.0	230.1	279.0	352.1	314.6	384.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	234.8	316.3

Hours of Operation Correction[4]

Boiler	Fuel	Units	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
1+2	Coal	hours	619.6	610.0	353.6	350.5	269.8	168.9	87.8	0.0	135.5	545.0	682.8	709.5	620.6	611.1	247.9	0.0	0.0	0.0	0.0	0.0	30.9	291.4	448.7	729.0
Monthly Maximum		days	28	31	30	31	30	31	31	30	31	30	31	31	29	31	30	31	30	31	31	30	31	30	31	31
Monthly Maximum		hours	672	744	720	744	720	744	744	720	744	720	744	744	696	744	720	744	720	744	744	720	744	720	744	744
1+2	Coal	hours	619.6	610.0	353.6	350.5	269.8	168.9	87.8	0.0	135.5	545.0	682.8	709.5	620.6	611.1	247.9	0.0	0.0	0.0	0.0	0.0	30.9	291.4	448.7	729.0

Ash Handling Emissions[5,6,7,8]

Process	Data	Units	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
Ash Handling	Throughput	tons/hr	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Ash Handling	PM_{10}	lb/ton	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05	6.66E-05
Ash Handling	$PM_{2.5}$	lb/ton	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05
Ash Handling	PM_{10}	lb	4.95E-04	4.87E-04	2.82E-04	2.80E-04	2.15E-04	1.35E-04	7.01E-05	0.00E+00	1.08E-04	4.35E-04	5.45E-04	5.67E-04	4.96E-04	4.88E-04	1.98E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.47E-05	2.33E-04	3.58E-04	5.82E-04
Ash Handling	$PM_{2.5}$	lb	7.49E-05	7.38E-05	4.28E-05	4.24E-05	3.26E-05	2.04E-05	1.06E-05	0.00E+00	1.64E-05	6.59E-05	8.26E-05	8.58E-05	7.51E-05	7.39E-05	3.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-06	3.52E-05	5.43E-05	8.82E-05
Ash Handling	PM_{10}	tons	2.47E-07	2.44E-07	1.41E-07	1.40E-07	1.08E-07	6.75E-08	3.50E-08	0.00E+00	5.41E-08	2.18E-07	2.73E-07	2.83E-07	2.48E-07	2.44E-07	9.90E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-08	1.16E-07	1.79E-07	2.91E-07
Ash Handling	$PM_{2.5}$	tons	3.75E-08	3.69E-08	2.14E-08	2.12E-08	1.63E-08	1.02E-08	5.31E-09	0.00E+00	8.19E-09	3.30E-08	4.13E-08	4.29E-08	3.75E-08	3.69E-08	1.50E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E-09	1.76E-08	2.71E-08	4.41E-08

Ash Handling Emission Calculations

1. Boiler fuel consumption values are from quarterly reports submitted to DDOE.
2. Heat content for coal taken from quarterly fuel sampling results.
3. Hours of operation on coal calculated per the following formula:

Hours = Coal Throughput (tons) * Coal Heat Content (MMBtu/ton) / Heat Input Reating (MMBtu/hr)

4. Since boiler boilers could fire coal simultaneously, it is possible for combined hours of coal burning of the two boiler to be greater than the number of hours in a month. To correct for this, the total hours of coal burning in a month is compared to the total hours in that month. If hours of operation is greater than possible hours, the maximum number of hours in a month is used for calculations. It is conservatively assumed if hours of coal burning does ot exceed total hours in the month that the two boilers never burned coal simultaneously.
5. Ash throughput is assumed to be a constant value of 0.6 tons of ash per hour during all hours when at least one boiler is burning coal.
6. Emission factor is calculated according to AP-42 Section 13.2.4 according to the following formula:

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}(\text{lb / ton})$$

M	27	% moisture	Based on mean moisture content of landfilled fly ash (AP-42 Table 13.2.4-1)
k	0.35	for PM_{10}	
k	0.053	for $PM_{2.5}$	
U	9.4	mph	Average wind speed based on annual average from the past 45 years at Washington National Airport, DC.

