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U.S. Utilities: Can Texas Comply With The Cross-State Air Pollution Rule? Yes, If Existing Scrubbers Are Turned On

Ticker	Rating	CUR	19 Jul 2011 Closing Price	Target Price	TTM Rel. Perf.	EPS 2010A	EPS 2011E	EPS 2012E	P/E 2010A	P/E 2011E	P/E 2012E	Yield
AEP	M	USD	37.39	39.00	-18.2%	3.03	3.26	3.19	12.3	11.5	11.7	4.9%
SPX			1326.73			85.28	99.75	113.11	15.6	13.3	11.7	1.9%

O – Outperform, M – Market-Perform, U – Underperform, N – Not Rated

Highlights

- On July 7th, 2011, the EPA published the final version of its Cross-State Air Pollution Rule (CSAPR), a regulation that will cap the annual emissions of sulfur dioxide (SO2) and nitrogen oxides (NOx) from power plants in 23 eastern states, and set limits on summer emissions of NOx in an additional five states. The states covered by CSAPR account for over three quarters of U.S. coal fired generation.
- The Cross-State Air Pollution Rule finalizes regulations issued in draft form on July 6, 2010. The EPA's draft regulation was entitled the Clean Air Transport Rule (CATR). While CSAPR imposes annual SO2 and NOx emissions limits on Texas, CATR did not.
- After the release of the rule, Texas' utilities, regulator and politicians, as well as sell-side analysts on Wall Street, claimed that the rule could potentially cause widespread retirements and costly upgrades.
  - Energy Future Holdings warned investors that due to CSAPR it would "likely incur material capital expenditures and operating costs and experience material revenue decreases due to reduced generation."
  - Bryan Shaw, Chairman of the Texas Commission on Environmental Quality, argued that, "This rule will impose great costs on coal-fired power plants, causing some to shut down or curtail operations, threatening the state's electrical capacity reserve margins needed to avoid power disruption during times of peak demand."
  - On Wall Street, sell-side analysts calculated that CSAPR puts 4.6 GW of lignite coal-fired capacity in Texas at risk of retirement.
- The EPA, by contrast, contends that in formulating CSAPR it set the 2012 SO2 budget for Texas at a level that can be achieved simply through the continuous use of existing flue gas desulfurization equipment.
- In this research note, we analyze the potential for the state of Texas to comply with CSAPR without costly upgrades or plant closures.
  - We have analyzed the hourly SO2 emissions rate for each coal fired unit in Texas that is equipped with an SO2 scrubber. By plotting the distribution of these hourly emissions rates, we have determined the number of hours that each scrubber is in operation. We then assessed the impact on SO2 emissions of running these existing scrubbers continuously.

See Disclosure Appendix of this report for important disclosures and analyst certifications.

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- We also assessed the emissions reductions potentially achievable by coal fired units that currently lack SO2 scrubbers. Specifically, we determine the level of SO2 emissions these units have historically achieved when burning lower sulfur coal.

- We find that if coal fired generating units in Texas were to run their existing scrubbers continuously, and if unscrubbed units were to achieve the SO2 emissions rates they have historically when burning lower sulfur coal, the state of Texas could likely comply with its SO2 budget under CSAPR in 2012.

Investment Conclusion

In this research note, we analyze the potential for the state of Texas to comply with CSAPR without costly upgrades or plant closures. We find that if Texas utilities were simply to run their existing scrubbers continuously, and switch unscrubbed units to lower sulfur coal, Texas could likely comply with its SO2 budget under CSAPR in 2012.

Individual Texas utilities, however, may find that under these circumstances their 2012 emissions of SO2 may exceed their allocation under CSAPR of SO2 allowances. We have therefore analyzed the impact on individual utilities of the need to purchase (or the opportunity to sell) SO2 emission allowances, assuming a price per ton of $700, as per the EPA's modeling.

Our analysis suggests that Energy Future Holdings would be required to buy SO2 allowances to cover its emissions, resulting in an incremental annual cost of $15 million. We calculate that Xcel Energy (XEL) would be required to spend $7 million to buy the required allowances.

We note that Xcel Energy (XEL), as a regulated utility, could pass through this cost to its customers, while Energy Future Holdings, as a competitive generator, would see its after-tax earnings reduced by an estimated $10 million annually.

On the other hand, NRG Energy (NRG) would likely benefit from the sale of excess SO2 allowances, potentially adding $5 million to annual revenues. We calculate that American Electric Power (AEP) might also have an excess of allowances, worth $1 million annually to the company.

Details

The Controversy

On July 7th, 2011, the EPA published the final version of its Cross-State Air Pollution Rule (CSAPR), a regulation that will cap the annual emissions of sulfur dioxide (SO2) and nitrogen oxides (NOx) from power plants in 23 eastern states, and set limits on summer emissions of NOx in an additional five states. The states covered by CSAPR account for over three quarters of U.S. coal fired generation.

The Cross-State Air Pollution Rule finalizes regulations issued in draft form on July 6, 2010. The EPA's draft regulation was entitled the Clean Air Transport Rule (CATR). While CSAPR imposes annual SO2 and NOx emissions limits on Texas, CATR did not.

