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MAY 09 2007

PUBLIC SERVICE
COMMISSION

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May 9, 2007

Re: *The Application of Kentucky Utilities Company for a Certificate of Public Convenience and Necessity to Construct Flue Gas Desulfurization Systems and Approval of Its 2004 Compliance Plan for Recovery by Environmental Surcharge* – Case No. 2004-00426

Dear Ms. O'Donnell:

Enclosed please find an original and ten (10) copies of Kentucky Utilities Company's *Update to the 2004 SO₂ Compliance Strategy* ("Update Strategy") and a presentation entitled "SO₂ Compliance Strategy – E.W. Brown FGD – Kentucky Public Service Commission Update." These two documents were presented by Company representatives at the April 26, 2007 meeting with the Commission Staff, the Attorney General, and the Kentucky Industrial Utility Customer's Inc., in the above-referenced matter. Also enclosed is the attendee listing for that meeting. This information is being filed pursuant to the direction of the Commission Staff following the meeting.

Also enclosed are an original and ten copies of a Motion for Confidential Treatment regarding certain information provided in the *Update Strategy*.

Should you have any questions concerning the enclosed, please do not hesitate to contact me.

Sincerely,

Kent Blake

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MAY 09 2007

PUBLIC SERVICE
COMMISSION

*Update to the 2004 SO₂
Compliance Strategy*

For

e.on | U.S.

Subsidiaries

*Kentucky Utilities and
Louisville Gas and Electric*

April 2007

Sulfur Dioxide Compliance Strategy

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Executive Summary

The purpose of this document is to update the 2004 SO₂ Compliance strategy including the cost estimates of the flue gas desulfurization (“FGD” or “scrubber”) systems being built at Kentucky Utilities’ (“KU’s”) Ghent and E.W. Brown stations, along with both quantitative and qualitative explanations that support the changes in cost. A Certificate of Public Convenience and Necessity (“CCN”) was granted and environmental cost recovery (“ECR”) treatment approved by the Kentucky Public Service Commission (“KPSC”) on June 20, 2005 as Project KU-21 in Case No. 2004-00426. However, since KPSC approval, and despite the efforts of KU to control capital costs, the cost estimate of the E.W. Brown (“Brown”) FGD project has increased from \$234.2 million to \$358.6 million, an increase of 53%, primarily driven by market prices for materials, equipment, labor and a significant scope increase for the ductwork routing of units 1 and 2.

The changes in capital cost, combined with the changes in the forecasted prices of SO₂ allowances and fuel necessitate a re-evaluation of the Companies’ 2004 least-cost SO₂ compliance plan. On December 22, 2006, the KPSC approved as Case No. 2006-00493 an application for changes to the Ghent FGD CCNs which also included an update on the Ghent FGD project¹ in general and demonstrated that the addition of FGDs at Ghent continues to be the least-cost next step in environmental compliance. This evaluation focuses on whether or not the plan to construct an FGD on Brown Units 1, 2 and 3 continues to be economical.

Continued construction of wet FGD systems on Ghent Units 1, 3 and 4 and Brown Units 1, 2 and 3 and the simultaneous switching of these units to high sulfur coal is the least-cost plan for continued environmental compliance. While the addition of the FGD systems do not eliminate the need to purchase SO₂ allowances, the installation of environmental controls reduces the purchase of SO₂ allowances and are required for continued economical compliance with the SO₂ emission reduction requirements of the Clean Air Act Amendments of 1990.

Following the scrubbing and fuel switching of the remaining units at Ghent, construction of FGD systems at Brown and the simultaneous conversion of the Brown Units 1-3 to high sulfur coal in conjunction with purchasing SO₂ allowances on an as-needed basis, is the least-cost SO₂ compliance plan. Compared to only completing the scrubbers at Ghent and purchasing allowances, completing the FGD at Brown has the following benefits over the 20 year analysis period:

1. Decreases the cost of SO₂ compliance by approximately \$93.6 million in present value revenue requirements.
2. Significantly limits exposure to the volatile SO₂ allowance market by reducing the anticipated allowance shortfall to approximately 298,000 tons

¹ *In the Matter of: Application of Kentucky Utilities Company to modify certain Certificates of of Public Convenience and Necessity to construct ductwork for two flue gas desulfurization units at the Ghent power station, Order dated December 22, 2006, finding 4 at Page 4 - “KU’s updated PVR analysis demonstrates that constructing three new FGDs at the Ghent Station continues to be the most cost-effective means for KU to comply with the relevant emission limits imposed by the CAIR.”*

3. Increases fuel procurement flexibility
4. Positions the Companies for the SO₂ reduction requirements associated with the Clean Air Interstate Rule and future regulations targeting fine particulates and mercury
5. Delays the depletion of the Companies' SO₂ allowance bank.

Therefore, the Companies will continue with the implementation of the Base Case – construct an FGD for Brown 1, 2 and 3 in 2009, purchase allowances on an as-needed basis and continue the practice of environmental dispatching. Additionally, the Companies will evaluate additional environmental technologies for existing generating assets.

Background

The Clean Air Act Amendments (“CAAA”) of 1990 sought to reduce the effects of acid deposition through a phased reduction in SO₂ and NO_x emissions from 1980 levels in the 48 contiguous states. Subsequently, the Clean Air Interstate Rule (“CAIR”) was finalized by the Environmental Protection Agency in March 2005. This regulation requires significant additional reductions/limits in phases for NO_x and SO₂. With regard to SO₂, CAIR will reduce the allowable SO₂ emissions of Kentucky Utilities (“KU”) and Louisville Gas & Electric (“LG&E”), collectively “the Companies” by around 50% in 2010 and 65% in 2015.

In order to comply with these regulations, the Companies have constructed Flue gas desulfurization (“FGD”) systems on many of the fleet’s coal-fired units (Ghent 1, Trimble County 1, Mill Creek 1-4 and Cane Run 4-6). By increasing the FGDs’ SO₂ removal efficiency where economically feasible, LG&E is expected to meet CAAA Phase II requirements and provide a bank of SO₂ allowances. The Companies’ joint planning process assumes that allowances banked by either utility can be utilized by either Company, thereby mitigating the combined Companies’ exposure to the volatile SO₂ allowance market.

On December 20, 2004, the Companies filed with the Kentucky Public Service Commission (“KPSC”) for a Certificate of Public Convenience and Necessity (“CCN”) and environmental cost recovery (“ECR”) treatment for additional wet FGD systems on E.W. Brown (“Brown”) units 1, 2 and 3 and the remaining un-scrubbed units at Ghent. On June 20, 2005, the KPSC approved these projects under Project KU-21 in Case No. 2004-00426. Since that time, the Companies have proceeded with the construction of these projects. On November 16, 2006, the Companies filed an application for changes to the Ghent FGD CCNs. That application, which also included an update on the Ghent FGD project in general, was approved as Case No. 2006-00493 on December 22, 2006. The purpose of this document is to provide a similar update on the Brown FGD project.

To date, \$63.8 million in capital costs have been spent or committed on the construction of the FGD planned at the Brown station. Recent photographs of this construction can be found in **Appendix 1**. Since 2004, several factors impacting the cost of the Brown FGD project have changed, as discussed in the following section. The goal of this revised evaluation was to identify the current least-cost plan, given the impact of these new factors.

Significant Changes since 2004 Filing

Since Case No. 2004-00426 was completed in 2004, significant changes have occurred in the marketplace that have impacted three key drivers to least-cost environmental evaluations. Those changes are the SO₂ allowance market, fuel price forecasts and FGD capital costs.

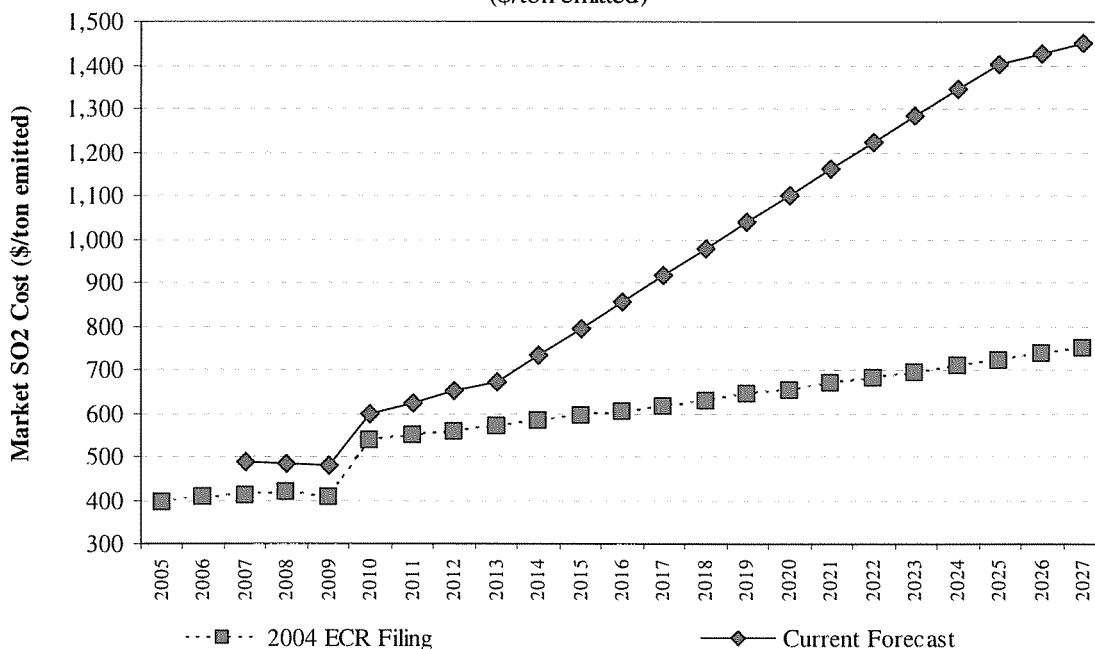
SO₂ Allowance Prices

Previous testimony² has documented the increase in the SO₂ allowance price forecast since the 2004 ECR. An increase in the SO₂ allowance price makes constructing a FGD more favorable than purchasing allowances from the allowance market.

The following graph indicates that the SO₂ allowance market price forecast has seen a significant increase since 2004. The primary factors that have placed upward pressure on the SO₂ allowance market are:

- Increasing construction cost for building FGDs (materials, labor, contractor availability)
- Higher natural gas prices resulting in greater reliance on coal-fired generation
- Overall industry stronger coal build-out compared to earlier views
- Increased difference between low and high sulfur coal prices
- Current SO₂ market forecasts considers the impact the CAIR would have on the SO₂ allowance market in 2014 and beyond.

Forecasted SO₂ Allowance Market Cost
(\$/ton emitted)



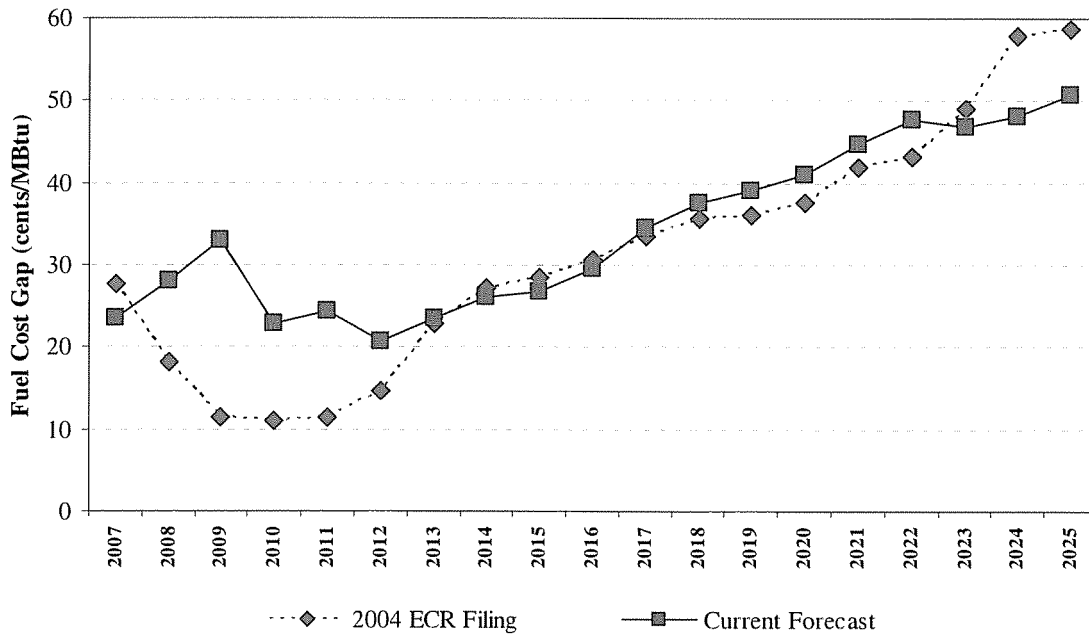
High and Low Sulfur Coal Prices

The near-term forecasted price has increased for Eastern Kentucky low sulfur coal, which is currently burned at Brown. A significant increase in savings, on the order of 10-20 cents/mmBtu, when switching from low sulfur fuel to high sulfur fuel is also forecasted

² See Case No. 2006-00493, Testimony of John P. Malloy (page 11, beginning line 6)

at Brown for 2009-2012. The savings in 2012 and beyond, in general, remain consistent with the 2004 expectations. The forecasted increase in savings is demonstrated in the following graph.

