

PRELIMINARY DETERMINATION SUMMARY
Permit Nos. 70492 and PSD-TX-1037

APPLICANT

City Public Service (CPS)
P.O. Box 1771
San Antonio, Texas 78296-1771

PROJECT LOCATION

The proposed project will be located at an existing power plant on Calaveras Lake, in Bexar County Texas, approximately 15 miles southeast of downtown San Antonio. The existing plant consists of the O.W. Sommers Plant (Units 1 and 2), the J.T. Deely Plant (Units 1 and 2), and the J.K. Spruce Plant (Units 1). The plant is located at 9599 Gardner Road, San Antonio, Texas 78623.

PROJECT DESCRIPTION

CPS has requested a permit to construction a new pulverized coal-fired utility boiler to be called Spruce 2 and ancillary equipment capable of producing approximately 750 net megawatts of electricity, with a heat input of approximately 8,000 MMBtu/hour. The primary fuel that will be fired in the boiler will be low-sulfur western subbituminous coal from the Powder River Basin (PBR). Emissions from the boiler will be controlled with combustion controls, a wet flue gas desulfurization system, a selective catalytic reduction system, and a fabric filter dust collection system. Existing permitted coal, limestone and ash storage and handling equipment could see an increase in emissions, due to increased throughputs associated with the new utility boiler. These existing sources have been evaluated for both BACT and impacts and the sources will be included in this permit. Other new ancillary equipment includes: economizer ash handling operations, fly ash handling operations, coal conveyors and transfer building, limestone silo, new railcar receiving building, new coal transfer building, new coal, limestone, and ash storage silos, rotary plow reclaim system, new coal conveyors, storage tanks for water treatment, and emergency diesel generators and diesel storage tanks. These new sources have been evaluated for both BACT and have been included in the impacts evaluation.

EMISSIONS (Criteria Pollutants)

Annual potential emissions, in tons per year (tpy), for nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), particulate matter less than 10 microns in aerodynamic diameter (PM₁₀), sulfur dioxide (SO₂), volatile organic compounds (VOC), sulfuric acid mist (H₂SO₄), lead (Pb), and fluorides as hydrogen fluoride (HF) are summarized in the following table:

SO ₂	NO _x	PM/PM ₁₀	VOC	CO	H ₂ SO ₄	Pb	Fluorides as (HF)
2,103	1,754	831/787	88	5,257	129	0.29	26

NONATTAINMENT AND PSD APPLICABILITY

Bexar County, where the facility will be located, is classified as attainment for ozone on the 1-hour standard and deferred-attainment for ozone based upon the 8-hour standard. Bexar County is

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attainment or unclassified for all other criteria pollutants. The newly proposed facility falls under Category I (fossil fuel-fired steam electric plants of more than 250 MMBtu/hr heat input) of the 28 named PSD source categories with 100 tpy major thresholds. The new facility will be built at the site of an existing major source. CPS was able to net out of PSD for NO_x and SO₂. CPS will enhance the existing Spruce 1 scrubber to net out of PSD for SO₂. CPS will over control NO_x from J.T. Deely Units 1 and 2, Spruce Unit 1, and O.W. Sommers Units 1 and 2. A PSD review was triggered for the following criteria pollutants: VOC, PM/PM₁₀, CO, H₂SO₄, Pb, and Fluorides (as HF).

CONTROL TECHNOLOGY - Best Available Control Technology (BACT)

Emissions from the utility boiler will be controlled with combustion controls, a wet flue gas desulfurization (FGD) system, a selective catalytic reduction system, and a fabric filter dust collection system. CPS proposes the emission limits listed below as BACT for the Utility boiler. Note that the hourly emissions include routine start-up, shut down, and maintenance emissions.

Pollutant	1- Hour Emission Rate (lb/MMBtu)	Annual Emission Rate (lb/MMBtu)
NO _x	0.2	0.069* and 0.05
SO ₂	0.36	0.10* and 0.06
CO	0.56	0.15
PM/PM ₁₀	0.033	0.022
Pb	2.2 E-5	8.4E-6
VOC	0.0036	0.0025
Fluorides (as HF)	0.008	0.0008
H ₂ SO ₄	0.0055	0.0037

* Note: 30-day rolling average

CO and VOC : CPS proposes good combustion control as BACT for CO and VOC emissions from the new utility boiler.