After the release of the rule, Texas' utilities, regulators and politicians complained that the rule could potentially cause retirements and costly upgrades. On Wall Street, sell-side analysts calculated that CSAPR puts 4.6 GW of lignite coal-fired capacity in Texas at risk of retirement.

Texas Gov. Rick Perry blasted the rule as "another example of heavy-handed and misguided action from Washington, D.C., that threatens Texas jobs and families and puts at risk the reliable and affordable electricity our state needs to succeed." Writing in the *El Paso Times*, Bryan Shaw, Chairman of the Texas Commission on Environmental Quality, argued that:

> *This rule will impose great costs on coal-fired power plants, causing some to shut down or curtail operations, threatening the state's electrical capacity reserve margins needed to avoid power disruption during times of*

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> *peak demand. Such a scenario could lead to blackouts, which create serious health risks to Texans dependent upon reliable energy.*

Corroborating these assessments, Energy Future Holdings, formerly TXU, wrote in an 8-K published on July 13th, 2011:

> *" In order to ensure near-term compliance with the CSAPR, the primary options we have identified are (i) reducing the operating levels at certain of our legacy lignite/coal-fueled generation facilities (potentially in conjunction with fuel switching and the mothballing or closure of related mining operations), (ii) conducting seasonal or temporary shut-downs of certain of our legacy lignite/coal-fueled generation facilities and related mining operations, (iii) installing and operating dry sorbent injection systems for sulfur dioxide emission reductions at certain of our legacy lignite/coal-fueled generation facilities (potentially in conjunction with reducing operating levels and/or fuel switching and mothballing or closure of related mining operations) and (iv) mothballing certain of our legacy lignite/coal-fueled generation facilities and related mining operations. We expect to apply one or more of these options at certain of our legacy lignite/coal-fueled generation facilities and related mining operations. In connection with these actions, we will likely incur material capital expenditures and operating costs and experience material revenue decreases due to reduced generation and wholesale power sales volumes, and we may incur other material asset (including goodwill) impairment charges."*

The EPA, by contrast, contends that in formulating CSAPR it set the 2012 SO2 budget for Texas at a level that can be achieved simply through the continuous use of existing flue gas desulfurization equipment (SO2 scrubbers).

In this research note, therefore, we compare the validity of the two claims, and test the potential for the state of Texas to comply with CSAPR without costly upgrades or plant closures.

Analysis

Exhibit 1 compares Texas' 2010 emissions of SO2 with the state's 2012 emissions budget under CSAPR. As can be seen there, CSAPR would require the state's annual SO2 emissions to be cut from some 410,000 tons in 2010 to 244,000 tons by 2012 – a reduction of more than 40%.

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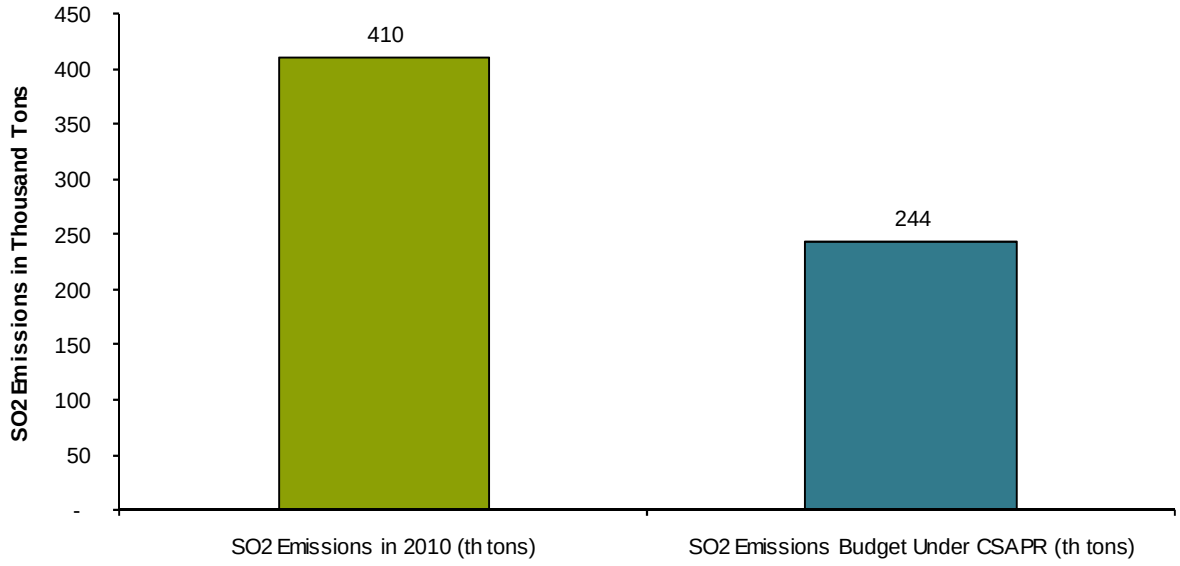
Exhibit 1
Texas SO2 Emissions Vs. CSAPR State Budget



Source: Ventyx, EPA and Bernstein analysis

Exhibit 2 presents the 2010 SO2 emissions of the large coal-fired utilities in Texas and compares these with the SO2 allowances that will be granted them under CSAPR in 2012. As can be seen there, Energy Future Holdings would need to reduce SO2 emissions at its coal-fired facilities by 60%, Xcel Energy (XEL) by 43%, PNM Resources (PNM) by 26%, NRG Energy (NRG) by 12% and American Electric Power (AEP) by 10%.

