



CLEAN AIR MARKETS update

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FROM THE DESK OF BRIAN MCLEAN

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Washington, DC, U.S.A.**

On February 14, 2002, President Bush announced a legislative plan to reduce air pollution from the power sector. The Clear Skies proposal, if adopted, would be the most important reform in the way the United States regulates air pollution. Rather than adding new requirements (as environmental legislation has tended to do over the last 30 years), it offers the prospect of replacing a number of existing programs with a single market-based approach that achieves needed environmental benefits at lower cost.

The Clear Skies proposal addresses emissions of nitrogen oxides, sulfur dioxide, and mercury from electric power generation. These emissions are significant contributors to air pollution problems in the United States. The substantial emission cuts required by the Clear Skies proposal will address a variety of air quality problems, including smog, acid rain, mercury contamination, and visibility impairment. Most importantly, the proposal will improve human health by reducing the risk of inhaling small, dangerous particles. As a result, tens of millions more people will live in areas that meet the national requirements for healthy air.

The Clear Skies proposal could replace overlapping requirements with a simpler, more effective approach that reduces and caps emissions of all three pollutants from power generation. Under a plan that has been proven to protect environmental integrity while significantly reducing costs, sources will be allowed to trade permitted emissions under each cap. The caps on emissions, along with stringent emissions monitoring and reporting requirements and significant automatic penalties for noncompliance, ensure that emissions reduction goals are achieved and sustained. With this assurance, facilities have the flexibility to design and adjust compliance strategies and trade permitted emissions without needing government approval.

The concept of multipollutant legislation is a compelling one. The appeal of addressing a wide array of air pollution concerns at lower cost and with more certainty and flexibility is obvious. Such legislation could also provide the electric power sector the kind of regulatory certainty and flexible implementation timeframe not accorded any other sector of the economy. There would be many winners associated with successful legislation, including power generators, consumers, and the environment.

TO TRADE OR NOT TO TRADE?

—Stephanie Benkovic and Joseph Kruger, U.S. EPA

Using cap and trade as a policy tool can have many advantages, but it isn't always the right policy tool for every environmental problem. Analyzing the following key questions can help policymakers ensure that a cap and trade program will deliver intended environmental and economic benefits.

CAN YOU ADDRESS THE ENVIRONMENTAL OR HEALTH PROBLEMS WITH FLEXIBILITY?

Cap and trade programs are premised on the notion that regulators do not need to direct the level or location of specific emission reductions. Instead, these programs set an overall target and let "the market" determine where the most cost effective reductions should be made. In some cases, however, *where* an emission reduction is made does matter. For example, some toxic emissions might only have local health impacts in the area immediately surrounding a facility. Allowing such a facility to buy allowances from other facilities might not fully address the risks caused by its emissions unless the cap requires reductions significant enough to minimize or prevent local impacts. Even when the location of the emissions matters, cap and trade might be effec-

tive if the environmental goal can be met through emissions reductions in a general region. In most cases, the more a pollutant is uniformly mixed over a larger geographic area, the more appropriate it is for the use of cap and trade.

Just as sometimes *where* an emission reduction is made is important, *when* the reduction is made can also be significant. Consider whether unused allowances from one compliance period can be used for compliance in future periods, known as "banking." Allowing banking in a cap and trade program creates additional flexibility for sources, encouraging early emissions reductions, and can further reduce the compliance costs. Banking can also delay the achievement of the emissions reduction target later in the program. Because banking does not delay achievement of cumulative reductions, this tradeoff does not represent an environmental concern for problems such as acid deposition and climate change.



CAN YOU MEASURE EMISSIONS ACCURATELY AND CONSISTENTLY?

Monitoring plays a particularly important role in a cap and trade system. Total mass emissions (rather than just the emissions rate or concentration) must be measured from each individual unit or facility affected by the program. This complete and consistent accounting of emissions is essential to ensure that the environmental goal of the program is achieved and that the tradeable allowances (or authorizations to emit) accurately represent a specific amount of emissions.

DO DIFFERENTIAL MARGINAL COSTS OF ABATEMENT EXIST ACROSS FACILITIES?

Cap and trade programs make the most sense when emissions sources have a variety of costs for reducing emissions. These cost differences might result from the age of the facilities, the availability of technology, location, fuel use, and other factors. Where costs are different, there is “room for a deal,” as high-cost sources have the incentive to buy allowances from low-cost sources.

IS THE NUMBER OF SOURCES APPROPRIATE?

In general, cap and trade programs should include enough sources to create an active market for allowances. If too few sources are participating, few opportunities for trading might exist. The more numerous the sources are, however, the more complex it becomes to establish a cap and trade program. Thus, the number of participating sources should be sufficient to provide for a fluid market, yet not so many that program administrators are unable to effectively manage the emissions and allowance data.

