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Abstract

Keywords (electric utilities, environment, disclosure)

Quantitative analysis of 47 U.S. electric utilities' environmental exposures to impending air quality and climate policies shows potentially material and highly differentiated financial impacts. For many companies, the minimized compliance costs of a four-pollutant cap-and-trade regulatory regime would not necessarily exceed those of a three-pollutant regime that omitted controls on carbon dioxide emissions. Fragmented regulatory requirements would have the highest compliance costs. The companies studied vary considerably in the adequacy of their financial reporting of these potential impacts. Greater transparency would benefit investors and the most favorably positioned companies.

SUMMARY AND METHODOLOGY

The electric utility industry is one of the most environmentally sensitive sectors of the U.S. economy. Most companies with generating assets are heavily exposed to the impacts of environmental regulations. Not only have utilities spent heavily to comply with past and current environmental standards, most are faced with the likelihood of significant additional expenditures to meet future environmental standards now being considered by Congress and regulatory agencies. Among the most significant of these are additional restrictions on emissions of nitrogen and sulfur oxides, airborne particulates, mercury and other toxic air pollutants, as well as new restrictions on emissions of carbon dioxide, the main greenhouse gas. Depending on the outcomes of legislative and regulatory processes now underway, utilities may be subject to expensive new requirements. Consequently, environmental issues are well-known

material financial uncertainties and a crucial management challenge for most companies in the utility sector. Environmental exposures are also sources of potential competitive advantage or disadvantage for most utilities. The financial risks that result from environmental exposures are highly differentiated across companies in the sector.

This variability stems from differences in:

- the importance of generating earnings in total earnings, the mix of technologies and fuels used in the portfolio of generating assets, the location of generating plants;
- the environmental controls already in place and the ease of upgrading such controls; and
- the regulatory or market situation that would enable or impede cost recovery.

In deregulated wholesale electricity markets, particularly, generating units will not be assured of recovering environmental control costs through rate increases. Companies will differ in their ability to recover costs, depending on the regulatory status of the plants they operate and the market position of those plants.

A challenge for management in this sector is to position companies to prosper despite the uncertainties surrounding these impending environmental issues. This involves not only managing asset portfolios to maximize risk-adjusted returns, but also participating strategically in the public policy process and ensuring that the financial community understands and appreciates company strategies. The results of this paper show how complicated these challenges are. According to our analysis, companies within the utilities sector would rationally take differing public policy positions and adopt different investment strategies to deal with impending environmental issues.

Because these issues are definitely material, a thorough understanding of the financial implications of electric utilities' environmental exposures is necessary if the investment community is to assess accurately the risks and values in utility company securities. Financial impacts can be sufficiently large to have significant effects on earnings, credit risk, asset valuations, and fundamental shareholder values.

The analysis presented in this paper compares, in financial terms, the environmental exposures of leading electric utility holding companies, under a range of plausible future environmental policy scenarios concerning carbon dioxide and other important air pollutants, most notably sulfur oxides, nitrogen oxides, and mercury. The results confirm that these policy issues constitute material financial uncertainties for most companies in the industry.

The results also indicate that for most companies, under plausible assumptions, dealing with all four pollutants in an integrated way would be less costly than delaying the control of carbon emissions until steps to control the other pollutants had already been taken. Moreover, somewhat counter-intuitively, the results suggest that an integrated policy that required reductions in all four emissions might be less costly for many electric utilities than a policy that exempted carbon emissions from controls altogether. This finding, if accurate, means that companies face interesting challenges in formulating their positions on regulatory policy issues.

The analytic tool, or "metric" underlying these results embodies a methodology that could be adopted both by financial analysts and by utility sector managers. It estimates the least-cost option to comply with current and pending air quality regulations for each of 47 large utility holding companies. The least cost option is the minimized, discounted present value of adopting least-cost controls on all generating units owned by each utility holding company to bring them into compliance. The compliance options include a suite of combustion controls, post-combustion pollution controls, re-powering with a cleaner fuel, and permit trading. Available compliance options and associated costs are tailored to the specific technological characteristics of each generating unit, and take into account pollution control equipment already installed. Least-cost combinations of emissions controls and permit trading are derived by minimizing discounted estimated capital and operating costs over a twenty-five year horizon.

This metric was used in this study to analyze the following scenarios:

- the financial impacts of a three-pollutant cap-and-trade bill that imposes stricter future controls on emissions of nitrogen oxides, sulfur oxides, and mercury;
- a four-pollutant cap-and-trade bill that adds restrictions on future emissions of carbon dioxide;
- a third hybrid scenario constructed on the assumption that controls on carbon emissions would be announced belatedly, after decisions to comply with the three-pollutant caps had been finalized, with a later compliance deadline.

