PNM San Juan Generating Station
BART Analysis Update
February 11, 2011

I. Introduction

The purpose of this Best Available Retrofit Technology (BART) Analysis Update for Public Service of New Mexico's (PNM) San Juan Generating Station (SJGS) is to present additional information related to the nitrogen oxide (NO_x) emission reductions achievable using selective non-catalytic reduction (SNCR) technology. In addition to addressing new information available on SNCR technology, the cost calculations below are revised to express the calculations in fourth quarter 2010 dollars.

Because Step 1 and Step 2 of the BART analysis (i.e., identify available technologies and eliminate technically infeasible options) have already been completed with respect to SNCR, (see PNM BART Analysis dated June 6, 2007), and the additional information recently obtained does not affect the analysis previously provided under those steps, this analysis will only address Steps 3 – 5 of the BART Analysis for SNCR (i.e., emissions control effectiveness, impact analysis / cost effectiveness, and visibility analysis.)

II. Previous Submittals

PNM has previously submitted two documents addressing the capabilities of SNCR systems at SJGS. The first document, dated May 30, 2008, included a BART analysis for SNCR, which concluded that SNCR could achieve a NO_x emission rate of 0.24 lb/mmBtu. This emission rate was based on a quotation received from Fuel Tech, Inc. (Fuel Tech) the industry leader in experience with SNCR systems, particularly for units larger than 300 MW. The second document, dated August 29, 2008, included a BART analysis specifically for one type of SNCR technology offered by Mobotec known as "Rotamix." In that document, PNM recognized that Mobotec claimed that its Rotamix technology would be capable of achieving a NO_x emission rate of 0.23 lb/mmBtu. However, PNM expressed concerns about Mobotec's experience with the Rotamix system at units larger than 300 MW. PNM is not aware of any new information that would address the concerns identified in the 2008 analysis of Mobotec's Rotamix system.

III. Additional Information Regarding SNCR

BART Analysis Step 3: Control Effectiveness

New developments have recently occurred in the SNCR market since PNM last evaluated SNCR in the context of the BART determination for SJGS. In January 2009, Fuel Tech purchased Advanced Combustion Technologies (ACT), which also provides SNCR systems for smaller boilers. ACT's SNCR technology, sold under the brand name HERT, uses a single nozzle injector instead of the multiple nozzle lance system developed by Fuel Tech. The HERT system has shown promising levels of NO_x reduction in smaller boilers. Following the purchase of ACT, Fuel Tech developed new alternatives for SNCR NO_x reduction at larger units, utilizing techniques adapted from ACT's experience. Fuel Tech has recently performed several confidential tests of NO_x reduction on larger boilers firing fuels that are similar to the fuel burned at SJGS.

Based on the most recent test results, Fuel Tech has indicated that they would be willing to guarantee that its SNCR technology can achieve a NO_x emission rate of 0.23 lb/mmBtu with an ammonia slip of 5 ppm at SJGS. According to Fuel Tech, an SNCR could be installed at each of the SJGS units using their traditional NOxOUT wall injectors, multi-nozzle injection lances, HERT-style injectors, or a combination of one or more injection systems. Fuel Tech's testing program, along with their CFD modeling, would determine the correct technology for the application. According to Fuel Tech, the technology may be able to achieve even lower NO_x emission rates, but full-scale testing of the new systems will be necessary to determine whether additional reductions are achievable at SJGS. Correspondence with Fuel Tech during the investigation of the control effectiveness of this new SNCR technology is included in Attachment 1. Based on this new information, the control effectiveness of SNCR in the BART analysis for NO_x should be revised from 0.24 lb/mmBtu to 0.23 lb/mmBtu.

BART Analysis Step 4: Impact Analysis / Cost Effectiveness

Fuel Tech has indicated that the capital cost for its SNCR system has escalated no more that 15 percent from the original estimate provided to PNM in 2007. Revised costs for these modifications to the SNCR system are included in Attachment 2, updated to reflect fourth quarter 2010 dollars.

To allow for a comparison of the costs associated with SNCR to the costs associated with the other available and technically feasible controls that have been evaluated in previous submittals, the cost calculations for those other controls have also been updated to reflect fourth quarter 2010 dollars as well. For the SCR costs, PNM and B&V performed a detailed update of the costs using data from the Bureau of Labor Statistics in response to questions from the EPA in November – December 2010. A copy of the document that was submitted to the EPA is included in Attachment 3, which contains a detailed explanation of how the calculation was performed. For the other controls listed, including SNCR/SCR hybrid, ROFA/Rotamix, ROFA, and Rotamix, a similar calculation was applied. However, the costs associated with ROFA/Rotamix, ROFA, and Rotamix were only updated from February 2008 to fourth quarter 2010, since the budgetary requests from Mobotec were provided in February 2008. As a result, the effect of the update on the calculations for these controls appears somewhat lower than the calculations made for SCR and SNCR/SCR hybrid. Attachment 4 provides a detailed explanation of these calculations.

Table 1 shows the impact analysis and cost effectiveness results of each available and technically feasible NO_x control technology. In addition, the "least cost" curves of these technologies are provided as Figures 1 through 4.

Table 1
Impact Analysis and Cost Effectiveness Results of Additional NOx Control Technologies for SJGS

All Feasible Technologies	Emission Performance Level (lb/MBtu)	Expected Emission Rate (lb/h)	Expected Emission Rate (ton/yr)	Expected Emission Reduction (ton/yr)	Total Capital Investment (TCI) (1,000$)	Total Annualized Cost (TAC) (1,000$)	Cost Effectiveness ($/ton)	Incremental Cost Effectiveness ($/ton)	Energy Impacts (1,000$)	Non-Air Impacts (1,000$)
SJGS Unit 1										
Selective Catalytic Reduction (SCR)	0.07	259.5	966	3,174	184,143	20,525	6,466	2,443	1,496	--
SNCR/SCR Hybrid	0.18	667.3	2,484	1,656	110,683	16,816	10,154	35,917	706	1,762
ROFA & Rotamix (Mobotec)	0.20	741.4	2,760	1,380	30,790	6,902	5,001	7,982	1,413	3
Rotamix (Mobotec)	0.23	852.6	3,174	966	11,822	3,597	3,723	116	51	4
SNCR (Fuel Tech)	0.23	852.6	3,174	966	17,048	3,582	3,708	80	36	--
ROFA (Mobotec)	0.26	963.8	3,588	552	19,256	3,549	6,429	--	1,363	--
SJGS Unit 2										
Selective Catalytic Reduction (SCR)	0.07	258.2	961	3,158	198,790	21,891	6,932	3,036	1,492	--
SNCR/SCR Hybrid	0.18	663.8	2,471	1,648	115,151	17,306	10,503	37,887	346	1,762
ROFA & Rotamix (Mobotec)	0.20	737.6	2,746	1,373	30,790	6,902	5,027	8,024	1,413	3
Rotamix (Mobotec)	0.23	848.2	3,158	961	11,822	3,597	3,742	117	51	4
SNCR (Fuel Tech)	0.23	848.2	3,158	961	17,048	3,582	3,727	80	36	--
ROFA (Mobotec)	0.26	958.9	3,570	549	19,256	3,549	6,462	--	1,363	--
SJGS Unit 3										
Selective Catalytic Reduction (SCR)	0.07	403.1	1,501	4,931	248,416	28,359	5,752	744	2,194	--
SNCR/SCR Hybrid	0.18	1,036.4	3,859	2,572	178,759	26,604	10,342	39,171	507	2,658
ROFA & Rotamix (Mobotec)	0.20	1,151.6	4,287	2,144	35,724	9,810	4,576	7,498	2,810	5
Rotamix (Mobotec)	0.23	1,324.3	4,931	1,501	13,919	4,988	3,324	-378	84	5
SNCR (Fuel Tech)	0.23	1,324.3	4,931	1,501	21,220	4,859	3,238	-578	36	--
ROFA (Mobotec)	0.26	1,497.1	5,574	857	22,081	5,231	6,100	--	2,725	--
SJGS Unit 4										
Selective Catalytic Reduction (SCR)	0.07	395.4	1,472	4,837	230,089	26,592	5,497	339	2,215	--
SNCR/SCR Hybrid	0.18	1,016.8	3,786	2,524	171,412	25,808	10,226	38,034	507	2,658
ROFA & Rotamix (Mobotec)	0.20	1,129.8	4,206	2,103	35,724	9,810	4,664	7,643	2,810	5
Rotamix (Mobotec)	0.23	1,299.3	4,837	1,472	13,919	4,988	3,388	-385	84	5
SNCR (Fuel Tech)	0.23	1,299.3	4,837	1,472	21,220	4,859	3,301	-590	36	--
ROFA (Mobotec)	0.26	1,468.7	5,468	841	22,081	5,231	6,218	--	2,725	--

Notes:

1. Costs for all technologies are shown in fourth quarter 2010 dollars. Costs were escalated from the original BART estimate calculations.
2. Expected emission rates (ton/yr) calculations were based on 85 percent unit capacity factor (refer to Appendix A Design Basis in June 6, 2007 BART Application Document).
3. Expected emission reduction (ton/yr) calculations were based on control effectiveness described in submittal and baseline emission (refer to June 6, 2007 BART Application Document).
4. TCI and TAC are referenced from Attachment 2, 3, and 4.
5. Cost-effectiveness ($/ton) is defined as ratio of TAC over Expected Emission Reduction (ton/yr).
6. Expected emission reduction is based on annual emission reduction from baseline upgrade emission levels.
7. Incremental cost effectiveness are based on increments in expected emission reduction (ton/yr).

Figure 1
SJGS 1 NOx Technology Least Cost Curve

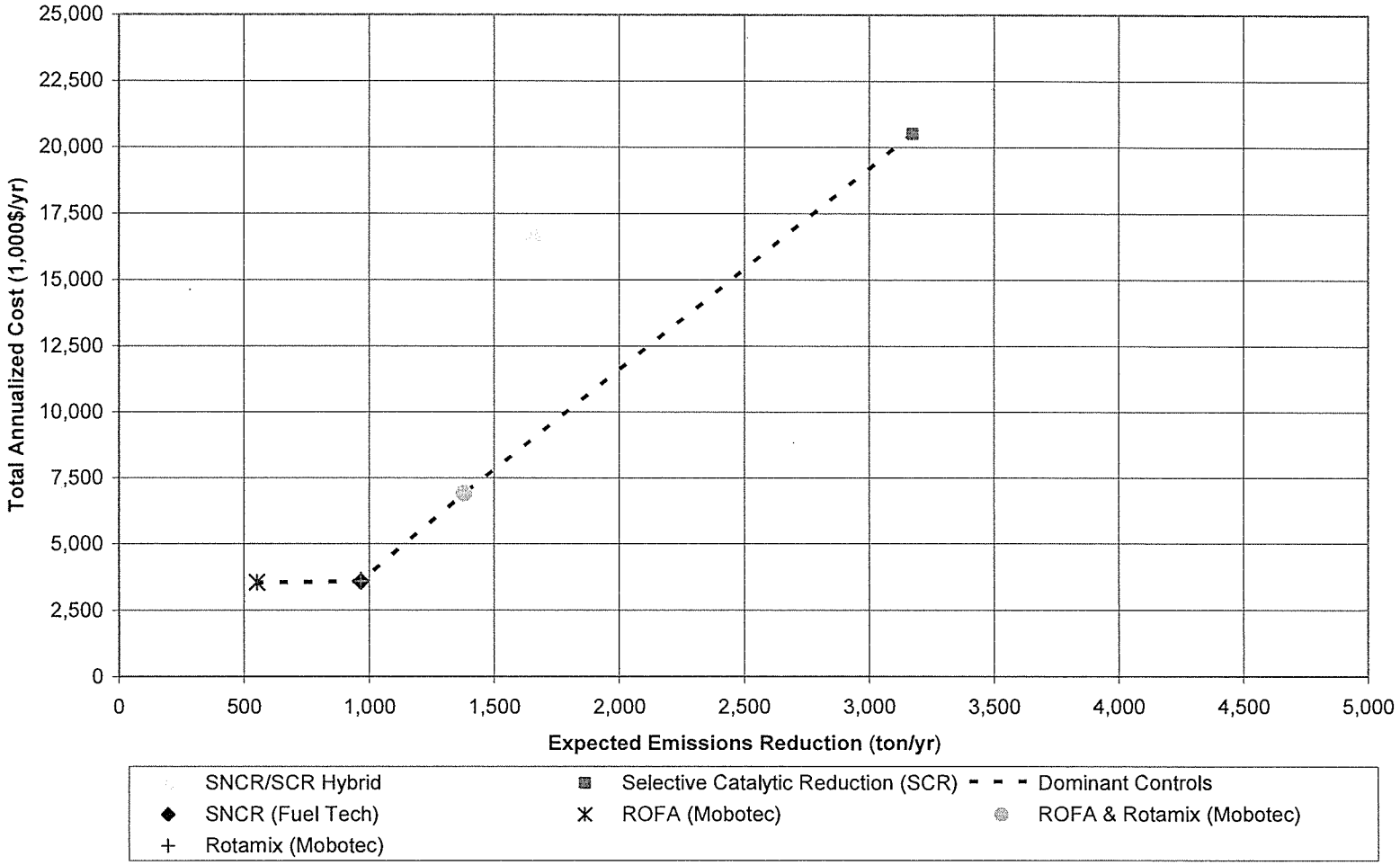


Figure 2
SJGS 2 NOx Technology Least Cost Curve

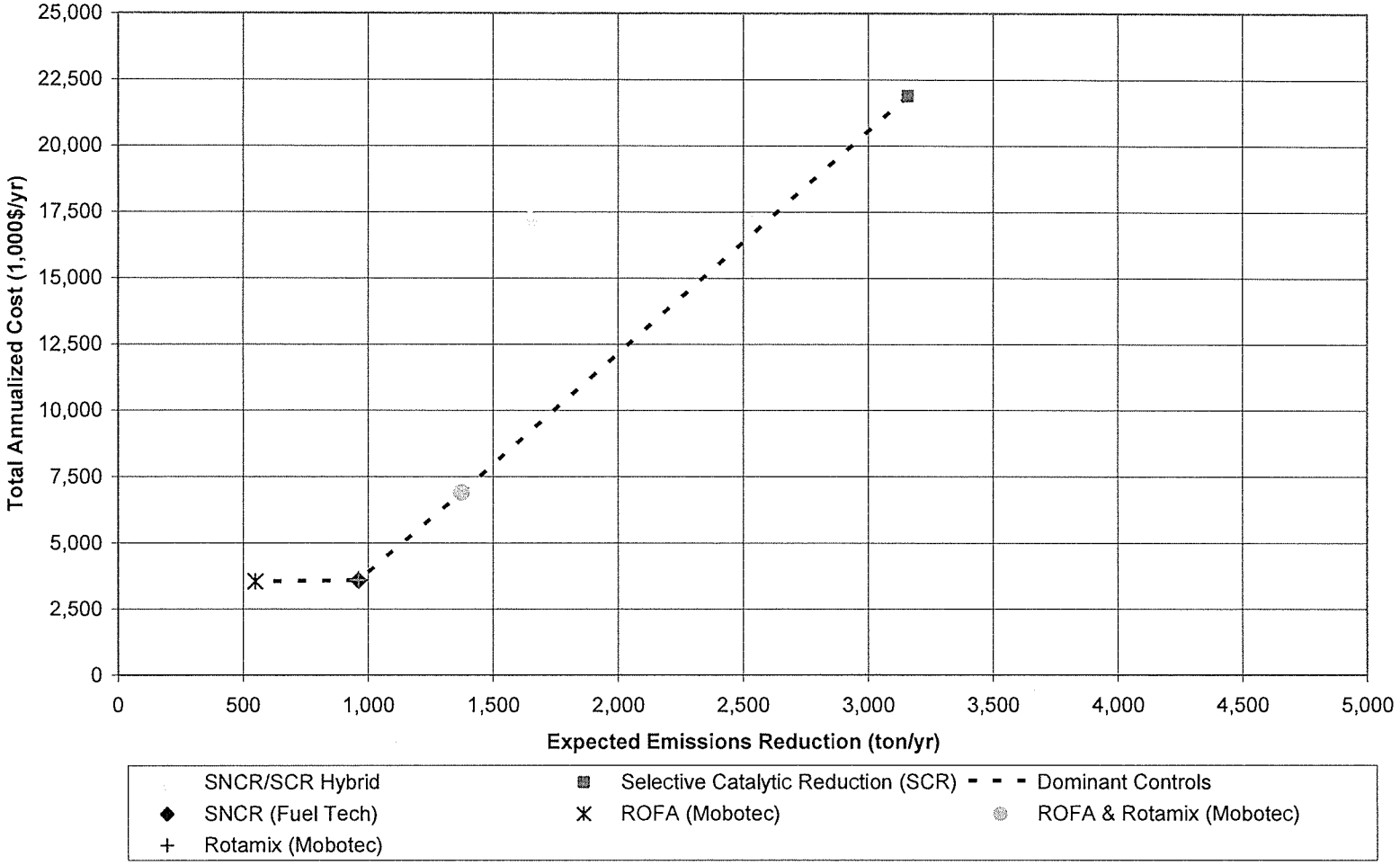


Figure 3
SJGS 3 NOx Technology Least Cost Curve

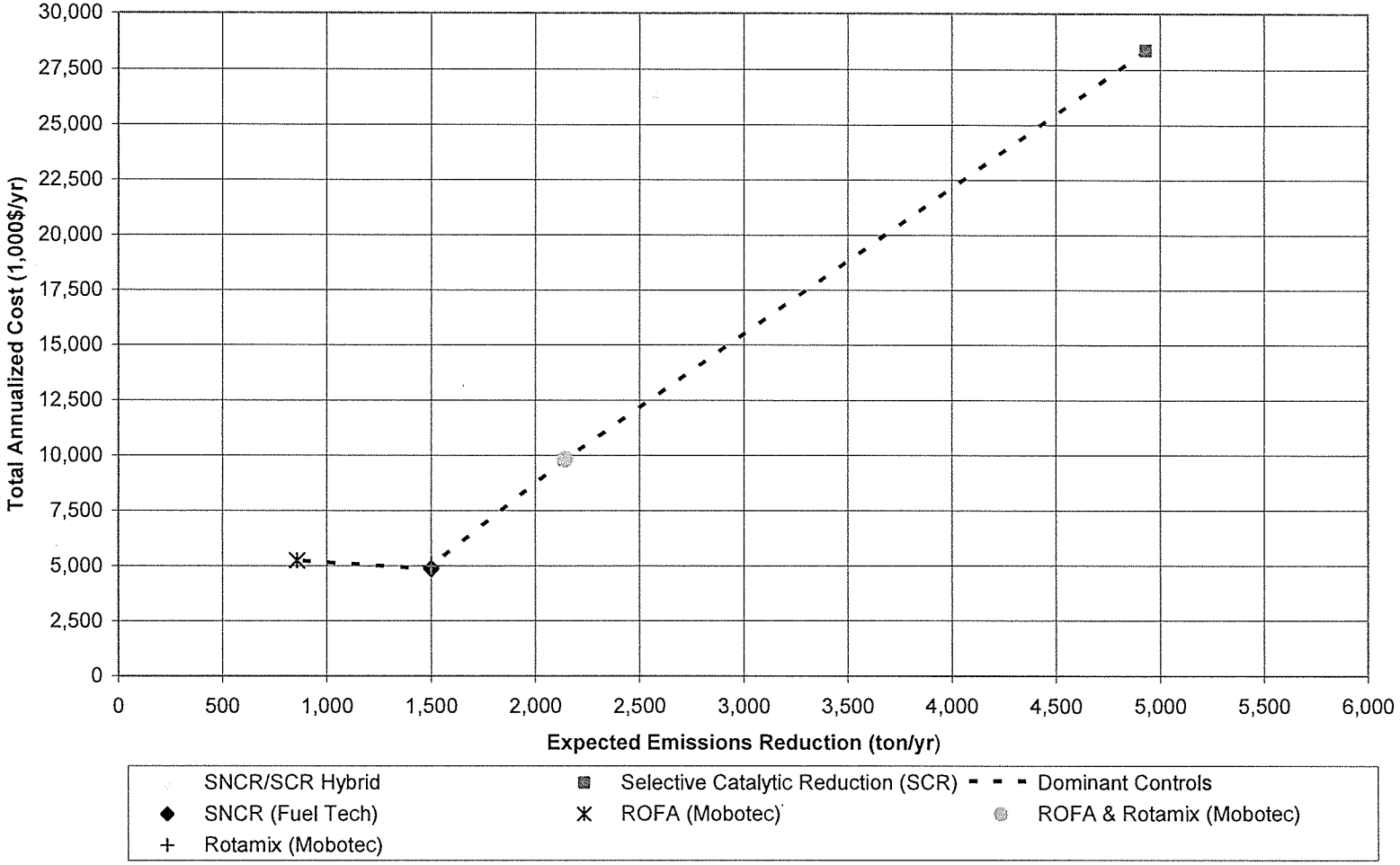
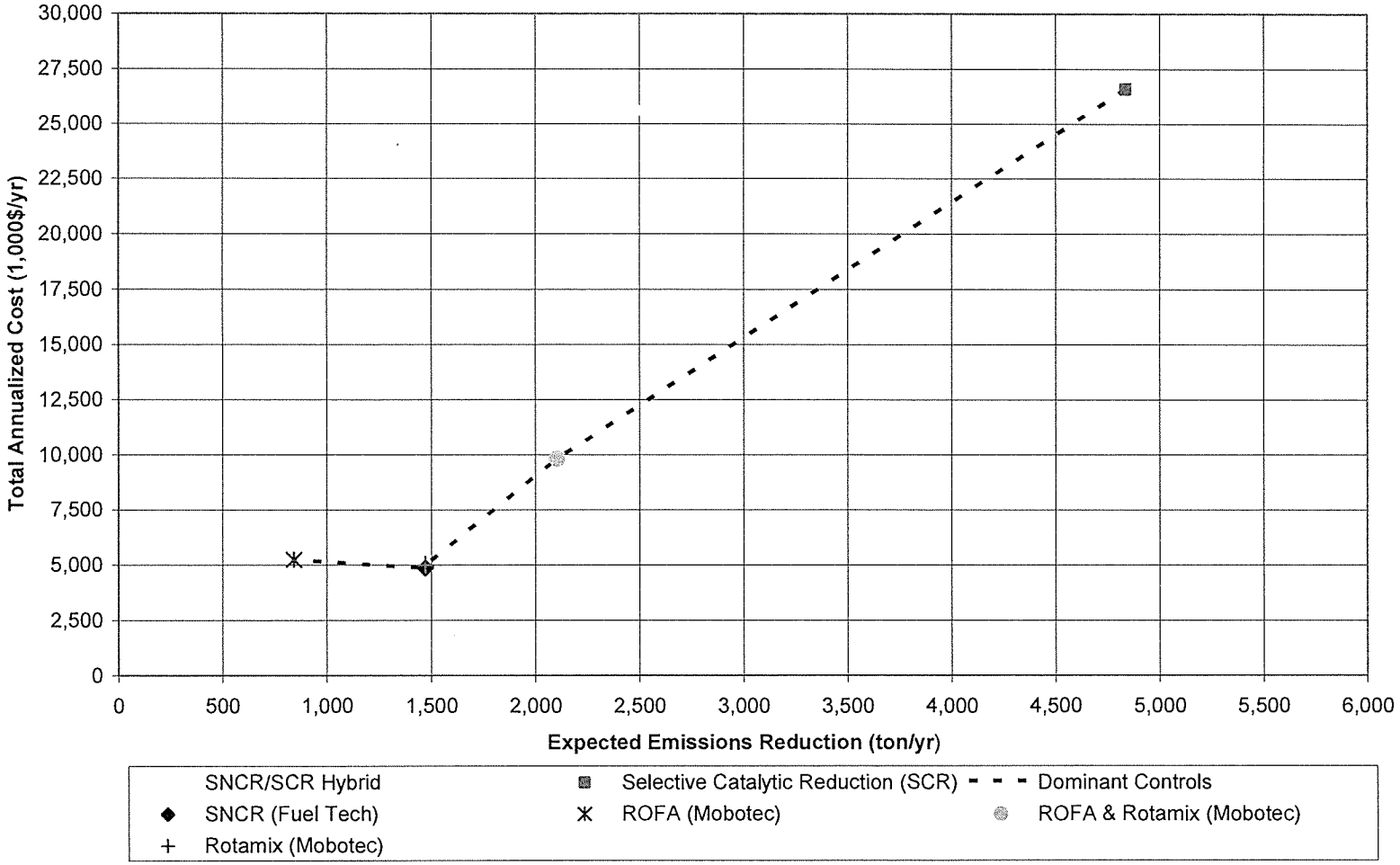


Figure 4
SJGS 4 NOx Technology Least Cost Curve



BART Analysis Step 5: Visibility Analysis

CALPUFF modeling analyses were performed to provide SJGS plant-wide visibility impacts at 16 Class I areas for the SNCR NO_x control technology. For consistency, the modeling methodology and modeling refinements contained in this submittal use "nitrate repartitioning" and the "variable ammonia background," based on the November 6, 2007 refinements provided to NMED. These refinements are summarized below.

Nitrate Repartitioning

Nitrate repartitioning has been included to better account for the amount of particulate nitrate (NO_3) by limiting the available ammonia when individual unit puffs overlap. The original visibility modeling conducted for the June 2, 2007 BART application did not incorporate repartitioning of available ammonia (MNITRATE = 0). The refinements did not allow each overlapping puff(s) to use the full ammonia background value but instead only a portion of the ammonia available (MNITRATE = 1). This concept is reflected in Section 3.1.2.6 of the *CALMET/CALPUFF Protocol for BART Exemption Screening Analysis for Class I Areas in the Western United States* dated August 15, 2006, (hereinafter referred to as the WRAP Protocol). "Nitrate repartitioning" does not refer to the ammonia limiting method commonly referred to as "ALM."

Ammonia Background Concentration

The Sithe Global Power, LLC's Desert Rock Energy Facility and the Toquop Energy Projects located in the southwestern United States recently used variable monthly background ammonia concentrations, based on ammonia background concentrations monitored at several western class I areas. Based on this information, SJGS's BART modeling reflects these approved values, presented in Table 2 for reference.

Table 2 Variable Monthly Ammonia Background Concentration[1]	
Month	Background Ammonia Concentration (ppb)
January	0.2
February	0.2
March	0.2
April	0.5
May	0.5
June	1.0
July	1.0
August	1.0
September	1.0
October	0.5
November	0.5
December	0.2
[1]The ammonia data and supporting information for the values contained in Desert Rock Energy Facility and the Toquop Energy Project visibility analyses were included in detail in Attachment 1 of the March 31, 2008 report submittal.	

Facility Visibility Modeling Results

The expected degree of visibility improvement for the SNCR control technology scenario was determined based on the difference between the maximum visibility impact for the baseline (taking into account the existing NO_x combustion controls) and the maximum visibility impact for the SNCR control technology scenario, as determined for each receptor at each of the sixteen Class I areas. The baseline includes the effects of the NO_x combustion controls currently installed and operating at each SJGS unit. The stack outlet conditions which were modeled for each scenario are included in Attachment 5.

The results of the refined visibility modeling for the SJGS plant, assuming the same SNCR control technology is installed on all four units, are illustrated in Tables 1 through 3 of Attachment 6. These tables summarize the scenarios and the maximum visibility (deciview) impact projected at any of the 16 Class I areas at any time over the

2001 to 2003 period. Attachment 7 includes (i) the plant-wide summary of the 98th percentile visibility impact for the modeled scenarios, (ii) the number of days above 0.5 dv threshold, and (iii) the contribution of each pollutant associated with the 98th percentile visibility impact for each Class I area.

The visibility modeling analysis indicates an improvement in visibility impact at each of the 16 Class I areas. The maximum visibility (deciview) improvement projected at any of the 16 Class I areas at any time over the 2001 to 2003 period is illustrated in Table 3 of Attachment 6. These maximum visibility improvements between the baseline and the SNCR control scenarios range from 0.05 dv to 0.22 dv of expected visibility improvement. Based on the visibility improvement modeled and the total annual cost evaluated in the impact analysis stage of this document, the cost-effectiveness for visibility improvement (annual cost per improvement in visibility, $/dv), was determined for SJGS over the range of visibility improvement. The cost effectiveness of installing SNCRs at all four SJGS units ranges from $352 million/dv to $79 million/dv over the range of visibility improvements at the different Class I areas.

Unit Specific Visibility Modeling Results

The results of the refined visibility modeling for Unit 1, Unit 2, Unit 3, and Unit 4 are illustrated in Tables 4-6, 7-9, 10-12, and 13-15 of Attachment 6, respectively. These tables summarize the scenarios and the maximum visibility (deciview) impact seen at any of the 16 Class I areas at any time over the 2001 to 2003 period. Similar to results seen for the SJGS facility, the visibility impacts at Mesa Verde represent the maximum visibility impact at any of the 16 Class I areas.

The maximum visibility (deciview) improvement seen at any of the 16 Class I areas at any time over the 2001 to 2003 period is illustrated in Tables 6, 9, 12, and 15. Again, the expected degree of visibility improvement for the SNCR control technology scenario was determined based on the difference between the maximum visibility impact for the baseline (taking into account the existing NO_x combustion controls) and the maximum visibility impact for the SNCR control technology scenario, as determined for each receptor at each of the sixteen Class I areas. Furthermore, the same methodology previously described for the SJGS's cost-effectiveness in ($/dv) was used here for each unit.