Fuel Price Gap Between Low and High Sulfur Coal at Brown
(2004 ECR Filing vs. Current Forecast)



The primary driver behind the increasing gap between high and low sulfur fuels is a result of upward pressure on the near-term low sulfur fuel price attributed to utilities switching to low sulfur fuel until FGD construction is completed. Projections reflect the expectation that once FGDs are constructed, the upward pressure on low sulfur coal will be relaxed and the fuel gap will re-align itself with the long term gap anticipated by the 2004 forecast.

Capital Costs

In 2004, the estimated capital cost associated with constructing the single-module, wet FGD at Brown for Units 1, 2 and 3 was \$234.2 million. Testimony in Case No. 2006-00493 documents the fact that the earliest completed FGD at Ghent (on Unit 3) is less than the cost of the remaining FGDs to be constructed at Ghent. FGDs constructed on subsequent units are subject to the change in commodity prices, vendor availabilities and increasing labor prices.³ The companies, have been proactively managing the costs associated with the FGD project and will continue to do so. However, even with the Companies’ best efforts to manage costs, the capital cost of the Brown FGD has increased by \$124.4 million. The following table identifies the impacts to various areas of the project.

³ Case No. 2006-00493, Testimony of John P. Malloy (page 12, beginning line 11)

Brown FGD Capital Cost Impacts

Item	Cost (M\$)
FGD Island and Foundation	60.4
Reactant Prep	18.0
Limestone Unloading	-10.0
Gypsum Dewatering	6.0
Combustion Modification	-13.0
Byproduct Pumping	-3.0
BOP Utilities	5.4
Ductwork	70.4
Stack	10.3
Fans	11.6
Auxiliary Power	10.1
Wet ESP Shell	-11.0
Spare Parts	0.0
Plant Labor	1.5
Escalation*	-21.9
A&G	7.5
AFUDC	3.4
Contingency	-21.3
	124.4

*Fluor Target Estimates include 5% escalation on labor and varying escalation on material/commodities.

The estimate for Brown’s FGD project has increased from \$234.2 million in November of 2004 to \$358.6 million in March 2007. The cost has been driven primarily by market prices for materials, equipment, labor and a significant scope increase for the ductwork routing of units 1 and 2.

Economic Analysis

The June 2005 order issued by KPSC approving both the CCN and ECR treatment of the proposed FGD projects at the Companies’ Ghent and Brown stations was based on supporting analytics that the FGDs represented the most reasonable least-cost plan for continued environmental compliance. A revised present value revenue requirements (“PVRR”) evaluation of the economics of constructing an FGD at Brown has been completed with the previously mentioned market changes regarding SO₂ allowance prices, fuel prices and capital costs. The purpose of this “revised” evaluation was to identify the current least-cost plan, given these revised forecasts.

Cases Evaluated

In order to identify the least-cost compliance strategy, individual alternatives were evaluated based on varying the number of units scrubbed at the Brown station and the in-service date of the FGD system. The Base Case represents the Companies' current plan as approved by the KPSC in 2005, which is to construct three FGDs at the remaining unscrubbed units at Ghent and build one FGD for all three Brown units (in-service in 2009). In order to determine if delaying the Brown FGD may be economical, several one-year and two-year delay scenarios were evaluated. In addition, a "Walk-Away" Case (Case09) was included in which no FGD would be completed at the Brown station and no further construction would take place while satisfying current contractual commitments at an estimated cost of \$63.8 million. The Ghent scrubbers are assumed to be completed in all cases. The table below summarizes the SO₂ compliance strategies that were evaluated in this update. Only a wet FGD with a 98% SO₂ removal efficiency is considered.

SO₂ Compliance Strategies Evaluated

<u>Case</u>	<u>Construct FGD at</u>	<u>In- Service Date</u>	<u>Total FGD</u>	
			<u>Capital Cost¹ (\$M)</u>	<u>Ash Pond Cost¹ (\$M)</u>
Base Case	Brown Units 1,2,3	2009	\$358.6	\$150.3
Case01	Brown Units 2,3	2009	\$337.8	\$155.4
Case02	Brown Units 3	2009	\$304.1	\$130.2
Case03	Brown Units 1,2,3	2010	\$395.5	\$150.3
Case04	Brown Units 2,3	2010	\$374.9	\$155.4
Case05	Brown Units 3	2010	\$339.2	\$130.2
Case06	Brown Units 1,2,3	2011	\$456.7	\$179.4
Case07	Brown Units 2,3	2011	\$430.5	\$159.0
Case08	Brown Units 3	2011	\$387.9	\$133.4
Case09	None (Purch. Allowances)	n/a	\$63.8	\$120.6

¹ Total FGD Capital Costs and Ash Pond Costs are the sum of annual (nominal dollars) construction expenditures.

Using the same analysis methods that were used in the original evaluation, the Cases were evaluated using the PROSYMTM detailed hourly production costing computer model and the Strategist Capital Expenditure and Recovery module. Used together, these tools have the capability of simulating the hourly production costs (fuel, fixed and variable operation and maintenance, emissions, etc) and quantifying the revenue requirements impact associated with each capital project. **Appendix 2** contains economic and forward looking assumptions used in this analysis. Each alternative was independently evaluated within PROSYMTM using the Companies' base price forecasts for fuel and SO₂ and NO_x allowances and the estimates for capital construction costs in the table above.

Shortfalls in SO₂ or NO_x allowances are made up by purchasing the required number of allowances from the allowance market on an as-needed basis. The first year that the Companies would purchase SO₂ allowances and the volume of purchased allowances over the period can also be observed. In some Cases, the Companies rely heavily on SO₂ allowance purchases for compliance and it is assumed that an unlimited number of

allowances are available at the projected allowance price. The total PVRR for each Case has been categorized into four areas:

1. Production Costs: represent the revenue requirements associated with fuel, fixed and variable operation and maintenance expenses and purchased power expenses.
2. NO_x Allowance Costs: represent the revenue requirements associated with the purchasing of any NO_x allowances. Note that NO_x emission levels are quantified because the retrofitting of an SO₂ control technology impacts how that unit is dispatched, which in turn, affect NO_x tonnage emissions.
3. SO₂ Allowance Costs: represent the revenue requirements associated with the purchasing of any SO₂ allowances.
4. Capital Costs: represent the revenue requirements associated with any capital expenditures for the Case.

The Case Summary table below summarizes these categories and compares the resulting PVRR of each Case to that of the Base Case, with the Cases listed in order of increasing PVRR. The table is a summary of the annual data contained in **Appendices 3 and 4**. **Appendix 3** presents the annual results of each Case compared to the Base Case while **Appendix 4** details the SO₂ emissions associated with each Case.

Case Summary (Production and Allowances Costs estimated thru 2027)								
<i>(Assuming: Base Capital Costs, Base NO_x & SO₂ Emissions Price Forecasts)</i>								
(All Costs in 2007 PVRR \$1000)								
ALL CASES COMPARED TO Base Case- Constructing Brown 123 FGD for 2009 In-Service								
Case	Production Cost	NO _x Allowance Cost	SO ₂ Allowance Cost	Capital Cost	Total PVRR	Incremental Cost over Base	First Year of SO ₂ Allowance Purchase	Total SO ₂ Allowances Purchased
Base Case- BR123 WFGD 2009	14,800,304	75,816	114,287	576,240	15,566,648	Base	2018	298,138
Case01- BR23 WFGD 2009	14,796,732	70,884	161,527	561,487	15,590,630	23,982	2016	414,006
Case02- BR3 WFGD 2009	14,791,936	70,053	253,703	509,542	15,625,235	58,587	2014	640,107
Case03- BR123 WFGD 2010	14,802,114	75,331	140,589	611,761	15,629,795	63,147	2016	359,122
Case04- BR23 WFGD 2010	14,800,106	70,615	184,540	599,491	15,654,752	88,104	2014	467,100
Case09- Walk Away (with Env Dispatch)	14,845,387	73,303	523,155	218,376	15,660,222	93,574	2011	1,299,119
Case05- BR3 WFGD 2010	14,796,247	69,784	270,095	548,302	15,684,428	117,780	2013	678,411
Case06- BR123 WFGD 2011	14,802,973	74,416	166,035	670,020	15,713,444	146,796	2012	417,959
Case07- BR23 WFGD 2011	14,801,427	70,053	207,009	638,234	15,716,723	150,075	2012	518,880
Case08- BR3 WFGD 2011	14,798,973	69,197	287,087	582,204	15,737,461	170,813	2011	716,517

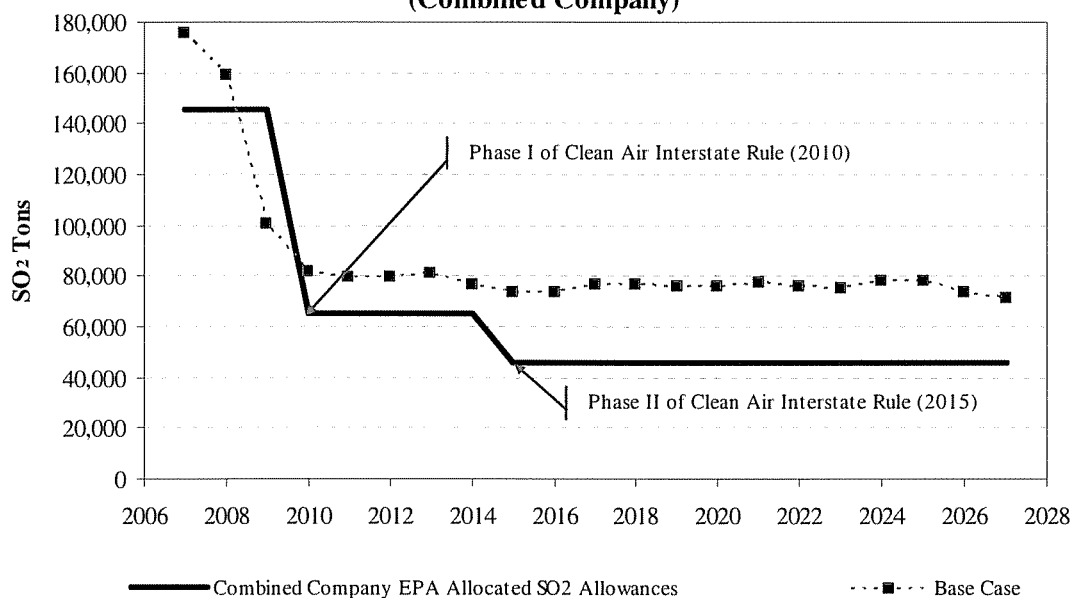
Discussion of Base Results

As can be observed in the table above, the approved current plan (Base Case) to build an FGD on Brown units 1, 2 and 3 for an in-service date of 2009 is the least-cost option and results in a PVRR that is \$23.9 million lower than the second least-cost option (Case01) of completing an FGD on only Brown units 2 and 3 in 2009. The Walk-Away Case (Case09) is \$93.6 million higher in PVRR than the Base Case. While the Cases with fewer or no units scrubbed require less capital, the savings are not sufficient to offset the resulting increased production and SO₂ allowance purchase costs.

Each of the FGD build alternatives allows the postponement of the Companies' initial SO₂ allowance purchases. However, no alternatives allow for all of the SO₂ allowances required to comply over the twenty-year study period to be provided without purchasing

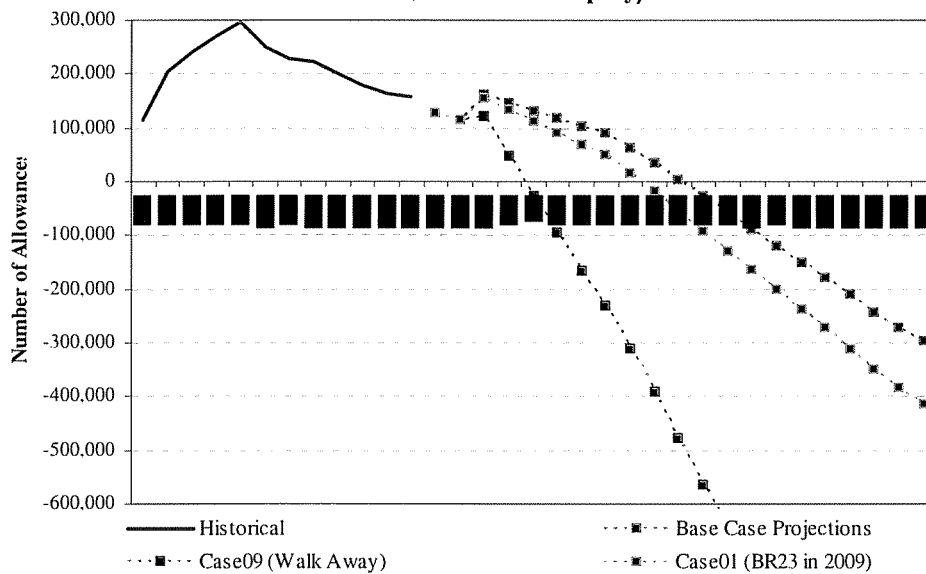
allowances from the SO₂ allowance market. With the Base Case, exposure to the volatile SO₂ market is mitigated, but the market is still relied upon to provide 298,000 allowances over the period. The figure below illustrates the difference between the Companies' projected annual Base Case SO₂ emissions and the Companies' anticipated annual allowance allocations. The difference between SO₂ emissions and allowance allocations is currently being covered by banked allowances. The implementation of Phase I and Phase II of CAIR significantly widens the gap between the number of allowances allocated and the number of allowances needed.

