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Including Renewable/Wind Energy in Cap and
Trade Programs
&
Update on the Clean Air Interstate Rule (CAIR)

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What does wind energy have to do with environmental regulations?

- Zero-emissions wind generation displaces generation from conventional emitting sources by:
 - Backing down marginal conventional generation, or
 - Partially offsetting the need for new conventional emitting capacity to meet growing energy demands.
- Wind generation avoids the emissions associated with the displaced conventional generation.
- By avoiding emissions, wind generation can help achieve emission reduction goals.

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Cap & Trade Regulations

- Today, the “cap and trade” approach is commonly used for emissions regulations.
- A cap is set at desired level to achieve health and environmental goals.
- An equivalent number of emission allowances signifying one unit (ton) of pollutant are distributed.
- Regulated emitting entities must hold allowances equaling their actual emissions during each control period (year).

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Cap & Trade Regulations

- Once the cap level is set, **the goal is to minimize the cost of meeting the cap through the allowance trading mechanism.**
- Regulated entities are allowed to buy and sell allowances to minimize their cost of meeting the cap.

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Common Allowance Distribution

- Today, emission allowances in most emission trading programs are allocated for free to existing fossil generators.
 - Allowances are commonly distributed based on fossil fuel heat input, or fuel consumption.
- This effectively excludes non-fuel energy sources, such as renewable energy, but...
- Non-emitting, renewable generation displaces emitting generation and actually makes it easier to achieve the cap level since fewer total emissions will have to be abated in order to reach the goal.

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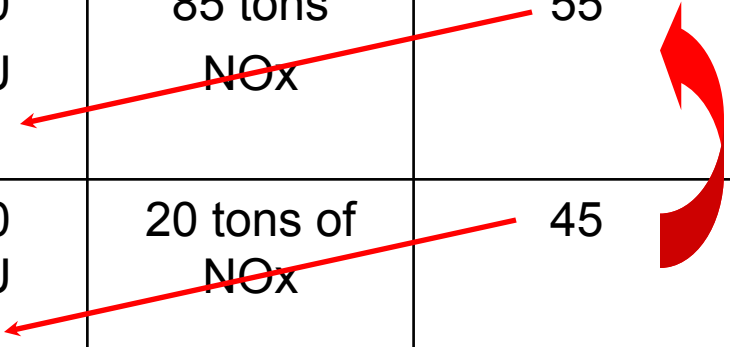
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An example of how allowance distribution can reward “clean generation”

	Generation	Heat Input	Actual Emissions	Allowances
Coal	50,000 MWh	445,000 mmBTU (55%)	85 tons of NOx	55
Natural Gas	50,000 MWh	360,000 mmBTU (45%)	20 tons of NOx	45
TOTAL	100,000 MWh	805,000 mmBTU	105 tons of NOx	100 allowances

Sell ~25 allowances



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Why Include Renewable/Wind Energy in a Cap & Trade Program?

- The distribution of emission allowances determines which energy sources can directly participate in the emission reduction market.
- Recognize renewable/wind energy for the value it provides under emission regulations in order to properly encourage its development.

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How to Include Renewable Energy in Cap & Trade Programs?

- Under a free allocation scheme:
 - Directly allocate allowances based on generation output (kWh), rather than fuel- or heat-input (mmBtu).
 - Or, reserve a portion of allowances in a “set-aside” for renewable projects.
- Under an auction allocation scheme:
 - Reserve a portion of auction revenue to support renewable projects.