Pb and PM/PM₁₀: CPS proposes to control Pb and PM/PM from the utility boiler with fabric filters as BACT. The PM/PM₁₀ includes condensable (back half) particulate. CPS also proposes to control PM/PM₁₀ from the material handling facilities with fabric filters, covered conveyors, enclosed buildings, and with water spraying where appropriate as BACT.

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NO_x: CPS proposes the use of a selective catalytic reduction (SCR) with ammonia (NH₃) injection, low NO_x burners and over fired air for the control of NO_x emissions from the utility boiler as BACT. Ammonia slip is limited to 0.0063 lb/MMBtu (10 ppmv) on an hourly basis and 0.0019 lb/MMBtu (3 ppmv) on an annual basis.

SO₂: CPS proposes to fire low sulfur PRB coal and to use a wet flue gas desulfurization (FGD) system with approximately a 95% removal efficiency as BACT for SO₂.

H₂SO₄ and Fluorides (as HF) and HCl: CPS proposes to control these acid gases with a wet FGD with approximately a 95% removal efficiency for HF and HCl and a 90% removal efficiency for H₂SO₄.

AIR QUALITY MONITORING

In accordance with 40 CFR § 52.21 (i)(8)(i), evaluation of pre-construction monitoring requirements for pollutants which were subject to a PSD review was conducted. The modeled emission increases were below the corresponding PSD monitoring *de minimis* concentrations. A summary of the modeling results is as follows:

Modeling Results for PSD Monitoring Significance			
Pollutant	Averaging Time	GLCmax (µg/m ³)	Significance (µg/m ³)
PM ₁₀	24-hr	3	10
CO	8-hr	110	575
Fluorides	24-hr.	0.1	0.25

AIR QUALITY ANALYSIS

Modeling has been performed in accordance with Texas Commission on Environmental Quality (TCEQ) and EPA guidelines. The predicted impacts from the proposed project compare to the National Ambient Air Quality Standards (NAAQS) *de minimis* as follows:

Pollutant	Averaging Period	Maximum Impact (µg/m ³)	De Minimus Level (µg/m ³)	Increment Consumed (µg/m ³)	Allowable Increment (µg/m ³)	NAAQS Level (µg/m ³)
NO ₂	Annual	0.32	1	n/a	25	100
CO	1-hour	511	2,000	none	n/a	40,000
	8-hour	110	500	none	n/a	10,000
SO ₂	3-hour	52.7	25	n/a	512	1300
	24-hour	1.96	5	n/a	91	365
	Annual	0.00013	1	n/a	20	80

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Pb	Quarter	0.0003	0.2	n/a	n/a	1.5
Flourides (as HF)	24-hour	0.12	n/a	n/a	n/a	n/a
PM ₁₀	24-hour	3.07	5	n/a	30	150
	Annual	0.33	1	none	17	50

The detailed results of the air dispersion modeling are provided in the Air Quality Impact Analysis Modeling Report.

NAAQS ANALYSIS

The NAAQS analysis shows that the predicted concentrations for all criteria pollutants from the proposed project were below the NAAQS *de minimis*, except SO₂ on a 3-hour basis. Ambient SO₂ data representative for the area were obtained for use in establishing a background 3-hour concentration. The maximum predicted SO₂ concentration was added to the background. The resulting total predicted concentration was below the NAAQS. The modeling analysis indicates that the proposed project will not cause an exceedance of the NAAQS for all criteria pollutants for which there is a NAAQS.

INCREMENT ANALYSIS

Increment was not consumed by this project, because the predicted impacts were either below *de minimis* or the net emissions increase is not significant for emissions that would have consumed increment, as was the case for SO₂ on a 3-hour basis.