These policy scenarios were chosen to resemble proposed legislation submitted to the current and previous Congresses. Financial impacts were estimated under the assumption that permits would initially be grandfathered to utilities in proportion to their historical 1998 emissions, and under an alternative assumption, that permits would be allocated through an auction among utility bidders. In total, therefore, six policy scenarios were analyzed.

Beyond these six specific policy scenarios, the metric is an analytical tool that permits wide flexibility in the choice of policy assumptions. Analysts can pre-specify the allowance levels and percentage emission reductions, the compliance deadlines, the amortization period, the permit prices prevailing for each pollutant in each five-year period, and the discount rate to be applied, and thereby can quickly generate financial cost information under resulting scenarios.

In order to facilitate comparison of environmental exposures among companies, the present value of future compliance costs in constant year 2000 prices, discounted at 8% per year to the year 2000, are benchmarked to each company's revenues in the year 2000. These benchmarks indicate the financial materiality of the companies' environmental exposures to pending environmental issues and allow their exposures to be compared. Two limitations of this analysis should be recognized. First, the approach does not allow for adjustments by companies in the dispatch of their various generating units in order to achieve compliance. In reality, companies may reduce the hours operated by particular units rather than install pollution control equipment if the former is the least-cost option. Second, the metric does not allow for the fact that companies may recover some or all of their environmental costs if market or regulatory processes pass through these cost increases to electricity product prices. Because these adjustment modes are not included in the metric, the resulting cost increases overstate the financial impacts of the environmental scenarios relative to revenues and earnings.[1] However, financially material costs of compliance with environmental regulations, such as those estimated through this methodology, must be disclosed in financial statements under current securities laws without netting these costs against possible future cost recovery.

[1] In order to overcome these limitations, a complete model of the demand and supply sides of electricity markets is being constructed, in which environmental cost increases lead companies to alter the quantities and prices at which power from various generating units is bid into the market. This model is applicable to regulated and deregulated electricity markets. In this model, an econometrically estimated bid function aggregates estimated bids into an overall market supply curve. The model simulates the action of an ISO in matching supply with market demand in all periods, thereby determining the market clearing price as well as the electricity supplied by each unit. Simulations run over future time periods yield operating earnings for all units, which vary in each environmental policy scenario.

ANALYTICAL DETAILS

A Three-Pollutant Cap-and-Trade Policy

The metric analyzes a three-pollutant cap-and-trade policy that approximates the Bush Administration's "Clear Skies" policy. The hypothesized policy requires utilities to reduce emissions of sulfur oxides, nitrogen oxides, and mercury by 75%, 75%, and 90% respectively below emissions in the baseline year of 1997. The assumed date by which compliance must be achieved is the year 2008. In that year, in the scenario assuming grandfathering of emission allowances, if electricity production and fuel use grow at assumed rates, allowed emissions for generating plants would be 0.190818 pounds of sulfur oxide per million BTUs of energy consumed, and 0.090248 pounds of nitrogen oxide per million BTUs of energy. These allowances represent the "caps" in the cap-and-trade regime. In the analysis assuming that emission permits would be auctioned in the year 2008, these allowances can be exceeded by purchasing permits but, in the aggregate, only enough permits are put up for sale to meet the overall emission reduction requirement.

It is assumed in this analysis that all generating plants would be eligible to trade emission allowances for sulfur and nitrogen oxides in a national emission trading market but that an emission trading market for mercury would not exist, due

principally to monitoring difficulties. The prices in these permit markets in the three-pollutant and four-pollutant announced later scenarios for sulfur oxides and nitrogen oxides are assumed to be $US303 per ton and $US1619 per ton respectively during the period 2008-2014 and subsequently in the period 2014-2035. In the other four-pollutant scenario the permit prices in the period 2008-2014 are assumed to be $936 per ton and $254 per ton for nitrogen and sulfur oxides, respectively. These prices are not estimated within the metric model but are adopted from analyses carried out with the National Energy Modeling System (NEMS).[2] This system represents, with a higher degree of aggregation, the U.S. electricity sector as a whole and derives estimates of electricity, fuel, and permit prices from simulated demand and supply balances.

[2] Energy Information Administration, 2000, *Analysis of Strategies for Reducing Multiple Emissions from Power Plants: Sulfur Dioxide, Nitrogen Oxides, and Carbon Dioxide*, Office of Integrated Analysis and Forecasting, U.S. Dept. of Energy, December.

In addition to allowance trading, the analysis assumes that generating units can draw from an array of internal pollution control options. Utilities are assumed to make compliance choices to be compatible with existing installed technology in order to achieve technologically possible and cost-effective compliance. The capital and operating costs for each of these options, as applied to plants of given characteristics, were estimated from the literature as of 1998. The options included in the analysis, including technical options for reducing carbon dioxide emissions, are:

Combustion controls, such as:

- Low NOx burner with or without overfire air;
- Low NOx coal-and-air nozzles with close coupled overfire air;
- Low NOx coal-and-air nozzles with separated overfire air;
- Low NOx coal-and-air nozzles with close-coupled and separated overfire air;
- Coal reburning;
- NOx combustion controls for wet bottom boiler types;
- NOx combustion controls for vertically fired boiler types;
- Non plug-in combustion controls.