Annual SO₂ Emissions and Allowance Allocations
(Combined Company)



Beginning in 2000, it became necessary for the Companies to begin using banked SO₂ allowances for compliance. As the figure below shows, the Companies' banked SO₂ allowances, once in excess of 297,000 tons (during 1999) was over 156,000 allowances by year end 2006. Base Case projections are that even with the reduced emissions resulting from the new wet FGDs currently under construction at Ghent; the number of banked credits will be fully depleted before the end of 2018. The Base Case delays the need to purchase SO₂ allowances by two years compared to the second least-cost Case (Case01 –BR23 WFGD 2009) which requires an additional 116,000 allowances over the study period. The Walk-Away option (Case09) necessitates purchasing SO₂ allowances starting in 2011 and significantly increases SO₂ allowance market exposure by requiring 1.3 million SO₂ allowances be purchased over the next twenty years.

**SO₂ Allowance Bank
(Combined Company)**



Because of the wide variance in forecasted SO₂ prices, a sensitivity analysis was conducted regarding SO₂ allowance prices as well as capital costs.

Sensitivities

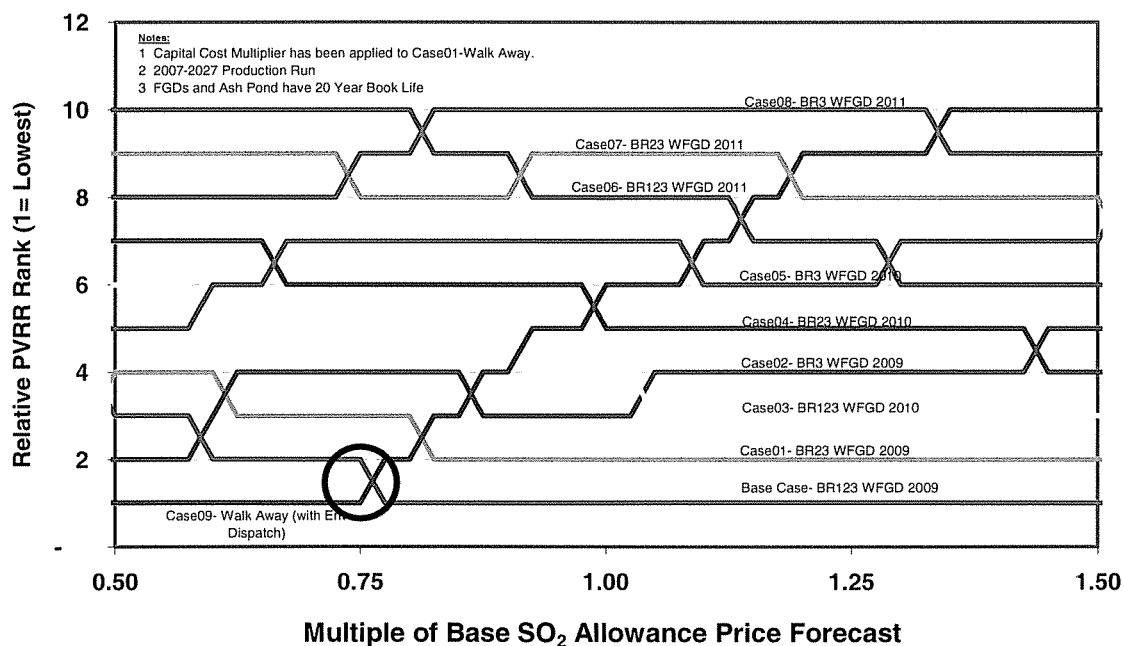
Sensitivity: Market Price of SO₂

Due to the volatility of the historic allowance market, it is prudent to evaluate the sensitivity of the rank of the Base Case as the least-cost alternative to changes in the SO₂ allowance price forecast. To do so, the PVRR of each Case was quantified, assuming that the SO₂ allowance price forecast was a multiple of the base price projection. This multiplier was applied to each year of the SO₂ allowance market price curve to determine the price at which SO₂ allowances would be purchased if required by the Case. This sensitivity includes the simplifying assumption that the new SO₂ market prices would not make significant changes to the dispatch of the Companies' generating units.

The following graph depicts the relative rank of each alternative's PVRR for multiples of the base SO₂ allowance price curve. The lowest ranked Case at each particular price curve multiple represents the least-cost alternative.

Sensitivity of FGD Least Cost Plan to SO₂ Allowance Prices

(Base Capital Costs, Base NO_x Price)

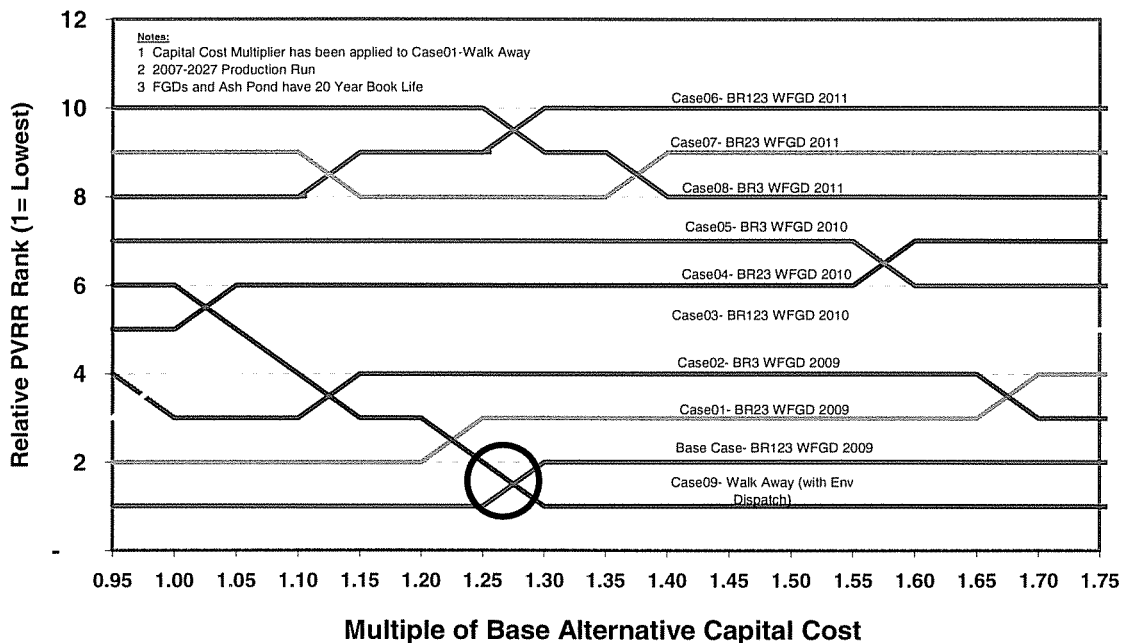


The SO₂ market price sensitivity analysis indicates that the Walk-Away Case with no FGD at Brown (Case09) would be preferred if, in each year of the study period, the SO₂ allowance market fell to or below 0.75x the base SO₂ allowance price projections. For all multiples above 0.75x the base SO₂ allowance price projections, the Base Case is least-cost.

Sensitivity: Capital Cost

Similar in method to the SO₂ price sensitivity analysis, a capital cost sensitivity analysis was also conducted in order to quantify the sensitivity of the Base Case to a range of capital costs. The graphical results of that sensitivity are shown below.

Sensitivity of FGD Least Cost Plan to Capital Cost
(Base NOx Price, Base SO₂ Price)



As with the SO₂ allowance market price sensitivity, the capital cost sensitivity confirms the preference of the Base Case. The 2009 construction of an FGD for Brown units 1, 2 and 3 is the least-cost alternative over a range of capital costs up to and including a multiplier of 1.25x the base capital costs. At capital costs above 1.25x the base costs, the Walk-Away Case (Case09) is least-cost, but involves a significant exposure to the SO₂ allowance market.

Least-Cost Plan and SO₂ Compliance Strategy

As was the case in the 2004 filing with the KPSC, building a wet FGD system for Brown 1, 2 and 3 for service starting in 2009 continues to be the least-cost Case. This is the least-cost SO₂ compliance plan under the current base forecasts for fuel and SO₂ allowance prices. The project is currently underway and is on schedule for completion in May 2009 as was stated in the original filing for Case No. 2004-00426. Since the original filing, significant increases in the project’s capital costs have been partially offset by increases in SO₂ allowance price forecasts and the near-term price gap between high and low sulfur coal.

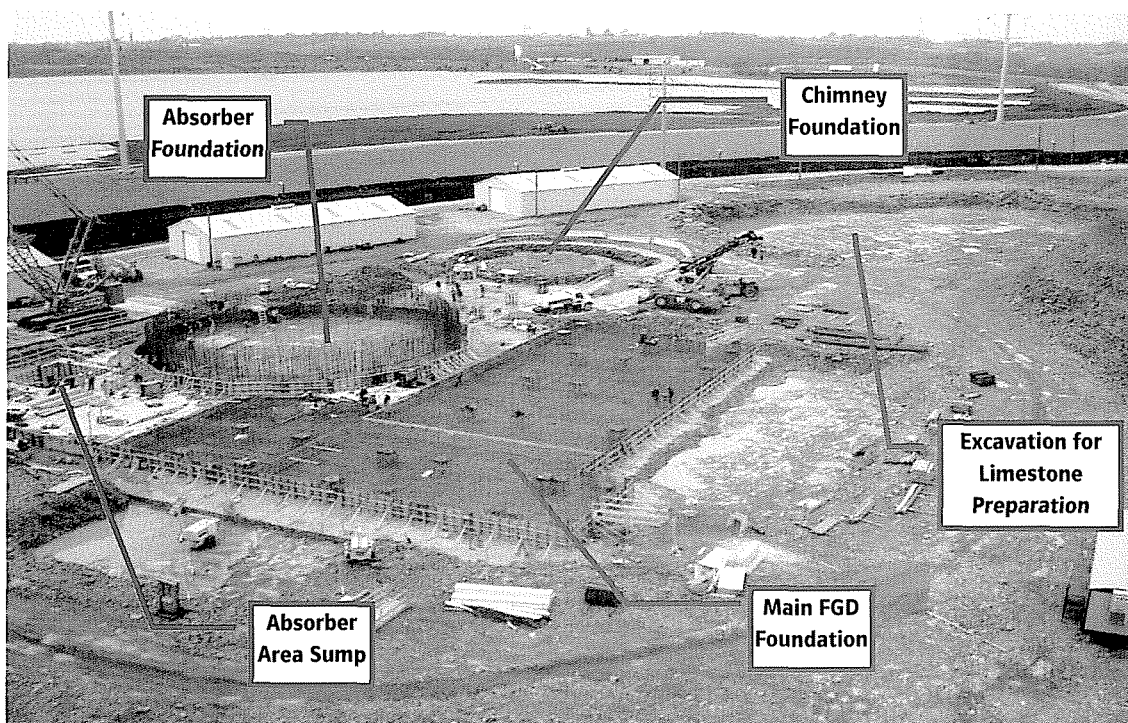
Without scrubbing at Brown, the Companies face a significant SO₂ allowance shortfall of over 1.3 million tons through 2027. While the Base Case allows a shortfall of 1 million tons of allowances to be economically mitigated, future allowance purchases of 298,000 tons are still expected.

Following the scrubbing and fuel switching of the remaining units at Ghent, construction of an FGD system at Brown and the simultaneous conversion of Brown units 1-3 to high sulfur coal in conjunction with purchasing SO₂ allowances on an as-needed basis, is the least-cost SO₂ compliance plan. Compared to completing the scrubbers at Ghent and purchasing allowances, completing the FGD at Brown has the following benefits over the 20 year analysis period:

- (1) Decreases the cost of SO₂ compliance by approximately \$93.6 million in PVRR
- (2) Significantly limits exposure to the volatile SO₂ allowance market by reducing the anticipated allowance shortfall to approximately 298,000 tons
- (3) Increases fuel procurement flexibility
- (4) Positions the Companies for the SO₂ reduction requirements associated with the CAIR and future regulations targeting fine particulates and mercury
- (5) Delays the depletion of the Companies' SO₂ allowance bank.

Therefore, the Companies will continue with the implementation of the Base Case – construct an FGD for Brown 1, 2 and 3 in 2009, purchase allowances on an as-needed basis and continue the practice of environmental dispatching. Additionally, the Companies will evaluate additional environmental technologies for existing generating assets.

Appendix 1



The picture above (dated 4/11/2007) shows the main FGD foundation where the recycle pumps will sit next to the absorber that will sit on the pedestal foundation in the upper left corner with the rebar protruding vertically. The absorber area sump is located in the photo immediately to the left of the absorber. The anchor bolts in the main FGD foundation, where the structure's columns will be located, will provide support and access for the piping that will be installed in the area above the recycle pumps. The chimney foundation will be built in the circular excavation seen in the upper center of the photo and the limestone preparation building will be built in the rectangular excavation that you see in the upper right of the photo.



The picture above (dated 4/11/2007) shows a closer view of the main FGD foundation and absorber foundation from a different angle. The edge of the excavated area indicates the amount of soil that was removed and the amount of rock that was blasted and excavated to prepare the site for the FGD construction.