These maximum visibility improvements between the baseline and the SNCR control scenario for each unit are similar to that of the combined SJGS. The visibility improvements are summarized below.

- Unit 1 improvements range from 0.02 dv to 0.17 dv.
- Unit 2 improvements range from 0.02 dv to 0.18 dv.
- Unit 3 improvements range from 0.02 dv to 0.17 dv.
- Unit 4 improvements range from 0.03 dv to 0.18 dv.

Based on the visibility improvement modeled and the total annual cost evaluated in the impact analysis stage of this document, the cost-effectiveness for visibility improvement (annual cost per improvement in visibility, $/dv), was determined for each unit for each Class I area. The resulting cost for installation of SNCRs for each unit is summarized below.

- Unit 1 cost range is $199 million/dv to $21 million/dv.
- Unit 2 cost range is $189 million/dv to $20 million/dv.
- Unit 3 cost range is $211 million/dv to $28 million/dv.
- Unit 4 cost range is $174 million/dv to $27 million/dv.

Attachment 7 includes (i) the plant-wide summary of the 98th percentile visibility impact for the modeled scenarios, (ii) the number of days above 0.5 dv threshold, and (iii) the contribution of each pollutant associated with the 98th percentile visibility impact for each Class I area.

IV. Summary

The information provided above is intended to assist the New Mexico Environment Department in preparing its BART determination for the San Juan Generating Station. As noted above, additional information recently obtained by PNM suggests that SNCR is capable of achieving a NO_x emission rate of 0.23 lb/mmBtu, based on the guarantee provided by Fuel Tech, which will result in an overall reduction in NO_x emissions of 4,900 tons. Additionally, those NO_x emission reductions will result in additional visibility improvements at each of the 16 Class I areas reviewed for this BART analysis.

Attachment 1

Communication from FuelTech on SNCR (2/8/2011)

FUEL TECH®
Technologies to enable clean efficient energy™

William E. Cummings, Jr.
Senior Vice President
Air Pollution Control Sales

February 8, 2011

Ms. Diane M. Fischer, P.E.
Air Quality Business Development Manager
BLACK & VEATCH
11401 Lamar Avenue
Overland Park, KS 66211

RE: FUEL TECH, INC. PROPOSAL 07-B-047

Dear Ms. Fischer:

Fuel Tech has reviewed the data contained in FTI Proposal 07-B-047 and our overall experience with the combined HERT and NOxOUT injection strategies. Provided the San Juan process conditions reasonably match those indicated in the aforementioned proposal and the baseline NOx is at or below 0.30 LBS/MMBtu, Fuel Tech's SNCR systems will, for the subject application, be capable of achieving a controlled NOx emission rate of 0.23 LBS/MMBtu or less with an expected ammonia slip limit of 5 ppm.

Further, our experience with testing of a combined HERT/NOxOUT system and a NOxOUT system for confidential clients on utility boilers firing western US coals, provides us with the confidence necessary to support commercial guarantees for these controlled emission levels.

While we remain comfortable with this determination, we have yet to confirm this performance prediction through temperature/gas species testing, computational fluid dynamics (CFD) and chemical kinetic modeling (CKM). It would also be prudent to confirm the selected scope of supply can indeed be installed without interference or compromise due to the San Juan unit configurations. Fuel Tech strongly recommends that PSNM complete the above recommended testing and modeling in an effort to generate a firm commercial guarantee.

We hope you find this information helpful. Should you or your staff have any questions or comments please do not hesitate to contact our offices.

Very truly yours,

William E. Cummings, Jr.
Senior Vice President
APC Sales

WEC:bav

Attachment 2

Updated SNCR Costs

PNM SJGS BART Analysis - Cost Analysis (Draft)

Technology: Selective Non-Catalytic Reduction - SJGS Unit 1 & 2 **Date:** 1/24/2011

Cost Item	$	Remarks/Cost Basis				
CAPITAL COST						
Direct Costs						
Purchased equipment costs						
SNCR system scope:	*$4,962,000*	*From vendor quote (FuelTech), escalated by 15 percent, per email from Fuel Tech dated 1/23/2011*				
Reagent delivery system						
Wall injectors and multiple nozzle lances						
Automatic injector and lance retract system						
Flue gas temperature monitors						
Reagent storage tank	$100,000	B&V cost estimate				
NOx monitoring system	$220,000	B&V cost estimate				
Electrical system upgrades	$189,000	B&V cost estimate				
Instrumentation and control system	$279,000	B&V cost estimate				
Subtotal capital cost (CC)	$5,750,000					
Gross Receipt Tax	$355,781	(CC) X	6.2%			
Freight	$287,500	(CC) X	5.0%			
Total purchased equipment cost (PEC)	$6,393,000					
Direct installation costs						
Foundation & supports	$639,000	(PEC) X	10.0%			
Handling & erection	$1,918,000	(PEC) X	30.0%			
Electrical	$639,000	(PEC) X	10.0%			
Piping	$160,000	(PEC) X	2.5%			
Insulation	$0	(PEC) X	0.0%			
Painting	$0	(PEC) X	0.0%			
Demolition	$320,000	(PEC) X	5.0%			
Relocation	$128,000	(PEC) X	2.0%			
Total direct installation costs (DIC)	$3,804,000					
Air preheater modifications	$1,071,000	B&V cost estimate				
Site preparation	$0	N/A				
Buildings	$0	N/A				
Total direct costs (DC) = (PEC) + (DIC)	$11,268,000					
Indirect Costs						
Engineering	$789,000	(DC) X	7.0%			
Owner's cost	$563,000	(DC) X	5.0%			
Construction management	$1,127,000	(DC) X	10.0%			
Start-up and spare parts	$338,000	(DC) X	3.0%			
Performance test	$100,000	(DC) X	Engineering estimate			
Contingencies	$2,254,000	(DC) X	20.0%			
Total indirect costs (IC)	$5,171,000					
Interest During Construction (IDC)	$609,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)		
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$17,048,000**					
ANNUAL COST						
Direct Annual Costs						
Fixed annual costs						
Operating labor	$125,000		1 FTE and	124,862 $/year		Estimated manpower level
Maintenance labor and materials	$338,000	(DC) X	3.0%			
Total fixed annual costs	$463,000					
Variable annual costs						
Reagent	$1,417,000		906 lb/hr and	420 $/ton		Engineering estimate
Auxiliary and ID fan power	$36,000		80 kW and	0.061 $/kWh		Estimate in vendor quote
Water	$6,000		39 gpm and	0.33 $/1,000 gal		Engineering estimate
Total variable annual costs	$1,459,000					
Total direct annual costs (DAC)	$1,922,000					
Indirect Annual Costs						
Cost for capital recovery	$1,660,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$1,660,000					
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$3,582,000**					

PNM SJGS BART Analysis - Cost Analysis (Draft)

Technology: Selective Non-Catalytic Reduction - SJGS Unit 3 & 4 **Date:** 1/24/2011

Cost Item	$	Remarks/Cost Basis				
CAPITAL COST						
Direct Costs						
Purchased equipment costs						
SNCR system scope:	*$6,462,000*	*From vendor quote (FuelTech), escalated by 15 percent,*				
Reagent delivery system		*per email from Fuel Tech dated 1/23/2011*				
Wall injectors and multiple nozzle lances						
Automatic injector and lance retract system						
Flue gas temperature monitors						
Reagent storage tank	$100,000	B&V cost estimate				
NOx monitoring system	$220,000	B&V cost estimate				
Electrical system upgrades	$242,000	B&V cost estimate				
Instrumentation and control system	$291,000	B&V cost estimate				
Subtotal capital cost (CC)	$7,315,000					
Gross Receipt Tax	$452,616	(CC) X	6.2%			
Freight	$365,750	(CC) X	5.0%			
Total purchased equipment cost (PEC)	$8,133,000					
Direct installation costs						
Foundation & supports	$813,000	(PEC) X	10.0%			
Handling & erection	$2,440,000	(PEC) X	30.0%			
Electrical	$813,000	(PEC) X	10.0%			
Piping	$203,000	(PEC) X	2.5%			
Insulation	$0	(PEC) X	0.0%			
Painting	$0	(PEC) X	0.0%			
Demolition	$407,000	(PEC) X	5.0%			
Relocation	$163,000	(PEC) X	2.0%			
Total direct installation costs (DIC)	$4,839,000					
Air preheater modifications	$1,071,000	B&V cost estimate				
Site preparation	$0	N/A				
Buildings	$0	N/A				
Total direct costs (DC) = (PEC) + (DIC)	$14,043,000					
Indirect Costs						
Engineering	$983,000	(DC) X	7.0%			
Owner's cost	$702,000	(DC) X	5.0%			
Construction management	$1,404,000	(DC) X	10.0%			
Start-up and spare parts	$421,000	(DC) X	3.0%			
Performance test	$100,000	(DC) X	Engineering estimate			
Contingencies	$2,809,000	(DC) X	20.0%			
Total indirect costs (IC)	$6,419,000					
Interest During Construction (IDC)	$758,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)		
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$21,220,000**					
ANNUAL COST						
Direct Annual Costs						
Fixed annual costs						
Operating labor	$125,000	1	FTE and	124,862 $/year		Estimated manpower level
Maintenance labor and materials	$421,000	(DC) X	3.0%			
Total fixed annual costs	$546,000					
Variable annual costs						
Reagent	$2,201,000	1,408	lb/hr and	420 $/ton		Engineering estimate
Auxiliary and ID fan power	$36,000	80	kW and	0.061 $/kWh		Estimate in vendor quote
Water	$9,000	60	gpm and	0.33 $/1,000 gal		Engineering estimate
Total variable annual costs	$2,246,000					
Total direct annual costs (DAC)	$2,792,000					
Indirect Annual Costs						
Cost for capital recovery	$2,067,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$2,067,000					
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$4,859,000**					

Attachment 3

Updated SCR Costs, As Submitted to the EPA

San Juan Generation Station BART Project
Review and Update of 2007 BART Cost Estimates

1.0 Introduction

The purpose of this document is to update the cost estimates for application of SCR at the San Juan Generating Station that were performed by B&V in May of 2007 in support of PNM's BART application. The following items were assessed in this update:

- Impact of escalation on the prices included in the original BART estimate.
- Impact of auxiliary power limitations at San Juan Generation Station.
- Impact of changes to the draft system resulting from the addition of the consent decree air quality control equipment.
- Impact of other general changes to the price.

It should be noted that the potential impact of lead and asbestos abatement on the price of SCR upgrades at San Juan was not assessed by B&V. These costs are site specific and can not be determined until the project is under construction.

This document presents a discussion of each impact. The last section of this document presents the revised cost estimates that incorporate all impacts to the costs.

2.0 Price Escalation

The estimates developed by B&V for the BART project were completed in May 2007. PNM requested B&V to perform an escalation analysis to update the BART estimates from May 2007 to current day dollars (Oct 2010). First, B&V utilized the corporate escalation tool for this analysis. The tool was jointly developed by Black & Veatch and an outside consulting firm that specializes in financial analysis and forecasting. For the purposes of this analysis the costs were grouped into three major categories:

- Materials (steel, pipe, cable, etc.)
- Equipment (pumps, tanks, switchgear, etc)
- Labor

The resulting price escalation between May 2007 and October 2010 is shown in Table 1. It should be noted that the escalation shown is cumulative over the period. There were portions of this period where escalation was negative. However, there were also periods where escalation was extremely high.

Table 1
Escalation Calculation Using
B&V's Corporate Escalation Tool
May 2007 to October 2010

Cost Item	Cumulative Escalation Rate
Materials	10.0 percent increase
Equipment	10.0 percent increase
Labor	9.7 percent increase
Average	10.0 percent increase

B&V also compared the values from the corporate escalation tool to values available from the United States Bureau of Labor Statistics, "Producer Price Index" and the "Employer Cost for Employee Compensation Index". To do this comparison, B&V selected several representative cost categories and checked the index for those categories between May 2007 and September 2010 (latest data available). Table 2 is a summary of that investigation. The screen shots from the Bureau of Labor Statistics website that form the basis for Table 2 have been included for reference in Appendix A of this document.

The data in Table 1 and Table 2 are relatively comparable. However, since the data from the U.S. Bureau of Labor Statistics can be independently verified, B&V has utilized the values in Table 2 to escalate the BART estimates for San Juan Generating Station. The quantitative impacts to the costs will be presented in Section 5.0.

Table 2 Escalation Calculation Using Data from U.S. Bureau of Labor Statistics			
Cost item	Index Value		Change (Escalation)
	May 2007	Sept 2007	
Materials			
Plate Steel	119.2	137.5	15.4
Cable	160.8	166.1	3.3
Steel Pipe	170.1	195.7	15.0
Average			11.2
Equipment			
Pumps	117.9	129.7	10.0
Switchgear	179.1	195.2	9.0
Tanks	132.6	140.8	6.2
Average			8.4
Construction Labor (see note)	$29.48/hr	$31.43/hr	6.6
Note: Values for construction labor are in $/hour. The Bureau of Labor Statistics only has data available by quarter (1st quarter, 2nd quarter, etc.) and only has data through 2nd quarter of 2010 (not 3rd quarter 2010).			

3.0 Auxiliary Power

The original BART estimate included limited costs for upgrades to the auxiliary power systems that will be needed to address the increased loads resulting from the addition of SCR and associated equipment. The SCR results in additional parasitic load at the site due to the additional fan power needed to overcome the pressure drop associated with the SCR and to provide additional power for ancillary equipment needed to operate the SCR. In the initial 2007 estimate, PNM expected the existing auxiliary power to be sufficient. However, now that the consent decree AQC equipment has been

installed, B&V has determined that the current auxiliary power system is not sufficient to power the additional loads that would result from adding SCR and associated equipment.

B&V anticipates the following minimum load changes (no balanced draft conversion) as a result of the SCR's:

- Unit 1 - ID fan increase of 4,400 hp
- Unit 2 - ID fan increase of 4,400 hp (same as Unit 1)
- Unit 3 - ID fan increase of 13,000 hp
- Unit 4 - ID fan increase of 13,000 hp (same as Unit 3)
- Other aux loads are as 140 kW (each) for Units 1 and 2 and 190 kW (each for Units 3 and 4.

From these minimum auxiliary power requirements, the following assumptions were made about the station. These assumptions are based on the information available at this time.

- The existing start-up buses are limited.
- The startup issues are transformer limitations that require the additional power to be fed from the 345 kV switchyard.
- When motors are started, 85 percent bus undervoltage is acceptable and 80 percent motor undervoltage is acceptable.
- Two 3-breaker connection bays can be added to the 345 kV yard.
- The Units 1 and 2 ID fans will be 6,000 hp, three per unit, at 6.9 kV.
- The Units 3 and 4 ID fans will be 9,000 hp, three per unit, at 6.9 kV.
- Two additional bays (to feed the four new transformers) can be added to the 345 kV switchyard.
- Four new transformers will be required because of the new fan sizes. The transformers would be sized to power and start across the line fans for both sister units. In other words, Units 1 and 2 would be coupled together and Units 3 and 4 would be coupled together.
- There is adequate space near the new ID Fans is available to install new switchgear and transformers.

With these assumptions, the following additional equipment would be needed to power the SCR new equipment. The quantities listed are for the entire plant.

- Two 345kV bays (includes 6 – 345 kV 3-phase breakers, 16 – 345 kV 3-phase motorized disconnect switches)
- Two 40 MVA 345 kV to 6.9 kV transformers (for Units 1 and 2)
- Two 60 MVA 345 kV to 12.47 kV transformers (for Units 3 and 4)
- One 6.9 kV Switchgear lineup Main-Tie-Main with 8 feeder breakers, 3000 A bus for Units 1 and 2.
- One 12.49kV Switchgear lineup Main-Tie-Main with 8 feeder breakers, 3000 A bus for Units 3 and 4.
- Four 480 V single ended secondary unit substations (SUS), with motor control center (MCC) sections.

Figure 1 is a conceptual one-line diagram showing this configuration. The cost for this additional equipment is summarized in Table 3. These costs are conceptual, based on in-house data. B&V did not obtain outside quotations specifically for this project to develop these costs. These costs are included in the overall update of the SCR costs that are presented in Section 5.0.

Table 3
Presentation of Costs for Auxiliary Electrical Equipment Requirements for SCR Systems at San Juan Station

Equipment Cost Item	Estimate Amount
345 kV Bays	$3,500,000
Transformers (for Units 1 and 2)	$2,000,000
Transformers (for Units 3 and 4)	$3,000,000
6.9 kV Switchgear Line Up (Units 1 and 2)	$7,000,000
12.49 kV Switchgear Line Up (Units 3 and 4)	$10,000,000
Four Secondary Unit Substations with Motor Control Centers	$4,000,000
Total	$29,500,000
Amount Attributable to Units 1 and 2	$6,400,000 (each)
Amount Attributable to Units 3 and 4	$8,350,000 (each)

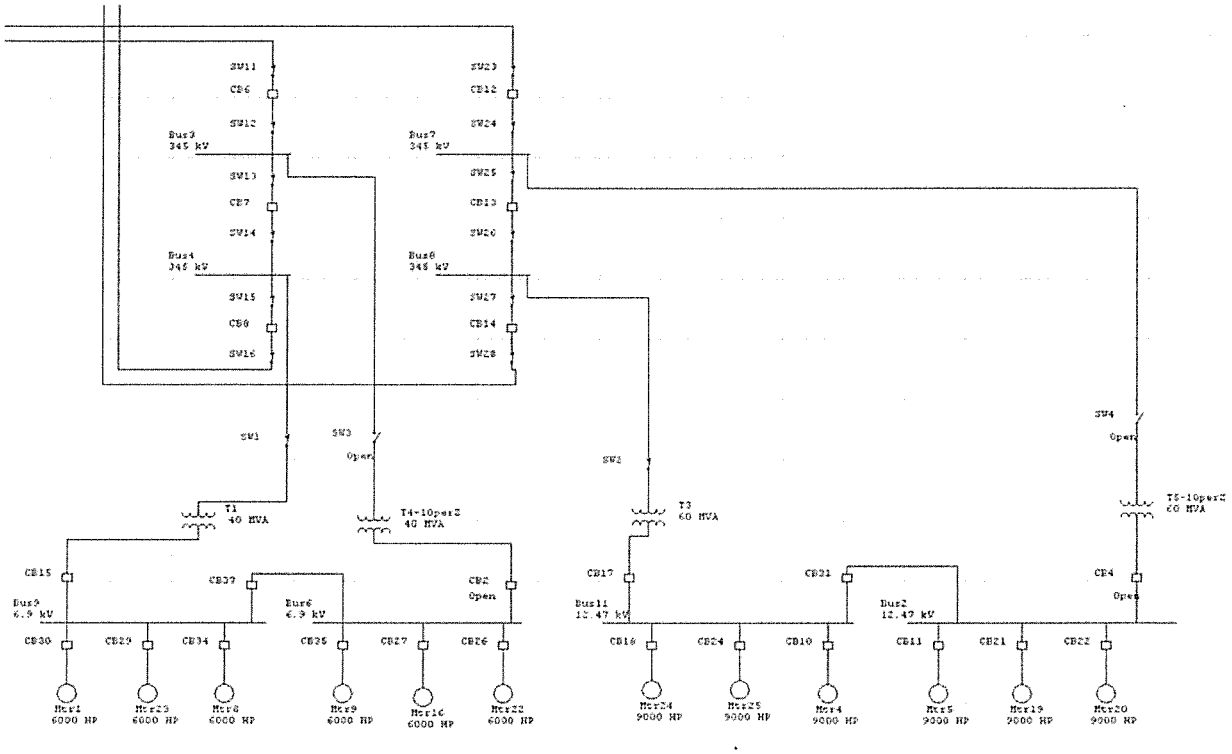


Figure 1

Conceptual One-Line Diagram for

New Auxiliary Electrical Equipment Associated with SCR Systems

4.0 Assessment of Draft Systems

Implosion studies were performed for Units 1-4 at SJGS for the implementation of the modifications required by the consent decree of 2005, which included the installation of new pollution control equipment and new induced draft (ID) booster fans (although the furnace continued operation in pressurized mode). These studies modeled various transient conditions that could potentially occur during unit operation (including upset conditions) and reviewed the corresponding pressures across the furnace and flue gas stream. The studies did not consider the effect of operating the booster fans with a loss of airside gas path that could occur with air side damper failure. This analysis was not required at the time but would be required to be in compliance with the current code. This is discussed in more detail below.

B&V has reviewed the implosion studies and their impact on the original BART estimate for the balance draft conversion. The design basis from each implosion study

was also validated against current plant operating data. B&V used this design basis information as the basis for updated recommendations concerning the draft system. The figures in Appendix B show the current draft configuration as well as the draft configuration after addition of SCR.

As a result of the implosion studies, PNM made some physical modifications to the boilers and some modifications to the controls during the installation of the new control equipment required by the consent decree. These modifications brought Units 1-4 into compliance with the National Fire Protection Association (NFPA) Code 85 for the 2004 revision of the code. The following is a summary of the modifications that were made to the draft systems as part of the consent decree work:

- The open stack system upstream of the FGD system was permanently closed in conjunction with the fabric filter addition.
- The boiler penthouse floor (furnace roof) was stiffened with the addition of beams.
- Buckstay clips (connections to furnace walls) were added and cover plates were placed over some of the buckstay webs.
- The inlet ductwork penetration to the ESP was stiffened using internal bracing.
- Based on the stiffening modifications made, the control system was programmed to "trip" (shut the unit down) if the pressure in the units exceeded a range of -2 / +18 inches wg.

The following modifications were not made to the draft system:

- Buckstays were not installed in the corners of the boiler.
- Trusses were not installed in the windbox.

At the time of the consent decree work, the NFPA requirements (2004 revision) were unclear on how to handle the addition of ID booster fans on units that were still to be operated in a pressurized furnace mode. In 2007 the requirements were clarified to define that any unit with a fan between the boiler and stack must meet the same requirements as a "balanced draft" unit and be stiffened accordingly. This requires that

the furnace either be designed for +/- 35 inches or the ratings of the ID/booster fans corrected to ambient temperature (whichever is less). The key provisions of the NFPA 85 code are quoted below:

> ***Article 1.3.1****: The code shall apply to new installations and to major alterations or extensions that are contracted for subsequent to the effective date of this code.*
>
> ***Article 1.4.1*** *Unless otherwise specified, the provisions in this code shall not apply to facilities equipment, structures, or installations that existed or were approved for construction or installation prior to the effective date of the code.*
>
> ***Article 4.6.1****: The furnace shall be capable of withstanding transient design pressures and normal operating pressures without permanent deformation due to yield or buckling of any support member. Transient pressures to be considered shall include but shall not necessarily be limited to misoperation of fans or dampers and a master fuel trip while operating at maximum design load.*
>
> ***Article 6.5.1.3: Balanced Draft Units.*** *All boilers with a fan located in the flue gas path downstream of the boiler enclosure shall be designed in accordance with either 6.5.1.3.1 or 6.5.1.3.2.*
>
> ***6.5.1.3.1*** *The furnace and flue gas removal system shall be designed so that the maximum head capability of the induced draft fan system with ambient air does not exceed the continuous design pressure of furnace, ducts, and associated equipment.*
>
> ***6.5.1.3.2*** *Where a furnace pressure control system in accordance with 6.5.2 is provided, the furnace shall be designed for the transient design pressures in 6.5.1.3.2.1 and 6.5.1.3.2.2.*

6.5.1.3.2.1 ***Positive Transient Design Pressure.*** *The positive transient design pressure shall be at least, but shall not be required to exceed, +8.7 kPa (+35 in. of water).*

6.5.1.3.2.2 ***Negative Transient Design Pressure.*** *The negative transient design pressure shall be at least as negative as, but shall not be required to be more negative than, −8.7 kPa (−35 in. of water).*

Accordingly, NFPA 85 now requires SJGS to increase the pressure ratings of the boilers to +/- 35 inches wg if the capacity of the ID /booster fans is increased. To comply with NFPA 85, and increase the pressure rating of the units to +/- 35 inches wg, SJGS will have to install buckstay corner connections, buckstay over-turning posts, and will likely have to install air heater stiffening as well. While some buckstay clips were added for the consent decree work, the spacing of those clips is unknown. Therefore, it is assumed that some additional clips would be needed to increase the pressure rating from the current level of -2 / +18 inches wg to +/- 35 inches wg.

The fabric filters will also require additional stiffening to increase the continuous pressure rating to that of the new ID fan test block suction pressure. B&V expects that the hot ESP casing will require stiffening as well. B&V continues to recommend a balanced draft conversion be performed on all four units at SJGS if SCR installation is required. Due to the 2007 NFPA 85 revisions, stiffening of the boiler and other components will be required regardless of whether a balanced draft conversion is performed (the majority of the costs associated with the balanced draft conversion are related to boiler stiffening).

Table 4 and Table 5 provide the updated cost estimates for the balanced draft conversion. Costs for stiffening the fabric filters have been added as it was determined that the fabric filters will also need to be stiffened if the capacity of the booster fans is increased to allow for SCR operation. Tables 4 and 5 also show a column for deleting the balance draft conversion portion of the work. In this scenario, the boiler would remain a positive pressure boiler, but the stiffening work, required by NFPA 85, would still need to be completed. As a result, the long outage associated with the boiler stiffening would also be required regardless of whether the units remain pressurized or

are converted to balanced draft. If a balanced draft conversion is not performed, new, low-speed motors for the FD fans would not be required and the ID fans would be smaller, resulting in a total cost savings of $1.5 million.

Table 4
Updated Costs for Balanced Draft Conversion
Units 1 and 2 (2007 Dollars)

	Units 1 & 2 BART Study		Updated		
Balanced Draft Conversion	Engineering & Material	Construction Labor Costs	Engineering & Material	Construction Labor Costs	Pressurized Furnace Differential
Boiler					
Stiffening	$1,335,000	$1,418,000	$1,335,000	$1,418,000	(Same)
Scaffolding	--	$195,000	--	$195,000	(Same)
Insulation & Lagging	$139,000	$1,197,000	$139,000	$1,197,000	(Same)
Ductwork & Casing Repairs (Allowance)	$182,000	$1,008,000	$182,000	$1,008,000	(Same)
Air Heater					
Stiffening	$106,000	$195,000	$106,000	$195,000	(Same)
Electrostatic Precipitator					
Stiffening (Excludes Casing Repairs)	$341,000	$1,114,000	$341,000	$1,114,000	(Same)
Insulation & Lagging (Allowance)	$84,000	$418,000	$84,000	$418,000	(Same)
Electrical/Control Modifications	$159,000	$334,000	$159,000	$334,000	(Same)
New Transformer (Note 2)	**$1,000,000**		**$0**		
Fan Modifications					
FD Fans (new motors only)	$490,000	$86,000	$490,000	$86,000	($576,000)
ID Fans	$2,400,000	$840,000	$2,400,000	$840,000	($500,000)
Fabric Filter (assumed same as ESP)					
Stiffening (Excludes Casing Repairs)			**$341,000**	**$1,114,000**	(Same)
Insulation & Lagging (Allowance)			**$84,000**	**$418,000**	(Same)
Miscellaneous Mech Commodities & Instrumentation	$325,000	--	$325,000	--	(Same)
Subtotal	$6,561,000	$6,805,000	$5,986,000	$8,337,000	($1,076,000)

Notes:
1. Excludes Contingency and Indirects
2. Auxiliary electric costs are being accounted for in a separate analysis. Refer to Section 3.0 of this report. Therefore, they are being deleted from the balanced draft conversion estimate.

Table 5
Updated Costs for Balanced Draft Conversion
Units 3 and 4 (2007 Dollars)

	Units 3&4 BART Study		Updated		
Balanced Draft Conversion	Engineering & Material	Construction Labor Costs	Engineering & Material	Construction Labor Costs	Pressurized Furnace Differential
Boiler					
Stiffening	$1,537,000	$1,908,000	$1,537,000	$1,908,000	(Same)
Scaffolding	- -	$262,000	- -	$263,000	(Same)
Insulation & Lagging	$188,000	$1,438,000	$188,000	$1,438,000	(Same)
Ductwork & Casing Repairs (Allowance)	$182,000	$1,009,000	$182,000	$1,009,000	(Same)
Air Heater					
Stiffening	$125,000	$263,000	$125,000	$263,000	(Same)
Electrostatic Precipitator					
Stiffening (Excludes Casing Repairs)	$416,000	$1,500,000	$416,000	$1,500,000	(Same)
Insulation & Lagging (Allowance)	$113,000	$563,000	$113,000	$563,000	(Same)
Electrical/Control Modifications	$214,000	$450,000	$214,000	$450,000	(Same)
New Transformer (Note 2)	**$1,000,000**		**$0**		
Fan Modifications					
FD Fans (new motors only)	$660,000	$116,000	$660,000	$116,000	($776,000)
ID Fans	$3,600,000	$1,260,000	$3,600,000	$1,260,000	($800,000)
Fabric Filter (assumed same as ESP)					
Stiffening (Excludes Casing Repairs)			**$416,000**	**$1,500,000**	(Same)
Insulation & Lagging (Allowance)			**$113,000**	**$563,000**	(Same)
Miscellaneous Mech Commodities & Instrumentation	$325,000	- -	$325,000	- -	(Same)
Subtotal	$8,357,000	$8,765,000	$7,886,000	$10,828,000	($1,576,000)

Notes:
1. Excludes Contingency and Indirects.
2. Auxiliary electric costs are being accounted for in a separate analysis. Refer to Section 3.0 of this report. Therefore, they are being deleted from the balanced draft conversion estimate.

