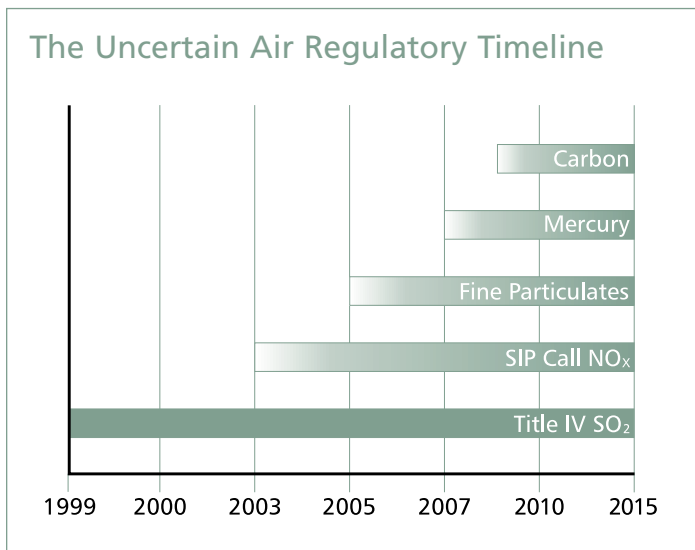


Gaining Competitive Advantage From Air Regulatory Uncertainty An Uncertain Outlook

Emissions from fossil-fired electric generation plants contribute to ozone formation in many U.S. cities, acid rain, fine particulates (soot), and global climate change. Under the Clean Air Act Amendments (CAAA) of 1990, the U.S. Environmental Protection Agency (EPA) is required to determine if nitrogen oxide (NO_x), sulfur dioxide (SO₂), and mercury (potentially) emission reductions are needed for electric boilers and other stationary sources. In addition, despite President Bush's decision to withdraw U.S. support for the Kyoto Protocol, there is growing public support to reduce carbon emissions, which contribute to global climate change.

As illustrated below, EPA is pursuing a sequential, piecemeal approach to address each air emissions problem. The first step was the Acid Rain regulation, implemented under Title IV of the CAAA, which established limits on SO₂ emissions for some fossil generation units



in 1995. SO₂ emission limits were extended in 2000 to cover most fossil-fired electric generators that are more than 25 MW.

The next step involves new NO_x emission reduction regulations. Regulatory structure for limiting summer NO_x emissions will be extended from 9 to 19 eastern U.S. states in May 2004.

EPA and Congress have taken initial steps to implement additional air regulations, including several bills that would transform the eastern U.S. summer NO_x emission regulations into a national annual program. In 1997, EPA indicated its intentions to further reduce SO₂ emissions and in 2000 announced its intentions to regulate mercury emissions from power plants.

Since 1995, EPA has been trying to build a consensus between electric utilities and other stakeholders to replace this piecemeal regulatory approach with a comprehensive, one-time integrated solution to reduce

these emissions. This would provide regulatory certainty to electric generation capacity owners so they can develop optimal, least-cost, compliance strategies and not waste money with missteps resulting from a mis-reading of future regulatory developments. President Bush has consistently supported this solution, and this year's Congress is likely to introduce several multi-pollutant bills.

ICF Consulting believes that generation plant owners must have an integrated view of wholesale and retail electric markets, fuel markets, and emissions allowance markets to develop the optimal compliance strategy.

Gaining Competitive Advantage

Electric generation plant owners must make compliance decisions for reducing NO_x emissions in the face of considerable uncertainty about future emission regulations. Owners of fossil-fired electric generation plants can pursue two alternative strategies for complying with the new NO_x regulation.

The high-tech strategy would be to install the most effective technology available, which can be capital-intensive and have adverse impacts on balance sheet debt and short-term earnings. For example, one Mid-Atlantic generation company announced plans to make capital investments of \$430 million in NO_x control equipment over five years. This large capital outlay could result in a decline in near-term earnings of \$.30 per share and in a stock price of more than \$3 per share. This strategy may also limit the generation plant owner's flexibility to respond to the evolving air regulatory outlook. Given the large space requirements associated with some NO_x control equipment,

adding control equipment to reduce SO₂ or mercury emissions may be more difficult and expensive than a less capital-intensive NO_x control strategy.

The alternative low-tech strategy would be to install less-costly, but also less effective, reduction technologies such as gas-reburn or Selective Non-Catalytic Reduction. This strategy will require less capital investment, have less impact on short-term financial performance, and may preserve the generation plant owner's flexibility to adapt to new air emission regulations. However, it may also increase risk exposure as it will require the generation plant owner to rely on the NO_x allowance market to achieve compliance.

ICF Consulting believes that generation owners must have an integrated view of wholesale and retail electric markets, fuel markets, and emissions allowance markets to manage the risks associated with this less capital intensive, "low-tech" strategy. 