7. Emissions in pounds calculated as follows:

PM (lb) = E (lb/ton) * Ash (tons/hr) * Coal Operation (hours) * Number of Transfer Points * Baghouse Control Efficiency (%) / 2000 (lb/ton)

Where:

Baghouse Control Efficiency = 98%

Number of Transfer Points = 1

8. Emissions in pounds converted to tons as follows:

PM (tons) = PM (lb) x 1/2000 (tons/lb)

Coal Handling Emission Calculations

Coal Handling Emissions[1,2,3,4]

Process	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
Coal Handling	850	3,060	1,550	3,230	1,360	5,820	4,590	3,060	5,610	5,780	2,210	0	0	0	1,785	4,165	6,205	2,380	0	0	3,060	1,020	0	0
Coal Handling	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04
Coal Handling	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04
Coal Handling	2.09	7.51	3.80	7.92	3.34	14.28	11.26	7.51	13.76	14.18	5.42	0.00	0.00	0.00	4.38	10.22	15.22	5.84	0.00	0.00	7.51	2.50	0.00	0.00
Coal Handling	0.32	1.14	0.58	1.20	0.51	2.16	1.70	1.14	2.08	2.15	0.82	0.00	0.00	0.00	0.66	1.55	2.30	0.88	0.00	0.00	1.14	0.38	0.00	0.00
Coal Handling	1.04E-03	3.75E-03	1.90E-03	3.96E-03	1.67E-03	7.14E-03	5.63E-03	3.75E-03	6.88E-03	7.09E-03	2.71E-03	0.00E+00	0.00E+00	0.00E+00	2.19E-03	5.11E-03	7.61E-03	2.92E-03	0.00E+00	0.00E+00	3.75E-03	1.25E-03	0.00E+00	0.00E+00
Coal Handling	1.58E-04	5.68E-04	2.88E-04	6.00E-04	2.53E-04	1.08E-03	8.52E-04	5.68E-04	1.04E-03	1.07E-03	4.10E-04	0.00E+00	0.00E+00	0.00E+00	3.32E-04	7.74E-04	1.15E-03	4.42E-04	0.00E+00	0.00E+00	5.68E-04	1.89E-04	0.00E+00	0.00E+00

Coal Handling Emission Calculations

Coal Handling Emissions[1,2,3,4]

Process	Aug-04	Sep-04	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07
Coal Handling	850	3,060	1,530	4,080	4,930	510	0	0	0	2,295	1,105	1,020	1,955
Coal Handling	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04
Coal Handling	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04
Coal Handling	2.09	7.51	3.75	10.01	12.09	1.25	0.00	0.00	0.00	5.63	2.71	2.50	4.80
Coal Handling	0.32	1.14	0.57	1.52	1.83	0.19	0.00	0.00	0.00	0.85	0.41	0.38	0.73
Coal Handling	1.04E-03	3.75E-03	1.88E-03	5.00E-03	6.05E-03	6.26E-04	0.00E+00	0.00E+00	0.00E+00	2.81E-03	1.36E-03	1.25E-03	2.40E-03
Coal Handling	1.58E-04	5.68E-04	2.84E-04	7.58E-04	9.16E-04	9.47E-05	0.00E+00	0.00E+00	0.00E+00	4.26E-04	2.05E-04	1.89E-04	3.63E-04

Process	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
Coal Handling	5,469	3,230	4,420	85	0	0	0	0	0	0	3,060	1,020	2,040
Coal Handling	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04	8.18E-04
Coal Handling	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04
Coal Handling	13.42	7.92	10.84	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.51	2.50	5.00
Coal Handling	2.03	1.20	1.64	0.03	0.00	0.00	0.00	0.00	0.00	0.00	1.14	0.38	0.76
Coal Handling	6.71E-03	3.96E-03	5.42E-03	1.04E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.75E-03	1.25E-03	2.50E-03
Coal Handling	1.02E-03	6.00E-04	8.21E-04	1.58E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.68E-04	1.89E-04	3.79E-04

Coal Handling Emission Calculations

1. Coal handling throughput based on coal deliveries from annual reports for 2008 and forward and from fuel tracking spreadsheet for August 2004 through December 2007.
2. Emission factor is calculated according to AP-42 Section 13.2.4 according to the following formula:

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}(\text{lb / ton})$$

M	4.5	% moisture	Based on mean moisture content for a coal power plant (AP-42 Table 13.2.4-1)
k	0.35	for PM_{10}	
k	0.053	for $PM_{2.5}$	
U	9.4	mph	Average wind speed based on annual average from the past 45 years at Washington National Airport, DC.