The values presented in Tables 4 and 5 are in 2007 dollars and will be included in the revised estimates presented in Section 5.0.

5.0 Updated Cost Estimates

This section of the document will present the updated capital cost estimates for the SCR systems on San Juan Generating Station. A summary of the updates is shown in Table 6. The details of the updated costs are presented in Tables 7 through 10. The following updates were made to the original BART cost estimates:

- Escalation to 2010 dollars, as described in Section 2.0 of this document.
- Auxiliary power system costs, as described in Section 3.0 of this document.
- Balanced draft conversion updates, as described in Section 4.0 of this document.
- Correction to the error in expansion joint costs, noted to the EPA on October 8, 2010.
- Correction to air heater costs for Units 3 and 4. The costs for modifications to the secondary air heaters were inadvertently double counted.
- Reduction in ductwork steel costs to move to the use of ASTM A572 duct material instead of ASTM A588 Grade B material. This issue is discussed in greater detail in the follow up responses to the conference call held with the EPA on October 13, 2010.

Line items in Tables 7 through 10 that have changes as a direct result of one of the items listed above are shown in red in the tables. Since the estimate is a factored estimate, a change to one line item will change other line items that are factors. For example, as the total purchased equipment cost (PEC) changes, the cost for "handling and erection" will also change because it is a multiplication factor of the purchased equipment cost.

Table 6 Summary of SCR Capital Cost Updates for San Juan Station			
Unit No.	2007 BART Estimate	2010 Updated Cost Estimate	Change
1	$156,805,000	$194,101,000	+23.8 %
2	$169,251,000	$209,652,000	+23.9 %
3	$215,568,000	$261,954,000	+21.5 %
4	$199,558,000	$242,377,000	+21.5 %
Total	$741,182,000	$908,084,000	+22.5 %

As can be seen in Table 6, the costs for SCR are higher than the original estimate. The two main causes of these changes are the escalation to 2010 dollars and the auxiliary power system upgrades that are required

The cost increases shown above include the recommended balanced draft conversion costs. For comparison purposes, B&V did examine the impact to the costs if only the "boiler stiffening" work discussed in Section 4.0 is done (boiler, duct, ESP, air heater, and fabric filter stiffening in accordance with NFPA 85) but not the additional fan work that would be associated with the balance draft conversion. The result of this analysis showed that the updated costs will be only slightly different when the costs solely attributable to the balanced draft conversion are excluded -- an increase of 21.3 percent (for the whole station) compared with 22.5 percent, for a total difference of $9,192,000 (about 1 percent of the project cost). As discussed in Section 4.0, the difference is slight because all of the boiler stiffening work is required (with or without balance draft conversion). The only difference in the total price for including the balanced draft conversion is the difference in fan costs.

Table 7 - PNM SJGS BART Analysis - Updated Cost Analysis

Technology: Selective Catalytic Reduction - SJGS Unit 1 **Date:** 10/21/2010

Cost Item	$	Remarks/Cost Basis		Current Value	Comments on Updates	Escalation to Oct 2010	Escalation Percentage
Original 2007 BART Cost Estimate							
Direct Costs							
Purchased equipment costs							
Anhydrous Ammonia Injection System	$437,000	B&V cost estimate		$437,000		$473,708	8.4%
Anhydrous Ammonia Vaporization System	$436,000	B&V cost estimate		$436,000		$472,624	8.4%
Reactor Box, Breeching and Ductwork	$4,451,000	B&V cost estimate		$4,005,900	Adjustement for ASTM A572	$4,454,561	11.2%
Ductwork Expansion Joints	$294,000	B&V cost estimate		$147,000	Correction	$159,348	8.4%
Catalyst	$2,557,000	B&V cost estimate		$2,557,000		$2,557,000	0.0%
Sonic Horns	$188,000	B&V cost estimate		$188,000		$203,792	8.4%
Elevator	$1,236,000	B&V cost estimate		$1,236,000		$1,339,824	8.4%
Structural Steel	$4,881,000	B&V cost estimate		$4,881,000		$5,427,672	11.2%
SCR Bypass	$10,000,000	B&V cost estimate		$10,000,000		$10,840,000	8.4%
NOx Monitoring System	$440,000	B&V cost estimate		$440,000		$476,960	8.4%
Electrical System Upgrade	$378,000	B&V cost estimate		$378,000		$409,752	8.4%
Auxiliary Electric System Requirements	$0	Not in estimate		$6,400,000	Added, Refer to Sect. 3.0	$6,400,000	0.0%
Instrumentation and Control System	$279,000	B&V cost estimate		$279,000		$302,436	8.4%
Subtotal capital cost (CC)	$25,577,000			$31,384,900		$33,517,677	
Gross Receipt Tax	$1,583,000	(CC) X	6.2%	$1,942,000		$2,074,000	
Freight	$1,279,000	(CC) X	5.0%	$1,569,000		$1,676,000	
Total purchased equipment cost (PEC)	$28,439,000			$34,896,000		$37,268,000	
Direct installation costs							
Foundation & supports	$8,532,000	(PEC) X	30.0%	$10,468,800		$11,117,866	6.2%
Handling & erection	$8,532,000	(PEC) X	30.0%	$10,468,800		$11,117,866	6.2%
Electrical	$4,266,000	(PEC) X	15.0%	$5,234,400		$5,558,933	6.2%
Piping	$711,000	(PEC) X	2.5%	$872,400		$926,489	6.2%
Insulation	$2,844,000	(PEC) X	10.0%	$3,489,600		$3,705,955	6.2%
Painting	$284,000	(PEC) X	1.0%	$348,960		$370,596	6.2%
Demolition	$2,844,000	(PEC) X	10.0%	$3,489,600		$3,705,955	6.2%
Relocation	$1,422,000	(PEC) X	5.0%	$1,744,800		$1,852,978	6.2%
Total direct installation costs (DIC)	$29,435,000			$36,117,360		$38,356,636	
Air preheater modifications	$1,071,000	B&V cost estimate		$1,071,000		$1,160,964	8.4%
Balanced draft conversion	$13,366,000	B&V cost estimate		$14,323,000	Refer to Section 4.0	$15,526,132	8.4%
Site preparation	$2,000,000	Engineering estimate		$2,000,000		$2,000,000	0.0%
Buildings & enclosures	$500,000	Engineering estimate		$500,000		$500,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$74,811,000			$88,907,000		$94,812,000	
Indirect Costs							
Engineering	$5,237,000	(DC) X	7.0%	$6,223,490		$6,636,840	
Owner's cost	$3,741,000	(DC) X	5.0%	$4,445,350		$4,740,600	
Construction management	$7,481,000	(DC) X	10.0%	$8,890,700		$9,481,200	
Construction indirect	$18,344,000	B&V labor market review		$22,507,920		$23,903,411	6.2%
Start-up and spare parts	$2,244,000	(DC) X	3.0%	$2,667,210		$2,844,360	
Performance test	$200,000	Engineering estimate		$200,000		$200,000	
Contingencies	$14,962,000	(DC) X	20.0%	$17,781,400		$18,962,400	
Total indirect costs (IC)	$52,209,000			$62,716,000		$66,769,000	
Interest During Construction (IDC)	$14,118,000	[(DC)+(IC)] X	7.41%	$16,853,000		$16,853,000	
Loss Generation during Outage (GEN)	$15,667,000			$15,667,000		$15,667,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC) + (GEN)	**$156,805,000**			**$184,143,000**		**$194,101,000**	

Table 8 - PNM SJGS BART Analysis - Updated Cost Analysis

Technology: Selective Catalytic Reduction - SJGS Unit 2 Date: 10/21/2010

Cost Item	$	Remarks/Cost Basis		Current Value	Comments on Updates	Escalation to Oct 2010	Escalation Percentage
Original 2007 BART Cost Estimate							
CAPITAL COST							
Direct Costs							
Purchased equipment costs							
Anhydrous Ammonia Injection System	$429,000	B&V cost estimate		$429,000		$465,036	8.4%
Anhydrous Ammonia Vaporization System	$429,000	B&V cost estimate		$429,000		$465,036	8.4%
Reactor Box, Breeching and Ductwork	$4,444,000	B&V cost estimate		$3,999,600	Adjustement for ASTM A572	$4,447,555	11.2%
Ductwork Expansion Joints	$294,000	B&V cost estimate		$147,000	Correction	$159,348	8.4%
Catalyst	$2,553,000	B&V cost estimate		$2,553,000		$2,553,000	0.0%
Sonic Horns	$188,000	B&V cost estimate		$188,000		$203,792	8.4%
Elevator	$1,236,000	B&V cost estimate		$1,236,000		$1,339,824	8.4%
Structural Steel	$5,998,000	B&V cost estimate		$5,998,000		$6,669,776	11.2%
SCR Bypass	$10,000,000	B&V cost estimate		$10,000,000		$10,840,000	8.4%
NOx Monitoring System	$440,000	B&V cost estimate		$440,000		$476,960	8.4%
Electrical System Upgrade	$372,000	B&V cost estimate		$372,000		$403,248	8.4%
Auxiliary Electric System Requirements	$0	Not in estimate		$6,400,000	Added. Refer to Sect. 3.0	$6,400,000	0.0%
Instrumentation and Control System	$278,000	B&V cost estimate		$278,000		$301,352	8.4%
Subtotal capital cost (CC)	$26,661,000			$32,469,600		$34,724,927	
Gross Receipt Tax	$1,650,000	(CC) X	6.2%	$2,009,000		$2,149,000	
Freight	$1,333,000	(CC) X	5.0%	$1,623,000		$1,736,000	
Total purchased equipment cost (PEC)	$29,644,000			$36,102,000		$38,610,000	
Direct installation costs							
Foundation & supports	$8,893,000	(PEC) X	30.0%	$10,830,600		$11,502,097	6.2%
Handling & erection	$11,858,000	(PEC) X	40.0%	$14,440,800		$15,336,130	6.2%
Electrical	$4,447,000	(PEC) X	15.0%	$5,415,300		$5,751,049	6.2%
Piping	$741,000	(PEC) X	2.5%	$902,550		$958,508	6.2%
Insulation	$2,964,000	(PEC) X	10.0%	$3,610,200		$3,834,032	6.2%
Painting	$296,000	(PEC) X	1.0%	$361,020		$383,403	6.2%
Demolition	$2,964,000	(PEC) X	10.0%	$3,610,200		$3,834,032	6.2%
Relocation	$1,482,000	(PEC) X	5.0%	$1,805,100		$1,917,016	6.2%
Total direct installation costs (DIC)	$33,645,000			$40,975,770		$43,516,268	
Air preheater modifications	$1,071,000	B&V cost estimate		$1,071,000		$1,160,964	8.4%
Balanced draft conversion	$13,366,000	B&V cost estimate		$14,323,000	Refer to Section 4.0	$15,526,132	8.4%
Site preparation	$2,000,000	Engineering estimate		$2,000,000		$2,000,000	0.0%
Buildings & enclosures	$500,000	Engineering estimate		$500,000		$500,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$80,226,000			$94,972,000		$101,313,000	
Indirect Costs							
Engineering	$5,616,000	(DC) X	7.0%	$6,648,040		$7,091,910	
Owner's cost	$4,011,000	(DC) X	5.0%	$4,748,600		$5,065,650	
Construction management	$8,023,000	(DC) X	10.0%	$9,497,200		$10,131,300	
Construction indirect	$22,085,000	B&V labor market review		$26,895,990		$28,563,541	6.2%
Start-up and spare parts	$2,407,000	(DC) X	3.0%	$2,849,160		$3,039,390	
Performance test	$200,000	Engineering estimate		$200,000		$200,000	
Contingencies	$16,045,000	(DC) X	20.0%	$18,994,400		$20,262,600	
Total indirect costs (IC)	$58,387,000			$69,833,000		$74,354,000	
Interest During Construction (IDC)	$15,407,000	[(DC)+(IC)] X	7.41%	$18,318,000		$18,318,000	
Loss Generation during Outage (GEN)	$15,231,000			$15,667,000		$15,667,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC) + (GEN)	**$169,251,000**			**$198,790,000**		**$209,652,000**	

Table 9 - PNM SJGS BART Analysis - Updated Cost Analysis

Technology: Selective Catalytic Reduction - SJGS Unit 3 Date: 10/21/2010

Cost Item	$	Remarks/Cost Basis		Current Value	Comments on Updates	Escalation to Oct 2010	Escalation Percentage
Original 2007 BART Cost Estimate							
CAPITAL COST							
Direct Costs							
Purchased equipment costs							
Anhydrous Ammonia Injection System	$559,000	B&V cost estimate		$559,000		$605,956	8.4%
Anhydrous Ammonia Vaporization System	$559,000	B&V cost estimate		$559,000		$605,956	8.4%
Reactor Box, Breeching and Ductwork	$5,613,000	B&V cost estimate		$5,051,700	Adjustement for ASTM A572	$5,617,490	11.2%
Ductwork Expansion Joints	$371,000	B&V cost estimate		$185,500	Correction	$201,082	8.4%
Catalyst	$3,225,000	B&V cost estimate		$3,225,000		$3,225,000	0.0%
Sonic Horns	$188,000	B&V cost estimate		$188,000		$203,792	8.4%
Elevator	$1,236,000	B&V cost estimate		$1,236,000		$1,339,824	8.4%
SCR Bypass	$10,000,000	B&V cost estimate		$10,000,000		$11,120,000	11.2%
Structural Steel	$7,816,000	B&V cost estimate		$7,816,000		$8,472,544	8.4%
NOx Monitoring System	$440,000	B&V cost estimate		$440,000		$476,960	8.4%
Electrical System Upgrade	$484,000	B&V cost estimate		$484,000		$524,656	8.4%
Auxiliary Electric System Requirements	$0	Not in estimate		$8,350,000	Added, Refer to Sect. 3.0	$8,350,000	0.0%
Instrumentation and Control System	$291,000	B&V cost estimate		$291,000		$315,444	8.4%
Subtotal capital cost (CC)	$30,782,000			$38,385,200		$41,058,704	
Gross Receipt Tax	$1,905,000	(CC) X	6.2%	$2,375,000		$2,541,000	
Freight	$1,539,000	(CC) X	5.0%	$1,919,000		$2,053,000	
Total purchased equipment cost (PEC)	$34,226,000			$42,679,000		$45,653,000	
Direct installation costs							
Foundation & supports	$10,268,000	(PEC) X	30.0%	$12,803,700		$13,597,529	6.2%
Handling & erection	$13,690,000	(PEC) X	40.0%	$17,071,600		$18,130,039	6.2%
Electrical	$5,134,000	(PEC) X	15.0%	$6,401,850		$6,798,765	6.2%
Piping	$856,000	(PEC) X	2.5%	$1,066,975		$1,133,127	6.2%
Insulation	$3,423,000	(PEC) X	10.0%	$4,267,900		$4,532,510	6.2%
Painting	$342,000	(PEC) X	1.0%	$426,790		$453,251	6.2%
Demolition	$3,423,000	(PEC) X	10.0%	$4,267,900		$4,532,510	6.2%
Relocation	$1,711,000	(PEC) X	5.0%	$2,133,950		$2,266,255	6.2%
Total direct installation costs (DIC)	$38,847,000			$48,440,665		$51,443,986	
Air preheater modifications	$8,685,000	B&V cost estimate		$5,090,000	Correction	$5,517,560	8.4%
Balanced draft conversion	$17,122,000	B&V cost estimate		$18,714,000	Refer to Section 4.0	$20,285,976	8.4%
Site preparation	$2,000,000	Engineering estimate		$2,000,000		$2,000,000	0.0%
Buildings & enclosures	$500,000	Engineering estimate		$500,000		$500,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$101,380,000			$117,424,000		$125,401,000	
Indirect Costs							
Engineering	$7,097,000	(DC) X	7.0%	$8,219,680		$8,778,070	
Owner's cost	$5,069,000	(DC) X	5.0%	$5,871,200		$6,270,050	
Construction management	$10,138,000	(DC) X	10.0%	$11,742,400		$12,540,100	
Construction indirect	$25,498,000	B&V labor market review		$31,795,855		$33,767,198	6.2%
Start-up and spare parts	$3,041,000	(DC) X	3.0%	$3,522,720		$3,762,030	
Performance test	$200,000	Engineering estimate		$200,000		$200,000	
Contingencies	$20,276,000	(DC) X	20.0%	$23,484,800		$25,080,200	
Total indirect costs (IC)	$71,319,000			$84,837,000		$90,398,000	
Interest During Construction (IDC)	$19,195,000	[(DC)+(IC)] X	7.41%	$22,481,000		$22,481,000	
Loss Generation during Outage (GEN)	$23,674,000			$23,674,000		$23,674,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC) + (GEN)	**$215,568,000**			**$248,416,000**		**$261,954,000**	

Table 10 - PNM SJGS BART Analysis - Updated Cost Analysis

Technology: Selective Catalytic Reduction - SJGS Unit 4 **Date:** 10/21/2010

Cost Item	$	Remarks/Cost Basis		Current Value	Comments on Updates	Escalation to Oct 2010	Escalation Percentage
Original 2007 BART Cost Estimate							
CAPITAL COST							
Direct Costs							
Purchased equipment costs							
Anhydrous Ammonia Injection System	$559,000	B&V cost estimate		$559,000		$605,956	8.4%
Anhydrous Ammonia Vaporization System	$559,000	B&V cost estimate		$559,000		$605,956	8.4%
Reactor Box, Breeching and Ductwork	$5,648,000	B&V cost estimate		$5,083,200	Adjustement for ASTM A572	$5,652,518	11.2%
Ductwork Expansion Joints	$373,000	B&V cost estimate		$186,500	Correction	$202,166	8.4%
Catalyst	$3,245,000	B&V cost estimate		$3,245,000		$3,245,000	0.0%
Sonic Horns	$188,000	B&V cost estimate		$188,000		$203,792	8.4%
Elevator	$1,236,000	B&V cost estimate		$1,236,000		$1,339,824	8.4%
Structural Steel	$6,252,000	B&V cost estimate		$6,252,000		$6,952,224	11.2%
SCR Bypass	$10,000,000	B&V cost estimate		$10,000,000		$10,840,000	8.4%
NOx Monitoring System	$440,000	B&V cost estimate		$440,000		$476,960	8.4%
Electrical System Upgrade	$484,000	B&V cost estimate		$484,000		$524,656	8.4%
Auxiliary Electric System Requirements	$0	Not in estimate		$8,350,000	Added, Refer to Sect. 3.0	$8,350,000	0.0%
Instrumentation and Control System	$291,000	B&V cost estimate		$291,000		$315,444	8.4%
Subtotal capital cost (CC)	$29,275,000			$36,873,700		$39,314,496	
Gross Receipt Tax	$1,811,000	(CC) X	6.2%	$2,282,000		$2,433,000	
Freight	$1,464,000	(CC) X	5.0%	$1,844,000		$1,966,000	
Total purchased equipment cost (PEC)	$32,550,000			$41,000,000		$43,713,000	
Direct installation costs							
Foundation & supports	$9,765,000	(PEC) X	30.0%	$12,300,000		$13,062,600	6.2%
Handling & erection	$9,765,000	(PEC) X	30.0%	$12,300,000		$13,062,600	6.2%
Electrical	$4,883,000	(PEC) X	15.0%	$6,150,000		$6,531,300	6.2%
Piping	$814,000	(PEC) X	2.5%	$1,025,000		$1,088,550	6.2%
Insulation	$3,255,000	(PEC) X	10.0%	$4,100,000		$4,354,200	6.2%
Painting	$326,000	(PEC) X	1.0%	$410,000		$435,420	6.2%
Demolition	$3,255,000	(PEC) X	10.0%	$4,100,000		$4,354,200	6.2%
Relocation	$1,628,000	(PEC) X	5.0%	$2,050,000		$2,177,100	6.2%
Total direct installation costs (DIC)	$33,691,000			$42,435,000		$45,065,970	
Air preheater modifications	$8,685,000	B&V cost estimate		$5,090,000	Correction	$5,517,560	8.4%
Balanced draft conversion	$17,122,000	B&V cost estimate		$18,714,000	Refer to Section 4.0	$20,285,976	8.4%
Site preparation	$2,000,000	Engineering estimate		$2,000,000		$2,000,000	0.0%
Buildings & enclosures	$500,000	Engineering estimate		$500,000		$500,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$94,548,000			$109,739,000		$117,083,000	
Indirect Costs							
Engineering	$6,618,000	(DC) X	7.0%	$7,681,730		$8,195,810	
Owner's cost	$4,727,000	(DC) X	5.0%	$5,486,950		$5,854,150	
Construction management	$9,455,000	(DC) X	10.0%	$10,973,900		$11,708,300	
Construction indirect	$20,996,000	B&V labor market review		$26,445,000		$28,084,590	6.2%
Start-up and spare parts	$2,836,000	(DC) X	3.0%	$3,292,170		$3,512,490	
Performance test	$200,000	Engineering estimate		$200,000		$200,000	
Contingencies	$18,910,000	(DC) X	20.0%	$21,947,800		$23,416,600	
Total indirect costs (IC)	$63,742,000			$76,028,000		$80,972,000	
Interest During Construction (IDC)	$17,594,000	[(DC)+(IC)] X	7.41%	$20,648,000		$20,648,000	
Loss Generation during Outage (GEN)	$23,674,000			$23,674,000		$23,674,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC) + (GEN)	**$199,558,000**			**$230,089,000**		**$242,377,000**	

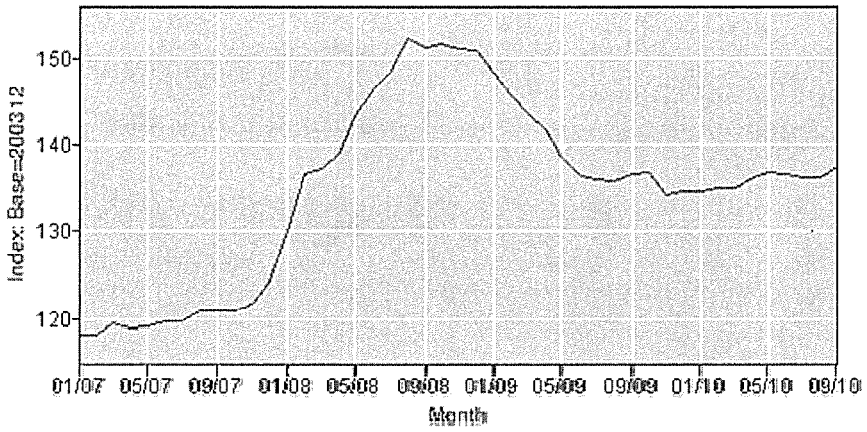
Appendix A

Data from the U.S. Bureau of Labor Statistics

Data extracted on: October 20, 2010 (4:43:35 PM)

Producer Price Index Industry Data

Series Id: PCU332313332313
Industry: Plate work manufacturing
Product: Plate work manufacturing
Base Date: 200312



Download: .xls

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	118.3	118.3	119.6	118.9	119.2	119.8	119.8	120.9	120.9	120.9	121.7	124.3	120.2
2008	130.1	136.7	137.3	139.0	143.3	146.6	148.4	152.4	151.3	151.7	151.2	151.0	144.9
2009	148.4	145.8	143.5	141.7	138.6	136.5	136.0	135.8	136.7	136.8	134.3	134.6	139.1
2010	134.7	135.0	135.1	136.2	136.9	136.7(P)	136.3(P)	136.2(P)	137.5(P)				

P : Preliminary. All indexes are subject to revision four months after original publication.

Databases, Tables & Calculators by Subject

Change Output Options: From: 2007 To: 2010 GO

☑ include graphs

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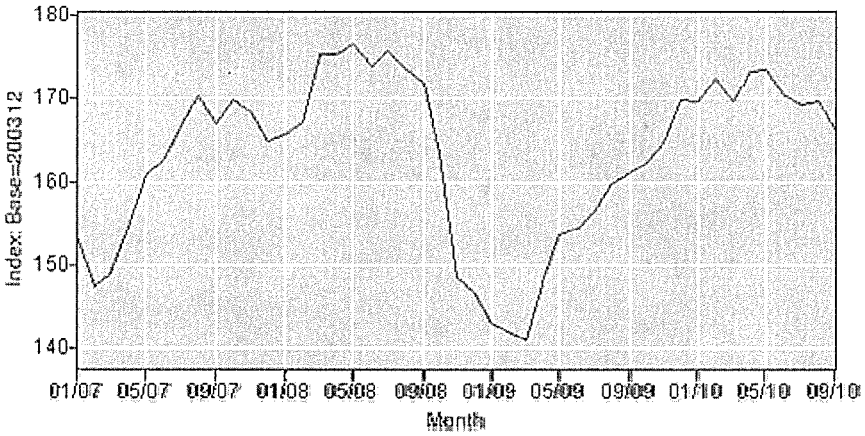
Data extracted on: October 20, 2010 (10:24:46 AM)

Producer Price Index Industry Data

Series Id: PCU33592-33592-
Industry: Communication & energy wire & cable mfg
Product: Communication & energy wire & cable mfg
Base Date: 200312



Download: .xls

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	153.5	147.6	148.9	154.6	160.8	162.6	166.8	170.3	167.0	169.8	168.5	164.9	161.3
2008	165.8	167.2	175.5	175.4	176.8	174.1	175.9	173.9	171.9	163.4	148.5	146.8	167.9
2009	143.2	142.1	141.2	148.6	153.8	154.6	156.5	159.7	161.2	162.3	164.7	169.8	154.8
2010	169.7	172.5	169.6	173.3	173.6	170.5(P)	169.2(P)	169.7(P)	166.1(P)				

P : Preliminary. All indexes are subject to revision four months after original publication.

Databases, Tables & Calculators by Subject

Change Output Options: From: 2007 To: 2010 GO

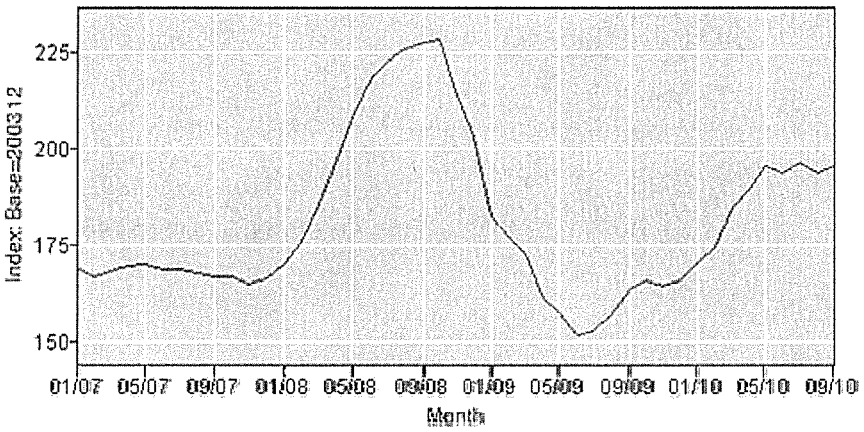
☑ Include graphs

More Formatting Options

Data extracted on: October 20, 2010 (10:35:04 AM)

Producer Price Index Industry Data

```
Series Id:   PCU33121-33121-
Industry:    Iron/steel pipe & tube mfg from purch steel
Product:     Iron/steel pipe & tube mfg from purch steel
Base Date:   200312
```



Download: .xls

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	169.4	167.2	168.6	169.8	170.1	169.1	168.8	168.1	167.0	167.1	165.3	166.7	168.1
2008	170.2	176.1	186.0	197.2	207.9	218.9	223.0	225.8	227.7	228.8	214.1	203.0	206.6
2009	182.8	177.4	172.9	161.6	158.1	152.2	153.2	157.3	164.1	166.1	164.8	166.2	164.7
2010	170.8	174.7	185.0	190.0	195.7	194.0(P)	196.6(P)	193.7(P)	195.7(P)				

P : Preliminary. All indexes are subject to revision four months after original publication.

Databases, Tables & Calculators by Subject

Change Output Options: From: 2007 To: 2010

☑ Include graphs

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Data extracted on: October 20, 2010 (10:36:26 AM)

Producer Price Index Industry Data

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Series Id:   PCU33391-33391-
Industry:    Pump and compressor manufacturing
Product:     Pump and compressor manufacturing
Base Date:   200312
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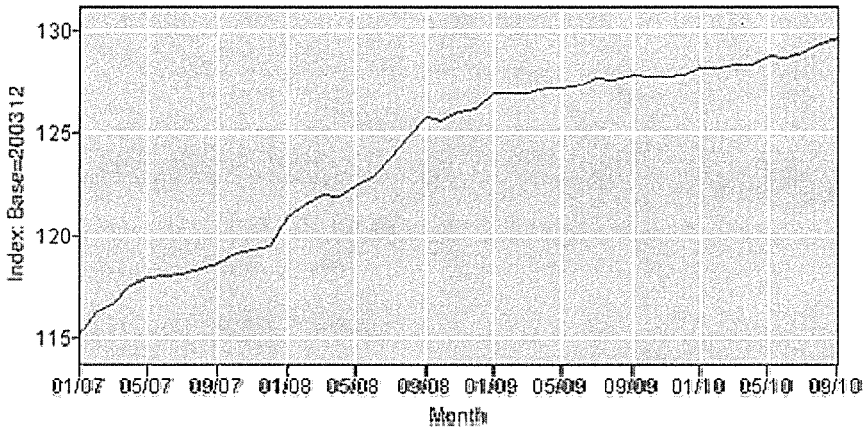

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Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	115.2	116.3	116.7	117.6	117.9	118.0	118.1	118.4	118.6	119.1	119.3	119.5	117.9
2008	120.9	121.5	122.0	121.9	122.4	122.9	123.8	124.8	125.8	125.6	126.0	126.2	123.6
2009	127.0	127.0	127.0	127.2	127.2	127.4	127.7	127.6	127.9	127.8	127.8	127.9	127.5
2010	128.2	128.2	128.4	128.4	128.8	128.7(P)	129.0(P)	129.4(P)	129.7(P)				

P : Preliminary. All indexes are subject to revision four months after original publication.