Post-combustion controls, such as:

- Selective catalytic reduction (SCR) for low or high NOx rate and for coal or gas/oil stream boilers;
- Selective non-catalytic reduction (SNCR) for low or high NOx rate and for coal or gas/oil stream boilers;

Scrubbers:

- Scrubbers for 1%, 2%, 3%, or 4% sulfur content in the fuel, by weight;

Combined Controls, such as:

- SCR and scrubber for low or high NOx rate;
- SNCR and scrubber for low NOx rate;

Maximum Available Control Technologies (MACT) for mercury emission control, according to the particular boiler type

Re-powering for carbon dioxide emission control:

- From coal to coal IGCC;
- From coal to gas combined cycle;
- From oil/gas to gas combined cycle;
- From fossil fuel to wind power;

Each generating plant was assumed to use the most cost-effective combination of internal controls and permit purchases to meet the pollution constraints jointly. In these estimates, capital and operating costs were discounted at an 8% annual compound rate. Plants that were able to meet emission caps purely through internal controls at costs per ton less than the assumed market price of emission permits were assumed to generate emission reductions in excess of their requirements for sale in permit markets. Revenues from such sales were subtracted from compliance costs for such units.

A Four-Pollutant Cap-and-Trade Policy

The metric was also applied to analyze the impacts of a four-pollutant cap-and-trade policy regime in which generating units are required to reduce carbon dioxide emissions 7% below 1990 levels by the year 2015 in addition to the emission reductions for sulfur, nitrogen, and mercury described above. The analysis assumed that the re-powering options mentioned above represent the technological options for reducing carbon dioxide emissions, and that the industry would be aware of the future carbon abatement requirement at the same time that the other emission caps were announced. The costs of the four-pollutant regime were analyzed both with the assumption that carbon permits would be grandfathered and with the assumption that they would be distributed by auction. In the former case, the applicable emission cap for each generating unit in 2015 was assumed to be 92.309208 pounds of carbon dioxide per million BTUs.

Adhering to results from the NEMS analysis, it was assumed that over the period 2015-2035 the prevailing price in the carbon dioxide permit market would be $US32 per ton, which implies approximately $US100 per ton of carbon. This is consistent with analyses assuming no international trading in carbon permits. In addition, it has been assumed in the four-pollutant cap-and-trade policy that prices for sulfur and nitrogen oxide permits would fall to $254 and $936 per ton respectively in the period after 2015. The reason for this assumption is that so many units would re-power to natural gas fuel to meet the carbon constraint, reducing sulfur and nitrogen emissions in the process, that the overall emission constraints for sulfur and nitrogen oxides would be met without additional expenditures on combustion or post-combustion controls. For that reason, the demand for permits would fall to negligible levels in those markets. With respect to mercury, the cost-effectiveness analysis estimated the avoided cost of mercury MACT controls to be $US72, 500 per pound of mercury when calculating the net cost of re-powering to gas, which has a much lower mercury content than coal.

SIMULATION RESULTS

The Three-Pollutant Cap-and-Trade Policy

If a three-pollutant cap-and-trade policy similar to that endorsed by the current U.S. administration and submitted in proposed legislation is adopted, many large U.S. electric utility holding companies will face significant financial impacts.[3] This is true whether permits are initially auctioned or distributed (grandfathered) in relation to historical emissions. The required cuts in emissions would be sufficiently large to ensure that utilities would be forced to install expensive internal controls and that permit prices in an allowance trading market would remain high, although a significant fraction of units would adopt re-powering to natural gas fuel as the least-cost option.

[3] These financial impacts would not necessarily exceed those if instead of a cap-and-trade regime the EPA implemented the various piecemeal regulations now in various stages of enactment.