3. Emissions in pounds calculated as follows:
PM (lb) = E (lb/ton) * Coal (tons) * Number of Transfer Points / 2000 (lb/ton)
Where:
Number of Transfer Points = 3
4. Emissions in pounds converted to tons as follows:
PM (tons) = PM (lb) x 1/2000 (tons/lb)

APPENDIX D

REGULATORY APPLICABILITY FOR EXISTING UNITS

One of the required elements of a PAL application is an indication of any Federal or State applicable requirements, emissions limitations or work practices that apply to each new and existing emission source covered by the PAL. In accordance with 40 CFR 52.21(aa)(3)(i), the following sections summarize the applicable regulations with regard to the existing sources at the CPP.

D.1. NEW SOURCE PERFORMANCE STANDARDS

D.1.1. NSPS Subpart Db

One potentially applicable New Source Performance Standard (NSPS) for the boilers at the CPP is Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. Subpart Db applies to each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity greater than 100 MMBtu/hr. This regulation is only applicable to Boiler 3 as incorporated into Air Quality Permit #4926 that was issued for the boiler in September 2000. The CPP will continue to meet the applicable requirements of this subpart.

D.2. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The following sections evaluate applicability to relevant National Emission Standards for Hazardous Air Pollutants (NESHAP) codified under 40 CFR 63.

D.2.1. 40 CFR 63 Subpart ZZZZ

40 CFR 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (commonly referred to as the RICE MACT), applies to each existing, new, or reconstructed stationary reciprocating internal combustion engine located at a major or area source of hazardous air pollutants (HAPs). The CPP will be an area source of HAPs after this permitting action. At area sources of HAPs, engines are considered new if they were constructed (defined as the beginning of installation) after June 12, 2006. The fire pump, emergency generator, air compressor, and two portable generators at the CPP are reciprocating internal combustion engines and are therefore potentially subject to the requirements of the RICE MACT. The air compressor and portable generators meet the definition of a nonroad engine in 40 CFR 1068.30 and are therefore exempt from the RICE MACT.

The fire pump was purchased by the CPP in July 2006 and therefore installed after June 12, 2006. As such, it is classified as a new source under the RICE MACT. New engines at area sources comply with the RICE MACT by meeting the requirements of NSPS Subpart IIII or NSPS Subpart JJJJ per 40 CFR 63.6590(c)(1). Since the fire pump is not subject to either of these rules, this unit has no requirements under the RICE MACT.

The emergency generator was installed in 2004 and must meet the requirements for existing, emergency, CI engines at area sources. Requirements for this engine are also follows:

> Minimize engine startup and idle time to a period not exceeding minutes;
> Install a non-resettable hour meter per 40 CFR 63.6625(f);
> Change the oil and filter every 500 hours of operation or annually (whichever comes first), or choose to utilize an oil analysis program in order to extend the specific oil change requirement per 40 CFR 63.6625(i);
> Inspect the air cleaner every 1,000 hours of operation or annually (whichever comes first);
> Inspect all hoses and belts every 500 hours of operation of annually (whichever comes first); and
> Limit operation for maintenance and readiness checks to 100 hours per year.

The CPP will comply with these work practice standards for the emergency generator.

D.2.2. 40 CFR 63 Subpart JJJJJJ

As a future area source of HAP, the boilers at the CPP will be subject to 40 CFR 63 Subpart JJJJJJ or Area Source Boiler MACT. Area Source Boiler MACT was finalized on March 21, 2011. However, due to the extensive comments received during the public comment period, the rule was reproposed. The reproposed rule was published on December 23, 2011. The reproposed rule is still in the process of being finalized. Once a final version of the rule is published, the CPP will review applicability to the boilers and implement a strategy to comply with all applicable requirements.

D.3. COMPLIANCE ASSURANCE MONITORING

The requirements of the CAM regulations under 40 CFR 64 apply to pollutant-specific emission units at a major source that have pre-control device emissions greater than the Title V major source threshold(s) and use a control device to achieve compliance with an emission limitation or standard. The CAM requirements apply to the particulate matter control devices on Boilers 1 and 2. However, it should be noted that these units would be exempt from CAM on the applicable compliance date of the Boiler MACT. The CAM regulations recognize that new regulations, like the Boiler MACT, incorporate sufficient compliance assurance monitoring such that CAM requirements would be redundant and unnecessary. Specifically, EPA included an exemption in the CAM regulations under 40 CFR §64.2(b)(1)(i), which states that pollutant-specific emission units that are subject to MACT standards promulgated after January 15, 1990 (including the Boiler MACT) are categorically exempt from CAM. The CPP submitted a CAM Plan for Boilers 1 and 2 in the 2009 Title V renewal application but requested that DDOE include a permit term that eliminates the CAM requirement upon the applicable compliance date of the Boiler MACT.