Databases, Tables & Calculators by Subject

Change Output Options: From: 2007 To: 2010 GO

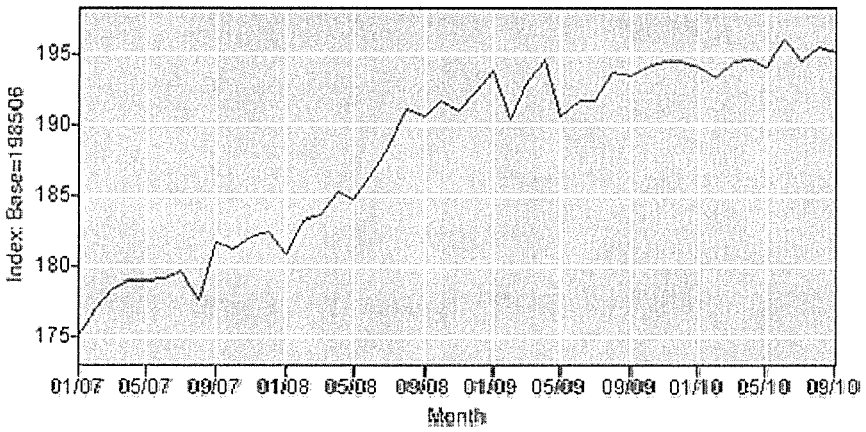
☑ include graphs

More Formatting Options

Data extracted on: October 20, 2010 (10:38:09 AM)

Producer Price Index Industry Data

Series Id: PCU335313335313
Industry: Switchgear and switchboard apparatus mfg
Product: Switchgear and switchboard apparatus mfg
Base Date: 198506



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Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	175.2	177.1	178.4	179.1	179.1	179.2	179.6	177.7	181.7	181.3	182.1	182.5	179.4
2008	180.9	183.3	183.7	185.3	184.8	186.7	188.5	191.1	190.7	191.8	191.0	192.3	187.5
2009	193.9	190.4	193.2	194.7	190.6	191.7	191.7	193.8	193.6	194.2	194.6	194.5	193.1
2010	194.2	193.4	194.5	194.7	194.2	196.2(P)	194.6(P)	195.5(P)	195.2(P)				

P : Preliminary. All indexes are subject to revision four months after original publication.

Databases, Tables & Calculators by Subject

Change Output Options: From: 2007 To: 2010 GO

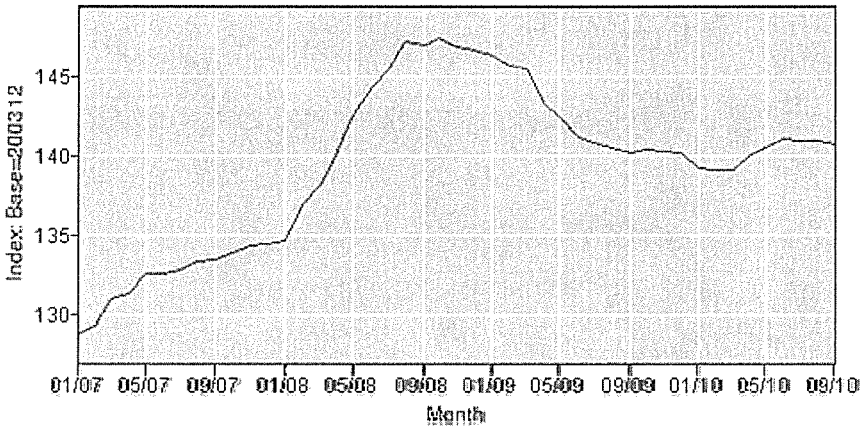
☑ Include graphs

More Formatting Options

Data extracted on: October 20, 2010 (10:27:59 AM)

Producer Price Index Industry Data

Series Id: PCU33242-33242-
Industry: Metal tank (heavy gauge) mfg
Product: Metal tank (heavy gauge) mfg
Base Date: 200312



Download: .xls

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	128.8	129.3	131.0	131.4	132.6	132.6	132.8	133.3	133.5	133.9	134.3	134.4	132.3
2008	134.6	136.9	138.1	140.3	142.6	144.4	145.5	147.3	147.1	147.6	147.0	146.8	143.2
2009	146.5	145.8	145.6	143.4	142.5	141.2	140.9	140.5	140.2	140.4	140.3	140.2	142.3
2010	139.2	139.1	139.1	140.1	140.5	141.1(P)	141.0(P)	141.0(P)	140.8(P)				

P : Preliminary. All indexes are subject to revision four months after original publication.

Databases, Tables & Calculators by Subject

Change Output Options: From: 2007 To: 2010 GO

More Formatting Options

Data extracted on: October 20, 2010 (11:44:21 AM)

Employer Costs for Employee Compensation

```
Series Id:                  CMU1010000405000D,CMU1010000405000P (V)
Compensation Component:     Total compensation
Employer/Employee Charac.:  Construction, extraction, farming, fishing, and forestry occupations
Sector:                     All Civilian
```

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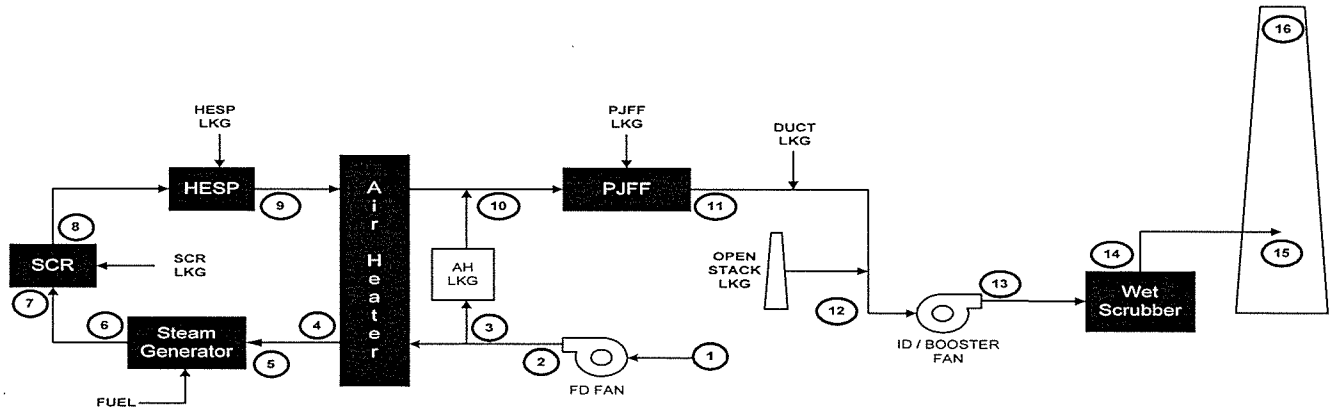
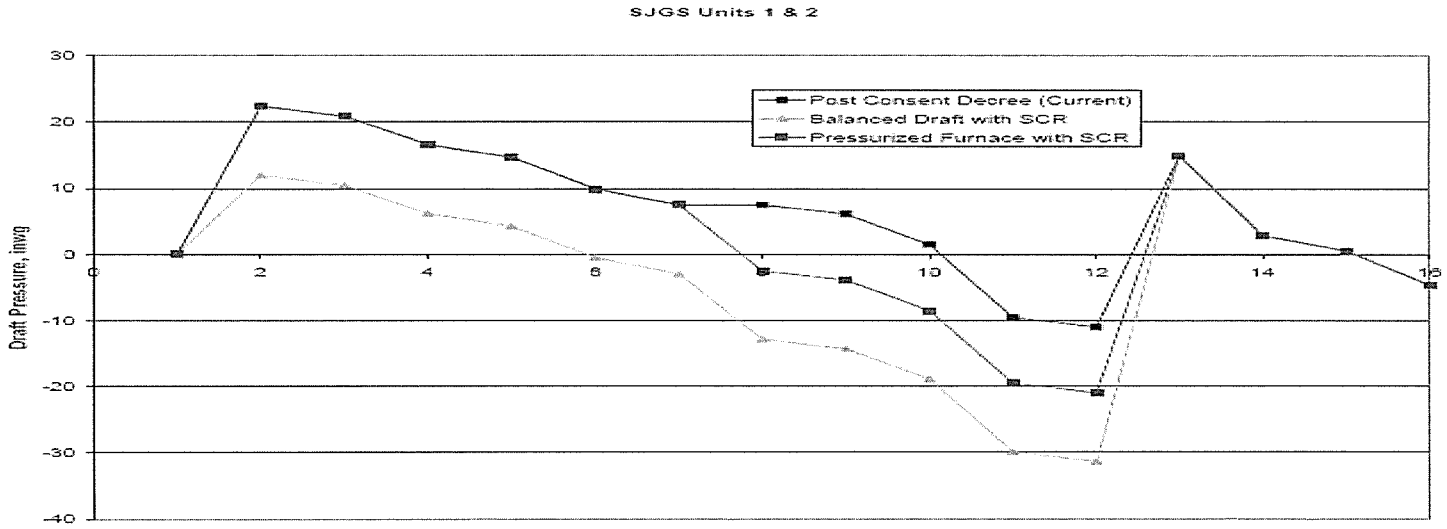
Year	Period	Cost of compensation (Cost per hour worked)	Percent of total compensation
2007	Qtr1	29.02	100.0
2007	Qtr2	29.48	100.0
2007	Qtr3	29.77	100.0
2007	Qtr4	29.88	100.0
2008	Qtr1	30.33	100.0
2008	Qtr2	30.60	100.0
2008	Qtr3	30.92	100.0
2008	Qtr4	31.21	100.0
2009	Qtr1	31.33	100.0
2009	Qtr2	31.53	100.0
2009	Qtr3	31.65	100.0
2009	Qtr4	30.99	100.0
2010	Qtr1	31.20	100.0
2010	Qtr2	31.43	100.0
V : See www.bls.gov/ncs/ect/mapnote.htm for details regarding the Farming, fishing, and forestry series.			

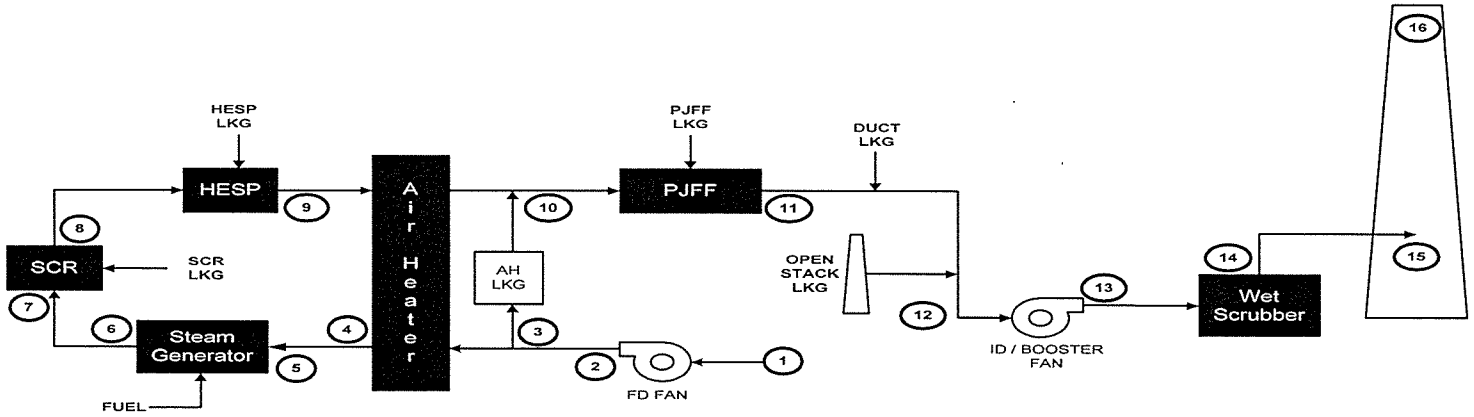
Appendix B

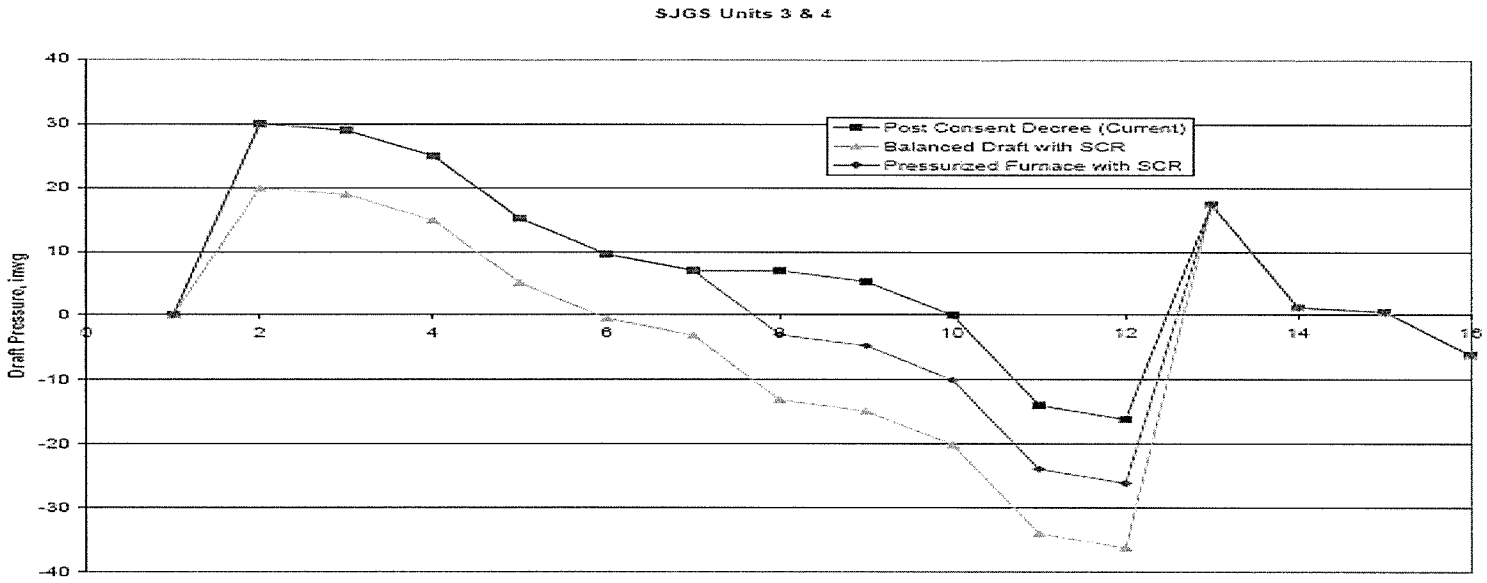
Draft System Pressure Curves





10/22/2010
B&V E-2 and E-4





10/22/2010
B&V E-2 and E-4

Attachment 4

Updated Costs for ROFA, ROFA/Rotamix, Rotamix, and SCR/SNCR Hybrid Systems

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: SNCR/SCR Hybrid - SJGS Unit 1 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis				
CAPITAL COST	Estimate				Escalation	Escalation
Direct Costs	in 2007 Dollars	Taken from 2007 BART			4th Qrtr 2010	Percentage
Purchased equipment costs						
Hybrid system scope:	$15,753,000	B&V cost development from vendor quote			$17,076,000	8.4%
Reagent delivery system						
Wall injectors and multiple nozzle lances						
Automatic injector and lance retract system						
Flue gas temperature, NOx monitors						
Reagent storage tank						
Single layer catalyst SCR system						
Ductwork modifications						
Electrical system upgrades	$378,000	Similar scope to SCR modifications			$410,000	8.4%
Instrumentation and control system	$279,000	Similar scope to SCR modifications			$302,000	8.4%
Subtotal capital cost (CC)	$16,410,000				$17,788,000	
Gross Receipt Tax	$1,015,000	(CC) X	6.2%		$1,101,000	
Freight	$821,000	(CC) X	5.0%		$889,000	
Total purchased equipment cost (PEC)	$18,246,000				$19,778,000	
Direct installation costs						
Foundation & supports	$3,649,000	(PEC) X	20.0%		$3,875,000	6.2%
Handling & erection	$5,474,000	(PEC) X	30.0%		$5,813,000	6.2%
Electrical	$2,737,000	(PEC) X	15.0%		$2,907,000	6.2%
Piping	$456,000	(PEC) X	2.5%		$484,000	6.2%
Insulation	$1,825,000	(PEC) X	10.0%		$1,938,000	6.2%
Painting	$182,000	(PEC) X	1.0%		$193,000	6.2%
Demolition	$1,825,000	(PEC) X	10.0%		$1,938,000	6.2%
Relocation	$912,000	(PEC) X	5.0%		$969,000	6.2%
Total direct installation costs (DIC)	$17,060,000				$18,117,000	
Air preheater modifications	$1,071,000	B&V cost estimate			$1,161,000	8.4%
Balanced draft conversion	$13,366,000	B&V cost estimate			$14,489,000	8.4%
Site preparation	$1,000,000	Engineering estimate			$1,000,000	0.0%
Buildings	$200,000	Engineering estimate			$200,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$50,943,000				$54,745,000	
Indirect Costs						
Engineering	$3,566,000	(DC) X	7.0%		$3,832,000	
Owner's cost	$2,547,000	(DC) X	5.0%		$2,737,000	
Construction management	$5,094,000	(DC) X	10.0%		$5,475,000	
Construction indirect	$11,222,000	B&V labor market review			$11,918,000	6.2%
Start-up and spare parts	$1,528,000	(DC) X	3.0%		$1,642,000	
Performance test	$509,000	(DC) X	1.0%		$547,000	
Contingencies	$10,189,000	(DC) X	20.0%		$10,949,000	
Total indirect costs (IC)	$34,655,000				$37,100,000	
Interest During Construction (IDC)	$3,171,000				$3,171,000	
Loss Generation during Outage (GEN)	$15,667,000				$15,667,000	
Total Capital Investment (TCI) = (DC) + (IC) + (GEN)	**$104,436,000**				**$110,683,000**	
ANNUAL COST						
Direct Annual Costs						
Fixed annual costs						
Operating labor	$125,000	1 FTE and	124,862 $/year			Estimated manpower level
Maintenance labor & materials	$1,528,000	(DC) X	3.0%			
Total fixed annual costs	$1,653,000					
Variable annual costs						
Urea	$1,703,000	1,089 lb/hr and	420 $/ton			Engineering estimate
Water	$1,762,000	252 gpm and	15.67 $/1,000 gal			Engineering estimate
Catalyst replacement	$215,000	33 m3 and	6,500 $/m3			2 yr catalyst replacement rate
Auxiliary power	$32,000	70 kW and	0.06095 $/kWh			Engineering estimate
ID fan power	$670,000	1,477 kW and	0.06095 $/kWh			Engineering estimate
Total variable annual costs	$4,382,000					
Total direct annual costs (DAC)	$6,035,000					
Indirect Annual Costs						
Cost for capital recovery	$10,781,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$10,781,000			*Calculated from escalated costs*		
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$16,816,000**					

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: SNCR/SCR Hybrid - SJGS Unit 2 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis				
CAPITAL COST	Estimate				Escalation	Escalation
Direct Costs	in 2007 Dollars	Taken from 2007 BART			4th Qrtr 2010	Percentage
Purchased equipment costs						
Hybrid system scope:	$15,753,000	B&V cost development from vendor quote			$17,076,000	8.4%
Reagent delivery system						
Wall injectors and multiple nozzle lances						
Automatic injector and lance retract system						
Flue gas temperature, NOx monitors						
Reagent storage tank						
Single layer catalyst SCR system						
Ductwork modifications						
Electrical system upgrades	$372,000	Similar scope to SCR modifications			$403,000	8.4%
Instrumentation and control system	$278,000	Similar scope to SCR modifications			$301,000	8.4%
Subtotal capital cost (CC)	$16,403,000				$17,780,000	
Gross Receipt Tax	$1,015,000	(CC) X	6.2%		$1,100,000	
Freight	$820,000	(CC) X	5.0%		$889,000	
Total purchased equipment cost (PEC)	$18,238,000				$19,769,000	
Direct installation costs						
Foundation & supports	$3,648,000	(PEC) X	20.0%		$3,874,000	6.2%
Handling & erection	$7,295,000	(PEC) X	40.0%		$7,747,000	6.2%
Electrical	$2,736,000	(PEC) X	15.0%		$2,906,000	6.2%
Piping	$456,000	(PEC) X	2.5%		$484,000	6.2%
Insulation	$1,824,000	(PEC) X	10.0%		$1,937,000	6.2%
Painting	$182,000	(PEC) X	1.0%		$193,000	6.2%
Demolition	$1,824,000	(PEC) X	10.0%		$1,937,000	6.2%
Relocation	$912,000	(PEC) X	5.0%		$969,000	6.2%
Total direct installation costs (DIC)	$18,877,000				$20,047,000	
Air preheater modifications	$1,071,000	B&V cost estimate			$1,161,000	8.4%
Balanced draft conversion	$13,366,000	B&V cost estimate			$14,489,000	8.4%
Site preparation	$1,000,000	Engineering estimate			$1,000,000	0.0%
Buildings	$200,000	Engineering estimate			$200,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$52,752,000				$56,666,000	
Indirect Costs						
Engineering	$3,693,000	(DC) X	7.0%		$3,967,000	
Owner's cost	$2,638,000	(DC) X	5.0%		$2,833,000	
Construction management	$5,275,000	(DC) X	10.0%		$5,667,000	
Construction indirect	$13,041,000	B&V labor market review			$13,850,000	6.2%
Start-up and spare parts	$1,583,000	(DC) X	3.0%		$1,700,000	
Performance test	$528,000	(DC) X	1.0%		$567,000	
Contingencies	$10,550,000	(DC) X	20.0%		$11,333,000	
Total indirect costs (IC)	$37,308,000				$39,917,000	
Interest During Construction (IDC)	$3,337,000				$3,337,000	
Loss Generation during Outage (GEN)	$15,231,000				$15,231,000	
Total Capital Investment (TCI) = (DC) + (IC) + (GEN)	**$108,628,000**				**$115,151,000**	
ANNUAL COST						
Direct Annual Costs						
Fixed annual costs						
Operating labor	$125,000	1 FTE and	124,862 $/year			Estimated manpower level
Maintenance labor & materials	$1,583,000	(DC) X	3.0%			
Total fixed annual costs	$1,708,000					
Variable annual costs						
Urea	$1,703,000	1,089 lb/hr and	420 $/ton			Engineering estimate
Water	$1,762,000	252 gpm and	15.67 $/1,000 gal			Engineering estimate
Catalyst replacement	$215,000	33 m3 and	6,500 $/m3			2 yr catalyst replacement rate
Auxiliary power	$32,000	70 kW and	0.06095 $/kWh			Engineering estimate
ID fan power	$670,000	1,477 kW and	0.06095 $/kWh			Engineering estimate
Total variable annual costs	$4,382,000					
Total direct annual costs (DAC)	$6,090,000					
Indirect Annual Costs						
Cost for capital recovery	$11,216,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$11,216,000			*Calculated from escalated costs*		
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$17,306,000**					

PNM SJGS BART Analysis - Cost Analysis (Draft)
Escalated to Fourth Quarter 2010 Dollars
Technology: SNCR/SCR Hybrid - SJGS Unit 3 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis					
CAPITAL COST	Estimate					Escalation	Escalation
Direct Costs	in 2007 Dollars	Taken from 2007 BART				4th Qrtr 2010	Percentage
Purchased equipment costs							
Hybrid system scope:	$23,680,000	B&V cost development from vendor quote				$25,669,000	8.4%
Reagent delivery system							
Wall injectors and multiple nozzle lances							
Automatic injector and lance retract system							
Flue gas temperature, NOx monitors							
Reagent storage tank							
Single layer catalyst SCR system							
Ductwork modifications							
Electrical system upgrades	$484,000	Similar scope to SCR modifications				$525,000	8.4%
Instrumentation and control system	$291,000	Similar scope to SCR modifications				$315,000	8.4%
Subtotal capital cost (CC)	$24,455,000					$26,509,000	
Gross Receipt Tax	$1,513,000	(CC) X	6.2%			$1,640,000	
Freight	$1,223,000	(CC) X	5.0%			$1,325,000	
Total purchased equipment cost (PEC)	$27,191,000					$29,474,000	
Direct installation costs							
Foundation & supports	$5,438,000	(PEC) X	20.0%			$5,775,000	6.2%
Handling & erection	$10,876,000	(PEC) X	40.0%			$11,550,000	6.2%
Electrical	$4,079,000	(PEC) X	15.0%			$4,332,000	6.2%
Piping	$680,000	(PEC) X	2.5%			$722,000	6.2%
Insulation	$2,719,000	(PEC) X	10.0%			$2,888,000	6.2%
Painting	$272,000	(PEC) X	1.0%			$289,000	6.2%
Demolition	$2,719,000	(PEC) X	10.0%			$2,888,000	6.2%
Relocation	$1,360,000	(PEC) X	5.0%			$1,444,000	6.2%
Total direct installation costs (DIC)	$28,143,000					$29,888,000	
Air preheater modifications	$8,685,000	B&V cost estimate				$9,415,000	8.4%
Balanced draft conversion	$17,122,000	B&V cost estimate				$18,560,000	8.4%
Site preparation	$1,000,000	Engineering estimate				$1,000,000	0.0%
Buildings	$200,000	Engineering estimate				$200,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$82,341,000					$88,537,000	
Indirect Costs							
Engineering	$5,764,000	(DC) X	7.0%			$6,198,000	
Owner's cost	$4,117,000	(DC) X	5.0%			$4,427,000	
Construction management	$8,234,000	(DC) X	10.0%			$8,854,000	
Construction indirect	$19,442,000	B&V labor market review				$20,647,000	6.2%
Start-up and spare parts	$2,470,000	(DC) X	3.0%			$2,656,000	
Performance test	$823,000	(DC) X	1.0%			$885,000	
Contingencies	$16,468,000	(DC) X	20.0%			$17,707,000	
Total indirect costs (IC)	$57,318,000					$61,374,000	
Interest During Construction (IDC)	$5,174,000					$5,174,000	
Loss Generation during Outage (GEN)	$23,674,000					$23,674,000	
Total Capital Investment (TCI) = (DC) + (IC) + (GEN)	**$168,507,000**					**$178,759,000**	
ANNUAL COST							
Direct Annual Costs							
Fixed annual costs							
Operating labor	$125,000		1 FTE and	124,862 $/year			Estimated manpower level
Maintenance labor & materials	$2,470,000	(DC) X	3.0%				
Total fixed annual costs	$2,595,000						
Variable annual costs							
Urea	$2,641,000		1,689 lb/hr and	420 $/ton			Engineering estimate
Water	$2,658,000		380 gpm and	15.67 $/1,000 gal			Engineering estimate
Catalyst replacement	$270,000		42 m3 and	6,500 $/m3			2 yr catalyst replacement rate
Auxiliary power	$32,000		70 kW and	0.06095 $/kWh			Engineering estimate
ID fan power	$997,000		2,197 kW and	0.06095 $/kWh			Engineering estimate
Total variable annual costs	$6,598,000						
Total direct annual costs (DAC)	$9,193,000						
Indirect Annual Costs							
Cost for capital recovery	$17,411,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life			
Total indirect annual costs (IDAC)	$17,411,000			*Calculated from escalated costs*			
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$26,604,000**						

