

Appendix D

Control Option 7

Control Option: NO_x/NH₃ Emissions Cap and Trade Program

Description:

A NO_x and NH₃ cap and trade program is one approach available for controlling the growth in, and/or obtaining reductions of, NO_x and NH₃ emissions. The basic concept entails capping emissions at some level that puts a ceiling on total allowable emissions from sources over a defined area. To achieve the RMNP goal of reduced nitrification, emission caps would initially be set at levels less than current emissions to ensure that emission reductions occur over a defined time period. Future years would be selected as timeframes for setting and attaining incrementally lower emissions caps until monitoring indicates nitrogen deposition below the critical load at RMNP. Even with growth in new sources of NO_x and NH₃ emissions, the emissions cap program would restrict total emissions to a level that is less than the cap in order to stay on track for reducing nitrogen deposition in RMNP.

Emission caps work by assigning emission allowances to sources covered by the program – each unit of emissions is represented by one allowance - like the Acid Rain Program which set a nationwide cap on sulfur dioxide emissions from electric utilities and set each allowance equal to one ton of sulfur dioxide. Since allowances would be limited, covered sources must have enough allowances at the end of each year to cover their actual emissions or be fined and surrender future year allowances to cover any shortfall. Unused allowances may be sold, traded or saved (banked) for future use. The trading aspect of the program would provide Colorado sources with the flexibility to achieve NO_x and NH₃ reductions through methods of their choosing, allowing market forces to drive the effort.

With the credit system of allowances, sources could choose from many alternatives that would best meet their needs with respect to meeting the overall emissions caps. Such alternatives include installing pollution control equipment; switching fuels; employing energy-efficiency measures and/or renewable energy generation; process, materials or activity changes to reduce emissions; purchasing excess allowances from other sources that have reduced their emissions; or using any combination of these and other options.

There are various ways to structure a cap and trade program that would help ensure it is reasonable and effective: ranging from which sources or source categories to include, seasonal versus annual caps, whether to allow inter-pollutant trading, the geographic extent of the program, and whether to geographically weight emissions based on the relative importance of source areas affecting the Park. The degree of enforceability of the program is a key issue – whether to implement cap and trade as a State-only program which would lack federal enforcement authority or include applicable parts of it in either the State's federally-enforceable regional haze or ozone SIPs. A voluntary approach is more likely to have shortfalls and be less effective as discussed further below.

Benefits of a Cap and Trade Program:

A market-based cap and trade program generally has multiple benefits as compared to a command and control approach.

- There is more environmental certainty that overall impacts of emissions will be reduced as caps are lowered to limit total emissions. Command and control does not ensure that aggregate emissions will not increase as new sources add new emissions and existing sources add capacity and are used more.
- A market system reduces the cost of compliance. It allows all sources to take advantage of the most cost-effective and/or lowest-cost compliance options.
- Incentives are created for early reductions and for reductions beyond those required by regulation. There is economic value in allowances – since they are limited and relatively scarce, they are valuable and can be banked or sold, creating incentives for sources with low compliance costs to make additional reductions and offers sources not currently regulated to generate reductions (allowances) for sale to those sources that are regulated.
- Technological innovation is promoted by providing sources with an economic incentive to find new ways to generate cost-effective reductions.
- Environmental benefits may be accelerated through the economic incentives created by early reductions and by decreasing emissions beyond the caps.
- State and local air regulatory authorities retain flexibility to impose stricter limits on sources necessary to address specific local air quality issues, regardless of a source’s accumulated allowances.
- Tracking emissions from sources to assure compliance improves accountability and the accuracy and comprehensiveness of emissions inventories.

Costs/Tradeoffs Associated with Cap and Trade

EPA’s market-based approach to the Acid Rain Program using cap and trade has demonstrated significant cost savings to affected sources and in administration of the program by air regulatory agencies. A cap and trade program for NO_x and NH₃ that includes some of the same features as EPA’s national Acid Rain Program could realize similar cost benefits. These features include the cap, accurate and complete emissions inventories, and substantial and automatic penalties for noncompliance.

- Technological innovation and energy efficiency measures taken by sources resulted in a 40% drop in scrubber costs for sulfur dioxide at power plants in the 1990’s from expected costs and efficiencies of removal improved from 90 to 95%.
- Costs have been lower than expected in many areas due to previously “grandfathered” sources being among those that have reduced their emissions by the greatest amounts due to their potential to achieve large emission reductions more cheaply than newer, less polluting sources.
- More oversight by air regulators may be required to assure emissions are accurately tracked. This has the benefit of assuring the effectiveness and equity of the program, however, by accurately administering the allowances and enforcing compliance requirements that are essential to success of the program.

Description of How to Implement:

Using EPA’s model for cap and trade, a mandatory program would provide the only certainty that needed emissions reductions would be achieved using this air management approach. A voluntary program could not be enforced to assure compliance.

Feasibility of Cap and Trade:

The cap and trade program is an available approach to air quality management.

Uncertainty Associated with Cap and Trade:

The primary uncertainty is not knowing in advance where emission reductions will occur. This is an inherent characteristic of the market-based program and not necessarily a deficiency or significant cause for concern. The flexibility provided by a cap and trade program is one of its main attractions, allowing for a lowest cost approach while achieving substantial emission reductions.