DO ADEQUATE POLITICAL AND MARKET INSTITUTIONS EXIST TO ENABLE CAP AND TRADE PROGRAMS TO WORK?

For the *trading* part of a cap and trade program to work, a country must have the same institutions and incentives in place as are required for any type of market to function. These include: a developed system of private contracts and property rights; a private sector that makes business decisions based on the desire to lower costs and raise profits; a private sector familiar with the range of control strategy options; and a government culture that allows private businesses to make decisions about how to reduce emissions with a minimum of intervention.

As with all environmental programs, a cap and trade program requires adequate enforcement to ensure that environmental objectives are met. For an emissions market to develop, participating sources must have confidence that emissions will be correctly measured and reported, that compliance will be verified, and that a significant financial penalty will be assessed for noncompliance.

Thus, cap and trade programs will have greatest success in countries where the rule of law is respected and enforcement is consistent, impartial, transparent, and independent of political considerations. The credibility of an emissions trading market will diminish significantly if participants believe that rules are unfair, arbitrary, or unpredictable.

Finally, even if a country does not yet have all of the attributes described above, developing the infrastructure necessary for a cap and trade program in advance of more comprehensive economic and political changes can still be beneficial. In particular, the emphasis on careful mass-based emissions measurement and accounting will improve the environmental accountability of sources and enhance existing air quality management practices.

For a more thorough discussion of these issues, please visit www.epa.gov/airmarkets/articles/index.html.



EMISSIONS TRADING DEMONSTRATION IN TAIYUAN, CHINA



—Xuehua Zhang and Dick Morgenstern, *Resources for the Future*

In a demonstration of international teamwork, a group of local and foreign experts are providing technical assistance to pilot an emissions trading program for sulfur dioxide (SO₂) control in the Chinese province of Shanxi. The province is a heavily industrial area in central China that greatly relies on uncontrolled coal combustion. This reliance, combined with unfavorable topography, has resulted in extremely high ambient SO₂ levels in the province, especially in the capital city of Taiyuan.

The Taiyuan Environmental Protection Bureau (EPB) has collected emissions data and imposed SO₂ emissions limits on large emitters since the late 1990s. Consistent with Taiyuan's 10th Five-year Plan, the goal for 2005 is to reduce SO₂ levels by 50 percent from the 2000 figures. A project team was assembled to develop a workable SO₂ emissions trading mechanism in Taiyuan to help achieve this goal.

The emissions trading project, supported by the Asian Development Bank (ADB) and the Shanxi Planning Commission, started in March 2001 and will continue for 18 months. The project team is led by Resources for the Future (RFF), which has been working with EPB, domestic consultants, other relevant government agen-



cies, and local companies. In addition, the U.S. Environmental Protection Agency (EPA) is providing training on various issues relating to developing and operating an emissions trading program. The project includes 26 companies from numerous sectors, including power generation and manufacturing, that account for approximately 50 percent of Taiyuan's total SO₂ emissions.

The team completed an initial report that describes the proposed action plan for the project, which the Taiyuan government and ADB approved in July 2001. Various bureaus of the Taiyuan government reviewed the proposed emissions trading regulation and issued it in April 2002. The RFF team and an EPA expert developed the information systems for emissions tracking, allowance tracking, and allowance transfers with input from EPB and the participating companies. The final phase of the project, to be completed later

this year, involves pilot operation of the trading program; fine-tuning the management, regulatory, and compliance systems; and overall project evaluation.

For additional information and future updates, please contact Xuehua Zhang at xzhang@rff.org or 202 328-5055.

CAN EMISSIONS TRADING AND COMMAND-AND-CONTROL REGULATIONS COEXIST?

—Jeremy Schreifels, U.S. EPA

Often, a key issue when contemplating an emissions trading program is whether emissions trading is compatible with existing regulations. Many people assume that market-based programs, like emissions trading, cannot coexist with command-and-control regulations. Experience shows that it is possible and, in some instances, beneficial for market-based and command-and-control instruments to work side-by-side to reduce pollution and protect human health and the environment.

In the United States, the U.S. sulfur dioxide (SO₂) cap and trade program confronted this issue. Although the trading program provided sources with flexibility to determine their compliance strategies, the United States did not eliminate the structure or certainty of existing command-and-control regulations. Instead, the SO₂ cap and trade program was designed to be compatible with and complementary to existing regulations.