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: SNCR/SCR Hybrid - SJGS Unit 4 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis				
CAPITAL COST	Estimate				Escalation	Escalation
Direct Costs	in 2007 Dollars	Taken from 2007 BART			4th Qrtr 2010	Percentage
Purchased equipment costs						
Hybrid system scope:	$23,680,000	B&V cost development from vendor quote			$25,669,000	8.4%
Reagent delivery system						
Wall injectors and multiple nozzle lances						
Automatic injector and lance retract system						
Flue gas temperature, NOx monitors						
Reagent storage tank						
Single layer catalyst SCR system						
Ductwork modifications						
Electrical system upgrades	$484,000	Similar scope to SCR modifications			$525,000	8.4%
Instrumentation and control system	$291,000	Similar scope to SCR modifications			$315,000	8.4%
Subtotal capital cost (CC)	$24,455,000				$26,509,000	
Gross Receipt Tax	$1,513,000	(CC) X	6.2%		$1,640,000	
Freight	$1,223,000	(CC) X	5.0%		$1,325,000	
Total purchased equipment cost (PEC)	$27,191,000				$29,474,000	
Direct installation costs						
Foundation & supports	$5,438,000	(PEC) X	20.0%		$5,775,000	6.2%
Handling & erection	$8,157,000	(PEC) X	30.0%		$8,663,000	6.2%
Electrical	$4,079,000	(PEC) X	15.0%		$4,332,000	6.2%
Piping	$680,000	(PEC) X	2.5%		$722,000	6.2%
Insulation	$2,719,000	(PEC) X	10.0%		$2,888,000	6.2%
Painting	$272,000	(PEC) X	1.0%		$289,000	6.2%
Demolition	$2,719,000	(PEC) X	10.0%		$2,888,000	6.2%
Relocation	$1,360,000	(PEC) X	5.0%		$1,444,000	6.2%
Total direct installation costs (DIC)	$25,424,000				$27,001,000	
Air preheater modifications	$8,685,000	B&V cost estimate			$9,415,000	8.4%
Balanced draft conversion	$17,122,000	B&V cost estimate			$18,560,000	8.4%
Site preparation	$1,000,000	Engineering estimate			$1,000,000	0.0%
Buildings	$200,000	Engineering estimate			$200,000	0.0%
Total direct costs (DC) = (PEC) + (DIC)	$79,622,000				$85,650,000	
Indirect Costs						
Engineering	$5,574,000	(DC) X	7.0%		$5,996,000	
Owner's cost	$3,981,000	(DC) X	5.0%		$4,283,000	
Construction management	$7,962,000	(DC) X	10.0%		$8,565,000	
Construction indirect	$16,723,000	B&V labor market review			$17,760,000	6.2%
Start-up and spare parts	$2,389,000	(DC) X	3.0%		$2,570,000	
Performance test	$796,000	(DC) X	1.0%		$857,000	
Contingencies	$15,924,000	(DC) X	20.0%		$17,130,000	
Total indirect costs (IC)	$53,349,000				$57,161,000	
Interest During Construction (IDC)	$4,927,000				$4,927,000	
Loss Generation during Outage (GEN)	$23,674,000				$23,674,000	
Total Capital Investment (TCI) = (DC) + (IC) + (GEN)	**$161,572,000**				**$171,412,000**	
ANNUAL COST						
Direct Annual Costs						
Fixed annual costs						
Operating labor	$125,000	1 FTE and	124,862 $/year			Estimated manpower level
Maintenance labor & materials	$2,389,000	(DC) X	3.0%			
Total fixed annual costs	$2,514,000					
Variable annual costs						
Urea	$2,641,000	1,689 lb/hr and	420 $/ton			Engineering estimate
Water	$2,658,000	380 gpm and	15.67 $/1,000 gal			Engineering estimate
Catalyst replacement	$270,000	42 m3 and	6,500 $/m3			2 yr catalyst replacement rate
Auxiliary power	$32,000	70 kW and	0.06095 $/kWh			Engineering estimate
ID fan power	$997,000	2,197 kW and	0.06095 $/kWh			Engineering estimate
Total variable annual costs	$6,598,000					
Total direct annual costs (DAC)	$9,112,000					
Indirect Annual Costs						
Cost for capital recovery	$16,696,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$16,696,000			*Calculated from escalated costs*		
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$25,808,000**					

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA - Unit 1 **Date:** 8/15/2008

Cost Item	$	Remarks/Cost Basis				Escalation 4th Qrtr 2010	Escalation Percentage
CAPITAL COST	Estimate in 2008 Dollars	Taken from 2008 BART					
Direct Costs							
Purchased equipment costs							
ROFA system scope:	$6,681,000	Nalco-Mobotec proposal, 2/1/2008				$7,075,000	5.9%
ROFA fan							
ROFA ports with boiler tube bends							
ROFA ductwork							
Instrumentation for ROFA							
Contingency for combustion system modifications	$125,000	Estimated cost based on 8/15/08 phone call with Nalco Mobotec				$132,000	5.9%
NOx monitoring system	$220,000	B&V cost estimate - see estimating notes				$233,000	5.9%
Electrical system upgrades	$1,159,000	New transformer and electrical upgrades for new ROFA booster fans				$1,227,000	5.9%
Subtotal capital cost (CC)	$8,185,000					$8,667,000	
Gross Receipt Tax	$506,447	(CC) X	6.2%			$536,271	
Freight	$409,250	(CC) X	5.0%			$433,350	
Total purchased equipment cost (PEC)	$9,101,000					$9,637,000	
Direct installation costs							
Foundation & supports	$252,000	B&V cost estimate - see estimating notes				$261,000	3.6%
Handling & erection	$1,843,000	B&V cost estimate - see estimating notes				$1,909,000	3.6%
Electrical	$435,000	B&V cost estimate - see estimating notes				$451,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008				included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008				included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008				included	3.6%
Demolition	$301,000	B&V cost estimate - see estimating notes				$312,000	3.6%
Relocation	$455,000	(PEC) X	5.0%			$471,000	3.6%
Total direct installation costs (DIC)	$3,286,000					$3,404,000	
Total direct costs (DC) = (PEC) + (DIC)	$12,387,000					$13,041,000	
Indirect Costs							
Engineering	$1,239,000	(DC) X	10.0%			$1,304,000	
Owner's cost	$619,000	(DC) X	5.0%			$652,000	
Construction management	$619,000	(DC) X	5.0%			$652,000	
Start-up and spare parts	$248,000	(DC) X	2.0%			$261,000	
Performance test	$50,000	(DC) X	Engineering estimate			$50,000	No escalation
Contingencies	$2,477,000	(DC) X	20.0%			$2,608,000	
Total indirect costs (IC)	$5,252,000					$5,527,000	
Interest During Construction (IDC)	$654,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)		$688,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$18,293,000**					**$19,256,000**	
ANNUAL COST							
Direct Annual Costs							
Fixed annual costs							
Maintenance labor and materials	$310,000	(DC) X	2.5%				
Total fixed annual costs	$310,000						
Variable annual costs							
Auxiliary and ID fan power	$1,363,000	3000 kW and	0.061 $/kWh	Nalco Mobotec prop.			
Total variable annual costs	$1,363,000						
Total direct annual costs (DAC)	$1,673,000						
Indirect Annual Costs							
Cost for capital recovery	$1,876,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life			
Total indirect annual costs (IDAC)	$1,876,000			*Calculated from escalated costs*			
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$3,549,000**						

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA - Unit 2 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis	Escalation 4th Qrtr 2010	Escalation Percentage
CAPITAL COST	Estimate			
Direct Costs	in 2008 Dollars	Taken from 2008 BART		
Purchased equipment costs				
ROFA system scope:	$6,681,000	Nalco-Mobotec proposal, 2/1/2008	$7,075,000	5.9%
ROFA fan				
ROFA ports with boiler tube bends				
ROFA ductwork				
Instrumentation for ROFA				
Contingency for combustion system modifications	$125,000	Estimated cost based on 8/15/08 phone call with Nalco Mobotec	$132,000	5.9%
NOx monitoring system	$220,000	B&V cost estimate - see estimating notes	$233,000	5.9%
Electrical system upgrades	$1,159,000	New transformer and electrical upgrades for new ROFA booster fans	$1,227,000	5.9%
Subtotal capital cost (CC)	$8,185,000		$8,667,000	
Gross Receipt Tax	$506,447	(CC) X 6.2%	$536,271	
Freight	$409,250	(CC) X 5.0%	$433,350	
Total purchased equipment cost (PEC)	$9,101,000		$9,637,000	
Direct installation costs				
Foundation & supports	$252,000	B&V cost estimate - see estimating notes	$261,000	3.6%
Handling & erection	$1,843,000	B&V cost estimate - see estimating notes	$1,909,000	3.6%
Electrical	$435,000	B&V cost estimate - see estimating notes	$451,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008	included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008	included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008	included	3.6%
Demolition	$301,000	B&V cost estimate - see estimating notes	$312,000	3.6%
Relocation	$455,000	(PEC) X 5.0%	$471,000	3.6%
Total direct installation costs (DIC)	$3,286,000		$3,404,000	
Total direct costs (DC) = (PEC) + (DIC)	$12,387,000		$13,041,000	
Indirect Costs				
Engineering	$1,239,000	(DC) X 10.0%	$1,304,000	
Owner's cost	$619,000	(DC) X 5.0%	$652,000	
Construction management	$619,000	(DC) X 5.0%	$652,000	
Start-up and spare parts	$248,000	(DC) X 2.0%	$261,000	
Performance test	$50,000	(DC) X Engineering estimate	$50,000	No escalation
Contingencies	$2,477,000	(DC) X 20.0%	$2,608,000	
Total indirect costs (IC)	$5,252,000		$5,527,000	
Interest During Construction (IDC)	$654,000	[(DC)+(IC)] X 7.41% 1 years (project time length X 1/2)	$688,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$18,293,000**		**$19,256,000**	
ANNUAL COST				
Direct Annual Costs				
Fixed annual costs				
Maintenance labor and materials	$310,000	(DC) X 2.5%		
Total fixed annual costs	$310,000			
Variable annual costs				
Auxiliary and ID fan power	$1,363,000	3000 kW and 0.061 $/kWh Nalco Mobotec prop.		
Total variable annual costs	$1,363,000			
Total direct annual costs (DAC)	$1,673,000			
Indirect Annual Costs				
Cost for capital recovery	$1,876,000	(TCI) X 9.74% CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$1,876,000	*Calculated from escalated costs*		
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$3,549,000**			

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA - Unit 3 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis				Escalation 4th Qtr 2010	Escalation Percentage
CAPITAL COST	Estimate						
Direct Costs	in 2008 Dollars	Taken from 2008 BART					
Purchased equipment costs							
ROFA system scope:	$7,651,000	Nalco-Mobotec proposal, 2/1/2008				$8,102,000	5.9%
ROFA fan							
ROFA ports with boiler tube bends							
ROFA ductwork							
Instrumentation for ROFA							
Contingency for combustion system modifications	$125,000	Estimated cost based on 8/15/08 phone call with Nalco Mobotec				$132,000	5.9%
NOx monitoring system	$220,000	B&V cost estimate - see estimating notes				$233,000	5.9%
Electrical system upgrades	$1,214,000	New transformer and electrical upgrades for new ROFA booster fans				$1,286,000	5.9%
Subtotal capital cost (CC)	$9,210,000					$9,753,000	
Gross Receipt Tax	$569,869	(CC) X	6.2%			$603,467	
Freight	$460,500	(CC) X	5.0%			$487,650	
Total purchased equipment cost (PEC)	$10,240,000					$10,844,000	
Direct installation costs							
Foundation & supports	$328,000	B&V cost estimate - see estimating notes				$340,000	3.6%
Handling & erection	$2,152,000	B&V cost estimate - see estimating notes				$2,229,000	3.6%
Electrical	$585,000	B&V cost estimate - see estimating notes				$606,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008				included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008				included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008				included	3.6%
Demolition	$396,000	B&V cost estimate - see estimating notes				$410,000	3.6%
Relocation	$512,000	(PEC) X	5.0%			$530,000	3.6%
Total direct installation costs (DIC)	$3,973,000					$4,115,000	
Total direct costs (DC) = (PEC) + (DIC)	$14,213,000					$14,959,000	
Indirect Costs							
Engineering	$1,421,000	(DC) X	10.0%			$1,496,000	
Owner's cost	$711,000	(DC) X	5.0%			$748,000	
Construction management	$711,000	(DC) X	5.0%			$748,000	
Start-up and spare parts	$284,000	(DC) X	2.0%			$299,000	
Performance test	$50,000	(DC) X	Engineering estimate			$50,000	No escalation
Contingencies	$2,843,000	(DC) X	20.0%			$2,992,000	
Total indirect costs (IC)	$6,020,000					$6,333,000	
Interest During Construction (IDC)	$750,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)		$789,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$20,983,000**					**$22,081,000**	
ANNUAL COST							
Direct Annual Costs							
Fixed annual costs							
Maintenance labor and materials	$355,000	(DC) X	2.5%				
Total fixed annual costs	$355,000						
Variable annual costs							
Auxiliary and ID fan power	$2,725,000	6000 kW and	0.061 $/kWh	Nalco-Mobotec prop.			
Total variable annual costs	$2,725,000						
Total direct annual costs (DAC)	$3,080,000						
Indirect Annual Costs							
Cost for capital recovery	$2,151,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life			
Total indirect annual costs (IDAC)	$2,151,000			*Calculated from escalated costs*			
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$5,231,000**						

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA - Unit 4 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis			Escalation	Escalation
CAPITAL COST	Estimate					
Direct Costs	in 2008 Dollars	Taken from 2008 BART			4th Qrtr 2010	Percentage
Purchased equipment costs						
ROFA system scope:	$7,651,000	Nalco-Mobotec proposal, 2/1/2008			$8,102,000	5.9%
ROFA fan						
ROFA ports with boiler tube bends						
ROFA ductwork						
Instrumentation for ROFA						
Contingency for combustion system modifications	$125,000	Estimated cost based on 8/15/08 phone call with Nalco Mobotec			$132,000	5.9%
NOx monitoring system	$220,000	B&V cost estimate - see estimating notes			$233,000	5.9%
Electrical system upgrades	$1,214,000	New transformer and electrical upgrades for new ROFA booster fans			$1,286,000	5.9%
Subtotal capital cost (CC)	$9,210,000				$9,753,000	
Gross Receipt Tax	$569,869	(CC) X	6.2%		$603,467	
Freight	$460,500	(CC) X	5.0%		$487,650	
Total purchased equipment cost (PEC)	$10,240,000				$10,844,000	
Direct installation costs						
Foundation & supports	$328,000	B&V cost estimate - see estimating notes			$340,000	3.6%
Handling & erection	$2,152,000	B&V cost estimate - see estimating notes			$2,229,000	3.6%
Electrical	$585,000	B&V cost estimate - see estimating notes			$606,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008			included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008			included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008			included	3.6%
Demolition	$396,000	B&V cost estimate - see estimating notes			$410,000	3.6%
Relocation	$512,000	(PEC) X	5.0%		$530,000	3.6%
Total direct installation costs (DIC)	$3,973,000				$4,115,000	
Total direct costs (DC) = (PEC) + (DIC)	$14,213,000				$14,959,000	
Indirect Costs						
Engineering	$1,421,000	(DC) X	10.0%		$1,496,000	
Owner's cost	$711,000	(DC) X	5.0%		$748,000	
Construction management	$711,000	(DC) X	5.0%		$748,000	
Start-up and spare parts	$284,000	(DC) X	2.0%		$299,000	
Performance test	$50,000	(DC) X	Engineering estimate		$50,000	No escalation
Contingencies	$2,843,000	(DC) X	20.0%		$2,992,000	
Total indirect costs (IC)	$6,020,000				$6,333,000	
Interest During Construction (IDC)	$750,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)	$789,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$20,983,000**				**$22,081,000**	
ANNUAL COST						
Direct Annual Costs						
Fixed annual costs						
Maintenance labor and materials	$355,000	(DC) X	2.5%			
Total fixed annual costs	$355,000					
Variable annual costs						
Auxiliary and ID fan power	$2,725,000	6000 kW and	0.061 $/kWh			Nalco-Mobotec pr
Total variable annual costs	$2,725,000					
Total direct annual costs (DAC)	$3,080,000					
Indirect Annual Costs						
Cost for capital recovery	$2,151,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$2,151,000			*Calculated from escalated costs*		
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$5,231,000**					

PNM SJGS BART Analysis - Cost Analysis (Draft)
Escalated to Fourth Quarter 2010 Dollars
Technology: Rotamix - SJGS Unit 1 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis						Escalation	Escalation
CAPITAL COST	Estimate								
Direct Costs	in 2008 Dollars	Taken from 2008 BART						4th Qrtr 2010	Percentage
Purchased equipment costs									
Rotamix system scope:	$2,101,000	Nalco-Mobotec proposal, 2/1/2008						$2,225,000	5.9%
Rotamix fan									
Rotamix ports with boiler tube bends									
Reagent and water storage tanks									
Reagent, water pump skids									
Rotamix injection lances									
Instrumentation for Rotamix									
NOx monitoring system	$220,000	B&V cost estimate - not included in Nalco-Mobotec proposal						$233,000	5.9%
Electrical system upgrades	$189,000	B&V cost estimate - for reagent preparation, injection systems						$200,000	5.9%
Subtotal capital cost (CC)	$2,510,000							$2,658,000	
Gross Receipt Tax	$155,306	(CC) X	6.2%					$164,464	
Freight	$125,500	(CC) X	5.0%					$132,900	
Total purchased equipment cost (PEC)	$2,791,000							$2,955,000	
Direct installation costs									
Foundation & supports	$567,000	same cost as SNCR system estimate - 5/5/08						$587,000	3.6%
Handling & erection	$1,702,000	same cost as SNCR system estimate - 5/5/08						$1,763,000	3.6%
Electrical	$567,000	same cost as SNCR system estimate - 5/5/08						$587,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Demolition	$284,000	same cost as SNCR system estimate - 5/5/08						$294,000	3.6%
Relocation	$113,000	same cost as SNCR system estimate - 5/5/08						$117,000	3.6%
Total direct installation costs (DIC)	$3,233,000							$3,348,000	
Air preheater modifications	$1,071,000	B&V cost estimate						$1,134,000	5.9%
Site preparation	$0	N/A						$0	5.9%
Buildings	$0	N/A						$0	5.9%
Total direct costs (DC) = (PEC) + (DIC)	$7,095,000							$7,437,000	
Indirect Costs									
Engineering	$708,000	same cost as SNCR system estimate - 5/5/08						$733,000	3.6%
Owner's cost	$355,000	(DC) X	5.0%					$372,000	
Construction management	$1,012,000	same cost as SNCR system estimate - 5/5/08						$1,048,000	3.6%
Start-up and spare parts	$213,000	(DC) X	3.0%					$223,000	
Performance test	$100,000	(DC) X	Engineering estimate					$100,000	No escalation
Contingencies	$1,419,000	(DC) X	20.0%					$1,487,000	
Total indirect costs (IC)	$3,807,000							$3,963,000	
Interest During Construction (IDC)	$404,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)				$422,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$11,306,000**							**$11,822,000**	
ANNUAL COST									
Direct Annual Costs									
Fixed annual costs									
Operating labor	$125,000		1 FTE and	124,862 $/year	Estimated level				
Maintenance labor and materials	$213,000	(DC) X	3.0%						
Total fixed annual costs	$338,000								
Variable annual costs									
Reagent	$2,053,000		1,313 lb/hr and	420 $/ton	Nalco Mobotec prop.				
Auxiliary and ID fan power	$51,000		112 kW and	0.061 $/kWh	Nalco Mobotec prop.				
Water	$4,000		24 gpm and	0.33 $/kgal	Nalco Mobotec prop.				
Total variable annual costs	$2,108,000								
Total direct annual costs (DAC)	$2,446,000								
Indirect Annual Costs									
Cost for capital recovery	$1,151,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life					
Total indirect annual costs (IDAC)	$1,151,000			*Calculated from escalated costs*					
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$3,597,000**								

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: Rotamix - SJGS Unit 2 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis					Escalation	Escalation
CAPITAL COST	Estimate							
Direct Costs	in 2008 Dollars	Taken from 2008 BART					4th Qtr 2010	Percentage
Purchased equipment costs								
Rotamix system scope:	$2,101,000	Nalco-Mobotec proposal, 2/1/2008					$2,225,000	5.9%
Rotamix fan								
Rotamix ports with boiler tube bends								
Reagent and water storage tanks								
Reagent, water pump skids								
Rotamix injection lances								
Instrumentation for Rotamix								
NOx monitoring system	$220,000	B&V cost estimate - not included in Nalco-Mobotec proposal					$233,000	5.9%
Electrical system upgrades	$189,000	B&V cost estimate - for reagent preparation, injection systems					$200,000	5.9%
Subtotal capital cost (CC)	$2,510,000						$2,658,000	
Gross Receipt Tax	$155,306	(CC) X	6.2%				$164,464	
Freight	$125,500	(CC) X	5.0%				$132,900	
Total purchased equipment cost (PEC)	$2,791,000						$2,955,000	
Direct installation costs								
Foundation & supports	$567,000	same cost as SNCR system estimate - 5/5/08					$587,000	3.6%
Handling & erection	$1,702,000	same cost as SNCR system estimate - 5/5/08					$1,763,000	3.6%
Electrical	$567,000	same cost as SNCR system estimate - 5/5/08					$587,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Demolition	$284,000	same cost as SNCR system estimate - 5/5/08					$294,000	3.6%
Relocation	$113,000	same cost as SNCR system estimate - 5/5/08					$117,000	3.6%
Total direct installation costs (DIC)	$3,233,000						$3,348,000	
Air preheater modifications	$1,071,000	B&V cost estimate					$1,134,000	5.9%
Site preparation	$0	N/A					$0	5.9%
Buildings	$0	N/A					$0	5.9%
Total direct costs (DC) = (PEC) + (DIC)	$7,095,000						$7,437,000	
Indirect Costs								
Engineering	$708,000	same cost as SNCR system estimate - 5/5/08					$733,000	3.6%
Owner's cost	$355,000	(DC) X	5.0%				$372,000	
Construction management	$1,012,000	same cost as SNCR system estimate - 5/5/08					$1,048,000	3.6%
Start-up and spare parts	$213,000	(DC) X	3.0%				$223,000	
Performance test	$100,000	(DC) X	Engineering estimate				$100,000	No escalation
Contingencies	$1,419,000	(DC) X	20.0%				$1,487,000	
Total indirect costs (IC)	$3,807,000						$3,963,000	
Interest During Construction (IDC)	$404,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)			$422,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$11,306,000**						**$11,822,000**	
ANNUAL COST								
Direct Annual Costs								
Fixed annual costs								
Operating labor	$125,000		1 FTE and	124,862 $/year	Estimated level			
Maintenance labor and materials	$213,000	(DC) X	3.0%					
Total fixed annual costs	$338,000							
Variable annual costs								
Reagent	$2,053,000		1,313 lb/hr and	420 $/ton	Nalco Mobotec prop.			
Auxiliary and ID fan power	$51,000		112 kW and	0.061 $/kWh	Nalco Mobotec prop.			
Water	$4,000		24 gpm and	0.33 $/kgal	Nalco Mobotec prop.			
Total variable annual costs	$2,108,000							
Total direct annual costs (DAC)	$2,446,000							
Indirect Annual Costs								
Cost for capital recovery	$1,151,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life				
Total indirect annual costs (IDAC)	$1,151,000			*Calculated from escalated costs*				
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$3,597,000**							

PNM SJGS BART Analysis - Cost Analysis (Draft)
Escalated to Fourth Quarter 2010 Dollars
Technology: Rotamix - SJGS Unit 3 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis						Escalation	Escalation
CAPITAL COST	Estimate								
Direct Costs	in 2008 Dollars	Taken from 2008 BART						4th Qtr 2010	Percentage
Purchased equipment costs									
Rotamix system scope:	$2,337,000	Nalco-Mobotec proposal, 2/1/2008						$2,475,000	5.9%
Rotamix fan									
Rotamix ports with boiler tube bends									
Reagent and water storage tanks									
Reagent, water pump skids									
Rotamix injection lances									
Instrumentation for Rotamix									
NOx monitoring system	$220,000	B&V cost estimate - not included in Nalco-Mobotec proposal						$233,000	5.9%
Electrical system upgrades	$242,000	B&V cost estimate - for reagent preparation, injection systems						$256,000	5.9%
Subtotal capital cost (CC)	$2,799,000							$2,964,000	
Gross Receipt Tax	$173,188	(CC) X	6.2%					$183,398	
Freight	$139,950	(CC) X	5.0%					$148,200	
Total purchased equipment cost (PEC)	$3,112,000							$3,296,000	
Direct installation costs									
Foundation & supports	$720,000	same cost as SNCR system estimate - 5/5/08						$746,000	3.6%
Handling & erection	$2,159,000	same cost as SNCR system estimate - 5/5/08						$2,237,000	3.6%
Electrical	$720,000	same cost as SNCR system estimate - 5/5/08						$746,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Demolition	$360,000	same cost as SNCR system estimate - 5/5/08						$373,000	3.6%
Relocation	$144,000	same cost as SNCR system estimate - 5/5/08						$149,000	3.6%
Total direct installation costs (DIC)	$4,103,000							$4,251,000	
Air preheater modifications	$1,071,000	B&V cost estimate						$1,134,000	5.9%
Site preparation	$0	N/A						$0	5.9%
Buildings	$0	N/A						$0	5.9%
Total direct costs (DC) = (PEC) + (DIC)	$8,286,000							$8,681,000	
Indirect Costs									
Engineering	$879,000	same cost as SNCR system estimate - 5/5/08						$911,000	3.6%
Owner's cost	$414,000	(DC) X	5.0%					$434,000	
Construction management	$1,255,000	same cost as SNCR system estimate - 5/5/08						$1,300,000	3.6%
Start-up and spare parts	$249,000	(DC) X	3.0%					$260,000	
Performance test	$100,000	(DC) X	Engineering estimate					$100,000	No escalation
Contingencies	$1,657,000	(DC) X	20.0%					$1,736,000	
Total indirect costs (IC)	$4,554,000							$4,741,000	
Interest During Construction (IDC)	$476,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)				$497,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$13,316,000**							**$13,919,000**	
ANNUAL COST									
Direct Annual Costs									
Fixed annual costs									
Operating labor	$125,000	1	FTE and	124,862	$/year	Estimated level			
Maintenance labor and materials	$249,000	(DC) X	3.0%						
Total fixed annual costs	$374,000								
Variable annual costs									
Reagent	$3,169,000	2,026	lb/hr and	420	$/ton	Nalco Mobotec prop.			
Auxiliary and ID fan power	$84,000	186	kW and	0.061	$/kWh	Nalco Mobotec prop.			
Water	$5,000	37	gpm and	0.33	$/1,000 gal	Nalco Mobotec prop.			
Total variable annual costs	$3,258,000								
Total direct annual costs (DAC)	$3,632,000								
Indirect Annual Costs									
Cost for capital recovery	$1,356,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life					
Total indirect annual costs (IDAC)	$1,356,000			*Calculated from escalated costs*					
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$4,988,000**								

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: Rotamix - SJGS Unit 4 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis	Escalation 4th Qrtr 2010	Escalation Percentage
CAPITAL COST	Estimate in 2008 Dollars	Taken from 2008 BART		
Direct Costs				
Purchased equipment costs				
Rotamix system scope:	$2,337,000	Nalco-Mobotec proposal, 2/1/2008	$2,475,000	5.9%
Rotamix fan				
Rotamix ports with boiler tube bends				
Reagent and water storage tanks				
Reagent, water pump skids				
Rotamix injection lances				
Instrumentation for Rotamix				
NOx monitoring system	$220,000	B&V cost estimate - not included in Nalco-Mobotec proposal	$233,000	5.9%
Electrical system upgrades	$242,000	B&V cost estimate - for reagent preparation, injection systems	$256,000	5.9%
Subtotal capital cost (CC)	$2,799,000		$2,964,000	
Gross Receipt Tax	$173,188	(CC) X 6.2%	$183,398	
Freight	$139,950	(CC) X 5.0%	$148,200	
Total purchased equipment cost (PEC)	$3,112,000		$3,296,000	
Direct installation costs				
Foundation & supports	$720,000	same cost as SNCR system estimate - 5/5/08	$746,000	3.6%
Handling & erection	$2,159,000	same cost as SNCR system estimate - 5/5/08	$2,237,000	3.6%
Electrical	$720,000	same cost as SNCR system estimate - 5/5/08	$746,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008	included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008	included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008	included	3.6%
Demolition	$360,000	same cost as SNCR system estimate - 5/5/08	$373,000	3.6%
Relocation	$144,000	same cost as SNCR system estimate - 5/5/08	$149,000	3.6%
Total direct installation costs (DIC)	$4,103,000		$4,251,000	
Air preheater modifications	$1,071,000	B&V cost estimate	$1,134,000	5.9%
Site preparation	$0	N/A	$0	5.9%
Buildings	$0	N/A	$0	5.9%
Total direct costs (DC) = (PEC) + (DIC)	$8,286,000		$8,681,000	
Indirect Costs				
Engineering	$879,000	same cost as SNCR system estimate - 5/5/08	$911,000	3.6%
Owner's cost	$414,000	(DC) X 5.0%	$434,000	
Construction management	$1,255,000	same cost as SNCR system estimate - 5/5/08	$1,300,000	3.6%
Start-up and spare parts	$249,000	(DC) X 3.0%	$260,000	
Performance test	$100,000	(DC) X Engineering estimate	$100,000	No escalation
Contingencies	$1,657,000	(DC) X 20.0%	$1,736,000	
Total indirect costs (IC)	$4,554,000		$4,741,000	
Interest During Construction (IDC)	$476,000	[(DC)+(IC)] X 7.41% 1 years (project time length X 1/2)	$497,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$13,316,000**		**$13,919,000**	
ANNUAL COST				
Direct Annual Costs				
Fixed annual costs				
Operating labor	$125,000	1 FTE and 124,862 $/year Estimated level		
Maintenance labor and materials	$249,000	(DC) X 3.0%		
Total fixed annual costs	$374,000			
Variable annual costs				
Reagent	$3,169,000	2,026 lb/hr and 420 $/ton Nalco Mobotec prop.		
Auxiliary and ID fan power	$84,000	186 kW and 0.061 $/kWh Nalco Mobotec prop.		
Water	$5,000	37 gpm and 0.33 $/1,000 gal Nalco Mobotec prop.		
Total variable annual costs	$3,258,000			
Total direct annual costs (DAC)	$3,632,000			
Indirect Annual Costs				
Cost for capital recovery	$1,356,000	(TCI) X 9.74% CRF at 7.41% interest & 20 year life		
Total indirect annual costs (IDAC)	$1,356,000	*Calculated from escalated costs*		
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$4,988,000**			