The picture above (dated 4/16/2007) shows the fire protection tank being built on its foundation. The tank will be a dual purpose tank that will hold and supply water for the fire protection system for the new items being installed as part of the FGD Project and will supply water for the quench water system that will quench the flue gas in case of a process upset where recycle pump flow is lost. Without quenching of the flue gas, the FRP mist eliminator panels would be overheated and damaged.



The above photo (dated 4/11/2007) shows balance-of-plant work that is being done to install new electrical manholes and underground ductbanks for the conduits to contain power, controls and communications cables between the existing plant and the new FGD items in addition to new fire hydrants and new underground fire protection piping that have been installed.



The above photo (dated 4/16/2007) shows construction of the new warehouse.

Appendix 2

- Base Case: Scrub Ghent and Brown consistent with the KPSC order in Case No. 2004-00426.
- Study Period: 20-year period for Production Cost impacts (2007-2027)
30-year period for Capital Costs impacts (2007-through book life of project).

The production costs include items such as fuel, O&M and purchase power and are estimated using the PROSYM production model. This model was run for the 2007-2027 time period.

The revenue requirements associated with capital costs are determined via the Capital Expenditure and Recovery module of the Strategist production and capital costing software. Capital projects with a 20 year book/tax life and an in service date after 2007 would have the last years of their life excluded from the revenue requirement calculation if capital costs impacts were halted at 2027. Doing so would have the affect of underestimating the capital cost of alternatives and would favor construction of new projects. Therefore, to completely account for capital projects costs over their lifetime, the revenue requirements associated with new capital projects were extended through the end of their book life.

- KU/LGE continues as a regulated entity subject to the oversight of the Kentucky Public Service Commission and that the Commission continues the requirement of the Companies implementing the least-cost strategy to the benefit of the native load customers.
- The capital costs, O&M costs and the costs of increased emissions (both NO_x and SO₂) associated with the addition of new environmental projects will be subject to recovery through the Environmental Cost Recovery mechanism.

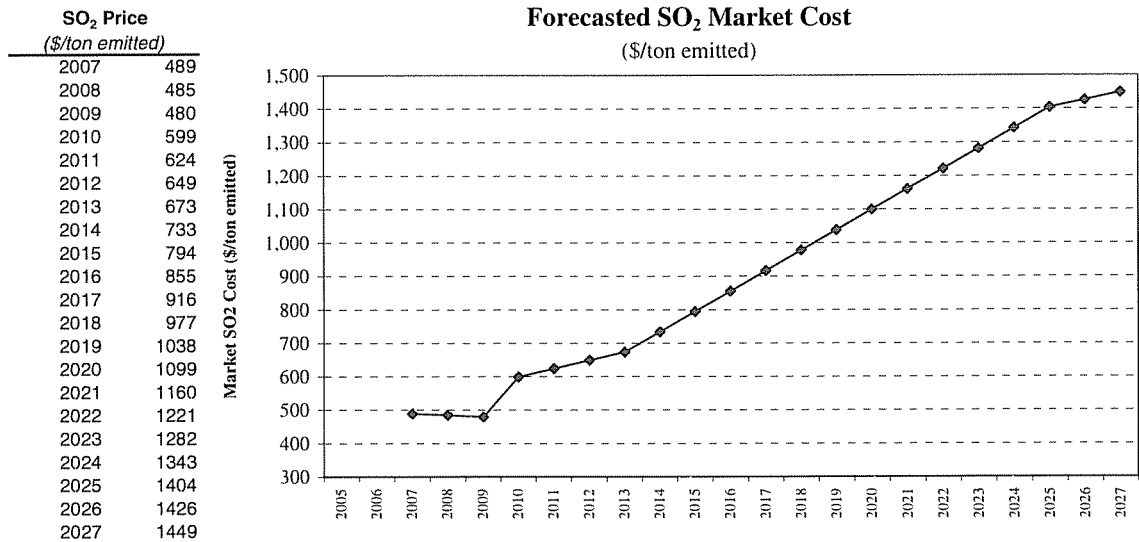
- Financial Data

➤ Discount Rate (%):	7.85 %
➤ Federal Income Tax Rate (%):	39.55 %
➤ AFUDC Rate (%):	7.85 %
➤ Insurance Rate (%):	0.07 %
➤ Property Tax Rate (%):	0.15 %
➤ Percentage of Debt in Capital Structure (%):	43.94 %
➤ Debt Interest Rate/Weighted Cost of Debt (%):	4.48%
➤ Desired Return on Rate base (%):	7.85
➤ Capitalized Interest Debt Rate (%):	4.48 %
➤ Environmental Projects Book Life (years):	20 years
➤ Environmental Projects Tax Life (years):	20 years
➤ Annual Fixed O&M escalation rate (%):	1.6% (prorated for mid-year installs)
➤ Annual Variable O&M escalation rate (%):	1.6%

- No unit retirements occur on the Companies' generating system within the study period.

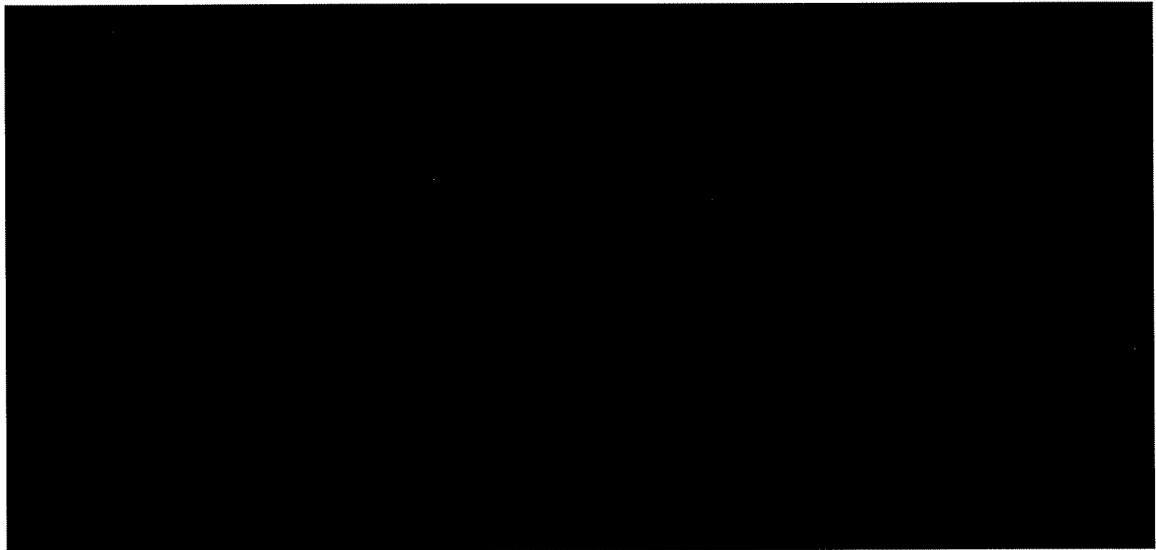
- SO₂ Emission Costs (Base Assumption)

Note that the effects of CAIR are reflected in the forecasted price of SO₂.



- Fuel Forecast (Base Assumptions)

- Fuel cost savings associated with serving native load will be returned to the ratepayer through the Fuel Adjustment Clause mechanism.



Appendix 3



U.S.

Update to the 2004 SO₂ Compliance Strategy
 Appendix 3- Comparison of Various SO₂ Compliance Plans (Base Capital Costs, Base SO₂ Market Prices)
 Confidential Information Redacted

Cost Comparison of Alternative SO ₂ Compliance Plans											
All Costs in 2007 PVRR \$ x1000											
Case01 - BR23 WFGD 2009						Base Case- BR123 WFGD 2009					
Fuel Forecast: Base Load Forecast: Base SO ₂ Price Forecast: Base X 1 NOX Price Forecast: None X 1 Other Description: Brown 23 FGD in '09 0						Fuel Forecast: Base Load Forecast: Base SO ₂ Price Forecast: Base X 1 NOX Price Forecast: Base X 1 Other Description: Brown 123 FGD in '09 0					
Environmental Controls:						Environmental Controls:					
Unit	SO ₂ Rem. %	SO ₂ Tech	SO ₂ In-Serv	NOX Tech	NOX In-Serv	SO ₂ Rem. %	SO ₂ Tech	SO ₂ In-Serv	NOX Tech	NOX In-Serv	Price Curve Multipliers
Brown 1	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	SO ₂ 1.00
Brown 2	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	NOX 1.00
Brown 3	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	
GHent 1	95%	Existing FGD	1992	Existing FGD	1992	95%	Existing FGD	1992	Existing FGD	1992	
GHent 2	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	98%	FS HS-Wet FGD	2009	FS HS-Wet FGD	2009	
GHent 3	98%	FS HS-Wet FGD	2007	FS HS-Wet FGD	2007	98%	FS HS-Wet FGD	2007	FS HS-Wet FGD	2007	
GHent 4	98%	FS HS-Wet FGD	2008	FS HS-Wet FGD	2008	98%	FS HS-Wet FGD	2008	FS HS-Wet FGD	2008	
SO ₂ Allowances Purchased: 414,006						SO ₂ Allowances Purchased: 298,138					
Largest Annual SO ₂ Purchase (as a % of EPA Allocation): 84%						Largest Annual SO ₂ Purchase (as a % of EPA Allocation): 71%					
Ann+Oz Seas NO _x Allow Purch: 63,917						Ann+Oz Seas NO _x Allow Purch: 68,367					
Year	Emission Price (Nominal \$/ton emit) NOX	Production \$	Combined Company Allow. Purchases NOX \$	Capital \$	PVRR Total \$	Emission Price (Nominal \$/ton emit) SO2	Production \$	Combined Company Allow. Purchases NOX \$	Capital \$	PVRR Total \$	Difference Calculations
2007	900	489	-	23,414	900	489	489	-	22,477	937	937
2008	850	485	-	43,312	850	485	-	-	43,574	(262)	(262)
2009	645	480	-	58,792	645	480	-	1,603	60,445	(2,736)	(2,736)
2010	2366	599	1,532	56,952	2366	599	3,633	4,008	58,714	(3,816)	(3,816)
2011	2369	624	3,218	50,515	2369	624	3,218	2,209	52,078	(3,430)	(3,430)
2012	2372	649	1,958	44,785	2372	649	1,958	2,209	46,171	(3,108)	(3,108)
2013	2274	673	4,827	39,682	2274	673	4,827	5,051	40,911	(2,748)	(2,748)
2014	2250	733	2,557	35,136	2250	733	2,557	2,704	36,225	(2,364)	(2,364)
2015	3098	794	3,329	31,080	3098	794	3,329	2,479	32,044	(2,033)	(2,033)
2016	3092	855	3,158	27,457	3092	855	3,158	3,312	28,312	6,245	6,245
2017	3086	916	4,112	15,877	3086	916	4,112	4,296	24,958	14,330	14,330
2018	3122	977	3,864	21,276	3122	977	3,864	4,039	21,943	2,366	2,366
2019	3149	1038	5,185	18,647	3149	1038	5,185	5,445	19,234	1,681	1,681
2020	3177	1099	4,624	16,288	3177	1099	4,624	4,987	16,803	2,078	2,078
2021	3250	1160	5,010	14,174	3250	1160	5,010	5,311	14,624	1,925	1,925
2022	3282	1221	4,679	12,281	3282	1221	4,679	5,418	12,674	2,757	2,757
2023	3281	1282	4,862	10,589	3281	1282	4,862	5,079	10,990	2,671	2,671
2024	3123	1343	4,862	9,078	3123	1343	4,862	4,578	9,372	2,678	2,678
2025	2970	1404	4,244	7,731	2970	1404	4,244	4,578	7,984	2,596	2,596
2026	3018	1426	3,340	6,532	3018	1426	3,340	3,612	6,748	2,356	2,356
2027	3066	1449	2,771	5,318	3066	1449	2,771	2,945	5,511	2,121	2,121
2028			-	3,585			-	-	3,806	(221)	(221)
2029			-	661			-	-	702	(41)	(41)
2030			-	-			-	-	-	-	-
2031			-	-			-	-	-	-	-
2032			-	-			-	-	-	-	-
Totals		14,796,732	70,884	161,527	15,590,630	Delta (PVRR \$000)	14,800,304	75,816	114,287	15,566,648	23,992
							(3,573)	(4,932)	(14,753)	23,992	23,992



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Update to the 2004 SO2 Compliance Strategy
Appendix 3- Comparison of Various SO2 Compliance Plans (Base Capital Costs, Base SO2 Market Prices)
Confidential Information Redacted

Cost Comparison of Alternative SO2 Compliance Plans
All Costs in 2007 PVRR \$ x1000

Table with columns: Year, Emission Price, Production \$, Combined Company Allow. Purchases, Capital \$, PVRR Total \$, Emission Price, Production \$, Combined Company Allow. Purchases, Capital \$, PVRR Total \$, Delta (PVRR \$000), Total \$, Cumulative Total \$. Includes sub-sections for Case02-BR3 WFGD 2009 and Base Case- BR123 WFGD 2009.



