

Emissions trading, the economy and the environment

John Kinsman reviews the successes of emissions trading and rebuts fears that trading might lead to localised 'hot spots'

The US Acid Rain Program, established in 1990 to reduce sulphur dioxide (SO₂) and nitrogen oxides (NO_x) from electric power plants across the nation, introduced the first major attempt to use emissions trading. This has been so successful in cost-effectively reducing SO₂ emissions that many new air quality regulations are expected to incorporate a 'cap-and-trade' approach. The Environmental Protection Agency (EPA) predicts that a new cap-and-trade programme for SO₂, NO_x and mercury (President Bush's Clear Skies proposal) would save over \$1 billion annually compared to if no trading was allowed.

Statistics from the EPA show that the SO₂ trading scheme has achieved virtually 100% compliance and reduced emissions by approximately 40% from 1980 levels through 2001. This should increase to about 50% by the end of the decade. Furthermore, compared to 'command-and-control' measures, hundreds of millions of dollars were saved each year as a result of Phase 1 (1995-99) and savings will grow in Phase 2 (2000 and beyond).

Factors contributing to this success include:

- An attainable emissions cap was set with reasonable deadlines.
- Reductions were required in two phases. Staged reductions allow learning and innovation based on previous compliance activities.
- The government did not specify how emissions sources should achieve compliance; rather, source owners have the flexibility to choose those activities – such as fitting emissions control technology, fuel switching and/or buying allowances – that make sense given their specific circumstances.

The Emissions Marketing Association consists of more than 270 members from 190 companies worldwide. Its aim is to promote market-based trading solutions for environmental control



- The federal government set very specific rules about how companies must prove how much SO₂ they actually emitted.
- There is a substantial penalty for companies that do not turn in enough allowances to prove annual compliance.

As allowances have value in a trading system, each emission source has an incentive to find the least-cost combination of con-

“Each emission source has an incentive to find the least-cost combination of controlling emissions and buying or selling allowances”

trolling emissions and buying or selling allowances to reduce costs for customers and shareholders alike. Compliance strategies fully integrate environmental protection into financial performance and long-term financial planning.

Companies that surpass their reduction targets can retain allowances, which therefore become a tangible financial asset. Retained allowances can be banked to accommodate new generation, sold in the market, saved for use during a second phase or as a contingency that targets might be lowered, used at another of the company's facilities, or used to ease facilities into compliance more gradually. A gradual transition allows companies to take advantage of evolving understanding of compliance options as well as new developments in environmental and energy policies. Trading provides the flexibility to consider company-specific and local circumstances such as local jobs, local coal resources, etc.

By contrast, in 'command-and-control'



emissions management programmes, a government entity dictates what controls should be applied. In such a system there is no incentive for facilities to reduce emissions more than needed and innovation is stifled. As a result, costs are much higher at most facilities.

No 'hot spots' expected

Some groups believe that emissions trading could create 'hot spots', or localised areas where deposition of substances like sulphur, nitrogen or mercury could increase. However, analyses by the EPA, New York-based think-tank Environmental Defense and the Environmental Law Institute have shown that 'hot spots' have not emerged during the SO₂ trading programme.

There are numerous reasons why 'hot spots' are not expected in large-scale cap-and-trade schemes or in a possible national mercury trading programme.

First, any cap-and-trade programme exists on top of the basic health-protection standards of the Clean Air Act – the National Ambient Air Quality Standards (NAAQS) for ozone, SO₂, nitrogen dioxide, particulate matter and other substances. All states have plans for actions needed to meet these standards. No facility may exceed emissions levels specified by the EPA and state regulators in plant-specific permits for the purpose of protecting local and sometimes regional air quality, regardless of the number of allowances held. Further, a cap-and-trade scheme does not preclude Federal and state regulators from addressing local situations if need be; in fact, state and federal regulators are required to act to address local air quality issues and the tools – the NAAQS – already exist for that purpose.

Second, cap-and-trade programmes set a permanent emissions cap to be much lower (eg, 50-70%) than current emissions, requiring a substantial reduction in emissions over the area of concern, be it a large region or the whole nation.

Third, the emissions reductions are not concentrated in any particular region. Controls on the power sector's widely-dispersed 1,100 coal-fired units at about 400 locations in the US lead to a broad reduction 'footprint' across the nation. This widespread reduction dominates the level to which emissions are reduced in any one location, compared to specific reductions at any single

plant. No areas go without substantial emission reductions. Further mitigating the possibility of 'hot spots' is the fact that the highest-emitting plants usually reduce emissions by the largest amounts due to greater economy-of-scale cost-effectiveness.

In reality, the only way to determine if local impacts could occur due to a source using purchased allowances would be to consider the actions of all the power plants within a large region, where some would be decreasing their emissions more than necessary and others would be buying allowances. Only by looking at the total impact of all the actions of many power plants could the impact of emissions trading on a particular location be evaluated.

Further, cap-and-trade programmes often create early reductions – and earlier environmental benefits – because sources over-control emissions early to 'bank' allowances for the reasons mentioned previously.

Unfortunately, the 'hot spots' issue is rife with misinformation from opponents of emissions trading. Such opponents would rather have extremely stringent plant-by-plant emission controls. They justify this by claiming exaggerated environmental and health concerns, while also ignoring costs and the need for a strong national economy

powered by low-cost, reliable energy. An example of such misinformation is a 2002 report that complained that power plants in Georgia increased SO₂ emissions by 36,000 tons/year between 1995 and 1999 due to the flexibility of cap-and-trade. But it conveniently ignored the fact that the same plants reduced their emissions by more than 400,000 tons per year between 1990 and 1995.

Mercury trading

With regard to mercury, a lack of understanding and/or purposeful misinformation have made mercury trading a controversial subject, but there are numerous reasons why it should not be a concern.

First, less than 10% of US mercury deposition comes from power plant emissions and, after these emissions are reduced in response to upcoming federal mercury regulations or possibly as part of a broader multi-emissions programme, the industry's share will be very small indeed. The president's proposal, for example, calls for a 70% reduction.

Second, researchers currently estimate that 60% of the mercury released by power plants is elemental mercury and in this form the metal tends not to deposit nearby – it may remain in the atmosphere for months or

years before it is deposited. In addition, some of the remaining power plant mercury emissions become elemental mercury soon after release. These facts make mercury 'hot spots' due to power plant emissions unlikely.

Third, a July 2001 Energy Information Administration modelling study found that controlling mercury emissions through a cap-and-trade programme would not significantly affect the regional distribution of mercury.

Finally, we need to consider all of this in the context of adverse health effects of mercury due to environmental exposures related to electric power emissions in the US which are speculative, if not non-existent.

In conclusion, the numerous economic benefits of emissions trading, coupled with confidence that 'hot spots' are not a serious concern, is why there are many supporters of the concept, including: the EPA; environmental groups and think-tanks like Environmental Defense and Resources for the Future; the National Governors Association; academics; and industry. ■

John Kinsman is director, air quality programs, at the Edison Electric Institute.

E-mail: jkinsman@eei.org

The opinions expressed in the above article are not necessarily the opinions of the EMA, its members or its member companies.