Clean Air Interstate Rule Overview

On May 12, 2005, the United States Environmental Protection Agency (EPA) published the final version of the Clean Air Interstate Rule (CAIR) in Federal Register, 70 FR 25162. CAIR is a requirement to reduce the interstate transport of pollutants that significantly contribute to nonattainment of ozone and fine particle (PM2.5) concentrations. The program is directed at reducing nitrogen oxides (NOx) and sulfur dioxide (SO2) emissions from the electric power sector across a 28-state region of the Eastern United States and the District of Columbia. The EPA is requiring these states to revise their state implementation plans (SIPs) to include control measures to reduce emissions of NOx and/or SO2.

Based on an assessment of the emissions contributing to interstate transport of air pollution and available control measures, EPA determined that achieving required reductions in the identified states by controlling emissions from power plants is highly cost effective.[1] The EPA developed a model cap and trade program for the states that will achieve the emission budget milestones set by CAIR. Modeling has shown that the emission targets identified by the EPA are not sufficient to achieve attainment of the national ambient air quality standards (NAAQS) for ozone in Wisconsin.

CAIR is implemented in two phases. For NOx, Phase I runs from 2009-2014 and Phase II is for the years 2015 and later. For SO2, Phase I covers the years 2010-2014 and Phase II is for the years 2015 and later. Across the CAIR region, in Phase I there will be a 53 percent reduction and in Phase II there will be a 61 percent reduction from 2003 NOx emission levels. For SO2, the reductions will be 45 percent in Phase I and 57 percent in Phase II from 2003 SO2 emission levels.

What is the CAIR Model Trading Program?

The backbone of CAIR is the optional trading program covering the emissions from electric generating units (EGUs) larger than 25 MW. This program consists of three separate markets – annual SO2 emissions, annual NOx emissions and ozone-season NOx emissions. The NOx markets are two separate compliance requirements – the annual market addresses PM2.5 concerns and the seasonal market addresses ozone concerns. CAIR establishes a budget for emissions of NOx and SO2 for each state affected by CAIR. The states are required to meet these budgets, with EPA's preferred approach being the model trading program administered by the EPA. If the state chooses to participate in the federal trading program, this budget is the number of allowances the state has the discretion to allocate to sources. If a state chooses not to adopt the trading program, it either has to demonstrate legally enforceable programs that will reduce emissions sufficiently to meet the prescribed budget or be subject to federal regulation under a federal implementation plan (FIP).

Annual SO2 Emissions Market – Model Rule

The annual SO2 budget for Wisconsin is 87,264 tons in 2010 and 61,085 tons in 2015. The CAIR SO2 trading program relies upon Title IV SO2 allowances. Pre-2010 Title IV SO2 allowances can be used for compliance with CAIR. Sulfur dioxide reductions are achieved by requiring sources to retire more than one allowance for each ton of SO2 emissions. The emission value of an SO2 allowance is

[1] The definition of a power plant covered under CAIR is: "a stationary, fossil-fuel-fired combustion turbine serving at any time, since the start-up of the unit's combustion chamber, a generator with nameplate capacity of more than 25 MWe producing electricity for sale." Cogeneration plants are defined as "a cogeneration unit serving at any time a generator with nameplate capacity of more than 25 MWe and supplying in any calendar year more than one-third of the unit's potential electric output capacity or 219,000 MWh, whichever is greater, to any utility power distribution system for sale."

independent of the year in which it is used, but is based upon its vintage year (i.e.. the year in which the allowance is issued). Sulfur dioxide allowances of vintage 2009 and earlier offset one ton of SO2 emissions (a retirement ratio of 1:1). Allowances vintage 2010 through 2014 offset one-half (0.5) of a ton of emissions (a retirement ratio of 2:1). Allowances vintage 2015 and beyond offset one-third (0.35) of a ton of emissions (a retirement ratio of 2.86:1). The allowances for SO2 have already been allocated in perpetuity under the Acid Rain Program. Other than the retirement ratios, there are no further restrictions on the use of banked SO2 allowances.

Annual NOx Emissions Market – Model Rule

The annual NOx budget for Wisconsin is 40,759 tons in 2009 and 33,966 tons in 2015. The CAIR annual NOx trading program relies upon CAIR annual NOx allowances allocated by the states. The NOx SIP call allowances and CAIR ozone-season NOx allowances cannot be used for compliance with the annual CAIR reduction requirement. Each state will have a share of the compliance supplement pool (CSP) that is comprised of 200,000 CAIR annual NOx allowances of vintage year 2009. The state may distribute the CSP allowances based upon criteria for early reduction and need. There are no restrictions on the use of the banked annual allowances or CSP allowances.

