Economic Impact Analysis
Virginia Department of Planning and Budget

9 VAC 5-140 – Regulation for Emission Trading

Department of Environmental Quality

May 23, 2003

The Department of Planning and Budget (DPB) has analyzed the economic impact of this proposed regulation in accordance with Section 2.2-4007.G of the Administrative Process Act and Executive Order Number 21 (02). Section 2.2-4007.G requires that such economic impact analyses include, but need not be limited to, the projected number of businesses or other entities to whom the regulation would apply, the identity of any localities and types of businesses or other entities particularly affected, the projected number of persons and employment positions to be affected, the projected costs to affected businesses or entities to implement or comply with the regulation, and the impact on the use and value of private property. The analysis presented below represents DPB's best estimate of these economic impacts.

Summary of the Proposed Regulation

This proposal makes a small but potentially significant change to the existing regulation, which establishes a caped allowance trading program for nitrogen oxide emissions from larger sources in Virginia. The underlying regulation is relatively simple to explain.

The U.S. Environmental Protection Agency (EPA), under its authority to implement the federal Clean Air Act established caps on the tonnage of nitrogen oxide (NOX) emissions from large stationary sources and from mobile sources during the summer. This rule is intended to reduce the formation of ground-level ozone during the summer months. With EPA's approval, the states subject to this rule implemented their caps by allocating emission allowances (at one ton of NOX per allowance) to existing sources[1]. Sources may emit NOX up to the number of allowances owned. Sources choosing to emit fewer tons than allowances owned may sell the excess. Sources choosing to emit more tons of NOX than allowances owned may purchase

additional allowances from those willing to sell. In addition, any allowances not used in the first year they are available may be banked for use in later ozone seasons. There are two key advantages of this type of arrangement. First, compared to the rate-based regulations that they replace, capped allowance trading systems provide significantly greater certainty of achieving the environmental quality limits established by the law. Second, by providing firms with much greater compliance flexibility, allowance trading programs result in lower costs of compliance. One potential problem with a trading program as described here is that emissions **may** become more concentrated either in one locality or in one period of time than would occur with the traditional rate-based standards.[2]

To prevent this from happening, the regulation includes two backup protections. First, all existing, air quality standards limiting ground-level ozone and other local standards remain in effect. So, a source is not allowed to violate local air quality by using allowances. Second, to prevent the concentration of emissions on particularly hot summer days when the demand for fossil fuel combustion is high, the use of banked allowances is limited by a mechanism known as 'flow control'. The flow control provision states that whenever the number of banked allowances reaches 10% or more of the total number of allowances in the budget for a given ozone season, then any banked allowances used during this period are only worth half a ton rather than a ton of NOX.

This represents a very rough way of limiting the size of the bank. Once the number of banked allowances gets close to the 10% level, the value of banking allowances falls, possibly by as much as half. This greatly reduces the incentive that firms have to bank further allowances.

In the original version of this regulation, Virginia chose to postpone the implementation of the flow control provisions until 2006, since 2007 is the first ozone season when the state must demonstrate full compliance with the new budget requirements. The EPA objected to the 2006 date since the allowance market begins in 2004, and there is a possibility that the number of allowances banked could exceed the 10% level in 2005. Virginia must change its rule to satisfy EPA requirements or the state would stand to loose substantial amounts of federal funds.

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[1] With a few allowances reserved for new sources in the electrical generation sector.

[2] It is important to point out that the opposite may also be true. It may easily be the case, depending on a number of technical and economic factors, that rate-based regulations could result in greater concentrations than market-based regulations.

Estimated Economic Impact

Whether this change in the emission trading program will have any significant economic impact depends on whether flow control restrictions will likely be binding in the second year of the program. If it is not expected that 10% of the allowances will be banked in the first year of the program, then the expected impact of the change in the Virginia flow control date from 2006 to 2005 is essentially zero.

The story is much more complicated if flow control can be expected to be binding. First of all, if flow control is binding for 2005, that means that at least 10% of allowances were not used for compliance purposes in the 2004 ozone season. This would happen if, on average, firms held 10% of their allowances over from the 2004 season. Why might they do this? Suppose that demand for electricity and process heat is low in 2004 due to a slow economy, but everyone anticipates that things will pick up in the next year or two. Then, the demand for NOX allowances will increase with demand for fossil fuel combustion. This will increase the price of NOX allowances relative to this year's price. Normally, this would encourage firms to hold allowances to profit from their higher value in later years.

However, each firm knows that, if their demand is slack due to a slack economy, then demand for fossil fuel combustion by others will also be low. Thus, each firm knows that there is a substantial likelihood that enough allowances will be held over to trigger flow control. The likelihood of having banked allowances subject to flow control reduces the value of holding allowances, giving firms increased incentive to sell their excess allowances. This reduces the current price and increases future prices. Thus, if there is any substantial likelihood that flow control will be triggered, most firms will probably choose to sell their allowances at a discount rather than hold them over.

Suppose, then, that Virginia could delay the advent of flow control provisions for a year. If flow control were to be triggered in that year and Virginia were the only state to delay implementing flow control language, then Virginia firms would benefit because they could sell their banked allowances as having much the same value as non-banked allowances (at least for that one year). This is very unlikely to happen because, should EPA allow Virginia to use the 2006 year, then other states would certainly follow suit. Thus, we would likely see a situation where many or all of the states in the program would have a flow control free year. A year of

flow control free banking would make banking relatively more attractive in that year alone. Unfortunately, it would also increase the likelihood of hitting the flow control trigger in the third year of the program.

All of the complications of the previous paragraphs make it very difficult to work out the economic impact on Virginia of EPA's requirement that the state use the 2005 date for implementing flow control. What we do know is that, in a smoothly functioning market for allowances, banking is generally not going to be a particularly good investment. In slow economic times, one might expect a capital gain from holding allowances for better economic times when the demand for allowances is higher. However, this investment is made very risky by the flow control provisions. Firms will usually be better off, selling their excess in one year and buying any extras they need in later years. A doubling of prices would be needed to make flow controlled allowances a good investment for the next year. But the prospect of large increases in allowance prices would also induce a large amount of over-control by firms with some flexibility to reduce emissions during the ozone season. This, in turn, would prevent prices from rising enough to make lots of banking worthwhile.[3]

Given the preceding discussion, it is unlikely that the implementation of flow control in 2005 rather than 2006 will make a significant difference for Virginia's economy.

Businesses and Entities Affected

Approximately 80 large sources of NOX emissions are affected by this regulation.

Localities Particularly Affected

This regulation does not have a disproportionate impact on any particular localities.

Projected Impact on Employment

The change in the year of application for progressive flow control is not expected to have any significant impact on employment.

[3] Some very significant banking of allowances has occurred in the Ozone Transport Commission NOX market. This banking is due to the phased in nature of the emission reductions. The price increase from Phase 2 ($1,000) to Phase 3 ($4,000-$5,000) justified banking even under progressive flow control. No such phased reductions are included under this regulation.

Effects on the Use and Value of Private Property

The circumstances under which this regulation might affect the use and value of private property are rather unlikely. Thus no significant impact is expected.