Figure 1 Three-Pollutant Cap-and-Trade, Permits Grandfathered

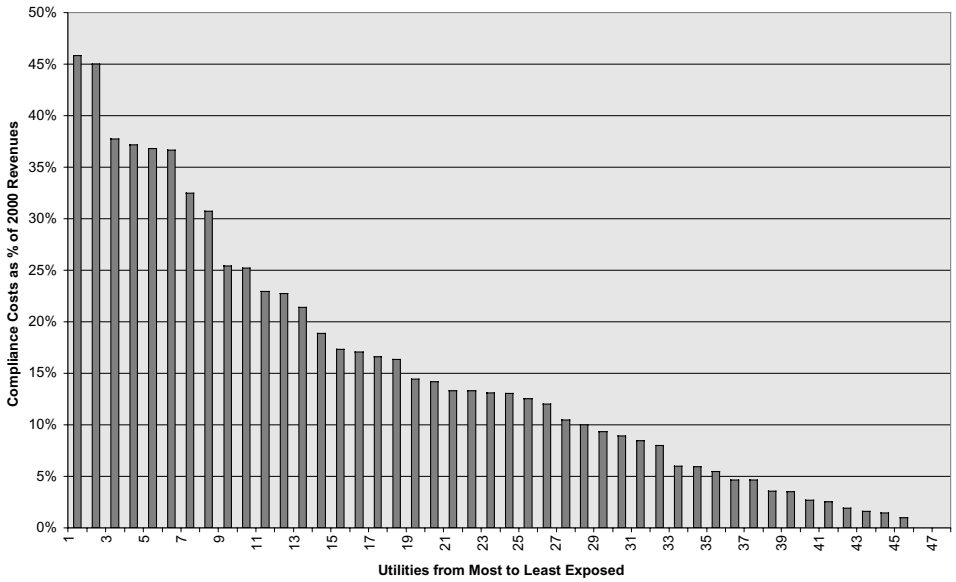


Figure 1 illustrates the finding that, even if permits are initially distributed free to companies in proportion to their historical emissions, more than half of the 47 major utility holding companies included in the study would face compliance costs with a discounted present value greater than 10% of their total year 2000 revenues. Over a quarter would face costs in excess of 20% of year 2000 revenues. Total revenues include not only revenues from sales of generated electricity, but also revenues from distribution, transmission, and unrelated business activities. Two electricity companies would face discounted compliance costs greater than 40% of their year 2000 revenues. To put these magnitudes into perspective, operating profits among these companies average only 4 or 5% of operating revenues.

Figure 2 Three-Pollutant Cap-and-Trade, Permits Auctioned

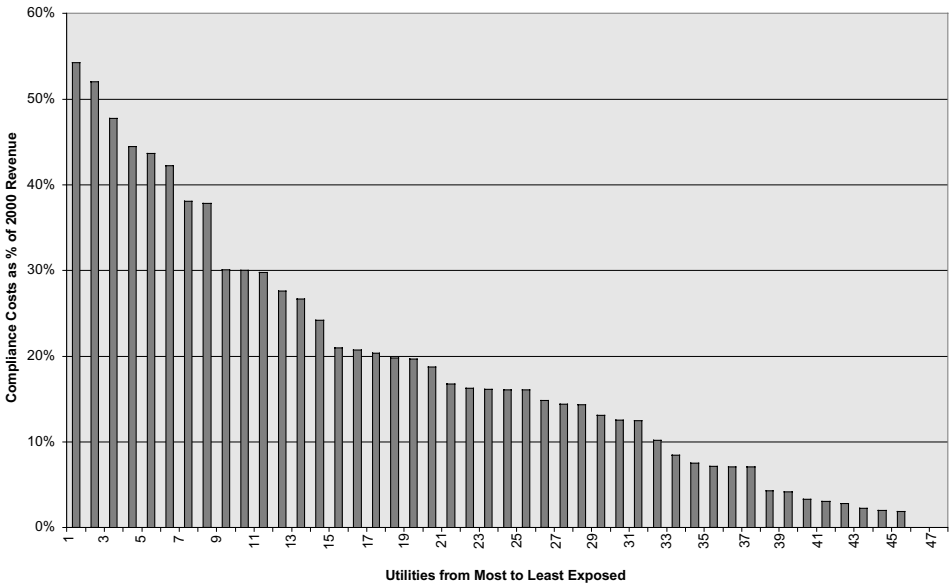


Figure 2 demonstrates that if permits are not distributed free but are sold to utilities through competitive auctions, these companies' financial exposures would be even greater. About one-third of the companies in the sample would face discounted compliance costs greater than 20% of their total year 2000 revenues, but two of the companies would be exposed to the extent of 50% or more of those revenues. For all but a few companies, the possibility of a future three-pollutant cap-and-trade policy represents a significant, financially material future risk.

The other striking conclusion that emerges from Figures 1 and 2 is the fact that different companies within the electric power sector are exposed in markedly differing degrees to future environmental restrictions of this kind. For a handful of companies, discounted compliance costs would amount to a small percentage of revenues, and for one or two companies, compliance costs would be negligible. At the other extreme, for some companies the potential compliance costs would be extremely large relative to annual revenues. The differing environmental exposures of companies within the same sector represent significant sources of competitive advantage or disadvantage.

Differences in exposure to impending environmental restrictions could stem from several factors that reflect past investment decisions:

- The importance of generating revenues in total revenues;
- The fuel mix used in generating electricity, especially the degree of reliance on coal;
- The effectiveness of emission controls already in place;

- The efficiency of the company's generating operations in converting fuel to electricity;
- The ease of retrofitting additional emission controls onto existing plants.