Ozone Season NOx Emission Market – Model Rule

The ozone season NOx budget for Wisconsin is 17,987 tons in 2009 and 14,989 tons in 2015. The CAIR ozone-season NOx trading program relies upon CAIR ozone-season NOx allowances allocated by the states. Pre-2009 NOx SIP Call allowances can be banked into the program and used by CAIR-affected sources for compliance with the CAIR ozone-season NOx program. NOx SIP Call allowances will not be issued after 2008. Banked NOx SIP Call allowances cannot be used to meet the annual NOx emissions budget. There are no other restrictions on the use of banked allowances.

Flexibility for States in Development of Trading Program

For the most part, states have to implement the trading program as dictated by the EPA in the model rule. The states do have flexibility in determining the following aspects of the program:

- Development of NOx allocations methodologies provided allocation information is submitted to EPA in required time frame. This includes:
  - Cost of allowance distribution (free v. auction)
  - Frequency of allocations (permanent v. periodically updated)
  - Basis for distribution (heat-input v. power output)
  - Use of allowance set-asides and their size (new source, energy efficiency, development of IGCC, renewables or small units).
- Provisions that allow individual units to opt-in to the trading program so long as the units comply with Part 75 monitoring requirements.

Clean Air Interstate Rule (CAIR) – Options for Rule Framework

Wisconsin is currently developing two options for the implementation of the Clean Air Interstate Rule. Under both options, Wisconsin would participate in the federal trading program operated by the US EPA.

Option One – CAIR Trading Program Separate from BART and RACT Compliance Requirements

The SO2 trading program would follow the EPA model rule. The CAIR SO2 allowances are based upon Title IV Acid Rain allowances that have previously been distributed. The emission reductions come from the retirement ratio that changes the value of the allowance depending on the year it was issued. The Phase I retirement ratio is 2:1 which means that an allowance issued in Phase I is worth one-half of a ton of SO2 emissions regardless of the year it is surrendered. In Phase II, the retirement ratio changes to 2.86:1, resulting in allowances issued in Phase II worth one-third of a ton of SO2 emissions.

Elements of Wisconsin's proposed allocation scheme for NOx allowances would vary from the EPA model rule. (For a comparison of the model rule and the State's proposal see Appendix One.) The proposed allocation scheme would include the following provisions:

- Allocations to both existing and new sources are based on gross generation output.
- The baseline for allocations is the average of the three most current years of data starting with 2002 data.
- Initially, data for calculation of the baseline is from the Clean Air Markets Division Acid Rain database. For non-Acid Rain units, the data is from the annual reports submitted to the Public Service Commission. Regulatory language will include a requirement to submit to the DNR annual and seasonal generation data. A reporting and measuring protocol will be developed to ensure consistent data reporting.
- Allocations are made at the unit level even though some of the data is reported at the facility level. Allocations to facilities that report data at the facility level is divided equally across the facility based on the number of units. For non-Acid Rain units with annual data only, seasonal data is approximated by taking the average monthly output and multiplying by the five months of the ozone season.
- The baseline is recalculated every three years. Reallocation of the NOx allowances happens every three years. Allocations are for three years.

Allocation date	For Years	Data Used	Notes
2006	2009-11	2002-04	Allocation may be in 2007
2009	2012-14	2005-07	
2012	2015-17	2008-10	
2015	2018-20	2011-13	

- Fuel weighting will not be used in the allocation calculation.
- The annual and seasonal markets include two separate set-asides – one for new sources and another for renewable and energy efficiency (RE/EE) projects.
- In Phase I (2009-2014), the new source set-aside is 5 percent of the State's allocation which equals 2,038 allowances in the Annual NOx program and 899 allowances in the Seasonal NOx program.