ADDITIONAL IMPACTS ANALYSIS

The construction phase of the project will take approximately four years, during which numerous temporary and contract workers will be utilized. Once construction of the plant is complete, 20 to 30 new permanent employees will be required to operate the plant. Segments of the local workforce will fill short-term construction positions as well as long-term operating positions. It is anticipated that no significant project related immigration will occur. No secondary or induced impacts to local off-site land use, community services, public infrastructures, or housing is anticipated to result from this project. The ambient air impacts will not significantly deteriorate the air quality of the area as demonstrated by the refined air dispersion modeling. No sensitive soil types have been identified in the Bexar County area that would be affected by criteria pollutant concentrations below the NAAQS. Modeling has demonstrated that there will be no adverse impacts on plants or soils as a result of the project since predicted concentrations will comply with the NAAQS. The nearest Class I area is approximately 430 km away from the site, therefore, a Class I area visibility impairment analysis was not required.

AIR TOXIC REVIEW (NON-CRITERIA POLLUTANTS)

A State Effects Evaluation Analysis has been performed for non-criteria pollutants to demonstrate that the public health and welfare are protected. The EPA ISC Multiple Receptor Processor Scenario Model was used to predict the maximum ground level concentrations of non-criteria pollutant expected to be emitted from the site. The results of the analysis indicate that the concentrations for all of the compounds evaluated were less than their respective effects

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screening level (ESL), except for hydrogen chloride and silica. The maximum predicted 1-hour silica concentration at the nearest residence is 1.9 $\mu\text{g}/\text{m}^3$. The maximum predicted annual average silica concentration at the nearest residence is 0.03 $\mu\text{g}/\text{m}^3$. Although the predicted concentration of hydrogen chloride and silica exceeded the effects screening level, no adverse affects were expected for human health and the environment, based upon the location and frequency of the predicted exceedances, Below is a summary of predicted sitewide concentrations for selected metals, ammonia, hydrogen chloride, hydrogen fluoride, coal dust, silica and limestone:

Sitewide Modeling Results for Health Effects			
Pollutant & CAS#	Averaging Time	GLCmax ($\mu\text{g}/\text{m}^3$)	ESL ($\mu\text{g}/\text{m}^3$)
Ammonia 7664-41-7	1-hr	93	170
	Annual	0.2	17
Hydrogen chloride 7647-01-0	1-hr	102	75
	Annual	0.09	0.1
Hydrogen Fluoride 7664-39-3	1-hr	13	25
	24-hr	1	3 - 12
	30-day	0.2	0.5
	Annual	0.09	2.5
Coal Dust	1-hr	4	9
	Annual	0.2	0.9
Silica 60676-86-0	1-hr	2.5	0.5
	Annual	0.07	0.05
Limestone 1317-65-3	1-hr	2	50
	Annual	0.008	5
Arsenic 7440-38-2	1-hr	0.03	0.1
	Annual	0.0003	0.01
Beryllium 7440-41-7	1-hr	0.01	0.02
	Annual	0.0001	0.002
Cadmium -	1-hr	0.008	0.1
	Annual	0.00008	0.001
Cobalt 7440-48-4	1-hr	0.03	0.2

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Sitewide Modeling Results for Health Effects			
Pollutant & CAS#	Averaging Time	GLCmax ($\mu\text{g}/\text{m}^3$)	ESL ($\mu\text{g}/\text{m}^3$)
	Annual	0.0003	0.02
Chromium (VI) -	1-hr	0.06	0.1
	Annual	0.0006	0.01
Mercury -	1-hr	0.1	0.25
	Annual	0.001	0.025
Manganese 7439-96-5	1-hr	0.1	2
	Annual	0.001	0.2
Nickel 7440-02-0	1-hr	0.03	0.15
	Annual	0.0003	0.015
Antimony 7440-36-0	1-hr	0.003	5
	Annual	0.00003	0.5

CONCLUSION

CPS has proposed controls that represent BACT for the proposed permit to construct the Spruce 2 utility boiler and associated equipment. Modeling analysis indicates that the proposed project will not violate the NAAQS or have any adverse impacts on the public health, soils, vegetation, or Class I Areas. In addition, the modeling predicted that only two pollutants would exceed their respective ESLs for non-criteria contaminants evaluated and that based upon the location and frequency of the predicted exceedances, no adverse affects were expected for human health and the environment. **Therefore, the TNRCC Executive Director has made the preliminary determination to issue the permit to CPS, as proposed, to construct and operate the Spruce 2 boiler and associated equipment at Calaveras Lake, San Antonio, Bexar County, Texas**