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Update to the 2004 SO2 Compliance Strategy
Appendix 3- Comparison of Various SO2 Compliance Plans (Base Capital Costs, Base SO2 Market Prices)
Confidential Information Redacted

Cost Comparison of Alternative SO2 Compliance Plans
All Costs in 2007 PVRR \$ x1000
Case03- BR123 WFGD 2010 vs Case- BR123 WFGD 2009
Table with columns: Year, Emission Price, Production, Allow. Purchases, Capital, PVRR Total, Emission Price, Production, Allow. Purchases, Capital, PVRR Total, Cumulative Total. Includes sub-sections for Fuel Forecast, Environmental Controls, and SO2 Allowances.



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Update to the 2004 SO₂ Compliance Strategy
Appendix 3- Comparison of Various SO₂ Compliance Plans (Base Capital Costs, Base SO₂ Market Prices)
Confidential Information Redacted

<p align="center">Cost Comparison of Alternative SO₂ Compliance Plans All Costs in 2007 PVRR \$ x1000</p>													
<p align="center">Base Case: BR123 WFGD 2009</p>													
Year	Emission Price (Nominal \$/ton emit) NOx	Production \$	Combined Company Allow. Purchases NOx \$	Capital \$	PVRR Total \$	Emission Price (Nominal \$/ton emit) SO ₂	Production \$	Combined Company Allow. Purchases SO ₂ \$	Capital \$	PVRR Total \$	Delta (PVRR \$000)	Ann+Oz Seas NO _x Allow Purch: 63,663	Ann+Oz Seas SO ₂ Allow Purch: 198
2007	900	489	-	23,414	739,419	850	485	-	36,258	23,414	15,654,752	599,491	184,540
2008	850	485	-	36,258	1,983,704	840	480	-	45,960	36,258	15,654,752	599,491	184,540
2009	645	480	1,445	45,960	1,983,704	2366	599	1,603	58,810	45,960	15,654,752	599,491	184,540
2010	2366	599	3,451	58,810	84%	2369	624	4,008	57,100	58,810	15,654,752	599,491	184,540
2011	2369	624	3,218	57,100	84%	2372	649	2,209	50,633	57,100	15,654,752	599,491	184,540
2012	2372	649	1,957	50,633	84%	2274	673	2,704	44,876	50,633	15,654,752	599,491	184,540
2013	2274	673	4,827	44,876	84%	2250	733	5,051	39,751	44,876	15,654,752	599,491	184,540
2014	2250	733	2,557	39,751	84%	3098	794	2,794	35,179	39,751	15,654,752	599,491	184,540
2015	3098	794	2,329	35,179	84%	3092	855	3,312	31,099	35,179	15,654,752	599,491	184,540
2016	3092	855	3,158	31,099	84%	3086	916	4,296	27,459	31,099	15,654,752	599,491	184,540
2017	3086	916	4,112	27,459	84%	3122	977	4,039	24,189	27,459	15,654,752	599,491	184,540
2018	3122	977	3,864	24,189	84%	3149	1038	5,445	21,249	24,189	15,654,752	599,491	184,540
2019	3149	1038	5,185	21,249	84%	3177	1099	4,987	18,609	21,249	15,654,752	599,491	184,540
2020	3177	1099	4,624	18,609	84%	3250	1160	5,311	16,241	18,609	15,654,752	599,491	184,540
2021	3250	1160	4,980	16,241	84%	3282	1221	5,010	14,060	16,241	15,654,752	599,491	184,540
2022	3282	1221	5,010	14,060	84%	3281	1282	5,079	13,444	14,060	15,654,752	599,491	184,540
2023	3281	1282	4,679	13,444	84%	3123	1343	4,578	10,522	13,444	15,654,752	599,491	184,540
2024	3123	1343	4,862	10,522	84%	2970	1404	3,240	9,007	10,522	15,654,752	599,491	184,540
2025	2970	1404	4,244	9,007	84%	3018	1426	2,945	7,657	9,007	15,654,752	599,491	184,540
2026	3018	1426	3,340	7,657	84%	3066	1449	2,771	6,307	7,657	15,654,752	599,491	184,540
2027	3066	1449	2,771	6,307	84%	3066	1449	2,771	5,875	6,307	15,654,752	599,491	184,540
2028	3066	1449	2,771	5,875	84%	3066	1449	2,771	4,453	5,875	15,654,752	599,491	184,540
2029	3066	1449	2,771	4,453	84%	3066	1449	2,771	3,697	4,453	15,654,752	599,491	184,540
2030	3066	1449	2,771	3,697	84%	3066	1449	2,771	682	3,697	15,654,752	599,491	184,540
2031	3066	1449	2,771	682	84%	3066	1449	2,771	-	682	15,654,752	599,491	184,540
2032	3066	1449	2,771	-	84%	3066	1449	2,771	-	-	15,654,752	599,491	184,540
Totals			70,615	184,540	599,491	15,654,752	14,800,106	70,615	184,540	599,491	15,654,752	184,540	198



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Update to the 2004 SO2 Compliance Strategy
Appendix 3- Comparison of Various SO2 Compliance Plans (Base Capital Costs, Base SO2 Market Prices)
Confidential Information Redacted

Cost Comparison of Alternative SO2 Compliance Plans
All Costs in 2007 PVRR \$ x1000

Table with columns for Year, Emission Price, Production \$, Capital \$, PVRR Total \$, and Cumulative Total \$. Includes sub-sections for Case05-BR3 WFGD 2010 and Case05-BR123 WFGD 2009, detailing fuel forecasts, SO2 prices, and environmental controls.



Cost Comparison of Alternative SO₂ Compliance Plans All Costs in 2007 PVRR \$ x1000

Year	Case06- BR123 WFGD 2011										Case06- BR123 WFGD 2009										Price Curve Multipliers	
	Ann-O ₂ Seas NO _x Allow Purch:	Emission Price (Nominal \$/ton emit)	Production \$	Allow. Purchases NOx \$	Capital \$	PVRR Total \$	Ann-O ₂ Seas NO _x Allow Purch:	Emission Price (Nominal \$/ton emit)	Production \$	Allow. Purchases NOx \$	Capital \$	PVRR Total \$	Ann-O ₂ Seas NO _x Allow Purch:	Emission Price (Nominal \$/ton emit)	Production \$	Allow. Purchases NOx \$	Capital \$	PVRR Total \$	Total \$	Cumulative Total \$	SO ₂	NO _x
2007	900	489	67,413	-	24,146	15,713,444	900	489	14,800,304	22,477	1,669	1,669	900	489	14,800,304	22,477	1,669	15,566,648	146,796	1,669	1.00	1.00
2008	850	485	-	-	27,570	-	850	485	-	43,574	-	-	850	485	-	-	43,574	-	14,335	-	-	-
2009	645	480	-	1,445	35,156	-	645	480	1,603	60,445	-	-	645	480	1,603	60,445	-	-	-	-	-	-
2010	2366	599	-	3,289	45,947	-	2366	599	4,008	58,714	-	-	2366	599	4,008	58,714	-	-	-	-	-	-
2011	2369	624	-	3,289	63,962	-	2369	624	3,515	52,078	-	-	2369	624	3,515	52,078	-	-	-	-	-	-
2012	2372	649	-	2,209	62,302	-	2372	649	2,209	46,171	-	-	2372	649	2,209	46,171	-	-	-	-	-	-
2013	2274	673	-	5,051	66,524	-	2274	673	5,051	40,911	-	-	2274	673	5,051	40,911	-	-	-	-	-	-
2014	2250	733	-	2,704	48,951	-	2250	733	2,704	36,225	-	-	2250	733	2,704	36,225	-	-	-	-	-	-
2015	3098	794	-	2,479	12,211	-	3098	794	2,479	32,044	-	-	3098	794	2,479	32,044	-	-	-	-	-	-
2016	3092	855	-	3,312	11,997	-	3092	855	3,312	28,312	-	-	3092	855	3,312	28,312	-	-	-	-	-	-
2017	3086	916	-	4,296	13,165	-	3086	916	4,296	24,958	-	-	3086	916	4,296	24,958	-	-	-	-	-	-
2018	3122	977	-	4,039	29,910	-	3122	977	4,039	21,943	-	-	3122	977	4,039	21,943	-	-	-	-	-	-
2019	3149	1038	-	5,445	26,337	-	3149	1038	5,445	19,234	-	-	3149	1038	5,445	19,234	-	-	-	-	-	-
2020	3177	1099	-	4,987	23,127	-	3177	1099	4,987	16,803	-	-	3177	1099	4,987	16,803	-	-	-	-	-	-
2021	3250	1160	-	5,311	12,826	-	3250	1160	5,311	12,826	-	-	3250	1160	5,311	12,826	-	-	-	-	-	-
2022	3282	1221	-	5,418	17,658	-	3282	1221	5,418	11,765	-	-	3282	1221	5,418	11,765	-	-	-	-	-	-
2023	3281	1262	-	5,079	15,342	-	3281	1262	5,079	10,930	-	-	3281	1262	5,079	10,930	-	-	-	-	-	-
2024	3123	1343	-	5,222	13,269	-	3123	1343	5,222	11,928	-	-	3123	1343	5,222	11,928	-	-	-	-	-	-
2025	2970	1404	-	4,578	11,416	-	2970	1404	4,578	11,732	-	-	2970	1404	4,578	11,732	-	-	-	-	-	-
2026	3018	1426	-	3,612	9,494	-	3018	1426	3,612	9,494	-	-	3018	1426	3,612	9,494	-	-	-	-	-	-
2027	3066	1449	-	2,945	8,248	-	3066	1449	2,945	8,248	-	-	3066	1449	2,945	8,248	-	-	-	-	-	-
2028	-	-	-	-	5,992	-	-	-	-	5,992	-	-	-	-	-	-	5,992	-	-	-	-	-
2029	-	-	-	-	5,030	-	-	-	-	5,030	-	-	-	-	-	-	5,030	-	-	-	-	-
2030	-	-	-	-	4,177	-	-	-	-	4,177	-	-	-	-	-	-	4,177	-	-	-	-	-
2031	-	-	-	-	770	-	-	-	-	770	-	-	-	-	-	-	770	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals			14,802,973	74,416	670,020	15,713,444	Delta (PVRR \$000)		2,669	14,800,304	75,816	114,287	576,240	15,566,648	146,796	93,780	146,796	146,796	146,796	146,796		



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All Costs in 2007 PVRR \$ x1000													
Case07- BR23 WFGD 2011						Base Case- BR123 WFGD 2009						Price Curve Multipliers	
Fuel Forecast: Base						Fuel Forecast: Base						SO ₂	NO _x
Load Forecast: Base						Load Forecast: Base						1.00	1.00
SO ₂ Price Forecast: Base X 1						SO ₂ Price Forecast: Base X 1							
NO _x Price Forecast: Base X 1						NO _x Price Forecast: Base X 1							
Other Description: Brown 23 FGD in '11						Other Description: Brown 123 FGD in '09							
0						0							
Environmental Controls:						Environmental Controls:							
Unit	SO ₂ Rem. %	SO ₂ Tech	SO ₂ In-Seq	NO _x Tech	NO _x In-Seq	SO ₂ Rem. %	SO ₂ Tech	SO ₂ In-Seq	NO _x Tech	NO _x In-Seq	NO _x Tech Cost (M\$)		
Brown 1	0%	0	0	LNCFCS I (1994)	0	98%	FS HS-Wet FGD	2009	LNCFCS III	2009	\$95.00		
Brown 2	98%	FS HS-Wet FGD	2011	LNCFCS II (1992)	2015	98%	FS HS-Wet FGD	2007	LNCFCS III	2003			
Brown 3	98%	FS HS-Wet FGD	2011	LNCFCS II	2003	98%	FS HS-Wet FGD	2008	LNCFCS III	2003			
Chemt 1	95%	Existing FGD	1992			95%	Existing FGD	1992					
Chemt 2	98%	FS HS-Wet FGD	2009	LNCFCS III	2009	98%	FS HS-Wet FGD	2009	LNCFCS III	2009	\$95		
Chemt 3	98%	FS HS-Wet FGD	2007	LNCFCS III (2009)/SCR (2009)	2009	98%	FS HS-Wet FGD	2009	LNCFCS III	2009			
Chemt 4	98%	FS HS-Wet FGD	2008	LNB & OFA (1998)	2003	98%	FS HS-Wet FGD	2007	LNB & OFA (1998)	2003			
Chemt 5	98%	FS HS-Wet FGD	2008	LNB & OFA (1999)	2003	98%	FS HS-Wet FGD	2008	LNB & OFA (1999)	2003			
SO ₂ Allowances Purchased:		518,880				SO ₂ Allowances Purchased:		298,138			1,814,742		
SO ₂ Tons Emitted:		84%				SO ₂ Tons Emitted:		71%			745,948		
Largest Annual SO ₂ Purchase (as a % of EPA Allocation):						Largest Annual SO ₂ Purchase (as a % of EPA Allocation):							
Ann-Oz Seas NO _x Allow Purch:		63,361				Ann-Oz Seas NO _x Allow Purch:		68,937					
Emission Price (Nominal \$/ton emit) SO ₂					Emission Price (Nominal \$/ton emit) SO ₂					DIFFERENCE CALCULATIONS			
Year	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Ann-Oz Seas NO _x	Total \$	Cumulative Total \$	
2007	900	489	23,740	3098	794	900	489	23,740	3098	794	1,263	1,263	
2008	850	485	27,056	3082	855	850	485	27,056	3082	855	(16,518)	(15,255)	
2009	645	480	34,387	3086	916	645	480	34,387	3086	916	(24,181)	(39,436)	
2010	2366	599	43,889	3122	977	2366	599	43,889	3122	977	(16,244)	(55,680)	
2011	2369	624	60,874	3177	1099	2369	624	60,874	3177	1099	6,981	(48,699)	
2012	2372	649	1,957	3149	1038	2372	649	1,957	3149	1038	18,141	(30,558)	
2013	2274	673	4,827	3149	1038	2274	673	4,827	3149	1038	19,653	(10,905)	
2014	2250	733	46,407	3098	794	2250	733	46,407	3098	794	16,478	5,573	
2015	3098	794	41,092	3082	855	3098	794	41,092	3082	855	22,796	28,369	
2016	3092	855	36,351	3086	916	3092	855	36,351	3086	916	21,557	49,926	
2017	3086	916	15,877	3122	977	3086	916	15,877	3122	977	22,251	72,177	
2018	3122	977	15,744	3177	1099	3122	977	15,744	3177	1099	9,442	81,620	
2019	3149	1038	15,280	3149	1038	3149	1038	15,280	3149	1038	7,999	89,618	
2020	3177	1099	4,624	3177	1099	3177	1099	4,624	3177	1099	16,803	97,328	
2021	3250	1160	15,060	3250	1160	3250	1160	15,060	3250	1160	12,636	110,265	
2022	3282	1221	14,060	3282	1221	3282	1221	14,060	3282	1221	12,826	123,091	
2023	3281	1282	13,444	3281	1282	3281	1282	13,444	3281	1282	11,765	134,856	
2024	3123	1343	14,097	3123	1343	3123	1343	14,097	3123	1343	10,930	145,786	
2025	2970	1404	13,835	2970	1404	2970	1404	13,835	2970	1404	9,372	165,158	
2026	3018	1426	9,248	3018	1426	3018	1426	9,248	3018	1426	5,445	170,603	
2027	3066	1449	2,771	3066	1449	3066	1449	2,771	3066	1449	4,987	175,590	
2028	-	-	-	-	-	-	-	-	-	-	14,624	190,214	
2029	-	-	-	-	-	-	-	-	-	-	11,928	202,142	
2030	-	-	-	-	-	-	-	-	-	-	12,826	214,968	
2031	-	-	-	-	-	-	-	-	-	-	11,732	226,700	
2032	-	-	-	-	-	-	-	-	-	-	8,494	235,194	
Totals			70,053	207,009	638,234			14,800,304	1,123		15,566,648	150,075	
						Delta (PVRR \$000)					92,722	61,994	