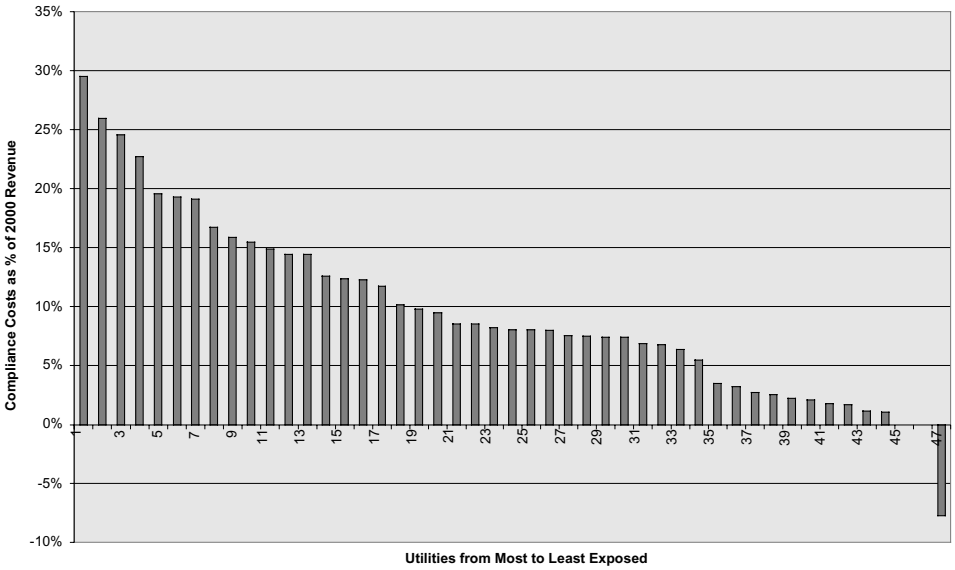
In an environmentally sensitive sector such as electricity generation, a company's decisions with respect to environmental performance can put it in a favorable or unfavorable competitive position to face emerging environment issues. These competitive advantages or disadvantages can be significant with respect to a company's overall business position.

The reason why forcing companies to purchase permits at auction instead of receiving them free would not greatly increase the financial burden of a three-pollutant cap-and-trade policy is that there are few permits to be distributed under these scenarios. The percentage reductions in emissions assumed in these simulations are so large that few permits would be available for distribution. Therefore, the additional expenditures on purchased permits would not be a major cost element.

The Four-Pollutant Cap-and-Trade Policy

The simulation results representing the impacts of a four-pollutant cap-and-trade policy show striking differences compared to the three-pollutant results. Figure 3 shows that under a requirement that carbon emissions be reduced 7% below a 1990 baseline, with a compliance deadline of 2015, and if permits were grandfathered to utilities, then under the assumptions of the scenario, compliance costs would be *lower* than in the three pollutant scenarios. This is quite counterintuitive because adding an additional environmental requirement should normally be expected to raise costs, not lower them. The explanation lies in the assumed carbon permit price.

Figure 3 Three-Pollutant Cap-and-Trade, Announced Carbon, Permits Grandfathered



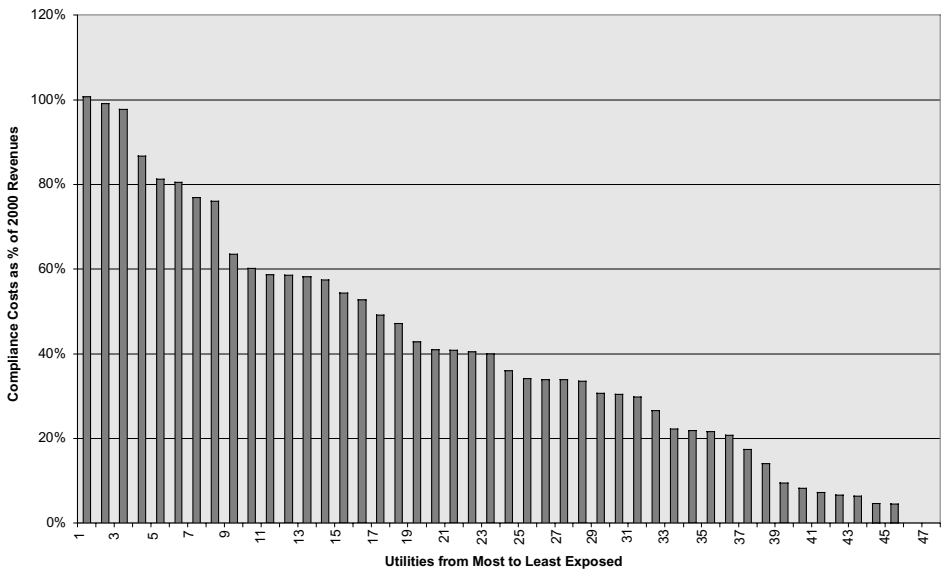
If it is as high as $US32 per ton of carbon ($US100 per ton of CO_2), utilities that re-power to natural gas would make considerable money selling excess carbon permits, since re-powering would reduce carbon emissions by far more than necessary to meet the requirement. Comparing Figure 3 with Figures 1 and 2 indicates that for most utilities, net compliance costs would actually be lower with an integrated four-pollutant regime, if permits were grandfathered. Once the carbon permit price reaches a level at which it becomes economical to re-power a unit, further increases in the price provide revenues from permit sales to the company that offset compliance costs.