D.4. DISTRICT OF COLUMBIA REGULATIONS

This section evaluates the applicability of the District of Columbia environmental regulations with regard to the existing sources at the CPP.

D.4.1. Chapter 5: Source Monitoring and Testing

DCMR Chapter 5 specifies the monitoring, testing, recordkeeping and reporting requirements applicable to sources located in the District of Columbia.

The Title V operating permit for the CPP already incorporates the applicable requirements of this section, such as quarterly fuel oil sampling. The CPP will continue to comply with applicable requirements in this section of DCMR.

D.4.2. Chapter 6: Particulates

This section provides emission standards for particulate matter and visible emissions based on the source type and date of the source. The applicable standards have already been incorporated into the CPP's existing Title V operating permit. The CPP will continue to comply with the relevant provisions of DCMR Chapter 6.

D.4.3. Chapter 8: Asbestos, Sulfur and Nitrogen Oxides

D.4.3.1. DCMR 804 – Nitrogen Oxide Emissions

DCMR 804 applies to fossil fuel-fired steam generating units of greater than or equal to 100 MMBtu/hr heat input. Boilers 1 through 3 have a heat input greater than the 100 MMBtu/hr threshold, and as such, DCMR 804 applies to the facility. These emissions limitations have been incorporated into the CPP's existing permits and CPP will continue to comply with the applicable standards in the section.

D.4.3.2. DCMR 805 – Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen

DCMR 805 dictates Reasonably Available Control Technology (RACT) requirements on all major stationary sources having the potential to emit 25 tpy or more of NO_x. The emergency standby engines at CPP, all of which operate less than 500 hours during any consecutive 12-month period, are exempt. Under this rule, the only units subject to RACT requirements at the CPP are the boilers. The emission limits and work practices (i.e., annual combustion tuning) applicable to the boilers are incorporated into the facility's permits. The CPP complies and will continue to comply with the applicable NO_x RACT requirements as contained in this section.

APPENDIX E[1]

NONATTAINMENT PAL BASELINE PERIOD SELECTION

[1] Appendix E was submitted on March 14, 2012 to provide further discussion regarding the selection of the PAL baseline period for nonattainment New Source Review.

On February 10, 2012, the Capitol Power Plant (CPP) of the Architect of the Capitol (AOC) submitted an air permit to construct application to the District Department of the Environment (DDOE) to install a cogeneration system at its facility located at 25 New Jersey and E Street Southeast, Washington, D.C. This addendum to the February 2012 submittal is being supplied to DDOE to provide further explanation of the baseline period selected when computing Plantwide Applicability Limits (PALs). The PAL calculations are further outlined in Section 3.1 and Appendix C of the February 2012 application.

DEFINITION OF PAL BASELINE ACTUAL EMISSIONS

Under the U.S. Environmental Protection Agency's (EPA's) PAL regulations, baseline actual emissions are defined in Title 40 of the Code of Federal Regulations Part 52.21(b)(48)(ii) [40 CFR 52.21(b)(48(ii)] as the average rate of emissions (in tons per year) of a regulated NSR pollutant actually emitted over a consecutive 24-month period and within the most recent 10 years prior to the submittal of an application for a PAL permit. Based on revisions proposed to Title 20 of the District Code of Municipal Regulations Chapter 2 (20 DCMR) after CPP submitted this permit application, it is CPP's understanding that DDOE seeks to define the PAL baseline period for nonattainment pollutants as the 2 consecutive calendar years immediately prior to the year the application for a PAL is submitted, except that DDOE may allow a different consecutive twenty-four (24) month period within the last 5 years upon a determination that the operations during that period would be more representative of normal source operations.[2]

In the February 2012 application for nonattainment pollutant PALs (one for nitrogen oxides [NO_x] and one for particulate matter with a diameter less than 2.5 microns[$PM_{2.5}$]), CPP defined and utilized a baseline period, February 2007 to January 2009, that is within 5 years prior to the cogeneration air permit application submittal but not the immediately preceding two years.[3] As will be discussed in the following section, this period is more representative of the range of normal source operations at the CPP than the two immediately preceding years.

