SO₂ Allowance Spot Prices and NOx Seasonal Allowance Spot Prices



Source: Derived from Cantor Fitzgerald data.

See notes on following pages.

SO_2

 SO_2 spot prices opened the February month trading at \$473/ton but soon dropped to \$425/ton before finally settling at \$461/ton. According to Evolution Markets, compliance buyers did not participate in this month's market activity; rather much of the selling was by financial players in preparation for the upcoming EPA auction to be held on March 25, 2008.

Preliminary EPA data suggests that 2007 SO_2 emissions once again fell below the 9.5 mt cap. Total SO_2 tons emitted in 2007 was 8.95 mt, down 4.7% from 2006. The surplus of leftover allowances carried forward from previous years is now 6.85 million allowances which will be banked for future use. This surplus added to the annual 9.5 million 2008 allocation results in a total of 16.39 million allowances that are likely to be available for compliance in 2008.

Emissions are declining despite an increase in power consumption. 2007 SO_2 emissions fell below cap despite a slight increase in coal consumption, most notably in the electric power sector. However, this increase in coal consumption coupled with lower SO₂ emissions may be explained by an increase in production of lower-sulfur coal. According to the EIA, coal production is up 2.4% year-to-date in Wyoming, which produces low-sulfur Powder River Basin coal. Alternatively, production has been falling in the top three coal producing states that make up higher-sulfur Appalachian coal. When combined, Kentucky, Pennsylvania, and West Virginia make up 1/3 of total US coal production.

The growing surplus of banked allowances also contributes to the decline in emissions. Finally, there has been a notable increase in investment in flue gas desulfurization retrofits (FGD) at coal-fired power plants. According to CERA, 2007 saw a 64% increase in FGD retrofits per GW compared with 2006. In 2006, 3.9 GW of FGD retrofits were brought on-line compared with the 10.9 GW of retrofits expected at the end of 2007

NO_X

The NO_x SIP Call current vintage (2008) showed little activity in February in large part because February is a shoulder month to the seasonal market. The compliance season begins May 1st and runs through September 30th.

Current vintage spot prices opened the February month trading at \$788/ton before settling the month at \$825/ton. Throughout the month of February, current vintage prices were stable. Monthly volume was down at approximately 2,000 tons compared with 5,000 tons last February. Generally, regulatory and economic factors facing the utility's business are the driving forces behind the compliance buyer's level of engagement in the market. Typically, activity in this market heightens as the compliance season comes closer.

EPA data shows 2007 NO_x seasonal emissions fell within the 527,501 ton/year budget despite the addition of Missouri to the NO_x program in May. The final total of 506,385 of emitted NO_x tons leaves 21,116 unused tons to be added to the 217,000 already banked allowances carried over from 2006. A well-supplied market and an increase in pollution control equipment coming online at coal-fired power plants in 2007 contributed to below-cap NO_x emissions output for 2007. According to CERA, 5.6 GW of selective catalytic reduction (SCR) retrofits were expected to be online at coal-fired power plants in 2007 compared with the 2.4 GW of SCR retrofits in 2006. In addition, 2.1 GW of selective non-catalytic reduction retrofits (SNCR) were expected to be online in 2007 compared with 2 GW in 2006.

SO2 Allowances Available for Compliance and SO2 Emission Output under Cap-and-Trade



Source: EPA

See overview on following slide.

NOx Allowances Available for Compliance and NOx Emission Output under Cap-and-Trade



Source: EPA

See notes on following slide.

Brief Overview of the SO₂ and NO_x Emissions Markets

The electric power industry is a major source of sulfur dioxide emissions (SO₂) and nitrogen dioxide emissions (NO_x) emissions – both precursors of acid rain and smog. According to the Environmental Protection Agency's (EPA) 2006 Acid Rain Progress Report, the power sector is responsible for 70% of SO₂ emissions and 20% of NO_x emissions.

Reduction in SO_2 and NO_x emissions can be obtained through a cap-and-trade program, which is a market-based compliance option that also provides an emitting source with relative flexibility in compliance options. These options include pollution control technology such as flue gas desulfurization (FGD) for SO_2 and selective catalytic reduction (SCR) for NO_x (i.e., scrubbers), fuel switching, and/or participating in their respective cap-and-trade markets. Compliance measures can be capital-intensive and the decision to use pollution controls and/or emission allowances is primarily driven by the regulatory environment, fuel input type and the level of emission output by emitting sources. The associated costs with this decision contribute to the price of wholesale power and ultimately, the retail price.

The Acid Rain Program

http://www.epa.gov/airmarkets/progsregs/arp/index.html

EPA's Acid Rain Program (ARP), established under the 1990 Clean Air Act Amendments, required reductions of SO_2 and NO_x emissions from the electric power industry. The Acid Rain Program was the first cap and trade program implemented nationwide to reduce SO_2 emissions. The SO_2 program set a permanent cap on the total amount of SO_2 that can be emitted by fossil fuel-fired generating units and allows allowance trading so affected sources have some flexibility in their compliance method. Currently, SO_2 sources must surrender one allowance to emit one ton of SO_2 . If a source falls short on the number of allowances it needs to comply with its individual cap, it can purchase allowances from another source that has a surplus of allowances. An emitting source may have a surplus of allowances for several reasons. For example, if it chose to install and/or run scrubbers then it can "bank" those unused allowances for future use or sell the leftover allowances to other emitting sources.

The NOx Budget Trading Program

http://www.epa.gov/airmarkets/cap-trade/docs/nox.pdf

In 2003, the cap-and-trade method was also implemented to reduce seasonal (primarily summer) NO_x emissions from fossil fuel-fired plants. While the EPA administers the program, states are required to share the responsibility for allowance allocation and enforcement. Currently, NO_x sources must surrender one allowance to emit one ton of NO_x .

Source – EPA

^[1] The Acid Rain Program also required NOx emission reductions by select coal units but under a rate-based regulatory program [http://www.epa.gov/airmarkets/progsregs/arp/nox.html].