Moreover, in reducing carbon dioxide emissions by switching plants to run on natural gas, companies will avoid the need to install expensive equipment to control emissions of mercury, sulfur, and (to some extent) nitrogen emissions. Since the natural sulfur or mercury content of natural gas used as power plant fuel is low, switching to natural gas not only reduces carbon emissions, it also, as a side benefit, helps meet other emission constraints. In fact, adding a carbon constraint would induce so many companies to make the fuel switch that the prices of nitrogen and sulfur permits would fall precipitously.

Companies differ greatly in their exposures to a four-pollutant regime. The distribution of compliance costs does not differ greatly from that found in the three-pollutant scenario, although individual companies change places in the ranking. Overall, the general conclusions remain the same. For most companies, the prospect of a four-pollutant cap-and- trade policy that includes carbon constraints represents a material financial risk and a potential source of competitive advantage or disadvantage.

If carbon permits are sold by auction, however, then these conclusions must be revised, as shown in Figure 4. If the permit price per ton of carbon dioxide were

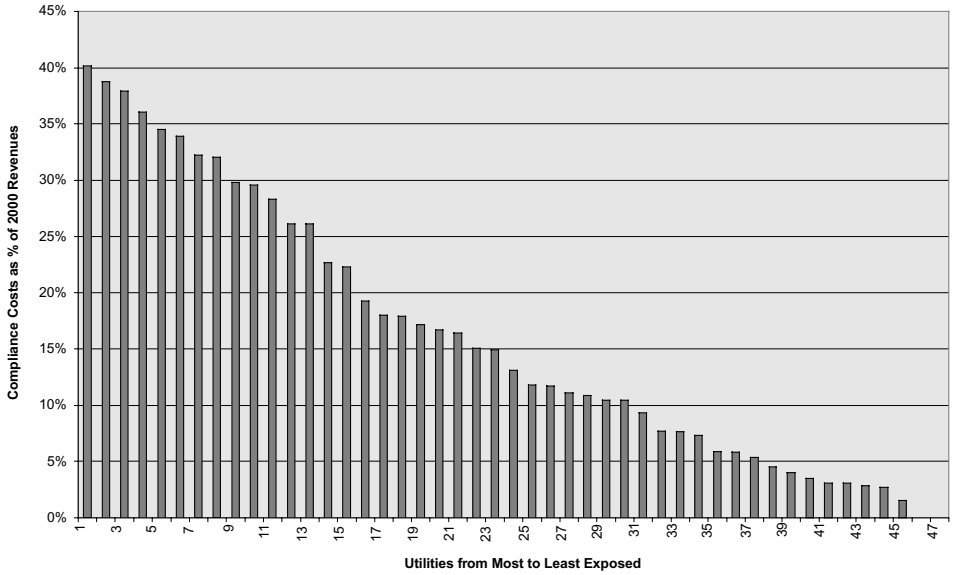
Figure 4 Four-Pollutant Cap-and-Trade, Announced Carbon, Permits Auctioned



$US32 per ton, in line with many economic model predictions, power plants produce such prodigious amounts of carbon dioxide that the total costs of acquiring the necessary permits at auction would be very large. For three-quarters of the companies, the discounted compliance cost would exceed 20% of a year's revenues. For half the companies, the costs would exceed 40% of a year's revenues. At the extreme, for the most exposed companies, discounted compliance costs would be nearer to one year's total revenues.

Again, not only do these exposures create material financial risks, they also create powerful potential competitive advantages and disadvantages. One or two companies face negative compliance costs in some scenarios because of their potential revenue gains in selling permits. More broadly, for some companies with relatively small compliance burdens, profits would likely increase as electricity prices rose in response to higher industry operating costs.

Figure 5 Four-Pollutant Cap-and-Trade, Carbon Later, Permits Grandfathered



Figures 5 and 6 show that for most companies, the worst of all worlds would be one in which they make least-cost decisions to comply with a three-pollutant cap-and-trade policy regime but are then faced, a few years later, with a new carbon reduction climate requirement. The ability to defer carbon control expenditures would not make up for the wasted costs of pollution control equipment for the other three pollutants and the loss of potential revenues from selling excess carbon permits. The costs of dealing with this situation would be higher for most companies than the costs of dealing with an integrated four-pollutant cap-and-trade regime.