In the United States, many programs protect against increases in regional pollution concentrations (e.g., “hot spots”). Air quality standards and source-specific tech-

nology and performance standards ensure that electric power plants limit SO₂ emissions to levels that do not endanger human health and welfare. Because these limits are in place, the government does not have to restrict trading for geographic considerations. The “safety net” created by air quality standards also eliminates the need for regulators to approve each trade, which reduces transaction costs and processing time for transactions in the SO₂ cap and trade program, as compared to project-based trading.

The key lessons from the U.S. experience include:

- **Emissions trading programs should complement, not contradict, existing regulations.** Governments can design emissions trading programs with existing requirements and regulations in mind. Multiple regulations can complicate compliance and increase costs to government and industry, especially if duplication,



contradiction, confusion, or uncertainty exist.

- **The legal framework should identify the relationship between emissions trading programs and other policy instruments before a trading program begins.** A legal framework that defines the rights and obligations of regulators and sources, establishes the basis for allowance trading, and characterizes the relationship between the different policy instruments is necessary to reduce confusion, create certainty, establish tradable permits as a valuable commodity, and minimize costs to industry and government.

For further information, please contact Jeremy Schreifels at schreifels.jeremy@epa.gov or 202 564-1256.

UPDATE ON U.S. EMISSIONS TRADING PROGRAMS: EMISSIONS TRADING GOES ONLINE

The U.S. Environmental Protection Agency's (EPA's) Clean Air Markets Division recently released the latest innovation in emissions trading—the Online Allowance Transfer System (OATS). This system enables users to directly transfer allowances from one account to another via the Internet instead of submitting paper forms. EPA expects online trading will substantially reduce the already low transaction and administrative costs associated with the national sulfur dioxide (SO₂) cap and trade program and the regional nitrogen oxides (NO_x) cap and trade program, implemented jointly by EPA and northeastern states.

Using this new online system, authorized account representatives can access their account any time, and transfers are processed immediately. In addition, account representatives can update their account information, such as address and phone number, and can designate allowance transfer agents

Select	Year	Serial Start	Serial End	Amount
<input type="checkbox"/>	1999	9123472	9128620	5149
<input type="checkbox"/>	1999	9108372	9128620	20048
<input type="checkbox"/>	2000	9679672	9684860	5894
<input type="checkbox"/>	2001	9679672	9684860	5893
<input type="checkbox"/>	2002	9679672	9684860	5894
<input type="checkbox"/>	2003	9679672	9684860	5893

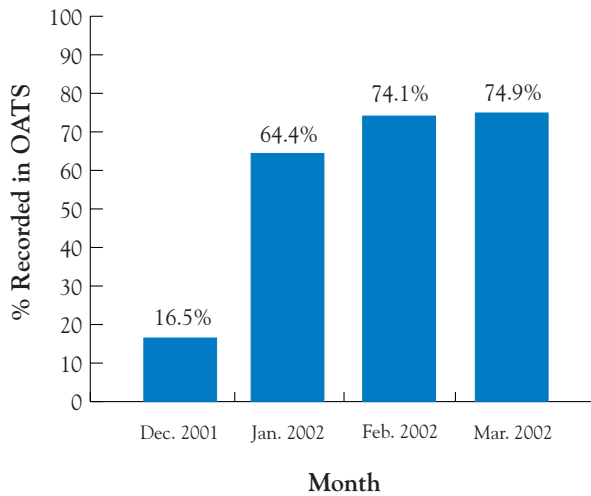
(i.e., people they are authorizing to transfer allowances on their behalf).

OATS use has grown dramatically since its release in December 2001. This past March, more than 1.2 million allowances were transferred online, and approximately three-quarters of all transactions are now processed electronically. EPA expects this percentage to increase as more participants in the allowance market register to transfer online.

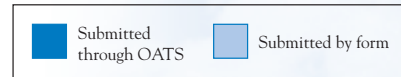
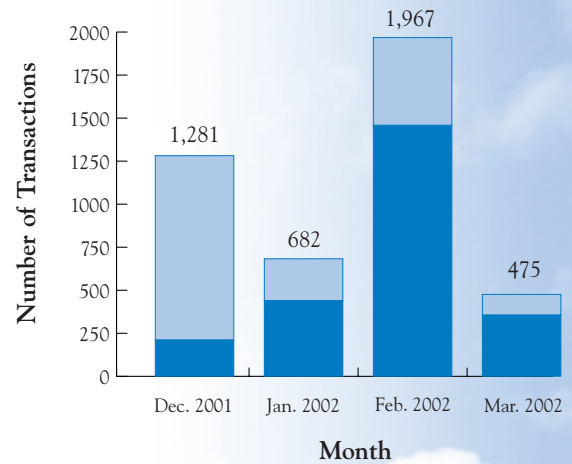
OATS is the next step in making EPA's emissions trading programs paperless. Most emissions sources already report emissions data for SO₂, NO_x, and carbon dioxide electronically.