- In Phase II (2015+), the new source set-aside is 3 percent of the State's allocation which equals 1,019 allowances in the Annual program and 450 allowances in the Seasonal program.
- After the new source establishes three years of clean generation data, it will be incorporated into the next distribution of the main allocation pool.
- Unused allowances in the new source set-aside are banked for future use instead of redistributed to the main allocation pool.
- In the case of oversubscription to the new source set-aside, preference will be given to clean coal projects over new fossil fuel-fired units. Distribution will be based on a pro rata allocation among the different levels of preferences. For instance, if no clean coal projects applied for the set-aside, then all new sources would receive a share of the new source set-aside. But if one clean coal project applied, it will receive all allowances it applied for up to the size of the set-aside. Any amount of the set-aside that was not allocated to the clean coal project will be distributed to the new fossil fuel projects pro rata.
- A separate set-aside is established for new RE/EE projects. The size of the set-aside is 3 percent in Phase I and 5 percent in Phase II. For the Annual NOx program, the set-aside equals 1,223 allowances in Phase I and 1,698 allowances in Phase II. For the Seasonal NOx program, the set-aside equals 540 allowances in Phase I and 749 allowances in Phase II.
- Any unused portion of the RE/EE set-aside is banked for future use instead of redistributed to the main allocation pool. In the case of oversubscription to the RE/EE set-aside, the allowances will be distributed on a pro rata basis.
- New renewable projects above 25 MWs will be eligible to apply for the RE/EE set-aside. Smaller renewable projects may use Green Tier agreements to aggregate their sources to meet the 25 MW threshold. After the renewable project establishes three years of clean generation data, it will be incorporated into the next distribution of the main allocation pool. Renewable projects would receive allowances as long as they generate electricity.
- Energy efficiency projects will be eligible to apply for the RE/EE set-aside. Smaller energy efficiency projects may use Green Tier agreements to aggregate their sources. The number of years that an energy efficiency project may receive allowances would be limited depending on the type of project.
- Combined heat and power (CHP) projects receive allocations based upon electrical output and an equivalent value of the thermal output. The CHP unit's baseline is calculated using the following equation: (Average of three highest years of generation output) + (Average of three highest years of thermal output divided by 3.4 mmBtu/MWh).
- The NOx Compliance Supplement Pool will not be distributed and will instead be permanently retired.

Option Two – Integration of BART and RACT Compliance Requirements for Major Electrical Generating Units into CAIR Trading Program

Option Two only concerns integrating compliance requirements for major electrical generating units (EGUs) subject to CAIR. It does not cover non-EGUs subject to BART or RACT. The purpose of this option is to integrate compliance requirements for BART and RACT units into the trading structure of CAIR. BART and RACT units would be compliant with their respective rules as long as they surrendered the appropriate number of allowances.

Option Two integrates compliance requirements for EGUs for BART and RACT into the CAIR trading structure. NOx and SO2 allowances are allocated according to the CAIR program structure outlined in Option One. The RACT and BART units are subject to a higher retirement ratio when the allowances are surrendered for compliance. This means those units that are identified as subject to

RACT or BART, in addition to CAIR, will have to surrender allowances at a rate higher then those units subject only to CAIR. The potential of using such a retirement ratio structure is to achieve focused reductions intended by the individual requirements relative to ozone and visibility while providing the flexibility of an open market national trading program.

The applied ratio account for the applicable RACT or BART level of control plus an additional reduction due to the added flexibility and uncertainty of actual reductions achieved on individual units with a market based regulation. A ratio will be determined and applied for the retirement of both NOx and SO2 allocations. The NOx ratio may be differentiated on an annual and ozone season basis. The ratios may also vary according to the separate requirements for 2009, 2012 and 2015.

The retirement ratio could be structured in two ways. The retirement ratio for both the NOx and SO2 markets may be applied to the year the allowance was issued. Or the ratio can be applied based on the year the allowance is surrendered for compliance. In the case of SO2, this retirement ratio would be additive to the ratios already established in Option 1. DNR is requesting comment on which structure is appropriate for implementation and achieving the desired emission reductions.

An example of potential ratios is presented in Table 1. The ratios reflect the RACT and BART level of control estimated for the units and does not include the additional reduction necessary to address the uncertainty associated with a trading program.

The additional reduction applied to the ratios can be based on several different criteria. The EPA's guidance suggests a straightforward approach by applying an additional reduction of ten percent for trading programs in nonattainment areas. Other factors to consider include: 1) the incremental cost of nearing full control versus the cost of allowances on the market and 2) estimate the difference due to the potential load shifting to units not affected by increased ratios. In evaluating this option the department solicits comment on these or other criteria that may be appropriate in addressing in achieving appropriate reductions and flexibility.

Table 1. Example of ratios based on estimated RACT and BART control levels.