Figure 6 Four-Pollutant Cap-and-Trade, Carbon Later, Permits Auctioned

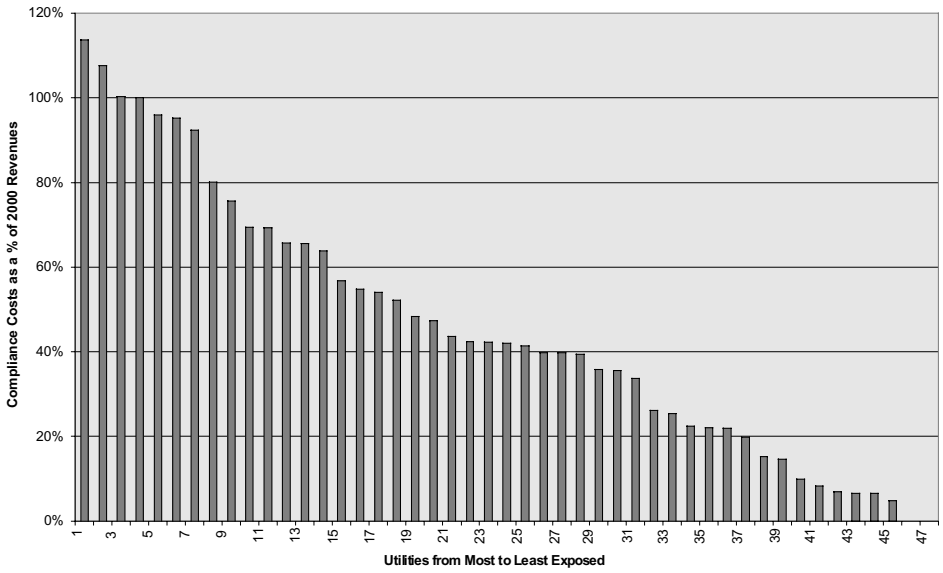


Table I illustrates the importance of the strategic choices facing electric utility companies by presenting the favored least-cost compliance options under all three scenarios, expressed as a percentage of total generating capacity (of all companies) choosing particular options. For example, the first panel of the table shows that under a 3-pollutant cap-and-trade regime, all of the capacity would respond by adopting some combination of combustion and post-combustion emission controls and permit transactions. By contrast, the second panel shows that under a 4-pollutant regime, 70% of the total capacity would achieve compliance by re-powering to natural gas plus permit transactions, instead of adopting combustion or post-combustion controls. For those units, limiting conventional pollutants along with carbon emissions would be achieved by changing the fuel.

The final panel illustrates the dilemma created by uncertainty over the direction of climate policy. If companies responded to a 3-pollutant regime by adopting their least-cost compliance options, but subsequently faced an unforeseen restriction on carbon emissions, almost 65% would re-power to natural gas, even though they had previously invested in combustion and post-combustion control technology to limit conventional pollutants. This indicates a wasted expenditure, because, with foresight, such units would simply have re-powered as the least-cost compliance option and would not have had to spend money on other measures. This is one reason why an integrated 4-pollutant policy would be the most economical for many companies.

Therefore, company managers face important decisions about the best way to position their companies to deal with these impending environmental scenarios and also about the best stance to take in the public policy arena. For many, resisting controls on carbon emissions may not be in their own best interest.

Table I Strategies Adopted to Comply with the Scenarios as a Percent of Total Generating Capacity: Compliance Strategies as a Percent of Total Generating Capacity, All Companies

Three-Pollutant Cap-and-Trade Scenarios

Compliance Strategy	*Percent of Generation*
Combustion/Post Combustion Controls + Permits	39.0
Mercury Controls + Permits	3.2
Comb/Post Comb + Mercury Controls + Permits	45.2
No Controls + Permits	12.6

Four-Pollutant Cap-and-Trade Scenarios with Integrated Carbon Controls

Compliance Strategy	*Percent of Generation*
Combustion/Post Combustion + Permits	17.1
Re-powering + Permits	70.1
Mercury + Permits	0.4
Comb/Post Comb + Mercury + Permits	0.2
No Controls + Permits	12.3

Four-Pollutant Cap-and-Trade Scenarios with Carbon Requirements Announced Later

Compliance Strategy	*Percent of Generation*
Combustion/Post Combustion Controls + Permits	19.1
Re-powering + Permits	0.3
Mercury Controls + Permits	0.4
Re-powering + Comb/Post Comb Controls +Permits	19.8
Comb/Post Comb + Mercury Controls + Permits	0.2
Re-powering + Mercury Controls + Permits	2.9
Mercury + Comb/PostComb Controls + Re-powering + Permits	45.0
No Controls + Permits	12.3

IMPLICATIONS FOR FINANCIAL ANALYSTS AND INVESTORS

The environmental policy scenarios used in this application of the metric tool are neither implausible nor remote. Legislation enacting both three-pollutant and four-pollutant cap-and-trade policies has been introduced in the current and previous Congressional sessions. The three-pollutant approach has the endorsement of the current administration.