For further technical information on online trading, contact Janice Wagner at wagner.janice@epa.gov, or visit the Clean Air Markets Web site at www.epa.gov/airmarkets.

OATS TRANSACTIONS AS PERCENTAGE OF TOTAL



OATS TRANSACTIONS VS. PAPER FORM



NEWS FROM AROUND THE WORLD



TRADING RELATED EVENTS

THE NEW HAMPSHIRE HOUSE OF REPRESENTATIVES APPROVED A CLEAN POWER ACT to reduce emissions of sulfur dioxide (SO₂), nitrogen oxides (NO_x), mercury, and carbon dioxide (CO₂) from state power plants. The bill passed the House in January and is now on its way to the Senate. The act calls for annual SO₂ reductions of 75 percent below Phase II levels of the Acid Rain Program, and annual NO_x reductions of 70 percent by 2006. The act calls for CO₂ reductions of 7 percent

below 1990 levels, and for mercury, reductions by 2006 or as soon as appropriate control technology is commercially available. New Hampshire will allow emissions averaging, banking, and trading to meet the cap levels for SO₂, NO_x, and CO₂. For more information, visit <www.des.state.nh.us/ard/nhcps.htm>.

THE COMMONWEALTH OF MASSACHUSETTS HELD PUBLIC MEETINGS ON ITS FOUR-POLLUTANT PROGRAM, which calls for reductions of SO₂, NO_x, mercury, and CO₂ emissions from large power plants. The plan will allow plants to

use trading and offsets to help meet their CO₂ limits. For more information, visit <www.state.ma.us/dep/bwp/daqc/daqcpubs.htm>.

THE UNITED KINGDOM'S EMISSIONS TRADING SCHEME AUCTIONED FINANCIAL INCENTIVES TO POTENTIAL PARTICIPANTS.

The clearing price for reducing a ton of CO₂ equivalent was £53. Thirty-four organizations agreed to take on binding emissions reduction targets. For more information, visit <www.defra.gov.uk/environment/climatechange/index.htm>.

NEWS FROM AROUND THE WORLD (CONTINUED)



THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

HELD ITS 10TH ANNUAL SO₂ ALLOWANCES AUCTION at the Chicago Board of Trade on March 25. The lowest successful bid was \$160.50 for 2002 allowances and \$68 for 2009 allowances. For more information, visit the Web site at <www.epa.gov/airmarkets/auctions/2002/02index.html>.

EPA HELD A WORKSHOP ON THE USE OF MARKET MECHANISMS FOR AIR POLLUTION CONTROL IN INDIA IN MARCH. The workshop focused on the practical application of emissions trading in the Indian power sector. The workshop was co-sponsored by EPA, the U.S. Agency for International Development, the Indian Ministry of Power, and the Indian Ministry of Environment & Forests. For more information, contact Katherine Grover at grover.katherine@epa.gov or Jeremy Schreifels at schreifels.jeremy@epa.gov.

UPCOMING

May 5-7, 2002

THE EMISSIONS MARKETING ASSOCIATION (EMA) 6TH ANNUAL SPRING MEETING at the Hotel Inter-Continental in New Orleans, Louisiana. The meeting's theme is "Multi-Pollutant:" *The New Catch Phrase*. It is co-sponsored by EPA and Clean Air Canada, Inc. For more information, contact EMA at 414 276-3819, or by fax at 414 276-3349, or visit its Web site at <www.emissions.org>.

May 21, 2002

THE CLEAN AIR MARKET'S PROGRAM BASICS WORKSHOP at the Drake Hotel in Chicago in advance of the annual EPRI CEM User Group Meeting. This EPA workshop will be held from 9:00 a.m. to 5:00 p.m. and will provide an overview of the Acid Rain Program and NO_x emissions trading programs. Source representatives who might be unfamiliar with these programs are particularly encouraged to attend. The workshop is free and open to the public, but attendance is limited to approximately 150. Register online at <www.epa.gov/airmarkets/business/campwkshp.html>. For more information, contact Martin Husk at 202 564-9165 or husk.martin@epa.gov.

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EPA's Clean Air Markets Division will release a new Web tool that will allow users to select and retrieve data in an easy-to-understand format. The first release will provide access to emissions and plant/unit characteristic data. Future releases will include additional data (e.g., allowance, acid deposition, source management), as well as graphing and/or mapping capabilities. Look for this new feature on the Division Web site (www.epa.gov/airmarkets) in summer 2002. For more information, contact Martin Husk at 202 564-9165 or husk.martin@epa.gov.