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA & Rotamix - SJGS Unit 1 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis					Escalation 4th Qrtr 2010	Escalation Percentage
CAPITAL COST	Estimate							
Direct Costs	in 2008 Dollars	Taken from 2008 BART						
Purchased equipment costs								
ROFA-Rotamix system scope:	$8,782,000	Nalco-Mobotec proposal, 2/1/2008					$9,300,000	5.9%
ROFA fan								
ROFA ports with boiler tube bends								
ROFA ductwork								
Instrumentation for ROFA								
Rotamix fan								
Rotamix ports with boiler tube bends								
Reagent and water storage tanks								
Reagent, water pump skids								
Rotamix injection lances								
Instrumentation for Rotamix								
Contingency for combustion system modifications	$125,000	ROFA + Rotamix cost					$132,000	5.9%
NOx monitoring system	$220,000	ROFA + Rotamix cost					$233,000	5.9%
Electrical system upgrades	$1,348,000	ROFA + Rotamix cost					$1,428,000	5.9%
Subtotal capital cost (CC)	$10,475,000						$11,093,000	
Gross Receipt Tax	$648,141	(CC) X	6.2%				$686,379	
Freight	$523,750	(CC) X	5.0%				$554,650	
Total purchased equipment cost (PEC)	$11,647,000						$12,334,000	
Direct installation costs								
Foundation & supports	$819,000	ROFA + Rotamix cost					$848,000	3.6%
Handling & erection	$3,545,000	ROFA + Rotamix cost					$3,673,000	3.6%
Electrical	$1,002,000	ROFA + Rotamix cost					$1,038,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Demolition	$585,000	ROFA + Rotamix cost					$606,000	3.6%
Relocation	$568,000	ROFA + Rotamix cost					$588,000	3.6%
Total direct installation costs (DIC)	$6,519,000						$6,753,000	
Air preheater modifications	$1,071,000	B&V cost estimate					$1,134,000	5.9%
Site preparation	$0	N/A					$0	
Buildings	$0	N/A					$0	
Total direct costs (DC) = (PEC) + (DIC)	$19,237,000						$20,221,000	
Indirect Costs								
Engineering	$1,947,000	ROFA + Rotamix cost					$2,017,000	3.6%
Owner's cost	$962,000	(DC) X	5.0%				$1,011,000	
Construction management	$1,631,000	ROFA + Rotamix cost					$1,690,000	3.6%
Start-up and spare parts	$577,000	(DC) X	3.0%				$607,000	
Performance test	$100,000	(DC) X	Engineering estimate				$100,000	No escalation
Contingencies	$3,847,000	(DC) X	20.0%				$4,044,000	
Total indirect costs (IC)	$9,064,000						$9,469,000	
Interest During Construction (IDC)	$1,049,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)			$1,100,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$29,350,000**						**$30,790,000**	
ANNUAL COST								
Direct Annual Costs								
Fixed annual costs								
Operating labor	$125,000	1	FTE and	124,862	$/year	Estimated level		
Maintenance labor and materials	$577,000	(DC) X	3.0%					
Total fixed annual costs	$702,000							
Variable annual costs								
Reagent	$1,785,000	1,142	lb/hr and	420	$/ton	Nalco Mobotec prop.		
Auxiliary and ID fan power	$1,413,000	3,112	kW and	0.061	$/kWh	Nalco Mobotec prop.		
Water	$3,000	21	gpm and	0.33	$/1,000 gal	Nalco Mobotec prop.		
Total variable annual costs	$3,201,000							
Total direct annual costs (DAC)	$3,903,000							
Indirect Annual Costs								
Cost for capital recovery	$2,999,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life				
Total indirect annual costs (IDAC)	$2,999,000			*Calculated from escalated costs*				
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$6,902,000**							

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA & Rotamix - SJGS Unit 2 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis					Escalation 4th Qrtr 2010	Escalation Percentage
CAPITAL COST	Estimate							
Direct Costs	in 2008 Dollars	Taken from 2008 BART						
Purchased equipment costs								
ROFA-Rotamix system scope:	$8,782,000	Nalco-Mobotec proposal, 2/1/2008					$9,300,000	5.9%
ROFA fan								
ROFA ports with boiler tube bends								
ROFA ductwork								
Instrumentation for ROFA								
Rotamix fan								
Rotamix ports with boiler tube bends								
Reagent and water storage tanks								
Reagent, water pump skids								
Rotamix injection lances								
Instrumentation for Rotamix								
Contingency for combustion system modifications	$125,000	ROFA + Rotamix cost					$132,000	5.9%
NOx monitoring system	$220,000	ROFA + Rotamix cost					$233,000	5.9%
Electrical system upgrades	$1,348,000	ROFA + Rotamix cost					$1,428,000	5.9%
Subtotal capital cost (CC)	$10,475,000						$11,093,000	
Gross Receipt Tax	$648,141	(CC) X	6.2%				$686,379	
Freight	$523,750	(CC) X	5.0%				$554,650	
Total purchased equipment cost (PEC)	$11,647,000						$12,334,000	
Direct installation costs								
Foundation & supports	$819,000	ROFA + Rotamix cost					$848,000	3.6%
Handling & erection	$3,545,000	ROFA + Rotamix cost					$3,673,000	3.6%
Electrical	$1,002,000	ROFA + Rotamix cost					$1,038,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Demolition	$585,000	ROFA + Rotamix cost					$606,000	3.6%
Relocation	$568,000	ROFA + Rotamix cost					$588,000	3.6%
Total direct installation costs (DIC)	$6,519,000						$6,753,000	
Air preheater modifications	$1,071,000	B&V cost estimate					$1,134,000	5.9%
Site preparation	$0	N/A					$0	
Buildings	$0	N/A					$0	
Total direct costs (DC) = (PEC) + (DIC)	$19,237,000						$20,221,000	
Indirect Costs								
Engineering	$1,947,000	ROFA + Rotamix cost					$2,017,000	3.6%
Owner's cost	$962,000	(DC) X	5.0%				$1,011,000	
Construction management	$1,631,000	ROFA + Rotamix cost					$1,690,000	3.6%
Start-up and spare parts	$577,000	(DC) X	3.0%				$607,000	
Performance test	$100,000	(DC) X	Engineering estimate				$100,000	No escalation
Contingencies	$3,847,000	(DC) X	20.0%				$4,044,000	
Total indirect costs (IC)	$9,064,000						$9,469,000	
Interest During Construction (IDC)	$1,049,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)			$1,100,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$29,350,000**						**$30,790,000**	
ANNUAL COST								
Direct Annual Costs								
Fixed annual costs								
Operating labor	$125,000		1 FTE and	124,862 $/year	Estimated level			
Maintenance labor and materials	$577,000	(DC) X	3.0%					
Total fixed annual costs	$702,000							
Variable annual costs								
Reagent	$1,785,000		1,142 lb/hr and	420 $/ton	Nalco Mobotec prop.			
Auxiliary and ID fan power	$1,413,000		3,112 kW and	0.061 $/kWh	Nalco Mobotec prop.			
Water	$3,000		21 gpm and	0.33 $/1,000 gal	Nalco Mobotec prop.			
Total variable annual costs	$3,201,000							
Total direct annual costs (DAC)	$3,903,000							
Indirect Annual Costs								
Cost for capital recovery	$2,999,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life				
Total indirect annual costs (IDAC)	$2,999,000			*Calculated from escalated costs*				
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$6,902,000**							

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA & Rotamix - SJGS Unit 3 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis					Escalation 4th Qrtr 2010	Escalation Percentage
CAPITAL COST	Estimate							
Direct Costs	in 2008 Dollars	Taken from 2008 BART						
Purchased equipment costs								
ROFA-Rotamix system scope:	$9,988,000	Nalco-Mobotec proposal, 2/1/2008					$10,577,000	5.9%
ROFA fan								
ROFA ports with boiler tube bends								
ROFA ductwork								
Instrumentation for ROFA								
Rotamix fan								
Rotamix ports with boiler tube bends								
Reagent and water storage tanks								
Reagent, water pump skids								
Rotamix injection lances								
Instrumentation for Rotamix								
Contingency for combustion system modifications	$125,000	ROFA + Rotamix cost					$132,000	5.9%
NOx monitoring system	$220,000	ROFA + Rotamix cost					$233,000	5.9%
Electrical system upgrades	$1,456,000	ROFA + Rotamix cost					$1,542,000	5.9%
Subtotal capital cost (CC)	$11,789,000						$12,484,000	
Gross Receipt Tax	$729,444	(CC) X	6.2%				$772,448	
Freight	$589,450	(CC) X	5.0%				$624,200	
Total purchased equipment cost (PEC)	$13,108,000						$13,881,000	
Direct installation costs								
Foundation & supports	$1,048,000	ROFA + Rotamix cost					$1,086,000	3.6%
Handling & erection	$4,311,000	ROFA + Rotamix cost					$4,466,000	3.6%
Electrical	$1,305,000	ROFA + Rotamix cost					$1,352,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008					included	3.6%
Demolition	$756,000	ROFA + Rotamix cost					$783,000	3.6%
Relocation	$656,000	ROFA + Rotamix cost					$680,000	3.6%
Total direct installation costs (DIC)	$8,076,000						$8,367,000	
Air preheater modifications	$1,071,000	B&V cost estimate					$1,134,000	5.9%
Site preparation	$0	N/A					$0	
Buildings	$0	N/A					$0	
Total direct costs (DC) = (PEC) + (DIC)	$22,255,000						$23,382,000	
Indirect Costs								
Engineering	$2,300,000	ROFA + Rotamix cost					$2,383,000	3.6%
Owner's cost	$1,113,000	(DC) X	5.0%				$1,169,000	
Construction management	$1,966,000	ROFA + Rotamix cost					$2,037,000	3.6%
Start-up and spare parts	$668,000	(DC) X	3.0%				$701,000	
Performance test	$100,000	(DC) X	Engineering estimate				$100,000	No escalation
Contingencies	$4,451,000	(DC) X	20.0%				$4,676,000	
Total indirect costs (IC)	$10,598,000						$11,066,000	
Interest During Construction (IDC)	$1,217,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)			$1,276,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$34,070,000**						**$35,724,000**	
ANNUAL COST								
Direct Annual Costs								
Fixed annual costs								
Operating labor	$125,000	1	FTE and	124,862	$/year	Estimated level		
Maintenance labor and materials	$668,000	(DC) X	3.0%					
Total fixed annual costs	$793,000							
Variable annual costs								
Reagent	$2,722,000	1,741	lb/hr and	420	$/ton	Nalco Mobotec prop.		
Auxiliary and ID fan power	$2,810,000	6,186	kW and	0.061	$/kWh	Nalco Mobotec prop.		
Water	$5,000	32	gpm and	0.33	$/1,000 gal	Nalco Mobotec prop.		
Total variable annual costs	$5,537,000							
Total direct annual costs (DAC)	$6,330,000							
Indirect Annual Costs								
Cost for capital recovery	$3,480,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life				
Total indirect annual costs (IDAC)	$3,480,000			*Calculated from escalated costs*				
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$9,810,000**							

PNM SJGS BART Analysis - Cost Analysis (Draft)

Escalated to Fourth Quarter 2010 Dollars

Technology: ROFA & Rotamix - SJGS Unit 4 **Date:** 2/8/2011

Cost Item	$	Remarks/Cost Basis						Escalation 4th Qrtr 2010	Escalation Percentage
CAPITAL COST	Estimate								
Direct Costs	in 2008 Dollars	Taken from 2008 BART							
Purchased equipment costs									
ROFA-Rotamix system scope:	$9,988,000	Nalco-Mobotec proposal, 2/1/2008						$10,577,000	5.9%
ROFA fan									
ROFA ports with boiler tube bends									
ROFA ductwork									
Instrumentation for ROFA									
Rotamix fan									
Rotamix ports with boiler tube bends									
Reagent and water storage tanks									
Reagent, water pump skids									
Rotamix injection lances									
Instrumentation for Rotamix									
Contingency for combustion system modifications	$125,000	ROFA + Rotamix cost						$132,000	5.9%
NOx monitoring system	$220,000	ROFA + Rotamix cost						$233,000	5.9%
Electrical system upgrades	$1,456,000	ROFA + Rotamix cost						$1,542,000	5.9%
Subtotal capital cost (CC)	$11,789,000							$12,484,000	
Gross Receipt Tax	$729,444	(CC) X	6.2%					$772,448	
Freight	$589,450	(CC) X	5.0%					$624,200	
Total purchased equipment cost (PEC)	$13,108,000							$13,881,000	
Direct installation costs									
Foundation & supports	$1,048,000	ROFA + Rotamix cost						$1,086,000	3.6%
Handling & erection	$4,311,000	ROFA + Rotamix cost						$4,466,000	3.6%
Electrical	$1,305,000	ROFA + Rotamix cost						$1,352,000	3.6%
Piping	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Insulation	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Painting	included	Nalco-Mobotec proposal, 2/1/2008						included	3.6%
Demolition	$756,000	ROFA + Rotamix cost						$783,000	3.6%
Relocation	$656,000	ROFA + Rotamix cost						$680,000	3.6%
Total direct installation costs (DIC)	$8,076,000							$8,367,000	
Air preheater modifications	$1,071,000	B&V cost estimate						$1,134,000	5.9%
Site preparation	$0	N/A						$0	
Buildings	$0	N/A						$0	
Total direct costs (DC) = (PEC) + (DIC)	$22,255,000							$23,382,000	
Indirect Costs									
Engineering	$2,300,000	ROFA + Rotamix cost						$2,383,000	3.6%
Owner's cost	$1,113,000	(DC) X	5.0%					$1,169,000	
Construction management	$1,966,000	ROFA + Rotamix cost						$2,037,000	3.6%
Start-up and spare parts	$668,000	(DC) X	3.0%					$701,000	
Performance test	$100,000	(DC) X	Engineering estimate					$100,000	No escalation
Contingencies	$4,451,000	(DC) X	20.0%					$4,676,000	
Total indirect costs (IC)	$10,598,000							$11,066,000	
Interest During Construction (IDC)	$1,217,000	[(DC)+(IC)] X	7.41%	1 years (project time length X 1/2)				$1,276,000	
Total Capital Investment (TCI) = (DC) + (IC) + (IDC)	**$34,070,000**							**$35,724,000**	
ANNUAL COST									
Direct Annual Costs									
Fixed annual costs									
Operating labor	$125,000		1 FTE and	124,862 $/year	Estimated level				
Maintenance labor and materials	$668,000	(DC) X	3.0%						
Total fixed annual costs	$793,000								
Variable annual costs									
Reagent	$2,722,000		1,741 lb/hr and	420 $/ton	Nalco Mobotec prop.				
Auxiliary and ID fan power	$2,810,000		6,186 kW and	0.061 $/kWh	Nalco Mobotec prop.				
Water	$5,000		32 gpm and	0.33 $/1,000 gal	Nalco Mobotec prop.				
Total variable annual costs	$5,537,000								
Total direct annual costs (DAC)	$6,330,000								
Indirect Annual Costs									
Cost for capital recovery	$3,480,000	(TCI) X	9.74%	CRF at 7.41% interest & 20 year life					
Total indirect annual costs (IDAC)	$3,480,000			*Calculated from escalated costs*					
Total Annual Cost (TAC) = (DAC) + (IDAC)	**$9,810,000**								

Attachment 5

CALPUFF Modeling Stack Parameter Tables

Public Service Company of New Mexico (PNM) - San Juan Generating Station (SJGS) Unit 1
Best Available Retrofit Technology (BART) Engineering Analysis
Stack Outlet Conditions for Visibility Modeling (24-hour Average Emission Rates) Rev. 9

SJGS Unit 1, Heat Input (HHV) = 3,707 MBtu/hr

Stack Outlet Conditions	Flow (acfm)	Stack Velocity (ft/s)	Temperature (°F)	Pressure (in, wg)	NO_x (lb/MBtu)	NO_x (lb/hr)	SO_2 (lb/MBtu)	SO_2 (lb/hr)	PM (lb/MBtu)	PM (lb/hr)	SO_3 (lb/MBtu)	SO_3 (lb/hr)	NH_3 Slip (ppm)	NH_3 Slip (lb/hr)
Visibility Modeling Baseline Case														
Baseline Upgrades (LNB/OFA, PJFF)	1,323,494	70	121	0.01	0.33	1,223.3	0.18	667.3	0.015	55.6	0.011	40.5	NA	NA
NO_x Control Technologies														
1. SNCR	1,323,904	70	121	0.01	0.23	852.6	0.18	667.3	0.015	55.6	0.011	40.5	5	15.9

Notes

1. Emission levels (lb/MBtu) shown are on a 24-hour average basis.
2. Emission in (lb/hr) is calculated based on the emission level (lb/MBtu) and design basis heat input.
3. Emission levels on a 24-hour average basis are assumed to be similar to the annual average basis.
4. Baseline upgrades emissions for visibility modeling purpose are based on information provided by PNM, 4/19/2007.
5. Stack velocity is calculated based upon volumetric flowrate and 6.10 m stack diameter.
6. All flow conditions are based on the coal as shown in the Design Basis document.
7. All SO_3 emissions are reported as Sulfuric Acid Mist (H_2SO_4).
8. SO_3 emissions for the baseline cases are determined using the National Park Service calculation formula.

Public Service Company of New Mexico (PNM) - San Juan Generating Station (SJGS) Unit 2
Best Available Retrofit Technology (BART) Engineering Analysis
Stack Outlet Conditions for Visibility Modeling (24-hour Average Emission Rates) Rev. 9

SJGS Unit 2, Heat Input (HHV) = 3,688 MBtu/hr

Stack Outlet Conditions	Flow (acfm)	Stack Velocity (ft/s)	Temperature (°F)	Pressure (in. wg)	NO_x (lb/MBtu)	NO_x (lb/hr)	SO_2 (lb/MBtu)	SO_2 (lb/hr)	PM (lb/MBtu)	PM (lb/hr)	SO_3 (lb/MBtu)	SO_3 (lb/hr)	NH_3 Slip (ppm)	NH_3 Slip (lb/hr)
Visibility Modeling Baseline Case														
Baseline Upgrades (LNB/OFA, PJFF)	1,316,710	70	121	0.01	0.33	1,217.0	0.18	663.8	0.015	55.3	0.011	40.3	NA	NA
NO_x Control Technologies														
1. SNCR	1,317,120	70	121	0.01	0.23	848.2	0.18	663.8	0.015	55.3	0.011	40.3	5	15.9

Notes

1. Emission levels (lb/MBtu) shown are on a 24-hour average basis.
2. Emission in (lb/hr) is calculated based on the emission level (lb/MBtu) and design basis heat input.
3. Emission levels on a 24-hour average basis are assumed to be similar to the annual average basis.
4. Baseline upgrades emissions for visibility modeling purpose are based on information provided by PNM, 4/19/2007.
5. Stack velocity is calculated based upon volumetric flowrate and 6.10 m stack diameter.
6. All flow conditions are based on the coal as shown in the Design Basis document.
7. All SO_3 emissions are reported as Sulfuric Acid Mist (H_2SO_4).
8. SO_3 emissions for the baseline cases are determined using the National Park Service calculation formula.

Public Service Company of New Mexico (PNM) - San Juan Generating Station (SJGS) Unit 3
Best Available Retrofit Technology (BART) Engineering Analysis
Stack Outlet Conditions for Visibility Modeling (24-hour Average Emission Rates) Rev. 9

SJGS Unit 3, Heat Input (HHV) = 5,758 MBtu/hr

Stack Outlet Conditions	Flow (acfm)	Stack Velocity (ft/s)	Temperature (°F)	Pressure (in, wg)	NO_x (lb/MBtu)	NO_x (lb/hr)	SO_2 (lb/MBtu)	SO_2 (lb/hr)	PM (lb/MBtu)	PM (lb/hr)	SO_3 (lb/MBtu)	SO_3 (lb/hr)	NH_3 Slip (ppm)	NH_3 Slip (lb/hr)
Visibility Modeling Baseline Case														
Baseline Upgrades (LNB/OFA, PJFF)	2,055,753	56	121	0.01	0.33	1,900.1	0.18	1,036.4	0.015	86.4	0.011	62.9	NA	NA
NO_x Control Technologies														
1. SNCR	2,056,389	56	121	0.01	0.23	1,324.3	0.18	1,036.4	0.015	86.4	0.011	62.9	5	24.8

Notes

1. Emission levels (lb/MBtu) shown are on a 24-hour average basis.
2. Emission in (lb/hr) is calculated based on the emission level (lb/MBtu) and design basis heat input.
3. Emission levels on a 24-hour average basis are assumed to be similar to the annual average basis.
4. Baseline upgrades emissions for visibility modeling purpose are based on information provided by PNM, 4/19/2007.
5. Stack velocity is calculated based upon volumetric flowrate and 6.10 m stack diameter.
6. All flow conditions are based on the coal as shown in the Design Basis document.
7. All SO_3 emissions are reported as Sulfuric Acid Mist (H_2SO_4).
8. SO_3 emissions for the baseline cases are determined using the National Park Service calculation formula.

Public Service Company of New Mexico (PNM) - San Juan Generating Station (SJGS) Unit 4
Best Available Retrofit Technology (BART) Engineering Analysis
Stack Outlet Conditions for Visibility Modeling (24-hour Average Emission Rates) Rev. 9

SJGS Unit 4, Heat Input (HHV) = 5,649 MBtu/hr

Stack Outlet Conditions	Flow (acfm)	Stack Velocity (ft/s)	Temperature (°F)	Pressure (in, wg)	NO_x (lb/MBtu)	NO_x (lb/hr)	SO_2 (lb/MBtu)	SO_2 (lb/hr)	PM (lb/MBtu)	PM (lb/hr)	SO_3 (lb/MBtu)	SO_3 (lb/hr)	NH_3 Slip (ppm)	NH_3 Slip (lb/hr)
Visibility Modeling Baseline Case														
Baseline Upgrades (LNB/OFA, PJFF)	2,016,837	55	121	0.01	0.33	1,864.2	0.18	1,016.8	0.015	84.7	0.011	61.7	NA	NA
NO_x Control Technologies														
1. SNCR	2,017,473	55	121	0.01	0.23	1,299.3	0.18	1,016.8	0.015	84.7	0.011	61.7	5	24.3

Notes

1. Emission levels (lb/MBtu) shown are on a 24-hour average basis.
2. Emission in (lb/hr) is calculated based on the emission level (lb/MBtu) and design basis heat input.
3. Emission levels on a 24-hour average basis are assumed to be similar to the annual average basis.
4. Baseline upgrades emissions for visibility modeling purpose are based on information provided by PNM, 4/19/2007.
5. Stack velocity is calculated based upon volumetric flowrate and 6.10 m stack diameter.
6. All flow conditions are based on the coal as shown in the Design Basis document.
7. All SO_3 emissions are reported as Sulfuric Acid Mist (H_2SO_4).
8. SO_3 emissions for the baseline cases are determined using the National Park Service calculation formula.

Attachment 6

Summary of 2001 to 2003 CALPUFF Results and Visibility and Associated $/dv Summary

Facility

Table 1
Baseline Visibility Modeling Results
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile for Each Year (dv)

Class I Area	2001	2002	2003	Average	Maximum
Arches	1.69	1.65	1.49	1.61	1.69
Bandelier	1.04	1.56	1.20	1.27	1.56
Black Canyon	0.95	1.15	1.07	1.05	1.15
Canyonlands	2.26	1.73	1.68	1.89	2.26
Capitol Reef	1.81	0.82	1.05	1.23	1.81
Grand Canyon	0.97	0.76	0.57	0.77	0.97
Great Sand Dunes	0.63	0.71	0.64	0.66	0.71
La Garita	0.86	0.94	0.90	0.90	0.94
Maroon Bells	0.54	0.56	0.51	0.54	0.56
Mesa Verde	3.38	3.53	3.80	3.57	3.80
Pecos	1.05	1.09	1.00	1.05	1.09
Petrified Forest	0.82	0.60	0.53	0.65	0.82
San Pedro	1.40	2.01	1.56	1.66	2.01
West Elk	0.80	0.91	0.83	0.85	0.91
Weminuche	1.15	1.48	1.34	1.33	1.48
Wheeler Peak	0.75	0.86	0.89	0.83	0.89
Overall				**1.24**	**3.80**

Table 2
SNCR Reduction Visibility Modeling Results
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile Impact for Each Year (dv)[1]

Class I Area	2001	2002	2003	Average	Maximum
Arches	1.61	1.49	1.27	1.45	1.61
Bandelier	0.91	1.35	1.14	1.13	1.35
Black Canyon	0.84	0.98	0.96	0.92	0.98
Canyonlands	2.13	1.60	1.60	1.78	2.13
Capitol Reef	1.62	0.71	0.98	1.10	1.62
Grand Canyon	0.84	0.64	0.57	0.68	0.84
Great Sand Dunes	0.57	0.61	0.51	0.56	0.61
La Garita	0.74	0.79	0.77	0.77	0.79
Maroon Bells	0.50	0.47	0.43	0.47	0.50
Mesa Verde	3.35	3.21	3.58	3.38	3.58
Pecos	0.88	0.92	0.91	0.90	0.92
Petrified Forest	0.77	0.54	0.50	0.60	0.77
San Pedro	1.30	1.77	1.47	1.51	1.77
West Elk	0.73	0.76	0.69	0.73	0.76
Weminuche	1.03	1.32	1.14	1.16	1.32
Wheeler Peak	0.68	0.75	0.74	0.72	0.75
Overall				**1.12**	**3.58**

[1] SNCR @ 0.23 lb/MBtu NOx for all Units.

Table 3

SJGS Visibility Improvement Cost Effectiveness (Based on Maximum Visibility Modeling Results)
Variable Ammonia Background and Nitrate Repartitioning

	Maximum Visibility Modeling Results (dv) (98th Percentile, see Note 1)		Visibility Improvements (dv) Calculated from Maximum Visibility Results (for each Class I Area)	Improvement ($/dv) (see Note 2)
Class I Area	Baseline	SNCR Control Run[3]	Baseline to SNCR	Baseline to SNCR
Arches	1.69	1.61	0.09	$198,611,764.71
Bandelier	1.56	1.35	0.21	$81,163,461.54
Black Canyon	1.15	0.98	0.17	$98,725,146.20
Canyonlands	2.26	2.13	0.13	$130,868,217.05
Capitol Reef	1.81	1.62	0.19	$88,387,434.55
Grand Canyon	0.97	0.84	0.13	$127,893,939.39
Great Sand Dunes	0.71	0.61	0.10	$162,326,923.08
La Garita	0.94	0.79	0.16	$108,916,129.03
Maroon Bells	0.56	0.50	0.06	$267,968,253.97
Mesa Verde	3.80	3.58	0.22	$78,520,930.23
Pecos	1.09	0.92	0.18	$95,920,454.55
Petrified Forest	0.82	0.77	0.05	$351,708,333.33
San Pedro	2.01	1.77	0.25	$68,348,178.14
West Elk	0.91	0.76	0.16	$106,848,101.27
Weminuche	1.48	1.32	0.16	$104,209,876.54
Wheeler Peak	0.89	0.75	0.14	$117,236,111.11

Notes:

1. Maximum of 2001, 2002 and 2003 visibility data.
2. Total Annualized Costs used in calculating Improvement are as follows (in $1,000):
   Baseline to SNCR. $16,882
3. SNCR @ 0.23 lb/MMBtu of NOx for all Units.

Units 1-4

Table 4
Baseline Visibility Modeling Results Unit 1
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile for Each Year (dv)

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.69	0.54	0.52	0.58	0.69
Bandelier	0.24	0.40	0.37	0.34	0.40
Black Canyon	0.29	0.29	0.28	0.29	0.29
Canyonlands	1.00	0.65	0.57	0.74	1.00
Capitol Reef	0.57	0.18	0.23	0.33	0.57
Grand Canyon	0.27	0.16	0.12	0.18	0.27
Great Sand Dunes	0.14	0.14	0.14	0.14	0.14
La Garita	0.19	0.21	0.21	0.20	0.21
Maroon Bells	0.14	0.12	0.11	0.12	0.14
Mesa Verde	1.35	1.40	1.27	1.34	1.40
Pecos	0.23	0.24	0.27	0.25	0.27
Petrified Forest	0.19	0.13	0.11	0.14	0.19
San Pedro	0.44	0.59	0.50	0.51	0.59
West Elk	0.22	0.20	0.20	0.21	0.22
Weminuche	0.31	0.43	0.35	0.36	0.43
Wheeler Peak	0.19	0.17	0.20	0.19	0.20
Overall				**0.37**	**1.40**

Table 5
SNCR Reduction Visibility Modeling Results Unit 1
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile Impact for Each Year (dv)[1]

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.56	0.43	0.44	0.48	0.56
Bandelier	0.20	0.32	0.29	0.27	0.32
Black Canyon	0.22	0.22	0.22	0.22	0.22
Canyonlands	0.85	0.51	0.48	0.61	0.85
Capitol Reef	0.45	0.14	0.21	0.27	0.45
Grand Canyon	0.21	0.14	0.12	0.16	0.21
Great Sand Dunes	0.12	0.12	0.11	0.12	0.12
La Garita	0.16	0.17	0.17	0.17	0.17
Maroon Bells	0.11	0.10	0.09	0.10	0.11
Mesa Verde	1.17	1.23	1.11	1.17	1.23
Pecos	0.18	0.20	0.23	0.21	0.23
Petrified Forest	0.16	0.11	0.10	0.12	0.16
San Pedro	0.35	0.47	0.42	0.41	0.47
West Elk	0.18	0.16	0.16	0.17	0.18
Weminuche	0.25	0.36	0.30	0.30	0.36
Wheeler Peak	0.16	0.14	0.17	0.15	0.17
Overall				**0.31**	**1.23**

[1] SNCR @ 0.23 lb/MBtu NOx for Unit 1.