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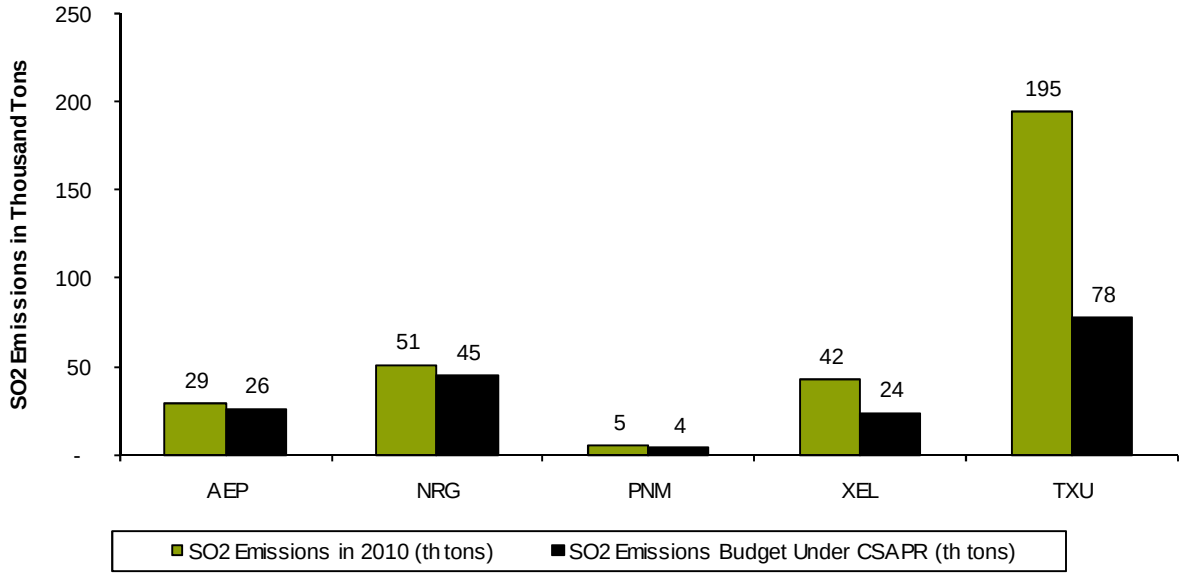
Exhibit 2
Annual SO2 Emissions of Large Coal-fired Utilities in Texas vs. SO2 Budget Allocated Under CSAPR



Source: Ventyx, EPA and Bernstein analysis

Given the apparently draconian of these cuts, how credible is the EPA's contention that it set the 2012 SO2 budget for Texas at a level that can be achieved simply through the continuous use of existing SO2 scrubbers?

To test this assertion, we have analyzed the hourly SO2 emissions rate for each coal fired unit in Texas that is equipped with an SO2 scrubber. By plotting the distribution of these hourly emissions rates, we have determined the number of hours that each scrubber is in operation. **Exhibit 3** presents an example by analyzing the distribution of hourly SO2 emission rates at Unit 1 of NRG's Limestone coal-fired power plant. This unit is equipped with an SO2 scrubber installed in 1985. As we can seen in the exhibit, the lowest level of SO2 emissions achieved by Limestone Unit 1 was 0.13 lbs/MMBtu (the left hand column of the chart), and during 10% of hours the unit achieved an SO2 emissions level below 0.20 lbs/MMBtu (the three columns at the left of the chart). On the other hand, the highest level of SO2 emissions from this unit was 0.63 lbs/MMBtu (the right hand column of the chart), and during 10% of hours, the emission rate of the unit exceeded 0.44 lbs/MMBtu (the three columns at the right of the chart). SO2 missions rates two to three times as high as the lowest levels achievable at the unit suggest that Limestone Unit 1's scrubber was simply turned off during these hours. The same conclusion is indicated by the absolute level of SO2 emissions during the hours when emissions are highest. The design SO2 removal rate of the scrubbers installed on coal fired power plants in Texas ranges between 90% and 97%, while the SO2 emissions from burning Texas lignite in an uncontrolled boiler range from 1.6 to 3.9 lbs/MMBtu. At a maximum, therefore, a plant operating its SO2 scrubber and burning Texas lignite should have SO2 emissions no higher than 0.39 lbs/MMBtu (3.9 lbs/MMBtu maximum sulfur content less 90% minimum SO2 removal).