Requirement	NOx			SO2		
	2009	2012	2015	2010	2012	2015
Units affected by CAIR	1 : 1	1 : 1	1 : 1	2 : 1	2 : 1	2.9 : 1
Unit Affected by CAIR & RACT	2.3 : 1	2.3 : 1	2.0 : 1			
Unit Affected by CAIR & BART	1 : 1	2.7 : 1	2.3 : 1	2 : 1	5.4 : 1	5.4 :1
Unit Affected by CAIR, RACT & BART	2.3 : 1	2.7 : 1	2.3 : 1	2 : 1	5.4 : 1	5.4 :1

Notes:
1) The NOx ratios are calculated in 2009 and 2012 versus the CAIR 2009 allocations and the 2015 ratios are calculated versus the CAIR 2015 allocations. This results in a reduction in ratios over time for the same effective control level.
2) This example is for discussion purposes only – ratios are subject to BART and RACT rule requirements and structure of an integrated approach.

Public Input on CAIR Rule Framework

The department is inviting comment on all aspects of the proposed CAIR rule framework. In addition, the department has identified specific questions as listed below. Comments are due April 26, 2006 and can be submitted to:

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Specific Questions:

Baseline

1. What years of data are sufficient to calculate a reasonable baseline?
2. How frequently should the baseline be updated?

Allocations

3. Should allocations be distributed at the unit, plant or generator level?
4. Should allocations be based on heat input or generation output?
5. For heat input based allocations should a fuel adjustment factor (fuel weighting) be used in determining allocations?
6. Should gross or net output be used for output based allocations?
7. Where should monitoring devices be physically located in monitoring generation output (net or gross generation)?

Set-Asides

8. What is the appropriate size of the new source and the RE/EE set-aside?
9. What is an appropriate timeframe for rolling new sources from the "set-aside" pool into the main allocation pool. What implications are associated with a longer or shorter period?
10. Should any unused new source set-aside allowances be banked for future use? What type of structure should be used if the new source set-aside is over-subscribed?
11. Should any unused RE/EE allowances be banked in the set-aside for future use? What type of structure should be used if the RE/EE set-aside is over-subscribed?
12. Should the set-aside structure permit aggregation of small RE/EE sources and qualification for set-aside allowances.
13. Whether the cut-off for eligibility for the RE/EE set-aside be set at a lower threshold than 25 MW?
14. How should clean coal be defined for purposes of implementing a preference in the new source set-aside?

Option Two

15. Should a retirement ratio under this option be implemented on a unit-by-unit basis or one system-wide ratio developed for each regulatory requirement?
16. The retirement ratios under the CAIR SOx program are applied according to the distribution year of the allocation. An alternative is to apply the ratio according to the year of use for compliance. A second aspect is to distribute initial allocations based on the RACT or BART requirement and then apply a ratio to additional allowances obtained by the source for compliance. What approaches are most effective based on implementation, economics, and environmental results?
17. What factors should be considered in adjusting retirement ratios to balance flexibility and address uncertainty associated with market trading programs?

Appendix One
Comparison of EPA Model Rule and Wisconsin's Allocation Scheme

	EPA Model Rule	**Wisconsin**
Allocation basis- existing sources	Heat input	Electrical output
Allocation basis- new sources	Electrical output	Electrical output
Data used for baseline	Highest three years of five years of data	Average of three years of data
Updating baseline	Once established, not updated	Updated every three years
Level of allocation	Unit level	Unit level
Reallocation	Every five years	Every three years
Length of allocation	Five years	Three years
Fuel weighting	1.0 for Coal 0.6 for Oil 0.4 for all others	No fuel weighting
New source set-aside	Phase I: 5% Phase II: 3%	Phase I: 5% Phase II: 3%
RE/EE source set-aside	No RE/EE set-aside	Phase I: 3% Phase II: 5%
Treatment of Clean Coal Projects	No preference	Preference in new source set-aside allocation
Oversubscription to set-aside	Pro-rata reduction	Preference in new source set-aside for clean coal, Pro-rata reduction
Underscription to set-aside	Re-distributed to the main allocation pool	Banked for future use in the set-aside
Treatment of CHP	Boiler units: Total Thermal Output/ 0.8 Combustion Turbines: (Total thermal output/0.8) + (Electrical generation * 3,413 btu/KWh	All units: Generation Output + (Thermal output/ 3.4 mmBtu/MWh)
Compliance Supplement Pool	Allocated based upon early reductions or extreme hardship	Retired from use