

NOx and SOx emissions trading in Ontario

Erik Haites outlines an unusual emissions trading programme due to begin next year

The government of Ontario recently announced its intention to establish an emissions trading programme for NOx and SOx emissions (oxides of nitrogen and sulphur) from all coal- or oil-fired electric generating plants in the province with a capacity greater than 25 MW beginning on 1 January 2001. This programme is being introduced in conjunction with a restructuring of the electricity sector, originally scheduled to begin in November this year, but recently delayed until an unspecified date in 2001. Draft regulations for the trading scheme are expected to be issued for public comment within the next few weeks.

About 85% of the electricity consumed in Ontario is generated by Ontario Power Generation (OPG), which is wholly owned by the provincial government and was created on 1 April last year as part of a reorganisation of Ontario Hydro, in preparation for the restructuring of the electricity market. OPG's total annual emissions of acid gases (SO₂ and NOx) are limited by regulation but OPG has also made voluntary commitments to limit its NOx and CO₂ emissions beginning this year. Regulation 355 in the Ontario Environmental Protection Act states that starting in 1994, Ontario Hydro, now OPG, will not emit more than 175 kilotonnes of SO₂ per year, and SOx and NOx emissions together will be limited to 215 Kt per year. Under this regulation NOx emissions are measured as NO, rather than NO₂, as is the case in most other jurisdictions. (1 unit of NO₂ = 1.533 units of NO.)

OPG's voluntary NOx commitment is to limit net emissions to 38 Kt (measured as NO) per year beginning this year. The CO₂ commit-

ment is to stabilise emissions at 1990 levels this year and reduce them by 10% by 2005.

The emissions trading programme is intended to maintain the level of environmental protection provided by the regulatory limit on OPG's SOx and NOx emissions and OPG's voluntary commitment to limit its NOx emissions. Starting in 2001, the annual emissions caps for all coal- and oil-fired plants – currently six OPG stations – are 36 Kt of NOx (reported as NO) and 157.5 Kt of SO₂. These fossil-fired units represent about 30% of OPG's generation capacity. The balance consists of nuclear (40%) and hydroelectric (30%).

In addition to the emissions trading programme, the government intends to establish emissions performance standards (EPSs) for any electricity generated or sold in Ontario that is produced by coal- or oil-fired stations with an output capacity greater than 25 MW. The EPSs will limit NOx emissions to a maximum rate of 1.3 Kg/MWh and SO₂ emissions to a maximum rate of 4.6 Kg/MWh.

Initially, OPG is the only firm subject to an emissions cap. Additional participants will enter the programme as OPG divests control of its generating facilities. The company is required to reduce its share of the provincial market to no more than 35% of the total within 10 years. No other generator will be allowed to control more than 25%. The programme is also expected to be extended to other NOx and SOx sources, possibly as soon as 2002. The caps will be adjusted as new sources are added. And they will be lowered over time to help meet the provincial government's commitments to reduce total NOx emissions by 45% below 1990 levels and SO₂ emissions by 50% below 1999's allowable levels by 2015.

Participants in the trading programme will be required to provide the Ontario Ministry of the Environment with government-issued allowances or emission reduction credits (ERCs) equal to their actual NOx and SOx emissions during the preceding year. Allowances equal to the emissions cap will be distributed to participants annually. In addition, sources that are not capped can create emission reduction credits by reducing their NOx or SOx emissions.

In 2001 the market is expected to involve mainly sales of NOx ERCs to OPG. Projections of OPG's emissions for 2001 suggest that its NOx emissions are likely to exceed the cap by

20–40% while its SO₂ emissions are expected to be roughly equal to the cap. Thus compliance can be achieved only by purchasing NOx, and possibly some SOx, credits. As nuclear generation units that are currently being refurbished come back into service, it is anticipated that OPG's emissions could fall well below the 2001 caps.

How the allowances will be distributed has not yet been decided. Distribution could be restricted to programme participants, in which case OPG, as the owner of all the stations covered by the cap, would receive all the allowances until it sells one of the units. The allowances, nevertheless, would need to be allocated to specific generating units to implement the proposed distance and directionality restrictions on trading.

Allowances could also be distributed to sources not subject to the caps, such as companies that generate electricity from renewable sources. These sources argue that they should receive part of the allocation on the grounds that their output reduces emissions from coal- and oil-fired plants. But the fossil-fuelled generators argue that this would require them to subsidise their competitors.

ERCs purchased from non-capped sources can be used for compliance purposes subject to approval by the Ministry of the Environment.

Although the detailed design of the trading scheme has yet to be announced, the ministry has proposed that:

- Unused credits and allowances can be banked for use in a later compliance period, possibly subject to a depreciation factor;
- Purchases of credits and allowances will have to come from upwind sources and will be discounted for distance from the user.
- ERCs created by sources in other jurisdictions can be used in Ontario provided they meet the criteria and subject to the distance and directionality restrictions.

Erik Haites is president of Margaree Consultants in Toronto. He is an environmental economist and specialises in issues relating to emissions trading and the economics of climate change. The opinions expressed in the above article are not necessarily the opinions of the Emissions Marketing Association, its members or member companies

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