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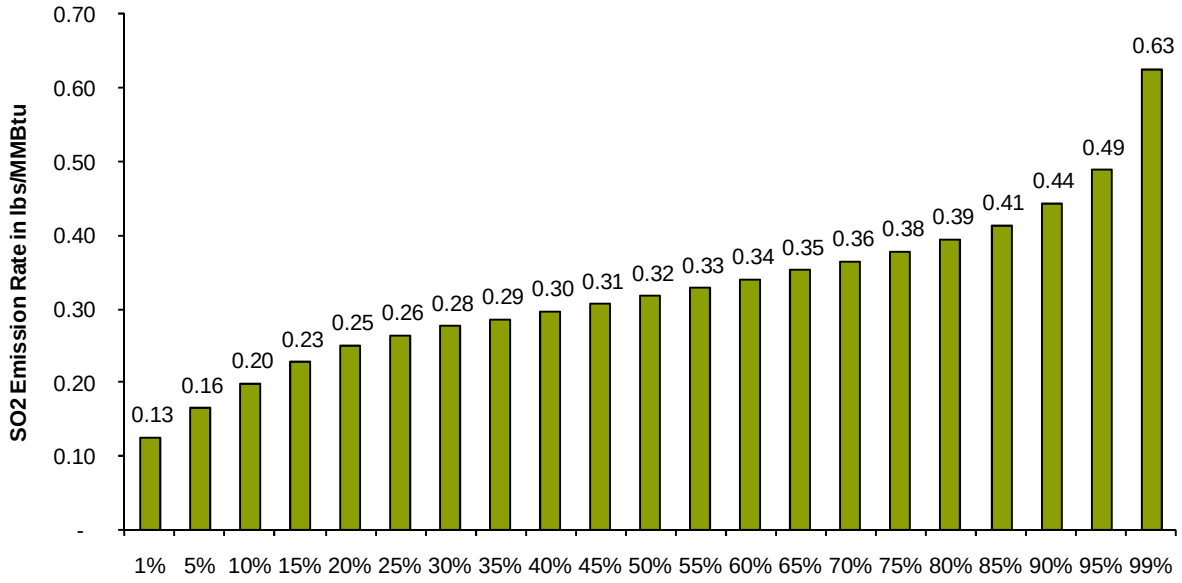
Exhibit 3
Variation in the Hourly SO2 Emission Rate at NRG's Limestone Coal-Fired Plant Unit 1 in 2010 (1)



1. Horizontal axis breaks down hourly emissions rates into percentiles across the hours of the year. Thus during 1% of hours, the hourly SO2 emission rate of the unit is at or below 0.13 lbs/MMBtu (left hand column), and during 99% of hours, it is below 0.63 lbs/MMBtu (right hand column).

Source: Ventyx, EPA and Bernstein analysis

When the hourly emissions rates of generators such as Limestone Unit 1are analyzed across the 8760 hours of the year, it becomes apparent that the highest rates of SO2 emissions generally occur during hours of peak demand, while the lowest rates of SO2 emissions occur during off-peak hours. This pattern suggests that generators have sought to avoid the reduction in net generation that results from operating the scrubbers (reflecting the parasitic load of the emissions control equipment) during hours when power prices are highest. Conversations with the investor relations departments of Energy Future Holdings and NRG Energy confirmed that, as long as continuous operation of SO2 scrubbers is not required to comply with currently prevailing SO2 emissions limits, generators will avoid operating the scrubbers so as to maximize net power output and revenues, and minimize variable operation and maintenance expense, including the cost of sorbents and water required for the operation of the SO2 scrubbers.

Could the EPA be right, then, that the continuous operation of existing scrubbers would allow Texas to comply with its 2012 SO2 emissions budget? To assess the potential of Texas' coal-fired generating fleet to reduce its aggregate SO2 emissions to the level required by the state's 2012 SO2 budget, we have modeled the impact of:

(i) running the fleet's existing SO2 scrubbers continuously, and

(ii) reducing the SO2 emissions rate of the coal-fired units that lack SO2 scrubbers to the level these units achieved during the best 10% of hours in 2010 (i.e., during those hours when they switched to burning lower sulfur coals).