Table 6

Unit 1 Visibility Improvement Cost Effectiveness (Based on Maximum Visibility Modeling Results)
Variable Ammonia Background and Nitrate Repartitioning

	Maximum Visibility Modeling Results (dv) (98th Percentile, see Note 1)		Visibility Improvements (dv) Calculated from Maximum Visibility Results (for each Class I Area)	Improvement ($/dv) (see Note 2)
Class 1 Area	Baseline	SNCR Control Run[3]	Baseline to SNCR	Baseline to SNCR
Arches	0.69	0.56	0.13	$27,984,375.00
Bandelier	0.40	0.32	0.08	$44,222,222.22
Black Canyon	0.29	0.22	0.07	$52,676,470.59
Canyonlands	1.00	0.85	0.15	$24,202,702.70
Capitol Reef	0.57	0.45	0.12	$29,360,655.74
Grand Canyon	0.27	0.21	0.06	$63,964,285.71
Great Sand Dunes	0.14	0.12	0.02	$199,000,000.00
La Garita	0.21	0.17	0.04	$89,550,000.00
Maroon Bells	0.14	0.11	0.03	$115,548,387.10
Mesa Verde	1.40	1.23	0.17	$20,705,202.31
Pecos	0.27	0.23	0.04	$89,550,000.00
Petrified Forest	0.19	0.16	0.03	$123,517,241.38
San Pedro	0.59	0.47	0.13	$28,656,000.00
West Elk	0.22	0.18	0.04	$85,285,714.29
Weminuche	0.43	0.36	0.07	$50,450,704.23
Wheeler Peak	0.20	0.17	0.03	$123,517,241.38

Notes:

1. Maximum of 2001, 2002 and 2003 visibility data.
2. Total Annualized Costs used in calculating Improvement are as follows (in $1,000):
   Baseline to SNCR. $3,582
3. SNCR @ 0.23 lb/MMBtu of NOx for Unit 1.

Table 7
Baseline Visibility Modeling Results Unit 2
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile for Each Year (dv)

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.69	0.54	0.52	0.58	0.69
Bandelier	0.23	0.40	0.37	0.33	0.40
Black Canyon	0.28	0.29	0.28	0.28	0.29
Canyonlands	0.99	0.65	0.57	0.74	0.99
Capitol Reef	0.57	0.18	0.23	0.33	0.57
Grand Canyon	0.27	0.16	0.12	0.18	0.27
Great Sand Dunes	0.14	0.14	0.14	0.14	0.14
La Garita	0.19	0.21	0.21	0.20	0.21
Maroon Bells	0.14	0.11	0.11	0.12	0.14
Mesa Verde	1.35	1.40	1.26	1.34	1.40
Pecos	0.23	0.24	0.27	0.25	0.27
Petrified Forest	0.19	0.13	0.11	0.14	0.19
San Pedro	0.44	0.58	0.50	0.51	0.58
West Elk	0.22	0.20	0.20	0.21	0.22
Weminuche	0.31	0.42	0.35	0.36	0.42
Wheeler Peak	0.18	0.17	0.20	0.18	0.20
Overall				**0.37**	**1.40**

Table 8
SNCR Reduction Visibility Modeling Results Unit 2
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile Impact for Each Year (dv)[1]

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.56	0.43	0.44	0.47	0.56
Bandelier	0.20	0.32	0.29	0.27	0.32
Black Canyon	0.22	0.22	0.22	0.22	0.22
Canyonlands	0.85	0.51	0.48	0.61	0.85
Capitol Reef	0.45	0.14	0.21	0.27	0.45
Grand Canyon	0.21	0.14	0.12	0.16	0.21
Great Sand Dunes	0.12	0.12	0.11	0.12	0.12
La Garita	0.16	0.17	0.17	0.17	0.17
Maroon Bells	0.11	0.10	0.09	0.10	0.11
Mesa Verde	1.16	1.22	1.10	1.16	1.22
Pecos	0.18	0.20	0.23	0.20	0.23
Petrified Forest	0.16	0.11	0.10	0.12	0.16
San Pedro	0.35	0.46	0.42	0.41	0.46
West Elk	0.18	0.16	0.16	0.17	0.18
Weminuche	0.24	0.36	0.29	0.30	0.36
Wheeler Peak	0.16	0.13	0.17	0.15	0.17
Overall				**0.31**	**1.22**

[1] SNCR @ 0.23 lb/MBtu NOx for Unit 2.

Table 9

Unit 2 Visibility Improvement Cost Effectiveness (Based on Maximum Visibility Modeling Results)
Variable Ammonia Background and Nitrate Repartitioning

	Maximum Visibility Modeling Results (dv) (98th Percentile, see Note 1)		Visibility Improvements (dv) Calculated from Maximum Visibility Results (for each Class I Area)	Improvement ($/dv) (see Note 2)
Class 1 Area	Baseline	SNCR Control Run[3]	Baseline to SNCR	Baseline to SNCR
Arches	0.69	0.56	0.13	$27,553,846.15
Bandelier	0.40	0.32	0.08	$43,156,626.51
Black Canyon	0.29	0.22	0.07	$51,913,043.48
Canyonlands	0.99	0.85	0.14	$25,225,352.11
Capitol Reef	0.57	0.45	0.12	$28,887,096.77
Grand Canyon	0.27	0.21	0.06	$62,842,105.26
Great Sand Dunes	0.14	0.12	0.02	$188,526,315.79
La Garita	0.21	0.17	0.04	$87,365,853.66
Maroon Bells	0.14	0.11	0.03	$111,937,500.00
Mesa Verde	1.40	1.22	0.18	$20,123,595.51
Pecos	0.27	0.23	0.04	$87,365,853.66
Petrified Forest	0.19	0.16	0.03	$119,400,000.00
San Pedro	0.58	0.46	0.12	$30,615,384.62
West Elk	0.22	0.18	0.04	$83,302,325.58
Weminuche	0.42	0.36	0.06	$56,857,142.86
Wheeler Peak	0.20	0.17	0.03	$119,400,000.00

Notes:

1. Maximum of 2001, 2002 and 2003 visibility data.
2. Total Annualized Costs used in calculating Improvement are as follows (in $1,000):
   Baseline to SNCR. $3,582
3. SNCR @ 0.23 lb/MMBtu of NOx for Unit 2.

Table 10
Baseline Visibility Modeling Results Unit 3
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile for Each Year (dv)

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.89	0.65	0.66	0.73	0.89
Bandelier	0.39	0.57	0.61	0.52	0.61
Black Canyon	0.44	0.41	0.46	0.44	0.46
Canyonlands	1.15	0.85	0.79	0.93	1.15
Capitol Reef	0.86	0.26	0.36	0.49	0.86
Grand Canyon	0.35	0.24	0.19	0.26	0.35
Great Sand Dunes	0.21	0.24	0.21	0.22	0.24
La Garita	0.29	0.33	0.33	0.32	0.33
Maroon Bells	0.20	0.18	0.18	0.19	0.20
Mesa Verde	1.56	1.90	1.74	1.73	1.90
Pecos	0.35	0.36	0.42	0.38	0.42
Petrified Forest	0.29	0.18	0.17	0.21	0.29
San Pedro	0.70	0.81	0.72	0.74	0.81
West Elk	0.30	0.33	0.35	0.33	0.35
Weminuche	0.44	0.64	0.50	0.53	0.64
Wheeler Peak	0.28	0.31	0.28	0.29	0.31
Overall				**0.52**	**1.90**

Table 11
SNCR Reduction Visibility Modeling Results Unit 3
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile Impact for Each Year (dv)[1]

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.78	0.53	0.54	0.62	0.78
Bandelier	0.31	0.49	0.49	0.43	0.49
Black Canyon	0.35	0.33	0.37	0.35	0.37
Canyonlands	1.01	0.69	0.67	0.79	1.01
Capitol Reef	0.69	0.23	0.32	0.41	0.69
Grand Canyon	0.28	0.20	0.18	0.22	0.28
Great Sand Dunes	0.18	0.19	0.16	0.18	0.19
La Garita	0.26	0.27	0.26	0.27	0.27
Maroon Bells	0.16	0.15	0.14	0.15	0.16
Mesa Verde	1.49	1.73	1.57	1.60	1.73
Pecos	0.29	0.30	0.36	0.31	0.36
Petrified Forest	0.27	0.17	0.16	0.20	0.27
San Pedro	0.58	0.66	0.59	0.61	0.66
West Elk	0.24	0.26	0.27	0.26	0.27
Weminuche	0.35	0.53	0.40	0.43	0.53
Wheeler Peak	0.22	0.26	0.23	0.24	0.26
Overall				**0.44**	**1.73**

[1] SNCR @ 0.23 lb/MBtu NOx for Unit 3.

Table 12

Unit 3 Visibility Improvement Cost Effectiveness (Based on Maximum Visibility Modeling Results)
Variable Ammonia Background and Nitrate Repartitioning

	Maximum Visibility Modeling Results (dv) (98th Percentile, see Note 1)		Visibility Improvements (dv) Calculated from Maximum Visibility Results (for each Class I Area)	Improvement ($/dv) (see Note 2)
Class 1 Area	Baseline	SNCR Control Run[3]	Baseline to SNCR	Baseline to SNCR
Arches	0.89	0.78	0.11	$43,383,928.57
Bandelier	0.61	0.49	0.12	$40,491,666.67
Black Canyon	0.46	0.37	0.09	$53,988,888.89
Canyonlands	1.15	1.01	0.15	$33,510,344.83
Capitol Reef	0.86	0.69	0.17	$28,582,352.94
Grand Canyon	0.35	0.28	0.08	$64,786,666.67
Great Sand Dunes	0.24	0.19	0.05	$105,630,434.78
La Garita	0.33	0.27	0.06	$85,245,614.04
Maroon Bells	0.20	0.16	0.04	$118,512,195.12
Mesa Verde	1.90	1.73	0.17	$27,925,287.36
Pecos	0.42	0.36	0.06	$79,655,737.70
Petrified Forest	0.29	0.27	0.02	$211,260,869.57
San Pedro	0.81	0.66	0.15	$31,758,169.93
West Elk	0.35	0.27	0.08	$63,103,896.10
Weminuche	0.64	0.53	0.11	$43,774,774.77
Wheeler Peak	0.31	0.26	0.05	$91,679,245.28

Notes:

1. Maximum of 2001, 2002 and 2003 visibility data.
2. Total Annualized Costs used in calculating Improvement are as follows (in $1,000):
   Baseline to SNCR. $4,859
3. SNCR @ 0.23 lb/MMBtu of NOx for Unit 3.

Table 13
Baseline Visibility Modeling Results Unit 4
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile for Each Year (dv)

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.88	0.65	0.63	0.72	0.88
Bandelier	0.38	0.56	0.60	0.51	0.60
Black Canyon	0.42	0.42	0.44	0.43	0.44
Canyonlands	1.14	0.85	0.78	0.92	1.14
Capitol Reef	0.86	0.26	0.35	0.49	0.86
Grand Canyon	0.36	0.24	0.18	0.26	0.36
Great Sand Dunes	0.21	0.23	0.21	0.22	0.23
La Garita	0.28	0.32	0.32	0.31	0.32
Maroon Bells	0.20	0.19	0.18	0.19	0.20
Mesa Verde	1.55	1.89	1.73	1.72	1.89
Pecos	0.34	0.35	0.41	0.37	0.41
Petrified Forest	0.29	0.18	0.17	0.21	0.29
San Pedro	0.69	0.80	0.69	0.73	0.80
West Elk	0.30	0.33	0.33	0.32	0.33
Weminuche	0.43	0.63	0.49	0.52	0.63
Wheeler Peak	0.28	0.30	0.28	0.29	0.30
Overall				**0.51**	**1.89**

Table 14
SNCR Reduction Visibility Modeling Results Unit 4
Variable Ammonia Background and Nitrate Repartitioning
98th Percentile Impact for Each Year (dv)[1]

Class I Area	2001	2002	2003	Average	Maximum
Arches	0.77	0.53	0.51	0.61	0.77
Bandelier	0.30	0.47	0.48	0.42	0.48
Black Canyon	0.34	0.33	0.36	0.34	0.36
Canyonlands	1.00	0.69	0.66	0.79	1.00
Capitol Reef	0.69	0.22	0.32	0.41	0.69
Grand Canyon	0.28	0.20	0.17	0.22	0.28
Great Sand Dunes	0.18	0.19	0.16	0.18	0.19
La Garita	0.25	0.27	0.25	0.26	0.27
Maroon Bells	0.16	0.15	0.14	0.15	0.16
Mesa Verde	1.49	1.71	1.56	1.59	1.71
Pecos	0.28	0.29	0.35	0.31	0.35
Petrified Forest	0.26	0.17	0.15	0.19	0.26
San Pedro	0.57	0.65	0.57	0.59	0.65
West Elk	0.24	0.26	0.26	0.25	0.26
Weminuche	0.35	0.52	0.39	0.42	0.52
Wheeler Peak	0.22	0.25	0.23	0.23	0.25
Overall				**0.43**	**1.71**

[1] SNCR @ 0.23 lb/MBtu NOx for Unit 4.

Table 15

Unit 4 Visibility Improvement Cost Effectiveness (Based on Maximum Visibility Modeling Results)
Variable Ammonia Background and Nitrate Repartitioning

	Maximum Visibility Modeling Results (dv) (98th Percentile, see Note 1)		Visibility Improvements (dv) Calculated from Maximum Visibility Results (for each Class I Area)	Improvement ($/dv) (see Note 2)
Class 1 Area	Baseline	SNCR Control Run[3]	Baseline to SNCR	Baseline to SNCR
Arches	0.88	0.77	0.11	$44,990,740.74
Bandelier	0.60	0.48	0.12	$40,157,024.79
Black Canyon	0.44	0.36	0.08	$59,256,097.56
Canyonlands	1.14	1.00	0.14	$35,210,144.93
Capitol Reef	0.86	0.69	0.17	$28,415,204.68
Grand Canyon	0.36	0.28	0.08	$63,934,210.53
Great Sand Dunes	0.23	0.19	0.04	$118,512,195.12
La Garita	0.32	0.27	0.05	$91,679,245.28
Maroon Bells	0.20	0.16	0.04	$124,589,743.59
Mesa Verde	1.89	1.71	0.18	$26,994,444.44
Pecos	0.41	0.35	0.06	$86,767,857.14
Petrified Forest	0.29	0.26	0.03	$173,535,714.29
San Pedro	0.80	0.65	0.15	$31,551,948.05
West Elk	0.33	0.26	0.07	$72,522,388.06
Weminuche	0.63	0.52	0.11	$44,990,740.74
Wheeler Peak	0.30	0.25	0.05	$99,163,265.31

Notes:

1. Maximum of 2001, 2002 and 2003 visibility data.
2. Total Annualized Costs used in calculating Improvement are as follows (in $1,000):
   Baseline to SNCR. $4,859
3. SNCR @ 0.23 lb/MMBtu of NOx for Unit 4.

Attachment 7

Summary of 2001 to 2003
98th Percentile CALPUFF Results

Facility

PNM SJGS BART Modeling - Facility
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	47	1.69	33.57	62.13	1.88	0.48	0.48	1.46	100
BAND	49	1.04	30.40	66.83	1.26	0.32	0.23	0.97	100
BLCA	26	0.95	37.13	57.66	2.28	0.58	0.58	1.76	100
CANY	67	2.26	55.66	38.57	2.53	0.65	0.62	1.98	100
CARE	28	1.81	52.95	42.68	1.91	0.49	0.48	1.49	100
GRCA	12	0.97	38.14	59.75	0.93	0.24	0.19	0.75	100
GRSA	14	0.63	38.82	54.18	3.18	0.81	0.53	2.47	100
LAGA	20	0.86	38.38	59.80	0.81	0.21	0.15	0.65	100
MABE	10	0.54	69.46	25.41	2.29	0.59	0.43	1.83	100
MEVE	157	3.38	75.39	9.84	6.26	1.60	2.09	4.82	100
PECO	35	1.05	80.51	15.41	1.83	0.47	0.36	1.43	100
PEFO	14	0.82	27.95	69.41	1.18	0.30	0.25	0.92	100
SAPE	93	1.40	39.89	53.93	2.71	0.69	0.68	2.09	100
WEEL	19	0.80	37.76	60.62	0.70	0.18	0.19	0.55	100
WEMI	53	1.15	28.74	65.59	2.44	0.62	0.72	1.88	100
WHPE	27	0.75	30.82	66.18	1.36	0.35	0.23	1.06	100

PNM SJGS BART Modeling - Facility
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	32	1.65	49.70	47.38	1.28	0.33	0.30	1.01	100
BAND	61	1.56	37.39	59.91	1.19	0.30	0.27	0.93	100
BLCA	30	1.15	31.11	65.99	1.28	0.33	0.28	1.02	100
CANY	57	1.73	52.51	43.96	1.55	0.40	0.35	1.23	100
CARE	18	0.82	91.30	1.66	3.11	0.79	0.69	2.46	100
GRCA	10	0.76	44.30	54.26	0.64	0.16	0.12	0.52	100
GRSA	17	0.71	28.48	69.87	0.74	0.19	0.13	0.60	100
LAGA	40	0.94	26.32	71.29	1.07	0.27	0.22	0.84	100
MABE	11	0.56	84.39	12.71	1.31	0.33	0.23	1.03	100
MEVE	162	3.53	85.08	5.44	4.14	1.06	1.04	3.24	100
PECO	41	1.09	41.87	56.64	0.66	0.17	0.13	0.53	100
PEFO	9	0.60	28.65	69.64	0.76	0.19	0.13	0.62	100
SAPE	109	2.01	46.15	47.36	2.82	0.72	0.76	2.19	100
WEEL	24	0.91	30.66	67.44	0.86	0.22	0.14	0.68	100
WEMI	83	1.48	57.20	35.77	3.02	0.77	0.91	2.32	100
WHPE	20	0.86	47.51	47.27	2.35	0.60	0.43	1.84	100

PNM SJGS BART Modeling - Facility
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	27	1.49	30.95	67.01	0.89	0.23	0.21	0.71	100
BAND	57	1.20	77.97	17.21	2.11	0.54	0.52	1.65	100
BLCA	21	1.07	27.98	70.17	0.82	0.21	0.17	0.65	100
CANY	48	1.68	70.45	24.81	2.07	0.53	0.49	1.65	100
CARE	23	1.05	52.60	45.24	0.94	0.24	0.20	0.77	100
GRCA	9	0.57	93.89	1.17	2.19	0.56	0.46	1.74	100
GRSA	15	0.64	27.42	70.94	0.76	0.19	0.09	0.60	100
LAGA	28	0.90	23.76	71.98	1.99	0.51	0.18	1.58	100
MABE	8	0.51	27.63	69.59	1.22	0.31	0.28	0.97	100
MEVE	159	3.80	41.19	53.18	2.41	0.62	0.72	1.88	100
PECO	50	1.00	51.25	46.75	0.89	0.23	0.18	0.70	100
PEFO	9	0.53	32.43	65.01	1.15	0.29	0.18	0.93	100
SAPE	97	1.56	37.04	56.49	2.78	0.71	0.83	2.15	100
WEEL	22	0.83	28.10	67.91	1.74	0.44	0.44	1.36	100
WEMI	63	1.34	36.23	61.45	1.00	0.26	0.29	0.77	100
WHPE	27	0.89	91.09	5.38	1.60	0.41	0.26	1.25	100

PNM SJGS BART Modeling - Facility
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	44	1.61	72.81	19.83	3.28	0.84	0.54	2.71	100
BAND	42	0.91	42.35	53.31	1.92	0.49	0.46	1.49	100
BLCA	20	0.84	53.56	41.60	2.14	0.55	0.46	1.70	100
CANY	63	2.13	73.54	22.85	1.60	0.41	0.34	1.27	100
CARE	27	1.62	59.78	35.30	2.16	0.55	0.54	1.68	100
GRCA	11	0.84	44.44	53.10	1.09	0.28	0.22	0.87	100
GRSA	10	0.57	82.01	11.72	2.88	0.74	0.39	2.25	100
LAGA	14	0.74	33.33	61.80	2.16	0.55	0.48	1.68	100
MABE	7	0.50	45.94	50.47	1.61	0.41	0.29	1.27	100
MEVE	153	3.35	76.19	8.88	6.33	1.62	2.11	4.87	100
PECO	30	0.88	49.12	47.72	1.41	0.36	0.28	1.11	100
PEFO	13	0.77	88.60	7.79	1.58	0.40	0.38	1.24	100
SAPE	85	1.30	76.93	16.40	2.88	0.74	0.83	2.22	100
WEEL	16	0.73	43.95	54.37	0.76	0.19	0.13	0.60	100
WEMI	42	1.03	90.48	1.83	3.42	0.87	0.73	2.67	100
WHPE	20	0.68	81.21	12.88	2.65	0.68	0.51	2.07	100

PNM SJGS BART Modeling - Facility
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	30	1.49	41.03	53.51	2.38	0.61	0.62	1.85	100
BAND	50	1.35	41.58	51.66	2.97	0.76	0.73	2.29	100
BLCA	26	0.98	39.93	57.72	1.06	0.27	0.17	0.84	100
CANY	50	1.60	44.84	50.30	2.09	0.53	0.62	1.62	100
CARE	13	0.71	40.05	57.91	0.90	0.23	0.19	0.73	100
GRCA	10	0.64	52.99	45.29	0.76	0.19	0.14	0.63	100
GRSA	10	0.61	35.16	60.88	1.78	0.45	0.33	1.39	100
LAGA	22	0.79	33.99	59.77	2.77	0.71	0.62	2.14	100
MABE	6	0.47	36.12	61.24	1.17	0.30	0.23	0.93	100
MEVE	157	3.21	78.44	9.96	4.96	1.27	1.54	3.84	100
PECO	34	0.92	50.34	47.87	0.80	0.20	0.16	0.63	100
PEFO	8	0.54	36.19	60.97	1.27	0.32	0.21	1.04	100
SAPE	95	1.77	41.15	53.49	2.34	0.60	0.59	1.83	100
WEEL	20	0.76	42.88	51.47	2.54	0.65	0.48	1.99	100
WEMI	60	1.32	40.77	57.10	0.93	0.24	0.23	0.73	100
WHPE	17	0.75	38.81	59.44	0.78	0.20	0.15	0.62	100

PNM SJGS BART Modeling - Facility
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	24	1.27	75.89	21.42	1.18	0.30	0.26	0.94	100
BAND	49	1.14	82.29	12.61	2.23	0.57	0.55	1.74	100
BLCA	18	0.96	45.73	49.82	1.94	0.50	0.50	1.52	100
CANY	43	1.60	74.16	20.85	2.18	0.56	0.51	1.74	100
CARE	21	0.98	49.83	47.77	1.05	0.27	0.25	0.84	100
GRCA	8	0.57	94.24	0.81	2.19	0.56	0.46	1.74	100
GRSA	10	0.51	27.65	70.10	0.98	0.25	0.24	0.77	100
LAGA	14	0.77	54.10	42.54	1.49	0.38	0.34	1.16	100
MABE	6	0.43	33.03	63.63	1.46	0.37	0.34	1.16	100
MEVE	156	3.58	82.06	0.90	7.26	1.85	2.36	5.58	100
PECO	40	0.91	47.63	48.61	1.70	0.43	0.30	1.33	100
PEFO	6	0.50	90.98	5.08	1.76	0.45	0.31	1.41	100
SAPE	90	1.47	84.37	8.84	2.95	0.75	0.79	2.30	100
WEEL	14	0.69	33.89	61.30	2.10	0.54	0.53	1.64	100
WEMI	54	1.14	37.46	59.26	1.46	0.37	0.30	1.15	100
WHPE	22	0.74	37.08	59.00	1.77	0.45	0.29	1.40	100

Units 1 - 4

PNM SJGS BART Modeling - Unit 1
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	14	0.69	25.34	71.69	1.31	0.33	0.31	1.03	100
BAND	1	0.24	43.57	53.42	1.34	0.34	0.29	1.04	100
BLCA	2	0.29	23.45	74.26	0.99	0.25	0.26	0.78	100
CANY	22	1.00	38.19	59.52	1.01	0.26	0.23	0.80	100
CARE	11	0.57	26.93	71.52	0.67	0.17	0.17	0.53	100
GRCA	4	0.27	30.85	67.43	0.76	0.19	0.15	0.61	100
GRSA	0	0.14	21.45	76.75	0.80	0.20	0.17	0.63	100
LAGA	0	0.19	28.88	69.14	0.89	0.23	0.16	0.70	100
MABE	0	0.14	20.45	75.64	1.73	0.44	0.40	1.34	100
MEVE	38	1.35	35.69	59.62	2.00	0.51	0.63	1.55	100
PECO	1	0.23	25.62	70.23	1.82	0.47	0.44	1.41	100
PEFO	2	0.19	25.42	72.19	1.06	0.27	0.23	0.84	100
SAPE	7	0.44	27.36	69.47	1.39	0.36	0.35	1.08	100
WEEL	0	0.22	33.65	63.73	1.17	0.30	0.22	0.93	100
WEMI	2	0.31	30.63	61.38	3.48	0.89	0.91	2.70	100
WHPE	2	0.19	28.38	69.83	0.81	0.21	0.13	0.64	100

PNM SJGS BART Modeling - Unit 1
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.54	23.97	72.89	1.37	0.35	0.35	1.07	100
BAND	4	0.40	31.04	66.80	0.95	0.24	0.22	0.75	100
BLCA	1	0.29	25.16	72.63	0.98	0.25	0.20	0.78	100
CANY	13	0.65	23.43	73.82	1.20	0.31	0.31	0.94	100
CARE	3	0.18	31.45	66.94	0.71	0.18	0.15	0.57	100
GRCA	1	0.16	43.73	54.87	0.62	0.16	0.11	0.51	100
GRSA	0	0.14	27.52	70.87	0.72	0.19	0.12	0.58	100
LAGA	0	0.21	25.77	71.45	1.20	0.31	0.33	0.94	100
MABE	0	0.12	26.89	71.16	0.87	0.22	0.16	0.69	100
MEVE	52	1.40	60.18	31.05	3.70	0.95	1.26	2.86	100
PECO	3	0.24	40.91	57.63	0.65	0.17	0.13	0.52	100
PEFO	0	0.13	28.41	69.90	0.75	0.19	0.13	0.62	100
SAPE	16	0.59	26.83	69.85	1.45	0.37	0.35	1.14	100
WEEL	0	0.20	24.64	72.13	1.40	0.36	0.38	1.09	100
WEMI	6	0.43	24.32	73.64	0.90	0.23	0.19	0.72	100
WHPE	0	0.17	31.55	67.09	0.60	0.15	0.12	0.49	100

PNM SJGS BART Modeling - Unit 1
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.52	29.53	67.07	1.47	0.38	0.40	1.16	100
BAND	3	0.37	23.82	72.96	1.41	0.36	0.36	1.10	100
BLCA	0	0.28	25.40	72.77	0.80	0.20	0.19	0.64	100
CANY	12	0.57	38.31	60.22	0.65	0.17	0.14	0.52	100
CARE	2	0.23	31.26	65.22	1.53	0.39	0.39	1.20	100
GRCA	0	0.12	52.37	44.18	1.52	0.39	0.31	1.22	100
GRSA	1	0.14	27.01	70.46	1.12	0.29	0.22	0.89	100
LAGA	0	0.21	20.74	75.52	1.71	0.44	0.17	1.41	100
MABE	0	0.11	33.14	63.55	1.53	0.39	0.19	1.20	100
MEVE	48	1.27	41.93	48.61	4.01	1.03	1.33	3.10	100
PECO	1	0.27	46.70	51.27	0.91	0.23	0.15	0.73	100
PEFO	0	0.11	31.59	65.92	1.12	0.29	0.18	0.91	100
SAPE	7	0.50	26.74	68.42	2.08	0.53	0.62	1.61	100
WEEL	0	0.20	20.88	76.49	1.15	0.30	0.29	0.90	100
WEMI	3	0.35	45.71	42.80	4.96	1.27	1.43	3.84	100
WHPE	0	0.20	22.74	73.74	1.56	0.40	0.34	1.23	100

PNM SJGS BART Modeling - Unit 2
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	14	0.69	25.31	71.71	1.31	0.34	0.31	1.02	100
BAND	1	0.23	43.57	53.42	1.34	0.34	0.29	1.03	100
BLCA	2	0.28	23.45	74.26	1.00	0.26	0.26	0.77	100
CANY	22	0.99	38.13	59.58	1.01	0.26	0.23	0.80	100
CARE	10	0.57	26.92	71.52	0.68	0.17	0.17	0.53	100
GRCA	4	0.27	30.84	67.43	0.76	0.20	0.15	0.61	100
GRSA	0	0.14	21.45	76.75	0.80	0.21	0.17	0.62	100
LAGA	0	0.19	28.87	69.14	0.89	0.23	0.16	0.70	100
MABE	0	0.14	20.45	75.64	1.74	0.44	0.40	1.33	100
MEVE	38	1.35	35.54	59.78	2.00	0.51	0.63	1.53	100
PECO	1	0.23	25.62	70.23	1.83	0.47	0.44	1.40	100
PEFO	2	0.19	25.42	72.18	1.07	0.27	0.23	0.83	100
SAPE	7	0.44	27.35	69.47	1.40	0.36	0.35	1.07	100
WEEL	0	0.22	33.65	63.72	1.18	0.30	0.22	0.92	100
WEMI	2	0.31	30.63	61.38	3.50	0.90	0.91	2.69	100
WHPE	2	0.18	28.38	69.83	0.82	0.21	0.13	0.64	100