Cost Comparison of Alternative SO ₂ Compliance Plans All Costs in 2007 PVRR \$ x1000													
Case08- BR3 WFGD 2011						Base Case- BR123 WFGD 2009						Price Curve Multipliers	
Fuel Forecast: Base Load Forecast: Base SO ₂ Price Forecast: Base X 1 NOX Price Forecast: Base X 1 Other Description: Brown 3 FGD in '11						Fuel Forecast: Base Load Forecast: Base SO ₂ Price Forecast: Base X 1 NOX Price Forecast: Base X 1 Other Description: Brown 123 FGD in '09						SO ₂ 1.00 NOx 1.00	
Environmental Controls:						Environmental Controls:							
Unit	SO ₂ Perm %	SO ₂ Tech	SO ₂ In-Seq	NOX Tech	NOX In-Seq	NO _x Tech Cost (M\$)	SO ₂ Perm %	SO ₂ Tech	SO ₂ In-Seq	NOX Tech	NOX In-Seq	NO _x Tech Cost (M\$)	
Brown 1	0%	0%	0	LNCFCS I (1992)	0	-	98%	FS HS-Wet FGD	2009	LNCFCS I (1992)	0	-	
Brown 2	98%	98%	2011	LNCFCS III (1992)	2015	-	98%	FS HS-Wet FGD	2009	LNCFCS III (1992)	2015	-	
Brown 3	98%	98%	1992	LNCFCS II	2003	-	98%	Existing FGD	1992	LNCFCS II	2003	-	
GHent 1	98%	98%	2009	LNCFCS III	2009	\$95.00	98%	FS HS-Wet FGD	2009	LNCFCS III	2009	\$95	
GHent 2	98%	98%	2007	(2007)SCR	2009	-	98%	FS HS-Wet FGD	2009	(2007)SCR	2009	-	
GHent 3	98%	98%	2008	LNCFCS III (1992)	2003	-	98%	LNCFCS III (1992)	2008	LNCFCS III (1992)	2003	-	
GHent 4	98%	98%	2008	LNCFCS III (1992)	2003	-	98%	LNCFCS III (1992)	2008	LNCFCS III (1992)	2003	-	
SO ₂ Allowances Purchased: 716,517						SO ₂ Allowances Purchased: 299,138						SO ₂ Tons Emitted: 1,814,742	
Largest Annual SO ₂ Purchase (as a % of EPA Allocation): 110%						Largest Annual SO ₂ Purchase (as a % of EPA Allocation): 71%						71%	
Ann+Oz Seas NO _x Allow Purch: 62,290						Ann+Oz Seas NO _x Allow Purch: 68,367						Ann+Oz Seas NO _x Tons Emit: 745,948	
Year	Emission Price (Nominal \$/ton emit) NOx	Production \$	Combined Company Allow. Purchases NOx \$	Capital \$	PVRR Total \$	Emission Price (Nominal \$/ton emit) SO ₂	Production \$	Combined Company Allow. Purchases NOx \$	Capital \$	PVRR Total \$	Total \$	Cumulative Total \$	
2007	900	489	-	22,834	22,834	900	489	-	22,477	22,477	157	157	
2008	850	485	-	25,660	25,660	850	485	-	43,574	43,574	(17,914)	(17,914)	
2009	645	480	1,445	33,148	33,148	645	480	1,603	60,445	60,445	(26,420)	(43,177)	
2010	2366	599	2,993	40,088	40,088	2366	599	4,008	58,714	58,714	(20,045)	(63,222)	
2011	2369	624	3,110	54,935	54,935	2369	624	3,515	52,078	52,078	1,968	(61,253)	
2012	2372	649	1,996	53,455	53,455	2372	649	2,209	46,171	46,171	19,574	(41,680)	
2013	2274	673	4,907	47,392	47,392	2274	673	5,051	40,911	40,911	19,180	(22,500)	
2014	2250	733	2,600	41,995	41,995	2250	733	2,704	36,225	36,225	16,560	(5,940)	
2015	3098	794	2,386	37,184	37,184	3098	794	2,479	32,044	32,044	22,607	16,666	
2016	3092	855	3,209	19,470	19,470	3092	855	3,312	28,312	28,312	22,311	38,977	
2017	3086	916	4,112	21,041	21,041	3086	916	4,296	24,958	24,958	23,606	62,583	
2018	3122	1038	3,878	20,898	20,898	3122	1038	4,039	21,943	21,943	11,378	73,960	
2019	3149	1099	5,102	20,358	20,358	3149	1099	5,445	19,234	19,234	10,673	84,633	
2020	3177	1099	4,536	19,581	19,581	3177	1099	4,987	16,803	16,803	10,512	95,145	
2021	3250	1160	4,856	19,844	19,844	3250	1160	5,311	14,624	14,624	10,144	105,289	
2022	3282	1221	4,855	18,301	18,301	3282	1221	5,418	11,765	11,765	10,381	115,670	
2023	3281	1282	4,548	17,923	17,923	3281	1282	5,079	11,253	11,253	10,187	125,857	
2024	3123	1343	4,702	18,484	18,484	3123	1343	5,222	11,928	11,928	10,043	135,901	
2025	2970	1404	4,077	18,155	18,155	2970	1404	4,578	7,947	7,947	145,648	145,648	
2026	3018	1426	3,212	15,184	15,184	3018	1426	3,612	6,748	6,748	8,665	154,312	
2027	3066	1449	2,674	13,108	13,108	3066	1449	2,945	8,248	8,248	7,436	161,748	
2028			-	5,094	5,094			-	3,806	3,806	1,288	163,036	
2029			-	4,276	4,276			-	702	702	3,574	166,610	
2030			-	3,549	3,549			-	-	-	3,549	170,159	
2031			-	654	654			-	-	-	654	170,813	
2032			-	-	-			-	-	-	-	-	170,813
Totals			69,197	287,087	582,204	15,737,461	14,800,304	75,816	576,240	15,566,648	170,813	170,813	
							(1,331)	(6,619)	5,964				



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Update to the 2004 SO₂ Compliance Strategy
 Appendix 3- Comparison of Various SO₂ Compliance Plans (Base Capital Costs, Base SO₂ Market Prices)
 Confidential Information Redacted

Cost Comparison of Alternative SO₂ Compliance Plans
All Costs in 2007 PVRR \$ x1000

Year	Case09- Walk Away (with Env Dispatch)										Base Case- BR123 WFGD 2009										Price Curve Multipliers	
	Unit	SO ₂ Rem. %	SO ₂ Tech	SO ₂ In-Serv	NOx Tech	NOx In-Serv	NOx Tech Cost (M\$)	SO ₂ Rem. %	SO ₂ Tech	SO ₂ In-Serv	NOx Tech	NOx In-Serv	NOx Tech Cost (M\$)	SO ₂ In-Serv	NOx Tech	NOx In-Serv	NOx Tech Cost (M\$)	SO ₂	NO _x			
2007	900	0%	n/a	0	LNB (1993)	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1.00			
2008	850	0%	n/a	0	LNB (1994)	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2009	645	0%	n/a	0	LNCFS I (1994)	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2010	2366	0%	n/a	0	LNCFS I (1994)	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2011	2369	0%	n/a	0	LNCFS II (1992)	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2012	2372	0%	n/a	0	LNCFS II (1992)	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2013	2274	0%	n/a	0	LNCFS II (1992)	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2014	2250	0%	n/a	0	LNCFS III (2009)	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2015	3098	98%	FS HS+Wei FGD	2009	LNB & OFA (1998)	2007	2009	2009	2009	LNB & OFA (1998)	2007	2009	2009	2009	2009	2009	2009	2009	2009			
2016	3092	98%	FS HS+Wei FGD	2008	LNB & OFA (1999)	2008	2008	2008	2008	LNB & OFA (1999)	2008	2008	2008	2008	2008	2008	2008	2008	2008			
2017	3086	98%	FS HS+Wei FGD	2003	LNB & OFA (1999)	2003	2003	2003	2003	LNB & OFA (1999)	2003	2003	2003	2003	2003	2003	2003	2003	2003			
2018	3122	97%	Existing FGD	2009	LNCFS III (2009)	2009	2009	2009	2009	LNCFS III (2009)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2019	3149	103%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2020	3177	109%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2021	3250	116%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2022	3282	122%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2023	3281	128%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2024	3123	134%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2025	2970	140%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2026	3018	142%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2027	3066	144%	Existing FGD	2009	LNB & OFA (1998)	2009	2009	2009	2009	LNB & OFA (1998)	2009	2009	2009	2009	2009	2009	2009	2009	2009			
2028																						
2029																						
2030																						
2031																						
2032																						
Totals																						

Appendix 4



Update to the 2004 SO₂ Compliance Strategy
Appendix 4 - SO₂ Emissions of Various SO₂ Compliance Plans

Base Case - BR123.WFGD.2009

Table with columns: FUEL, SO2 Content (MlbTU), Owner, and years 2007-2027. Rows include various plants like Brown 1, Brown 2, etc., and summary rows for SO2 EMISSIONS (TONS), ALLOWANCES, and ALLOWANCE BANK.



Update to the 2004 SO₂ Compliance Strategy
Appendix 4- SO₂ Emissions of Various SO₂ Compliance Plans

Case01- BR23 WFGD 2009

Table with columns for years 2007-2027 and rows for various SO2 sources and allowances. Includes sub-sections for 'SO2 SUMMARY BY YEAR', 'SCRUBBER REMOVAL EFF.', and 'SO2 EMISSIONS (TONS)'. Data points include fuel SO2 content, owner names, and emission/allowance values.



Update to the 2004 SO₂ Compliance Strategy
Appendix 4- SO₂ Emissions of Various SO₂ Compliance Plans

Case02-BR3 WFGD 2009

SO₂ SUMMARY BY YEAR

Table with columns for Fuel SO2 Compliant (MMBTU), Owner, and years 2006-2027. Rows include various scrubber removal units like Brown 1, Brown 2, Green 1, etc., and summary rows for SO2 Emissions (Tons) and Allowances (Tons).