Exhibit 4
Texas Coal Fleet and SO2 Scrubbers Installed

Holding Company Name	Plant Name	Unit	Percent Owned %	Nameplate Capacity MW	SO2 Annual Rate lbs/mmBtu	SO2 Control Equipment (Y/N)	SO2 Control Installation Date	Best Emission Rate lbs/mmBtu (10 Th Percentile)	Worst Emission Rate lbs/mmBtu (90 Th Percentile)	Scrubber Design Removal Rate
AES Corp (The)	AES Deepwater	GEN1	100	184	0.64	Y	Jun-86	0.05	0.76	93%
American Electric Power Co Inc	Oklaunion	1	55	394	0.18	Y	Dec-86	0.14	0.23	93%
American Electric Power Co Inc	Oklaunion	1	16	112	0.18	Y	Dec-86	0.14	0.23	93%
American Electric Power Co Inc	Pirkey	1	86	620	0.11	Y	Jul-07	0.04	0.21	93%
American Electric Power Co Inc	Welsh Station	1	100	558	0.46	N		0.41	0.51	
American Electric Power Co Inc	Welsh Station	2	100	558	0.45	N		0.40	0.51	
American Electric Power Co Inc	Welsh Station	3	100	558	0.47	N		0.41	0.52	
Austin Energy	Fayette Power Project	1	50	308	0.64	Y	Dec-10	0.58	0.69	97%
Austin Energy	Fayette Power Project	2	50	308	0.62	Y	Mar-11	0.53	0.68	97%
Brownsville Public Utility Board	Oklaunion	1	18	129	0.18	Y	Dec-86	0.14	0.23	93%
CPS Energy	J K Spruce	1	100	566	0.05	Y	Dec-92	0.02	0.07	93%
CPS Energy	J K Spruce	2	100	820	0.01	Y	May-10	0.01	0.02	90%
CPS Energy	J T Deely	1	100	486	0.68	N		0.64	0.72	
CPS Energy	J T Deely	2	100	446	0.68	N		0.64	0.72	
Energy Future Holdings Corp	Big Brown	1	100	593	1.32	N		1.10	1.55	
Energy Future Holdings Corp	Big Brown	2	100	593	1.33	N		1.11	1.59	
Energy Future Holdings Corp	Martin Lake	1	100	793	0.79	Y	May-77	0.53	1.05	93%
Energy Future Holdings Corp	Martin Lake	2	100	793	0.76	Y	May-78	0.52	1.05	93%
Energy Future Holdings Corp	Martin Lake	3	100	793	0.82	Y	Apr-79	0.57	1.05	93%
Energy Future Holdings Corp	Monticello (TX)	1	100	593	0.95	N		0.75	1.17	
Energy Future Holdings Corp	Monticello (TX)	2	100	593	0.93	N		0.73	1.15	
Energy Future Holdings Corp	Monticello (TX)	3	100	793	0.66	Y	Aug-78	0.49	0.86	93%
Energy Future Holdings Corp	Oak Grove Steam Electric Station	ST1	100	917	0.06	Y	Dec-09	0.03	0.10	95%
Energy Future Holdings Corp	Oak Grove Steam Electric Station	ST2	100	879	0.06	Y	Apr-10	0.02	0.08	95%
Energy Future Holdings Corp	Sandow 5	5	100	662	0.09	Y	Sep-09	0.02	0.18	95%
Energy Future Holdings Corp	Sandow No 4	4	100	591	0.99	Y	May-81	0.85	1.14	93%
International Power plc	Coleto Creek	1	100	600	0.80	N		0.60	0.96	
Lower Colorado River Authority	Fayette Power Project	1	50	308	0.64	Y	Dec-10	0.58	0.69	97%
Lower Colorado River Authority	Fayette Power Project	2	50	308	0.62	Y	Mar-11	0.53	0.68	97%
Lower Colorado River Authority	Fayette Power Project	3	100	460	0.10	Y	Apr-88	0.05	0.19	80%
Northeast Texas Electric Coop Inc	Pirkey	1	12	85	0.11	Y	Jul-07	0.04	0.21	93%
NRG Energy Inc	Limestone (NRG)	1	100	893	0.32	Y	Dec-85	0.20	0.44	93%
NRG Energy Inc	Limestone (NRG)	2	100	957	0.34	Y	Dec-86	0.24	0.45	93%
NRG Energy Inc	W A Parish	5	100	734	0.68	N		0.56	0.82	
NRG Energy Inc	W A Parish	6	100	734	0.75	N		0.62	0.90	
NRG Energy Inc	W A Parish	7	100	615	0.72	N		0.57	0.86	
NRG Energy Inc	W A Parish	8	100	615	0.13	Y	Dec-82	0.10	0.16	93%
Oklahoma Municipal Power Authority	Oklaunion	1	12	84	0.18	Y	Dec-86	0.14	0.23	93%
Oklahoma Municipal Power Authority	Pirkey	1	2	17	0.11	Y	Jul-07	0.04	0.21	93%
PNM Resources Inc	Twin Oaks Power	1	100	175	0.46	Y	Sep-90	0.39	0.55	95%
PNM Resources Inc	Twin Oaks Power	2	100	175	0.44	Y	Oct-91	0.29	0.57	95%
San Miguel Electric Coop Inc	San Miguel	1	100	410	0.63	Y	Jan-82	0.38	0.85	93%
Texas Municipal Power Agency	Gibbons Creek	1	100	454	0.67	Y	Oct-83	0.55	0.78	93%
Xcel Energy Inc	Harrington	1	100	360	0.61	N		0.48	0.73	
Xcel Energy Inc	Harrington	2	100	360	0.56	N		0.42	0.69	
Xcel Energy Inc	Harrington	3	100	360	0.61	N		0.47	0.78	
Xcel Energy Inc	Tolk	1	100	568	0.62	N		0.52	0.72	
Xcel Energy Inc	Tolk	2	100	568	0.60	N		0.50	0.67	

Source: Ventyx, EPA and Bernstein analysis

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Exhibit 4 lists each coal-fired generating unit in Texas, the SO2 control equipment installed on each, the average annual SO2 emission rate of each unit, the best and worst SO2 emission rate of each unit (the average emissions rate during the 10% of hours with the lowest and highest SO2 emissions, respectively), and the design SO2 removal rate for each SO2 scrubber.