PNM SJGS BART Modeling - Unit 2
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.54	23.96	72.89	1.38	0.35	0.35	1.07	100
BAND	4	0.40	31.03	66.81	0.95	0.24	0.22	0.74	100
BLCA	1	0.29	25.16	72.63	0.98	0.25	0.20	0.78	100
CANY	13	0.65	23.42	73.82	1.20	0.31	0.31	0.93	100
CARE	3	0.18	31.45	66.94	0.71	0.18	0.15	0.57	100
GRCA	1	0.16	43.73	54.87	0.62	0.16	0.11	0.51	100
GRSA	0	0.14	27.52	70.87	0.73	0.19	0.12	0.58	100
LAGA	0	0.21	25.77	71.45	1.21	0.31	0.33	0.93	100
MABE	0	0.11	26.89	71.16	0.88	0.22	0.16	0.69	100
MEVE	52	1.40	60.02	31.23	3.71	0.95	1.25	2.84	100
PECO	3	0.24	40.91	57.63	0.65	0.17	0.13	0.52	100
PEFO	0	0.13	28.41	69.90	0.75	0.19	0.13	0.61	100
SAPE	16	0.58	26.82	69.85	1.46	0.37	0.35	1.14	100
WEEL	0	0.20	24.64	72.13	1.41	0.36	0.38	1.08	100
WEMI	6	0.42	24.31	73.65	0.91	0.23	0.19	0.72	100
WHPE	0	0.17	31.55	67.09	0.61	0.16	0.12	0.48	100

PNM SJGS BART Modeling - Unit 2
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.52	29.52	67.08	1.47	0.38	0.40	1.15	100
BAND	3	0.37	23.81	72.96	1.42	0.36	0.36	1.09	100
BLCA	0	0.28	25.40	72.77	0.80	0.21	0.19	0.64	100
CANY	12	0.57	38.31	60.22	0.65	0.17	0.14	0.52	100
CARE	2	0.23	31.25	65.23	1.54	0.39	0.39	1.20	100
GRCA	0	0.12	52.36	44.18	1.53	0.39	0.31	1.22	100
GRSA	1	0.14	27.01	70.46	1.13	0.29	0.22	0.89	100
LAGA	0	0.21	20.74	75.52	1.72	0.44	0.17	1.40	100
MABE	0	0.11	33.14	63.55	1.54	0.39	0.19	1.19	100
MEVE	48	1.26	41.89	48.65	4.03	1.03	1.33	3.08	100
PECO	1	0.27	46.68	51.28	0.92	0.24	0.15	0.73	100
PEFO	0	0.11	72.61	23.59	1.70	0.44	0.30	1.37	100
SAPE	7	0.50	26.73	68.43	2.09	0.53	0.62	1.60	100
WEEL	0	0.20	20.87	76.49	1.16	0.30	0.29	0.89	100
WEMI	3	0.35	45.70	42.79	4.98	1.28	1.43	3.82	100
WHPE	0	0.20	22.74	73.73	1.56	0.40	0.34	1.22	100

PNM SJGS BART Modeling - Unit 3
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	18	0.89	35.30	62.84	0.82	0.21	0.17	0.66	100
BAND	3	0.39	26.98	70.54	1.12	0.28	0.21	0.87	100
BLCA	4	0.44	25.68	71.04	1.46	0.37	0.33	1.12	100
CANY	29	1.15	32.46	66.00	0.68	0.17	0.15	0.54	100
CARE	14	0.86	26.87	71.56	0.68	0.17	0.18	0.54	100
GRCA	5	0.35	27.44	70.95	0.71	0.18	0.17	0.56	100
GRSA	0	0.21	36.16	57.33	2.97	0.75	0.50	2.30	100
LAGA	1	0.29	25.67	70.62	1.64	0.42	0.37	1.27	100
MABE	0	0.20	33.23	64.11	1.21	0.30	0.21	0.95	100
MEVE	64	1.56	52.43	37.30	4.36	1.10	1.46	3.35	100
PECO	3	0.35	87.02	9.06	1.73	0.44	0.41	1.34	100
PEFO	2	0.29	85.92	11.67	1.07	0.27	0.21	0.85	100
SAPE	18	0.70	27.84	68.80	1.47	0.37	0.39	1.13	100
WEEL	4	0.30	34.05	62.90	1.38	0.35	0.24	1.08	100
WEMI	6	0.44	21.26	75.66	1.32	0.33	0.40	1.03	100
WHPE	2	0.28	27.58	70.65	0.80	0.20	0.14	0.63	100

PNM SJGS BART Modeling - Unit 3
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	12	0.65	29.26	66.96	1.65	0.42	0.45	1.27	100
BAND	10	0.57	52.51	41.86	2.54	0.64	0.47	1.97	100
BLCA	5	0.41	28.10	70.16	0.78	0.20	0.14	0.62	100
CANY	17	0.85	30.97	66.94	0.92	0.23	0.21	0.73	100
CARE	5	0.26	91.08	1.83	3.13	0.79	0.70	2.47	100
GRCA	3	0.24	42.65	55.95	0.62	0.16	0.12	0.51	100
GRSA	0	0.24	27.92	70.46	0.73	0.18	0.12	0.58	100
LAGA	1	0.33	22.49	73.90	1.64	0.41	0.29	1.26	100
MABE	0	0.18	27.59	70.65	0.80	0.20	0.13	0.63	100
MEVE	76	1.90	42.51	53.81	1.58	0.40	0.48	1.23	100
PECO	5	0.36	30.99	66.44	1.17	0.30	0.18	0.91	100
PEFO	3	0.18	28.46	69.86	0.75	0.19	0.13	0.61	100
SAPE	34	0.81	28.26	67.95	1.66	0.42	0.43	1.29	100
WEEL	4	0.33	32.22	63.43	1.95	0.49	0.38	1.52	100
WEMI	16	0.64	31.41	61.73	2.93	0.74	0.94	2.25	100
WHPE	0	0.31	44.36	54.39	0.55	0.14	0.11	0.44	100

PNM SJGS BART Modeling - Unit 3
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.66	29.12	65.81	2.19	0.55	0.65	1.68	100
BAND	8	0.61	31.91	64.13	1.75	0.44	0.40	1.36	100
BLCA	7	0.46	33.18	65.04	0.79	0.20	0.18	0.62	100
CANY	14	0.79	32.64	60.84	2.79	0.70	0.88	2.14	100
CARE	4	0.36	91.10	1.19	3.36	0.85	0.90	2.60	100
GRCA	0	0.19	52.76	43.76	1.54	0.39	0.32	1.23	100
GRSA	1	0.21	23.53	72.94	1.57	0.40	0.34	1.22	100
LAGA	3	0.33	21.25	74.88	1.79	0.45	0.16	1.47	100
MABE	0	0.18	22.58	74.94	1.09	0.27	0.27	0.85	100
MEVE	64	1.74	43.30	46.82	4.20	1.06	1.40	3.22	100
PECO	5	0.42	34.27	62.29	1.50	0.38	0.39	1.16	100
PEFO	1	0.17	72.31	23.90	1.69	0.43	0.30	1.36	100
SAPE	18	0.72	27.03	68.03	2.14	0.54	0.62	1.64	100
WEEL	2	0.35	23.08	74.48	1.07	0.27	0.28	0.83	100
WEMI	7	0.50	30.19	67.61	0.97	0.25	0.20	0.78	100
WHPE	2	0.28	90.86	5.64	1.60	0.40	0.26	1.24	100

PNM SJGS BART Modeling - Unit 4
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	18	0.88	35.06	63.08	0.82	0.21	0.17	0.66	100
BAND	3	0.38	26.97	70.54	1.12	0.29	0.20	0.87	100
BLCA	4	0.42	25.63	71.10	1.45	0.37	0.33	1.12	100
CANY	29	1.14	32.53	65.94	0.68	0.17	0.15	0.54	100
CARE	13	0.86	26.89	71.54	0.68	0.18	0.18	0.54	100
GRCA	5	0.36	27.72	70.68	0.70	0.18	0.16	0.55	100
GRSA	0	0.21	36.09	57.39	2.96	0.76	0.50	2.30	100
LAGA	1	0.28	36.17	62.10	0.77	0.20	0.14	0.61	100
MABE	0	0.20	33.07	64.29	1.19	0.31	0.21	0.94	100
MEVE	64	1.55	71.87	17.66	4.45	1.15	1.45	3.43	100
PECO	2	0.34	87.02	9.05	1.73	0.45	0.41	1.35	100
PEFO	2	0.29	85.93	11.66	1.07	0.28	0.21	0.85	100
SAPE	18	0.69	27.73	68.93	1.46	0.38	0.39	1.12	100
WEEL	4	0.30	33.81	63.19	1.36	0.35	0.23	1.07	100
WEMI	6	0.43	21.27	75.64	1.32	0.34	0.40	1.03	100
WHPE	2	0.28	27.76	70.47	0.80	0.21	0.13	0.63	100

PNM SJGS BART Modeling - Unit 4
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	12	0.65	29.14	67.09	1.64	0.42	0.45	1.27	100
BAND	10	0.56	52.56	41.80	2.54	0.65	0.47	1.98	100
BLCA	4	0.42	20.20	77.31	1.08	0.28	0.30	0.83	100
CANY	17	0.85	30.88	67.04	0.92	0.24	0.20	0.73	100
CARE	5	0.26	91.06	1.83	3.12	0.81	0.70	2.47	100
GRCA	3	0.24	42.57	56.03	0.62	0.16	0.12	0.51	100
GRSA	0	0.23	28.00	70.38	0.73	0.19	0.12	0.58	100
LAGA	1	0.32	22.47	73.91	1.64	0.42	0.29	1.27	100
MABE	0	0.19	28.63	66.47	2.26	0.58	0.24	1.82	100
MEVE	75	1.89	42.10	54.26	1.56	0.40	0.47	1.22	100
PECO	5	0.35	30.81	66.63	1.17	0.30	0.18	0.91	100
PEFO	3	0.18	28.47	69.84	0.75	0.19	0.13	0.61	100
SAPE	34	0.80	28.16	68.06	1.65	0.42	0.42	1.29	100
WEEL	4	0.33	24.93	71.68	1.47	0.38	0.41	1.13	100
WEMI	13	0.63	31.35	61.78	2.92	0.75	0.93	2.26	100
WHPE	0	0.30	44.20	54.55	0.55	0.14	0.11	0.44	100

PNM SJGS BART Modeling - Unit 4
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.63	28.93	66.06	2.16	0.56	0.63	1.67	100
BAND	8	0.60	23.30	73.35	1.46	0.38	0.38	1.13	100
BLCA	7	0.44	33.38	64.83	0.79	0.20	0.18	0.62	100
CANY	13	0.78	32.54	60.94	2.78	0.72	0.88	2.14	100
CARE	4	0.35	91.08	1.19	3.35	0.86	0.90	2.61	100
GRCA	0	0.18	52.85	43.67	1.54	0.40	0.32	1.23	100
GRSA	1	0.21	23.53	72.93	1.57	0.41	0.34	1.23	100
LAGA	3	0.32	21.23	74.90	1.79	0.46	0.16	1.47	100
MABE	0	0.18	22.92	75.41	0.73	0.19	0.18	0.57	100
MEVE	63	1.73	44.56	45.24	4.32	1.11	1.44	3.33	100
PECO	5	0.41	52.81	43.33	1.73	0.45	0.31	1.38	100
PEFO	1	0.17	31.86	65.63	1.13	0.29	0.18	0.92	100
SAPE	17	0.69	26.79	68.32	2.10	0.54	0.62	1.62	100
WEEL	1	0.33	23.22	75.05	0.76	0.19	0.19	0.59	100
WEMI	6	0.49	30.25	67.54	0.97	0.25	0.20	0.78	100
WHPE	2	0.28	90.85	5.63	1.59	0.41	0.26	1.24	100

PNM SJGS BART Modeling - Unit 1
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	12	0.56	31.25	65.08	1.61	0.41	0.38	1.27	100
BAND	1	0.20	32.57	63.38	1.85	0.47	0.29	1.43	100
BLCA	1	0.22	30.31	66.73	1.28	0.33	0.34	1.00	100
CANY	18	0.85	43.20	54.65	0.95	0.24	0.20	0.76	100
CARE	6	0.45	34.30	63.72	0.86	0.22	0.22	0.68	100
GRCA	2	0.21	38.64	59.21	0.95	0.24	0.19	0.77	100
GRSA	0	0.12	80.85	12.97	2.84	0.73	0.39	2.23	100
LAGA	0	0.16	32.90	62.21	2.16	0.55	0.48	1.69	100
MABE	0	0.11	26.50	68.43	2.24	0.57	0.52	1.74	100
MEVE	31	1.17	54.36	34.96	4.52	1.16	1.50	3.50	100
PECO	0	0.18	33.94	63.34	1.22	0.31	0.22	0.96	100
PEFO	1	0.16	34.18	63.57	0.97	0.25	0.27	0.77	100
SAPE	6	0.35	34.33	61.69	1.75	0.45	0.44	1.35	100
WEEL	0	0.18	41.98	54.76	1.46	0.37	0.27	1.16	100
WEMI	2	0.25	31.02	63.05	2.56	0.65	0.74	1.98	100
WHPE	0	0.16	45.27	52.16	1.16	0.30	0.20	0.91	100

PNM SJGS BART Modeling - Unit 1
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	5	0.43	30.43	65.58	1.74	0.45	0.44	1.36	100
BAND	4	0.32	38.79	58.51	1.18	0.30	0.28	0.93	100
BLCA	0	0.22	32.57	64.57	1.26	0.32	0.26	1.01	100
CANY	9	0.51	30.04	66.43	1.53	0.39	0.40	1.20	100
CARE	1	0.14	37.78	60.53	0.73	0.19	0.17	0.59	100
GRCA	0	0.14	52.70	45.61	0.74	0.19	0.14	0.62	100
GRSA	0	0.12	35.34	60.80	1.73	0.44	0.32	1.36	100
LAGA	0	0.17	32.85	63.61	1.54	0.39	0.42	1.19	100
MABE	0	0.10	35.80	58.15	2.79	0.72	0.29	2.26	100
MEVE	44	1.23	58.05	29.73	5.18	1.32	1.71	4.00	100
PECO	1	0.20	50.71	45.43	1.71	0.44	0.36	1.35	100
PEFO	0	0.11	35.18	62.04	1.24	0.32	0.20	1.02	100
SAPE	7	0.47	33.93	61.87	1.84	0.47	0.45	1.45	100
WEEL	0	0.16	31.41	64.48	1.79	0.46	0.48	1.38	100
WEMI	0	0.36	53.71	40.15	2.64	0.67	0.79	2.04	100
WHPE	0	0.14	61.79	33.59	2.11	0.54	0.28	1.68	100

PNM SJGS BART Modeling - Unit 1
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	5	0.44	59.02	38.91	0.91	0.23	0.20	0.73	100
BAND	1	0.29	30.40	65.49	1.80	0.46	0.45	1.40	100
BLCA	0	0.22	32.67	64.98	1.03	0.26	0.24	0.82	100
CANY	6	0.48	58.53	39.41	0.91	0.23	0.19	0.73	100
CARE	2	0.21	94.29	1.11	2.01	0.52	0.47	1.60	100
GRCA	0	0.12	94.09	0.96	2.19	0.56	0.45	1.75	100
GRSA	0	0.11	34.30	62.50	1.43	0.36	0.28	1.14	100
LAGA	0	0.17	43.30	53.72	1.31	0.33	0.31	1.02	100
MABE	0	0.09	41.33	54.55	1.91	0.49	0.23	1.50	100
MEVE	43	1.11	29.36	66.76	1.66	0.42	0.50	1.30	100
PECO	1	0.23	61.77	33.72	2.02	0.52	0.37	1.61	100
PEFO	0	0.10	90.79	5.30	1.75	0.45	0.32	1.40	100
SAPE	5	0.42	33.54	61.20	2.26	0.58	0.66	1.76	100
WEEL	0	0.16	44.53	53.47	0.88	0.22	0.20	0.70	100
WEMI	2	0.30	30.97	61.48	3.27	0.84	0.90	2.55	100
WHPE	0	0.17	43.59	54.56	0.82	0.21	0.17	0.66	100

PNM SJGS BART Modeling - Unit 2
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	12	0.56	31.23	65.10	1.62	0.41	0.38	1.26	100
BAND	1	0.20	32.57	63.38	1.86	0.48	0.29	1.43	100
BLCA	1	0.22	30.31	66.73	1.29	0.33	0.34	1.00	100
CANY	18	0.85	43.19	54.66	0.95	0.24	0.20	0.75	100
CARE	6	0.45	34.30	63.72	0.86	0.22	0.22	0.68	100
GRCA	2	0.21	38.64	59.21	0.95	0.24	0.19	0.77	100
GRSA	0	0.12	80.85	12.97	2.85	0.73	0.39	2.21	100
LAGA	0	0.16	32.90	62.21	2.17	0.56	0.48	1.68	100
MABE	0	0.11	26.50	68.42	2.25	0.58	0.52	1.73	100
MEVE	31	1.16	54.29	35.03	4.53	1.16	1.51	3.47	100
PECO	0	0.18	33.95	63.34	1.23	0.31	0.22	0.95	100
PEFO	1	0.16	34.18	63.56	0.98	0.25	0.27	0.76	100
SAPE	5	0.35	34.32	61.69	1.76	0.45	0.44	1.35	100
WEEL	0	0.18	41.98	54.75	1.47	0.38	0.27	1.15	100
WEMI	2	0.24	31.02	63.04	2.57	0.66	0.74	1.97	100
WHPE	0	0.16	45.27	52.16	1.17	0.30	0.20	0.91	100

PNM SJGS BART Modeling - Unit 2
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	5	0.43	30.42	65.59	1.75	0.45	0.44	1.35	100
BAND	4	0.32	38.79	58.51	1.19	0.30	0.28	0.93	100
BLCA	0	0.22	32.57	64.57	1.27	0.33	0.26	1.01	100
CANY	9	0.51	30.04	66.43	1.54	0.39	0.40	1.20	100
CARE	1	0.14	37.78	60.53	0.74	0.19	0.17	0.58	100
GRCA	0	0.14	52.70	45.61	0.75	0.19	0.14	0.61	100
GRSA	0	0.12	35.34	60.79	1.74	0.45	0.32	1.36	100
LAGA	0	0.17	32.85	63.60	1.54	0.40	0.42	1.19	100
MABE	0	0.10	35.80	58.14	2.81	0.72	0.29	2.25	100
MEVE	44	1.22	58.02	29.75	5.20	1.33	1.72	3.98	100
PECO	0	0.20	50.70	45.43	1.72	0.44	0.36	1.35	100
PEFO	0	0.11	35.18	62.04	1.25	0.32	0.20	1.02	100
SAPE	7	0.46	33.93	61.87	1.85	0.47	0.45	1.44	100
WEEL	0	0.16	31.41	64.48	1.80	0.46	0.48	1.38	100
WEMI	0	0.36	53.70	40.15	2.65	0.68	0.79	2.03	100
WHPE	0	0.13	61.79	33.59	2.13	0.54	0.28	1.67	100

PNM SJGS BART Modeling - Unit 2
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	5	0.44	59.01	38.92	0.92	0.23	0.20	0.73	100
BAND	1	0.29	30.39	65.49	1.81	0.46	0.45	1.39	100
BLCA	0	0.22	32.67	64.98	1.03	0.26	0.24	0.82	100
CANY	6	0.48	58.52	39.42	0.91	0.23	0.19	0.73	100
CARE	2	0.21	94.29	1.11	2.02	0.52	0.47	1.59	100
GRCA	0	0.12	94.08	0.96	2.20	0.56	0.45	1.74	100
GRSA	0	0.11	34.29	62.50	1.43	0.37	0.28	1.13	100
LAGA	0	0.17	43.30	53.72	1.31	0.34	0.31	1.02	100
MABE	0	0.09	41.33	54.54	1.92	0.49	0.23	1.49	100
MEVE	43	1.10	29.35	66.76	1.67	0.43	0.50	1.29	100
PECO	1	0.23	61.77	33.72	2.03	0.52	0.37	1.60	100
PEFO	0	0.10	90.78	5.29	1.76	0.45	0.32	1.40	100
SAPE	5	0.42	33.50	61.24	2.27	0.58	0.66	1.74	100
WEEL	0	0.16	44.52	53.47	0.88	0.23	0.20	0.70	100
WEMI	2	0.29	30.97	61.47	3.29	0.84	0.90	2.54	100
WHPE	0	0.17	43.59	54.56	0.82	0.21	0.17	0.65	100

PNM SJGS BART Modeling - Unit 3
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	18	0.89	35.30	62.84	0.82	0.21	0.17	0.66	100
BAND	3	0.39	26.98	70.54	1.12	0.28	0.21	0.87	100
BLCA	4	0.44	25.68	71.04	1.46	0.37	0.33	1.12	100
CANY	29	1.15	32.46	66.00	0.68	0.17	0.15	0.54	100
CARE	14	0.86	26.87	71.56	0.68	0.17	0.18	0.54	100
GRCA	5	0.35	27.44	70.95	0.71	0.18	0.17	0.56	100
GRSA	0	0.21	36.16	57.33	2.97	0.75	0.50	2.30	100
LAGA	1	0.29	25.67	70.62	1.64	0.42	0.37	1.27	100
MABE	0	0.20	33.23	64.11	1.21	0.30	0.21	0.95	100
MEVE	64	1.56	52.43	37.30	4.36	1.10	1.46	3.35	100
PECO	3	0.35	87.02	9.06	1.73	0.44	0.41	1.34	100
PEFO	2	0.29	85.92	11.67	1.07	0.27	0.21	0.85	100
SAPE	18	0.70	27.84	68.80	1.47	0.37	0.39	1.13	100
WEEL	4	0.30	34.05	62.90	1.38	0.35	0.24	1.08	100
WEMI	6	0.44	21.26	75.66	1.32	0.33	0.40	1.03	100
WHPE	2	0.28	27.58	70.65	0.80	0.20	0.14	0.63	100

PNM SJGS BART Modeling - Unit 3
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	12	0.65	29.26	66.96	1.65	0.42	0.45	1.27	100
BAND	10	0.57	52.51	41.86	2.54	0.64	0.47	1.97	100
BLCA	5	0.41	28.10	70.16	0.78	0.20	0.14	0.62	100
CANY	17	0.85	30.97	66.94	0.92	0.23	0.21	0.73	100
CARE	5	0.26	91.08	1.83	3.13	0.79	0.70	2.47	100
GRCA	3	0.24	42.65	55.95	0.62	0.16	0.12	0.51	100
GRSA	0	0.24	27.92	70.46	0.73	0.18	0.12	0.58	100
LAGA	1	0.33	22.49	73.90	1.64	0.41	0.29	1.26	100
MABE	0	0.18	27.59	70.65	0.80	0.20	0.13	0.63	100
MEVE	76	1.90	42.51	53.81	1.58	0.40	0.48	1.23	100
PECO	5	0.36	30.99	66.44	1.17	0.30	0.18	0.91	100
PEFO	3	0.18	28.46	69.86	0.75	0.19	0.13	0.61	100
SAPE	34	0.81	28.26	67.95	1.66	0.42	0.43	1.29	100
WEEL	4	0.33	32.22	63.43	1.95	0.49	0.38	1.52	100
WEMI	16	0.64	31.41	61.73	2.93	0.74	0.94	2.25	100
WHPE	0	0.31	44.36	54.39	0.55	0.14	0.11	0.44	100

PNM SJGS BART Modeling - Unit 3
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

Baseline

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.66	29.12	65.81	2.19	0.55	0.65	1.68	100
BAND	8	0.61	31.91	64.13	1.75	0.44	0.40	1.36	100
BLCA	7	0.46	33.18	65.04	0.79	0.20	0.18	0.62	100
CANY	14	0.79	32.64	60.84	2.79	0.70	0.88	2.14	100
CARE	4	0.36	91.10	1.19	3.36	0.85	0.90	2.60	100
GRCA	0	0.19	52.76	43.76	1.54	0.39	0.32	1.23	100
GRSA	1	0.21	23.53	72.94	1.57	0.40	0.34	1.22	100
LAGA	3	0.33	21.25	74.88	1.79	0.45	0.16	1.47	100
MABE	0	0.18	22.58	74.94	1.09	0.27	0.27	0.85	100
MEVE	64	1.74	43.30	46.82	4.20	1.06	1.40	3.22	100
PECO	5	0.42	34.27	62.29	1.50	0.38	0.39	1.16	100
PEFO	1	0.17	72.31	23.90	1.69	0.43	0.30	1.36	100
SAPE	18	0.72	27.03	68.03	2.14	0.54	0.62	1.64	100
WEEL	2	0.35	23.08	74.48	1.07	0.27	0.28	0.83	100
WEMI	7	0.50	30.19	67.61	0.97	0.25	0.20	0.78	100
WHPE	2	0.28	90.86	5.64	1.60	0.40	0.26	1.24	100

PNM SJGS BART Modeling - Unit 4
Nitrate Repartitioning - Monthly Varying NH3 Background
2001

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	16	0.77	40.70	57.11	0.96	0.25	0.21	0.77	100
BAND	1	0.30	31.87	63.98	1.89	0.49	0.30	1.47	100
BLCA	2	0.34	32.25	63.63	1.82	0.47	0.42	1.41	100
CANY	25	1.00	49.88	47.56	1.09	0.28	0.35	0.84	100
CARE	12	0.69	33.93	64.09	0.86	0.22	0.22	0.68	100
GRCA	4	0.28	35.23	62.74	0.89	0.23	0.21	0.70	100
GRSA	0	0.18	80.86	12.95	2.84	0.73	0.39	2.22	100
LAGA	0	0.25	83.24	12.04	2.08	0.54	0.47	1.63	100
MABE	0	0.16	41.26	55.45	1.48	0.38	0.26	1.17	100
MEVE	56	1.49	75.24	6.66	7.63	1.97	2.63	5.87	100
PECO	2	0.28	51.01	45.66	1.50	0.39	0.27	1.17	100
PEFO	2	0.26	34.06	63.67	0.97	0.25	0.28	0.76	100
SAPE	10	0.57	33.87	62.04	1.78	0.46	0.47	1.37	100
WEEL	1	0.24	42.07	54.19	1.69	0.43	0.29	1.33	100
WEMI	2	0.35	32.57	62.96	1.95	0.50	0.51	1.51	100
WHPE	2	0.22	35.71	62.01	1.03	0.27	0.17	0.81	100

PNM SJGS BART Modeling - Unit 4
Nitrate Repartitioning - Monthly Varying NH3 Background
2002

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	9	0.53	36.12	59.19	2.03	0.52	0.55	1.57	100
BAND	6	0.47	38.36	58.82	1.25	0.32	0.28	0.98	100
BLCA	4	0.33	25.95	70.85	1.38	0.36	0.39	1.07	100
CANY	14	0.69	38.16	59.26	1.13	0.29	0.25	0.90	100
CARE	4	0.22	39.68	58.29	0.89	0.23	0.19	0.72	100
GRCA	1	0.20	51.48	46.83	0.75	0.19	0.14	0.62	100
GRSA	0	0.19	34.60	61.42	1.78	0.46	0.34	1.40	100
LAGA	0	0.27	40.02	58.03	0.86	0.22	0.18	0.68	100
MABE	0	0.15	41.76	53.67	2.05	0.53	0.37	1.62	100
MEVE	69	1.71	46.90	49.03	1.73	0.45	0.52	1.36	100
PECO	3	0.29	47.48	46.21	2.86	0.74	0.47	2.24	100
PEFO	0	0.17	93.56	1.58	2.16	0.56	0.44	1.71	100
SAPE	21	0.65	35.00	60.30	2.05	0.53	0.53	1.60	100
WEEL	1	0.26	31.62	64.09	1.86	0.48	0.51	1.44	100
WEMI	8	0.52	26.63	69.19	1.80	0.46	0.53	1.39	100
WHPE	0	0.25	37.48	60.78	0.77	0.20	0.15	0.62	100

PNM SJGS BART Modeling - Unit 4
Nitrate Repartitioning - Monthly Varying NH3 Background
2003

SNCR NOx @ 0.23

Class I Area	No. of Days > 0.5 dv	98th Percentile	%_SO4	%_NO3	%_OC	%_EC	%_PMC	%_PMF	%_Total
ARCH	8	0.51	35.67	58.15	2.66	0.69	0.77	2.06	100
BAND	7	0.48	29.38	66.39	1.85	0.48	0.48	1.43	100
BLCA	1	0.36	40.98	53.38	2.46	0.63	0.65	1.90	100
CANY	11	0.66	57.43	39.07	1.54	0.40	0.32	1.25	100
CARE	3	0.32	54.80	42.94	0.99	0.26	0.21	0.81	100
GRCA	0	0.17	94.11	0.94	2.18	0.56	0.46	1.74	100
GRSA	1	0.16	30.20	65.25	2.02	0.52	0.44	1.57	100
LAGA	0	0.25	27.42	67.58	2.31	0.59	0.20	1.89	100
MABE	0	0.14	41.88	55.87	0.98	0.25	0.25	0.77	100
MEVE	58	1.56	49.78	38.83	4.82	1.24	1.61	3.72	100
PECO	2	0.35	61.23	34.29	2.00	0.52	0.37	1.59	100
PEFO	0	0.15	90.72	5.35	1.76	0.45	0.31	1.41	100
SAPE	11	0.57	41.14	53.10	2.49	0.64	0.70	1.92	100
WEEL	0	0.26	30.06	67.70	0.98	0.25	0.25	0.77	100
WEMI	5	0.39	29.77	63.42	3.04	0.78	0.59	2.40	100
WHPE	1	0.23	29.84	65.53	2.05	0.53	0.44	1.61	100