Case03- BRT23 WFGD 2010

FUEL/ SO ₂ Comment (WABTU)	Owner	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Brown 1	KU	2.5	2.5	2.5	5.0	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Brown 2	KU	2.5	2.5	2.5	5.0	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Brown 3	KU	2.5	2.5	2.5	5.0	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Ghent 1	KU	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Ghent 2	KU	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Ghent 3	KU	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
Ghent 4	KU	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
Green River 1	KU	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	
Green River 2	KU	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Green River 3	KU	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Green River 4	KU	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Tyone 1	KU	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Cano Run 4	LGE	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Cano Run 5	LGE	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Chillico Run 5	LGE	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Mill Creek 1	LGE	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Mill Creek 2	LGE	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Mill Creek 3	LGE	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Mill Creek 4	LGE	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Timbal County 1	LGE	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Timbal County 2	LGE	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Timbal County 3	LGE	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
SCRUBBER REMOVAL EFF.																							
Brown 1		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Brown 2		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Brown 3		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ghent 1		95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Ghent 2		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ghent 3		98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Ghent 4		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Green River 1		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Green River 2		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Green River 3		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Green River 4		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tyone 1		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cano Run 4		82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
Cano Run 5		84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%
Chillico Run 5		84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%
Mill Creek 1		93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
Mill Creek 2		92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Mill Creek 3		89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Mill Creek 4		91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Timbal County 1		99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Timbal County 2		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Timbal County 3		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TOTALS SO ₂ EMITTED		7,298	7,298	7,298	10,070	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700	10,700
Brown 2	KU	15,089	13,808	14,425	6,494	774	765	765	705	562	612	327	324	352	355	346	363	385	367	401	365	307	307
Brown 3	KU	34,743	35,261	33,912	13,715	1,934	1,670	1,670	1,710	1,871	1,841	1,915	1,812	1,703	1,881	1,941	1,970	1,931	1,945	1,978	1,711	1,651	1,590
Ghent 1	KU	4,548	5,996	5,461	5,446	5,441	5,442	5,442	4,738	5,255	5,240	5,340	5,323	5,323	5,344	5,344	5,323	5,373	5,419	5,435	5,290	5,228	5,228
Ghent 2	KU	1,489	1,630	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,592
Ghent 3	KU	5,725	2,202	2,177	2,175	2,171	2,177	2,177	2,146	2,133	2,125	2,137	2,126	2,133	2,147	2,145	2,145	2,157	2,157	2,145	2,152	2,141	2,097
Ghent 4	KU	19,134	4,600	2,177	2,175	2,171	2,177	2,177	2,146	2,133	2,125	2,137	2,126	2,133	2,147	2,145	2,145	2,157	2,157	2,145	2,152	2,141	2,097
Green River 1	KU	8,154	8,131	7,896	8,104	7,325	7,401	7,325	7,896	6,028	5,248	6,157	6,306	6,045	5,081	5,655	5,802	5,802	4,118	4,834	4,884	4,445	4,298
Green River 2	KU	14,477	14,658	14,293	12,112	10,559	9,254	10,600	9,478	8,625	7,666	8,819	9,036	8,283	8,678	8,164	7,852	8,417	9,042	9,042	5,603	5,531	5,311
Green River 3	KU	2,770	3,208	3,472	2,756	2,820	2,675	2,754	2,355	2,164	2,176	2,143	2,287	2,432	2,203	2,338	2,259	2,259	2,191	2,401	2,045	1,847	1,847
Green River 4	KU	5,146	5,119	4,871	4,089	4,651	4,527	4,294	4,294	3,794	3,854	4,143	3,647	4,395	4,329	4,448	4,429	4,485	4,575	4,194	4,479	3,859	3,859
Tyone 1	LGE	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510	6,510
Cano Run 4	LGE	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909	6,909
Cano Run 5	LGE	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810
Chillico Run 5	LGE	4,214	3,971	3,562	4,076	3,866	4,074	3,684	3,684	3,669	3,469	3,756	3,201	3,813	3,157	3,665	3,659	3,659	3,759	4,008	3,588	3,702	3,702
Mill Creek 1	LGE	4,733	5,050	4,666	4,476	4,569	4,821	4,475	4,610	4,018	4,139	3,633	4,224	4,155	4,257	4,304	4,500	4,265	4,560	3,915	4,318	3,954	3,954
Mill Creek 2	LGE	9,012	9,590	9,006	9,556	8,276	8,882	9,415															



Update to the 2004 SO₂ Compliance Strategy
Appendix 4- SO₂ Emissions of Various SO₂ Compliance Plans

Case07_BR23 WFGD 2011

Table with columns for Fuel SO2 Content (MMBTU), Owner, and years 2007-2026. Includes sub-sections for SO2 SUMMARY BY YEAR, TONS SO2 EMITTED, and ALLOWANCE BANK.

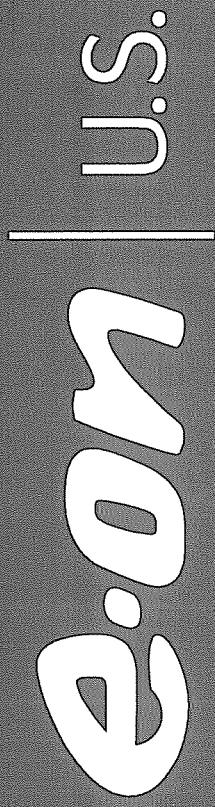


Update to the 2004 SO₂ Compliance Strategy
Appendix 4- SO₂ Emissions of Various SO₂ Compliance Plans

Case08-BR3 WFGD 2011

SO₂ SUMMARY BY YEAR

Table with columns for Owner, FUEL SO2 Content (MMBTU), and years 2007-2027. Rows include various plant names like Brown 1, Brown 2, etc., and summary rows for TONS SO2 EMITTED, ALLOWANCES, and TOTAL KULGE ALLOWANCE BANK.



*SO₂ Compliance Strategy
E. W. Brown FGD*

*Kentucky Public Service Commission
Update
April 26, 2007*

Purpose:

- *October 31, 2006 Informal Conference in Case No. 2006-00493*
 - *Provided update on the Ghent FGD progress*
 - *Discussed cost increases and market changes*
 - *Discussed and filed support for decision to continue*

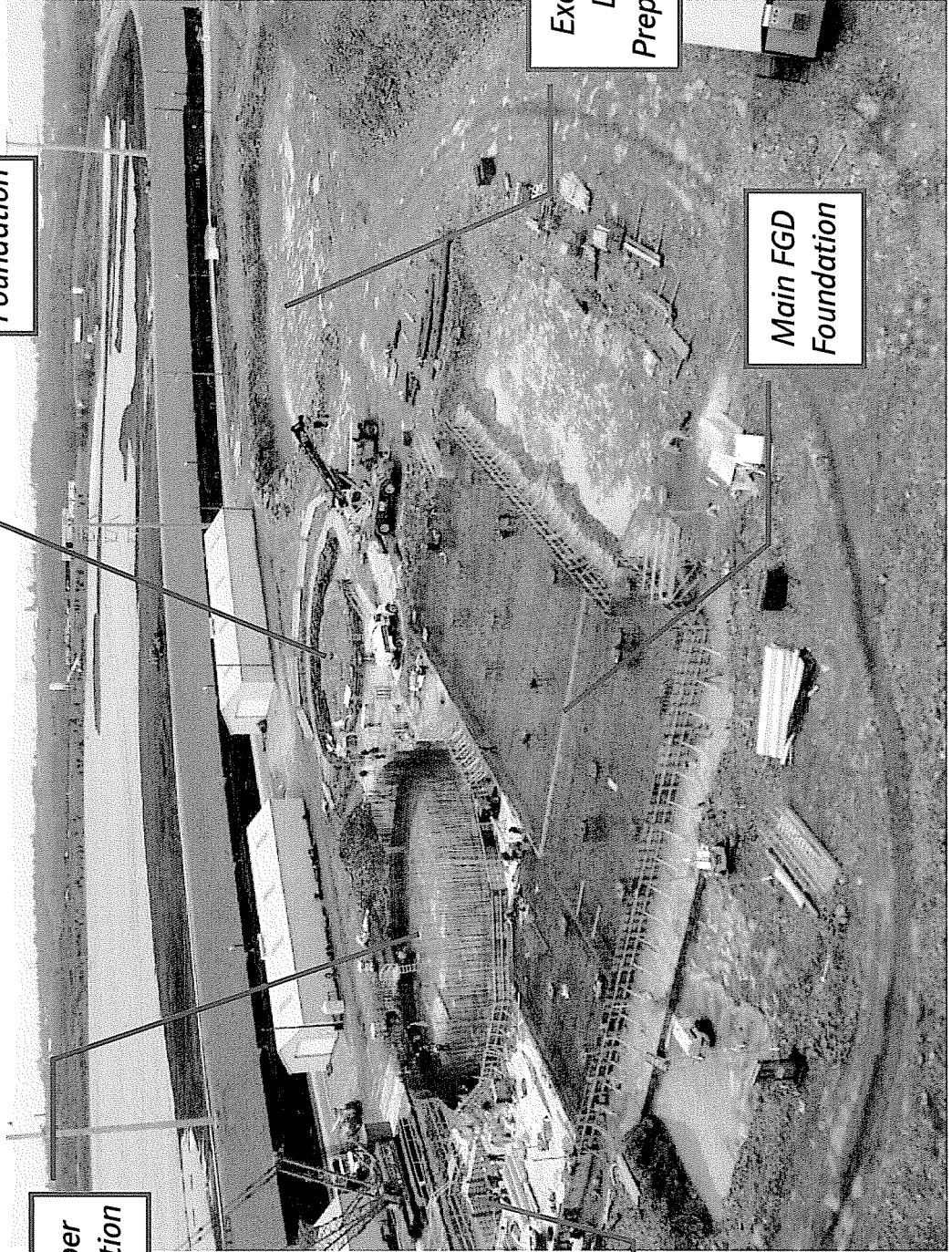
- *As indicated in the Informal Conference, the E. W. Brown FGD would be impacted in a similar manner as the Ghent project*
 - *Further analysis was necessary for the E. W. Brown FGD project*
 - *Robust evaluation similar to the original filed analysis in Case No. 2004-00426 has been performed*
 - *Capital cost estimate at \$358.6 million*

- *Construction of a single FGD for E. W. Brown Units 1-3 remains the least cost plan for SO₂ Compliance*

Background:

- *June 20, 2005* *CCN granted for FGDs at E.W. Brown*
- *March 31, 2007* *E.W. Brown project CWIP totaled \$36.7M*
- *May 2009* *Expected in-service date for E.W. Brown FGD (on schedule)*

FGD Foundation (4/11/2007)



Chimney Foundation

Absorber Foundation

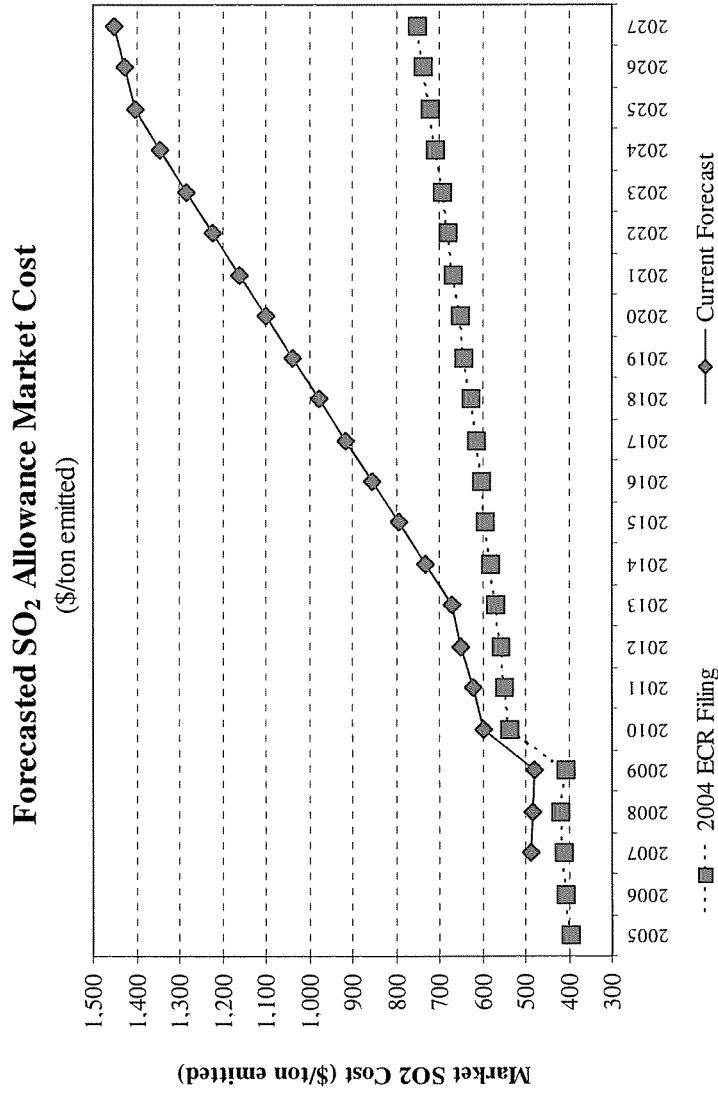
Absorber Area Sump

Excavation for Limestone Preparation Bldg.