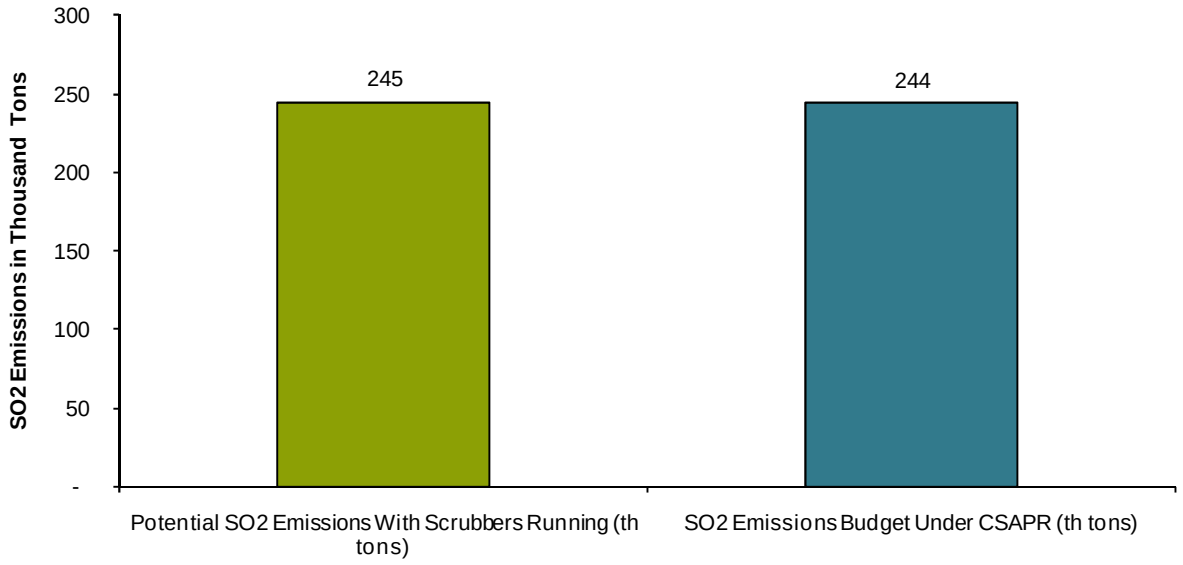
To estimate the SO2 emissions rate that can be achieved by those coal-fired units already equipped with SO2 scrubbers, we have used the hourly rate of emissions achieved by each coal-fired unit in 2010 during the 10% of hours when its hourly emissions rate was lowest.

At certain units, however, the hourly emissions rate during the best 10% of hours exceeded 0.39 lbs/MMBtu – a level that almost any Texas boiler equipped with a scrubber should be able to reach. (Recall that 0.39 lbs/MMBtu is the theoretical emissions rate of boiler burning the highest sulfur Texas lignite -- with an SO2 content of 0.39 lbs/MMBtu – while operating a scrubber that achieves only the lowest rate of SO2 removal -- 90%). In these cases, we have assumed that if the unit were to turn its scrubber on, it could achieve a rate equivalent to (i) the highest level of SO2 emissions from this unit during the worst 10% of hours (ii) reduced by the design removal rate of the SO2 scrubber installed at the unit, (iii) adjusted down by a degradation factor (10%) to reflect the gradual loss of scrubbing efficiency with time.

At coal-fired units that lack SO2 scrubbers, we have assumed SO2 emissions rates can be reduced to the level achieved by the unit during the best 10% of hours on 2010 – hours when, we presume, the unit was burning lower sulfur coal. The lower sulfur grades of Powder River Basin coal, for example, have an SO2 content of 0.6 to 1.9 lbs/MMBtu, vs. 3.0 to 3.9 lbs/MMBtu for the highest sulfur grades of Texas lignite.

Given these assumptions, we calculate that the state of Texas could reduce its annual SO2 emissions to some 245,000 tons annually, effectively complying with its 2012 SO2 emissions budget under the Cross State Air Pollution Rule (see **Exhibit 5**).

Exhibit 5
Potential SO2 Emission In Texas if Existing Scrubbers are Turned On vs. CSAPR State Budget



Source: Ventyx, EPA and Bernstein analysis

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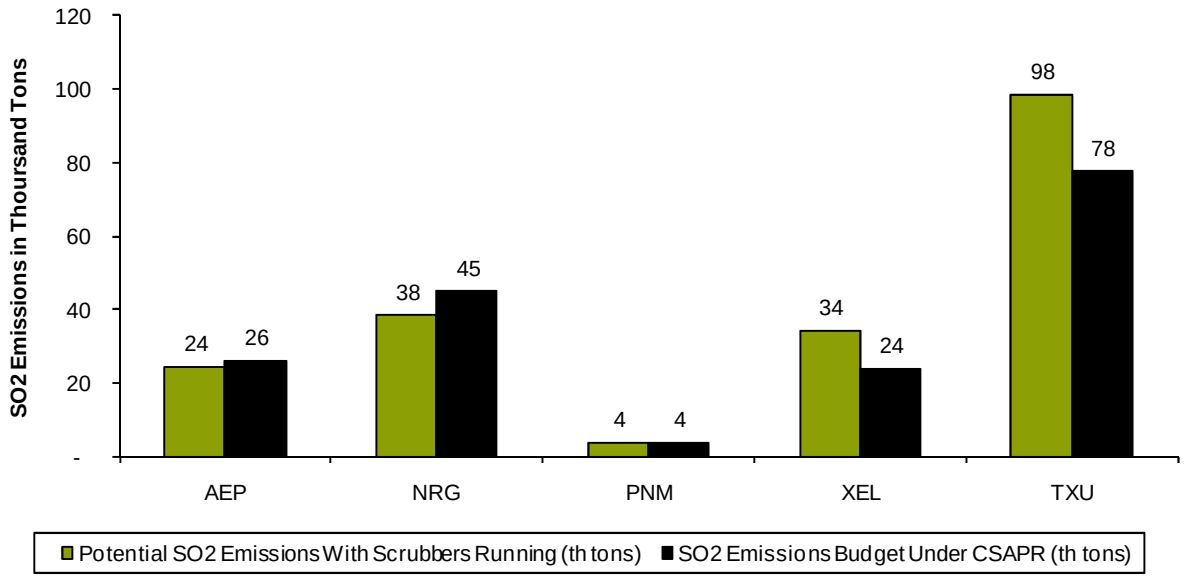
Individual Texas utilities, however, may find that even under these circumstances their individual 2012 emissions of SO2 differ materially from their allocations of SO2 allowances under the Cross State Air Pollution Rule. We have therefore analyzed the impact on individual utilities of the need to purchase (or the opportunity to sell) SO2 emission allowances, assuming a price per ton of $700, as per the EPA's modeling.