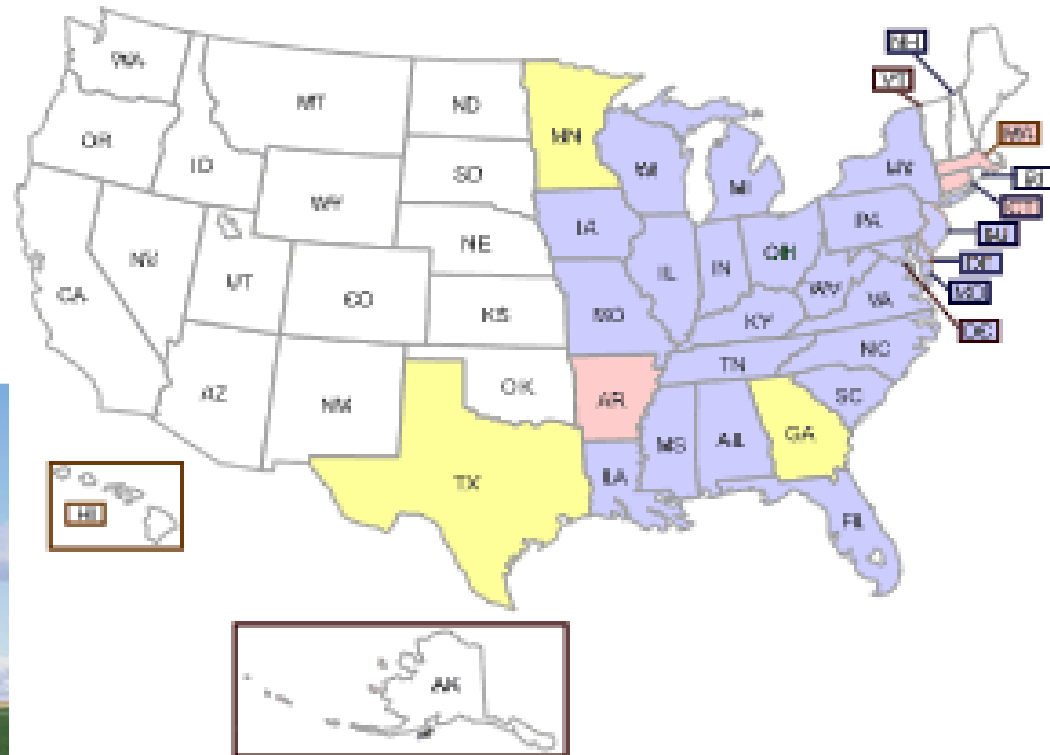
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Clean Air Interstate Rule (CAIR)

- Issued by the U.S. EPA in March 2005 for 28 eastern U.S. states and the District of Columbia.
- Places a cap on NO_x and SO₂ emissions
- Effective in 2009, implemented in two phases.



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Program Implementation

- Each regulated state is assigned an emissions cap and may participate in a regional trading program for annual and ozone season NOX and/or annual SO2.
- Can follow the model rule issued by EPA or determine own implementation of certain elements such as allocation (NOx only), timing, etc.
- Must submit rule to EPA by September 2006 or may take Federal Implementation Plan (FIP) and submit state plan by March 2007.

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How to include Wind? Renewable Energy Set-aside

How does it work?

- Reserve a portion of allowances for renewable energy, generally 1-10% of overall allowances, can be more
- Allocate allowances based on stipulated rate (ex. 1.5lbs NO_x/MWh)
- Seen under the previous NO_x Budget Trading Program (SIP Call) in 7 states
- Several states have proposed and final rules under the CAIR including a set-aside for renewable energy, or EE/RE (<1 to 10%)
 - CT, IL, IN, MA, MI, MO, NJ, NY OH, VA,

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How to include Wind?

Output-based Allocation

Allocate *all* allowances based on output

- Provides incentive for efficient and clean energy sources

Allocate based on output for “new” sources only

- Re-define eligible sources to include renewables, and allocate allowances on generation output (similar to conventional new sources under CAIR).

States with output-based allocation: PA, WI

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CAIR Approaches in the Midwest for Renewables

MI	Set-aside	Ozone: <1%, 200 allowances
WI	Output-based	Proportionate with generation
IL	Set-aside	Ozone: ~8%, 9149 allowances Annual: ~8%, 3684 allowances
IN	Set-aside	Ozone: 2.5%, 1115 allowances Annual: 0.5%, 545 allowances
OH	Set-aside	Ozone: 1%, 416 allowances
MO	Set-aside	Annual: 0.5%, 300 allowances

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Other Aspects of Including Renewables in Emission Programs

- What can renewable energy sources do with the allowances?
 - sell back into the market, retire for emission reduction claims, bundle with “renewable energy credits” (RECs) to sell into the voluntary green market (and some RPS markets)

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Resources

- STAPPA/ALAPCO, *Alternative NOx Allowance Allocation Language for the Clean Air Interstate Rule*
- NREL Report, *Incorporating Wind Generation into Cap and Trade Programs*, with specific recommendations for the CAIR that are applicable to any cap and trade program, including climate regulations.

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Questions?

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