Main FGD Foundation

Significant Changes: Increase in SO₂ Allowance Prices

- Upward pressure due to:*
- *Increasing FGD construction cost*
 - *Greater reliance on coal-fired generation due to higher gas prices*
 - *Increased price gap between low and high sulfur coal*
 - *Impact of the Clean Air Interstate Rule in 2010*
 - *Higher SO₂ market prices make physical compliance (FGDs) more favorable than financial compliance (purchasing allowances)*

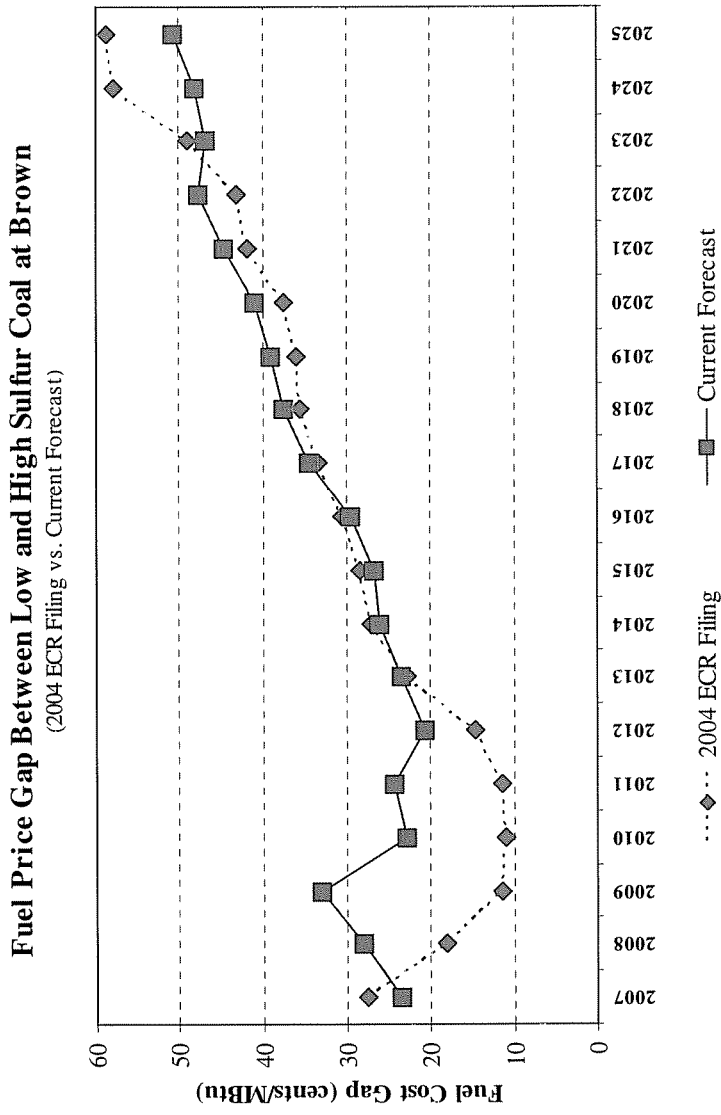


Significant Changes: Near-Term Increase in Fuel Price Gap

- *Price increase forecasted through 2012 for low sulfur coal (currently burned at E.W. Brown) with increased demand as utilities construct FGDs*

- *High sulfur coal becomes more attractive*

- *Increased savings of 10-20 cents/mmBtu as FGD allows E.W. Brown to switch from low to high sulfur coal*



Significant Changes: Increase in Capital Costs

- *Increase in estimates for E.W. Brown FGD*

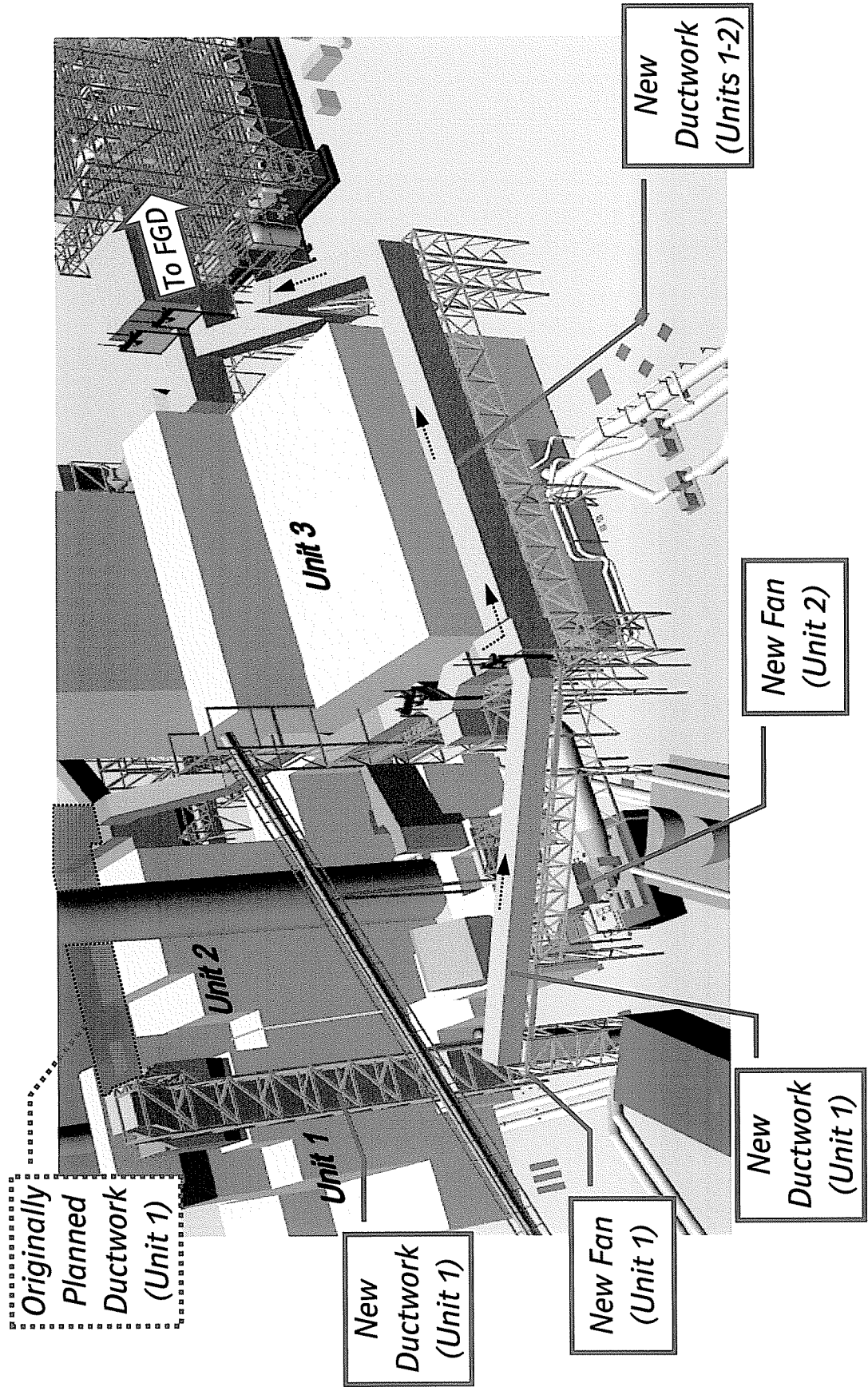
<i>2004 Filing</i>	<i>\$234.2 M</i>
<i>Current Estimate</i>	<u><i>358.6</i></u>
<i>Capital Increase</i>	<i>124.4</i>

- *Most significant changes*

<i>Ductwork & Fans</i>	<i>\$70M</i>
<i>Market Impacts</i>	<i>41</i>
<i>Scope Refinements & Other</i>	<i>13</i>

- *Key drivers*
 - *Market prices for materials, equipment, labor*
 - *Scope increase for ductwork routing*

Increase in Capital Costs: Ductwork & Fans - Units 1 & 2



Least-Cost Plan continues to include the scrubbing of E.W. Brown Units 1-3 in 2009

- \$23.9M (PVRR) less than the next best alternative (physical compliance)
- \$93.6M less than the "Walk-Away" Case (financial compliance)

Case Summary (Production and Allowances Costs estimated thru 2027)

(Assuming: Base Capital Costs, Base NOx & SO2 Emissions Price Forecasts)
(All Costs in 2007 PVRR \$1000)

Case	Production Cost	NOx Allowance Cost	SO2 Allowance Cost	Capital Cost	Total PVRR	Incremental Cost over Base	First Year of SO ₂ Allowance Purchase	First Year of NO _x Allowance Purchase	Total SO ₂ Allowances Purchased
Base Case- BR123 WFGD 2009	14,800,304	75,816	114,287	576,240	15,566,648	Base	2018	2009	298,138
Case01- BR23 WFGD 2009	14,796,732	70,884	161,527	561,487	15,590,630	23,982	2016	2009	414,006
Case02- BR3 WFGD 2009	14,791,936	70,053	253,703	509,542	15,625,235	58,587	2014	2009	640,107
Case03- BR123 WFGD 2010	14,802,114	75,331	140,589	611,761	15,629,795	63,147	2016	2009	359,122
Case04- BR23 WFGD 2010	14,800,106	70,615	184,540	599,491	15,654,752	88,104	2014	2009	467,100
Case09- Walk Away (with Env Dispatch)	14,845,387	73,303	523,155	218,376	15,660,222	93,574	2011	2009	1,299,119
Case05- BR3 WFGD 2010	14,796,247	69,784	270,095	548,302	15,684,428	117,780	2013	2009	678,411
Case06- BR123 WFGD 2011	14,802,973	74,416	166,035	670,020	15,713,444	146,796	2012	2009	417,959
Case07- BR23 WFGD 2011	14,801,427	70,053	207,009	638,234	15,716,723	150,075	2012	2009	518,880
Case08- BR3 WFGD 2011	14,798,973	69,197	287,087	582,204	15,737,461	170,813	2011	2009	716,517

Notes:

All cases include FGDs on Ghent Units 1-4.

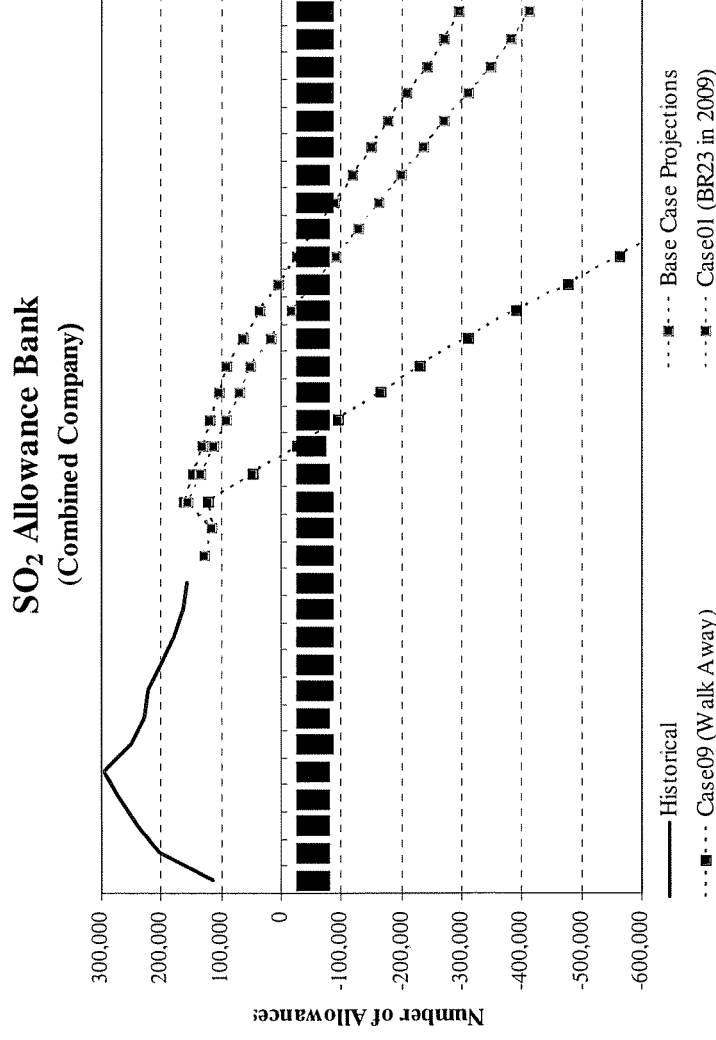
Least-Cost Plan: Delays exposure to SO₂ allowance market

Compared to 2nd Least-Cost Plan:

- Delays bank depletion 2 years
- Requires purchase of 116,000 fewer allowances

Compared to Walk-Away:

- Delays bank depletion 7 years
- Requires purchase of 1.0 million fewer allowances



Least-Cost Plan: Impacts

The Least Cost Plan is expected to:

- *Decrease the cost of SO₂ compliance by approximately \$93.6 million in PVRR compared to the Walk-Away Case*
- *Limit exposure to the SO₂ allowance market by delaying depletion of the SO₂ allowance bank and reducing the allowance shortfall to ~298,000 tons*
- *Increase fuel procurement flexibility*
- *Position the Companies for the SO₂ reduction requirements of the Clean Air Interstate Rule and future regulations on fine particulates and mercury*
- *Increase typical residential customers' bills (1000 kwh/month) by \$0.91/month with a 1.51% increase in ECR factor at the time of in-service*

Combined Company SO₂ Compliance Strategy

- *Continue with the construction of a single FGD for E.W. Brown 1, 2 and 3 in 2009*
- *Purchase SO₂ allowances on an as-needed basis*
- *Continue the practice of environmental dispatching*
- *Evaluate additional environmental technologies for existing generating assets*

COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

April 26, 2007

10:00 a.m.
Commission Offices

Commission Staff Meeting with **LG&E** to hear its update on Brown flue gas desulfurization.

Name	Company
ISAAC SCOTT	PSC - Financial Analysis
Anita Mitchell	PSC - Legal
Larry Coote	AG
David Sanford	PSC - Legal
Karl R. Rypsi	SKO Lutz (KU)
John P. Malloy	KU
Kent Blake	KU
Fereydoon Gorjian	PSC - Electric Branch
Mike Kurtz	KUC
Andrea Schroeder	PSC - Commission Operations