Exhibit 6 presents the result of our modeling for the large coal-fired utilities in Texas. As we can be seen there, if all existing scrubbers were to operate continuously, we estimate that the SO2 emissions of PNM Resources (PNM), NRG Energy (NRG) and American Electric Power (AEP) would be less than their individual allocation of SO2 allowances under CSAPR. The estimated SO2 emissions of Xcel Energy and Energy Future Holdings, however, would exceed their respective allowance allocations.

Exhibit 6
Potential Annual SO2 Emissions of Large Coal-fired Utilities in Texas vs. SO2 Budget Allocated Under CSAPR



Source: Ventyx, EPA and Bernstein analysis

This analysis suggests that Energy Future Holdings would be required to buy some 20 million tons of SO2 allowances annually to cover its emissions, resulting in an incremental annual cost of $15 million (see **Exhibit 7**). We calculate that Xcel Energy (XEL) would be required to purchase 10 million tons of allowances annually, at an annual cost of $7 million.

We note that Xcel Energy (XEL), as a regulated utility, could pass through this cost to its customers, while Energy Future Holdings, as a competitive generator, would see its after-tax earnings reduced by an estimated $10 million annually.

On the other hand, NRG Energy (NRG) would likely benefit from the sale of some 7 million tons annually of excess SO2 allowances, potentially adding $5 million to annual revenues. We calculate that American Electric Power (AEP) might also have an excess of allowances, worth $1 million annually to the company.

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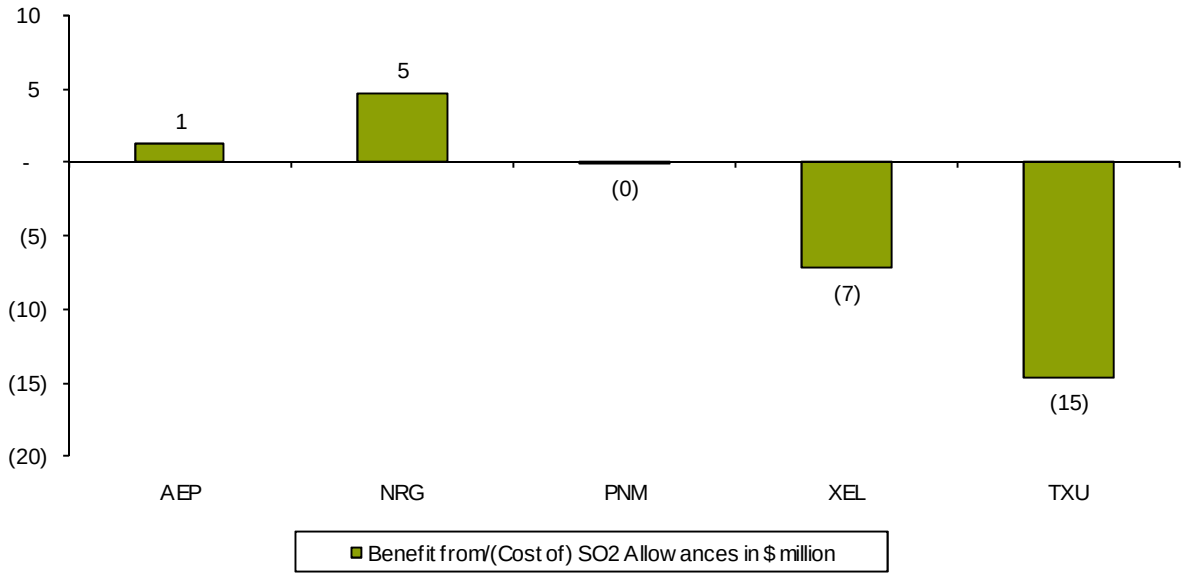
Exhibit 7
Benefit from/(Cost of) SO2 Allowances Due to Intra-state Trading, Assuming Allowance Price at $700/ton (in $ million)



Source: Ventyx, EPA and Bernstein analysis

In addition to the cost of purchasing SO2 allowances, coal-fired Texas utilities will likely face a combination of (i) lower revenues, as the net power output of their plants is reduced due to the continuous operation of their scrubbers (reflecting the parasitic load of the flue gas desulfurization equipment), and (ii) higher variable operation and maintenance expense, reflecting the cost of sorbents and water required for the operation of the scrubbers.