Because companies' financial exposures to these policies are so significant and so different, potential investors and financial analysts should be aware of the potential implications. Enactment of such policies could materially affect earnings, liquidity, debt-servicing capacity, required capital expenditures, and other financial characteristics. Because of the financial importance of these issues, it is not just managers of environmentally screened or socially responsible assets who should have an interest in knowing more about companies' exposures. Mainstream financial analysts could also benefit from greater transparency.

Many financial analysts assume that they can infer electric utility companies' exposures to these environmental issues, even without detailed compliance cost information, simply by referring to simple indicators, such as the importance of coal in a company's fuel mix. To test this assumption, multiple regression analyses were carried out for the sample of 47 companies relating compliance costs as a percentage of total company revenues to the following publicly available indicators: the percentage of coal in each company's fuel mix, the percentage of generating revenues in each company's total revenues, and the (generation-weighted) average age of each company's generating units. If companies' exposures to these environmental scenarios are predictable in terms of such simple indicators, then the regression analyses should yield a high multiple correlation coefficient (which indicates the percentage of total sample variation that can be explained).

In fact, the regression analyses resulted in surprisingly low multiple correlation coefficients:

- For the 3 pollutant scenario with allowances grandfathered, the coefficient was 0.23;
- For the 4-pollutant scenario with allowances grandfathered, the coefficient was 0.10;
- For the corresponding 4-pollutant scenario announced belatedly, the coefficient was 0.12.

These findings imply that simple benchmarking indicators are likely to give a misleading prediction of companies' exposures. Without more detailed information on the compliance options available to each generating unit and their costs, analysts will not be able to predict accurately how each electricity company will be impacted. Therefore, investors are quite dependent on the companies themselves for information on the potential financial impacts of these impending environmental restrictions.

At this point few companies in the sample have disclosed in their financial reports the implications of proposed three-pollutant or four-pollutant cap-and-trade policies, particularly in any quantitative detail. Although some companies have provided fuller disclosure than others, a perusal of SEC filings would be of little help to investors and analysts in understanding the distribution of exposures of electric utility companies to the risks of this kind of environmental legislation. This lack of information exists despite current SEC regulations requiring companies to disclose "material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or future financial condition." (Item 303, Regulation S-K, 17CFR229.303)

The SEC's instructions to firms on how to comply with this regulation in the management discussion and analysis (MD&A) section of their financial reports specifies that registered companies shall disclose "where a trend, demand, commitment, event, or uncertainty is both presently known to management and reasonably likely to have material effects on the registrant's financial condition or results of operation." (SEC Release 33-6835, May 24, 1989; 54FR22427). In the case of a proposed government regulation, the registrant is required to make two determinations in deciding what to disclose. First, it must determine that there is not a reasonable likelihood that the regulation or provision will be enacted. If it cannot make that determination, it must disclose the impacts on the firm's financial conditions under the assumption that the law or regulation will be adopted, unless it can make a second determination that, if enacted, the provisions will not have a material financial effect.

In the case of the three-pollutant or four-pollutant policies, most firms in the electric utility sector would find it difficult to reach the conclusion that the provisions, if enacted, would have no material financial effect. Moreover, bipartisan legislation has once again been introduced in the Congress imposing requirements similar to those described in this paper. Nonetheless, there is currently little information in many companies' financial reports regarding these issues. Moreover, there is little evidence that companies with the least exposures have tried to set a higher standard of transparency for the industry, although it would seem to be in their interest to do so. No systematic differences in the completeness of disclosure are evident between the reports of the least and most exposed companies. Investors and many electric utility companies share an interest in greater transparency with regard to these impending environmental requirements.

ELECTRIC UTILITY HOLDING COMPANIES INCLUDED IN THE STUDY

Allegheny Energy, Inc
AES Corp
ALLETE
Alliant Energy Corp
Ameren Corp
American Electric Power Co Inc
CH Energy Group, Inc
Cinergy Corp
CLECO Corporation
CMS Energy Corporation
Conectiv
Constellation Energy Group, Inc
Dominion Resources, Inc
DPL Inc
DTE Energy Company
Duke Energy Corporation
Dynegy Inc
Edison International
Entergy Corporation
Exelon Corporation
FirstEnergy Corporation
FPL Group, Inc
Great River Energy
IDACORP Inc
KeySpan Corp
LG&E Energy Corporation
Niagara Mohawk Holdings Inc.
NiSource, Inc
Northeast Utilities
OGE Energy Corporation
PG&E Corporation
Pinnacle West Capital Corporation
PPL Corp
Progress Energy
Public Service Enterprise Group, Inc
Reliant Energy, Inc
RGS Energy Group Inc
SCANA Corporation
Sierra Pacific Resources
Southern Company, The
TECO Energy, Inc
TXU Corporation
UniSource Energy Corporation
Vectren Corporation
Wisconsin Energy Corporation
WPS Resources Corporation
Xcel Energy Inc

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