PAL BASELINE PERIOD SELECTION

The CPP was originally placed in operation in 1910 to supply steam for heating and electricity solely for the U.S. Capitol. In the ensuing years, additional facilities were added to the power plant load, increasing the demand for steam and chilled water to cool the buildings. In 1951, the CPP eliminated electrical energy production. Currently, the CPP serves 23 facilities throughout Capitol Hill, including the House and Senate office buildings, the Supreme Court, and the Library of Congress. In addition, the CPP also provides heating and cooling to the U.S. Government Printing Office, Union Station, and the Postal Square Building. CPP's operations include seven (7) boilers to meet its customer demand (i.e., the need for heating and cooling). This demand, and hence the operation of CPP's boilers, is driven almost entirely by weather conditions, particularly the temperature. To support the representativeness of the selected baseline actual emissions period, CPP has reviewed the impact of temperatures within the past 5 years on its operations and compared that to operations/temperatures within the past 2 years.

CPP reviewed monthly total heating degree days (HDD) for the two years immediately prior to the application submittal (2010 and 2011) as well as for the 24-month period utilized in calculating the PAL baseline emissions. Heating degree day is a commonly used measurement, directly related to air temperatures, that is designed to capture the demand for energy to provide heating. The measurement is defined relative to a base temperature at which there is no need for supplemental heating. When the daily average air temperature (high and low temperatures averaged) is less than the base temperature, HDD is calculated as the base temperature minus the daily average temperature. If the daily average air temperature

[2] Definition of "PAL baseline period" in proposed 20 DCMR 299. "Notice of Proposed Rulemaking." DC Register Vol 59/7 (February 17, 2012) p. 41.

[3] A complete application was filed with DDOE on February 10, 2012.

is greater than the baseline temperature then there are no heating degree days for that day. AOC and CPP utilize this measurement when tracking operational performance and demand.

Using temperature data from the nearby Reagan National Airport, Table 1 depicts the monthly total heating degree days for the last two calendar years as well as for the months utilized in the selected baseline period. The 30-year average heating degree days for the airport, by month, is also provided in this table as a comparison to normal climatological conditions. As seen in Table 1, there have been 3,800 heating degree days on average in the last two calendar years compared to the 30-year average of 4,053 heating degree days. This data provides confirmation that the last two years have been warmer than the climatological average and that, therefore, one would expect there to be less demand for heating (e.g., boiler operational demands) during the last two calendar years when compared to other periods of time. To further illustrate, the 24-month period selected for use in calculating PAL baseline emissions for nonattainment pollutants correlates to a period with 3,956 heating degree days, which compares more favorably to the 30-year average value.

Based on this review, and given that emissions are related to boiler operations from CPP that operate dependent on heating needs (climatological conditions), CPP determined the selected a baseline period (February 2007 through January 2009) is more representative of normal operations than the prior two calendar years.

Table 1. Heating Degree Days from Reagan National Airport[4]

Last 2 Calendar Years		Selected Baseline Period		30-Year Average	
Month and Year	HDD by Month	Month and Year	HDD by Month	Month	HDD by Month
Jan-10	914	Feb-07	950	January	917
Feb-10	856	Mar-07	535	February	742
Mar-10	419	Apr-07	353	March	563
Apr-10	159	May-07	53	April	272
May-10	58	Jun-07	0	May	73
Jun-10	0	Jul-07	0	June	5
Jul-10	0	Aug-07	0	July	0
Aug-10	0	Sep-07	10	August	0
Sep-10	0	Oct-07	74	September	24
Oct-10	144	Nov-07	451	October	205
Nov-10	428	Dec-07	713	November	466
Dec-10	933	Jan-08	769	December	786
Jan-11	965	Feb-08	688	January	917
Feb-11	648	Mar-08	487	February	742
Mar-11	594	Apr-08	204	March	563
Apr-11	225	May-08	67	April	272
May-11	48	Jun-08	0	May	73
Jun-11	0	Jul-08	0	June	5
Jul-11	0	Aug-08	0	July	0
Aug-11	0	Sep-08	2	August	0
Sep-11	14	Oct-08	225	September	24
Oct-11	212	Nov-08	543	October	205
Nov-11	369	Dec-08	759	November	466
Dec-11	613	Jan-09	1028	December	786
Annual Avg. (over 24 months)	**3,800**	**Annual Avg. (over 24 months)**	**3,956**	**30-Yr Annual Avg.**	**4,053 (total)**

[4] Heating degree days is based on National Oceanic and Atmospheric Administration data observations at Reagan National Airport (KDCA).