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Valuation Methodology

Our target prices reflects the results of three alternative valuation methodologies: (i) a multiple-based valuation calculated by applying the median valuation multiples of a group of comparable companies to our estimates of a utility's future earnings, dividends and EBITDA; (ii) a discounted cash flow model over the forecast period of 2011-2015, and a terminal value in 2016 discounted back to present value at the weighted average cost of capital; and (iii) a discounted dividend model over the forecast period of 2011-2015, and a terminal value in 2016, discounted back to present value at the cost of equity.

Risks

AEP:
Our earnings and cash flow forecasts for AEP are driven primarily by our projections of load growth, future rate relief and the volume and profitability of AEP's off-system sales. If our assumptions in these critical areas prove overly optimistic, our earnings and cash flow forecast may need to be adjusted downwards and with it our target price. Similarly, increases in operation and maintenance expense that exceed our forecast, or increases in the price of steam coal that further erode AEP's gross margin on off-system sales, could likewise force a reduction in our earnings forecast and target price.

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- References to "Bernstein" relate to Sanford C. Bernstein & Co., LLC, Sanford C. Bernstein Limited, and Sanford C. Bernstein, a unit of AllianceBernstein Hong Kong Limited, collectively.
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- Bernstein rates stocks based on forecasts of relative performance for the next 6-12 months versus the S&P 500 for stocks listed on the U.S. and Canadian exchanges, versus the MSCI Pan Europe Index for stocks listed on the European exchanges (except for Russian companies), versus the MSCI Emerging Markets Index for Russian companies and stocks listed on emerging markets exchanges outside of the Asia Pacific region, and versus the MSCI Asia Pacific ex-Japan Index for stocks listed on the Asian (ex-Japan) exchanges - unless otherwise specified. We have three categories of ratings:

  Outperform: Stock will outpace the market index by more than 15 pp in the year ahead.

  Market-Perform: Stock will perform in line with the market index to within +/-15 pp in the year ahead.

  Underperform: Stock will trail the performance of the market index by more than 15 pp in the year ahead.

  Not Rated: The stock Rating, Target Price and estimates (if any) have been suspended temporarily.
- As of 07/05/2011, Bernstein's ratings were distributed as follows: Outperform - 45.2% (1.5% banking clients) ; Market-Perform - 46.1% (0.5% banking clients); Underperform - 8.8% (0.0% banking clients); Not Rated - 0.0% (0.0% banking clients). The numbers in parentheses represent the percentage of companies in each category to whom Bernstein provided investment banking services within the last twelve (12) months.
- Hugh Wynne maintains a long position in Duke Energy Corp. (DUK).
- The following companies are or during the past twelve (12) months were clients of Bernstein, which provided non-investment banking-securities related services and received compensation for such services AEP / American Electric Power Co Inc.
- An affiliate of Bernstein received compensation for non-investment banking-securities related services from the following companies AEP / American Electric Power Co Inc.

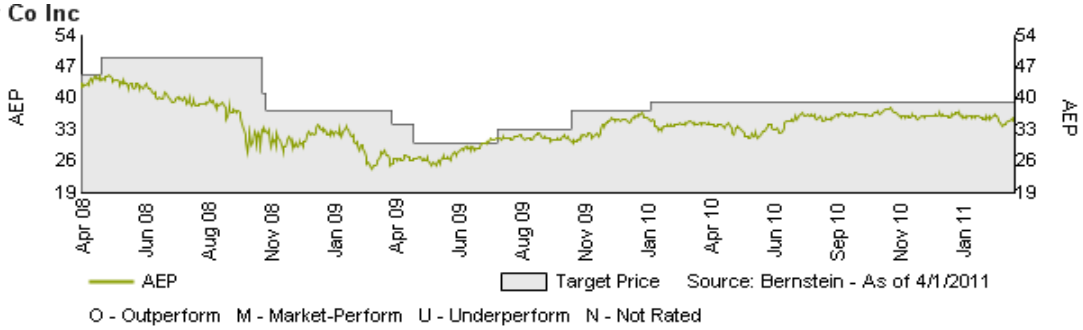
12-Month Rating History as of 07/19/2011

Ticker	Rating Changes
AEP	M (IC) 01/15/03

Rating Guide: O - Outperform, M - Market-Perform, U - Underperform, N - Not Rated
Rating Actions: IC - Initiated Coverage, DC - Dropped Coverage, RC - Rating Change

AEP / American Electric Power Co Inc

Date	Rating	Target(USD)
03/20/08	M	45.00
04/25/08	M	49.00
10/30/08	M	41.00
11/03/08	M	37.00
03/31/09	M	34.00
04/27/09	M	30.00
08/03/09	M	33.00
10/30/09	M	37.00
01/29/10	M	39.00



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