



Chapter 4: Emission Controls and Monitoring

Allowance trading allows sources in cap and trade programs to adopt the most cost-effective strategy to reduce emissions. To meet the Acid Rain Program (ARP) and Clean Air Interstate Rule (CAIR) emission reduction targets, some sources opted to install control technologies. A wide set of controls is available to help reduce emissions. The tracking and reporting of accurate and consistent emissions monitoring data is important to ensure program compliance and is achieved through the use of continuous emission monitoring systems (CEMS). The following is an analysis of controls on ARP and CAIR units.

Analysis and Background Information

Continuous Emission Monitoring Systems (CEMS)

Accurate and consistent emissions monitoring is the foundation of a successful cap and trade program. EPA has developed detailed procedures (40 CFR Part 75) to ensure that sources monitor and report emissions with a high degree of precision, accuracy, reliability and consistency. Sources use continuous emission monitoring systems (CEMS) or other approved methods to record and report pollutant emissions data. Sources conduct stringent quality assurance tests of their monitoring systems to ensure the accuracy of emissions data and to provide assurance to market participants that a ton of emissions measured at one facility is equivalent to a ton measured at a different facility. EPA conducts comprehensive electronic and field data audits to validate the reported data.

SO₂ Controls

Sources in the ARP and CAIR SO₂ annual program have a number of SO₂ control options available. These include switching to low sulfur coal, employing various types of flue gas desulfurization technologies (FGDs), or utilizing fluidized bed limestone units. FGDs on coal-fired generators are the principal means of controlling SO₂ and tend to be present on the highest generating coal-fired generating units.

NO_x Controls

Sources have a variety of options by which to reduce NO_x emissions, including advanced controls like selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR), combustion controls, and others. While some CAIR units with low levels of emissions do not have to use CEMS, the vast majority of NO_x emissions—over 99 percent—were measured by CEMS.

Key Points

ARP and CAIR SO₂ Annual Program Controls

- Of all coal-fired generation (measured in megawatt hours, MWh) from sources participating in the ARP and CAIR SO₂ annual program, 70 percent was produced by units with pollution controls.
- Flue-gas desulfurization (FGD) controlled units accounted for 49 percent of coal-fired units and 69 percent of coal-fired generation.
- Sixty six percent of units, accounting for 37 percent of energy generation, primarily use natural gas, oil, or other fuel sources, and make up one percent of SO₂ emissions.



<http://www.epa.gov/airmarkets/progress>

- In 2013, CEMS monitored over 99 percent of SO₂ emissions from CAIR sources, including 100 percent from coal-fired units and 24 percent from oil-fired units.

CAIR NO_x Annual Program Controls

- The 376 coal-fired units with add-on controls (either SCRs or SNCRs) generated 64 percent of annual coal-fired generation. At oil- and natural gas-fired units, SCR- and SNCR- controlled units produced 70 percent of generation.
- Although 61 coal-fired units remain uncontrolled, they represent one percent of coal-fired generation under the CAIR NO_x annual program.

CAIR NO_x Ozone Season Program Controls

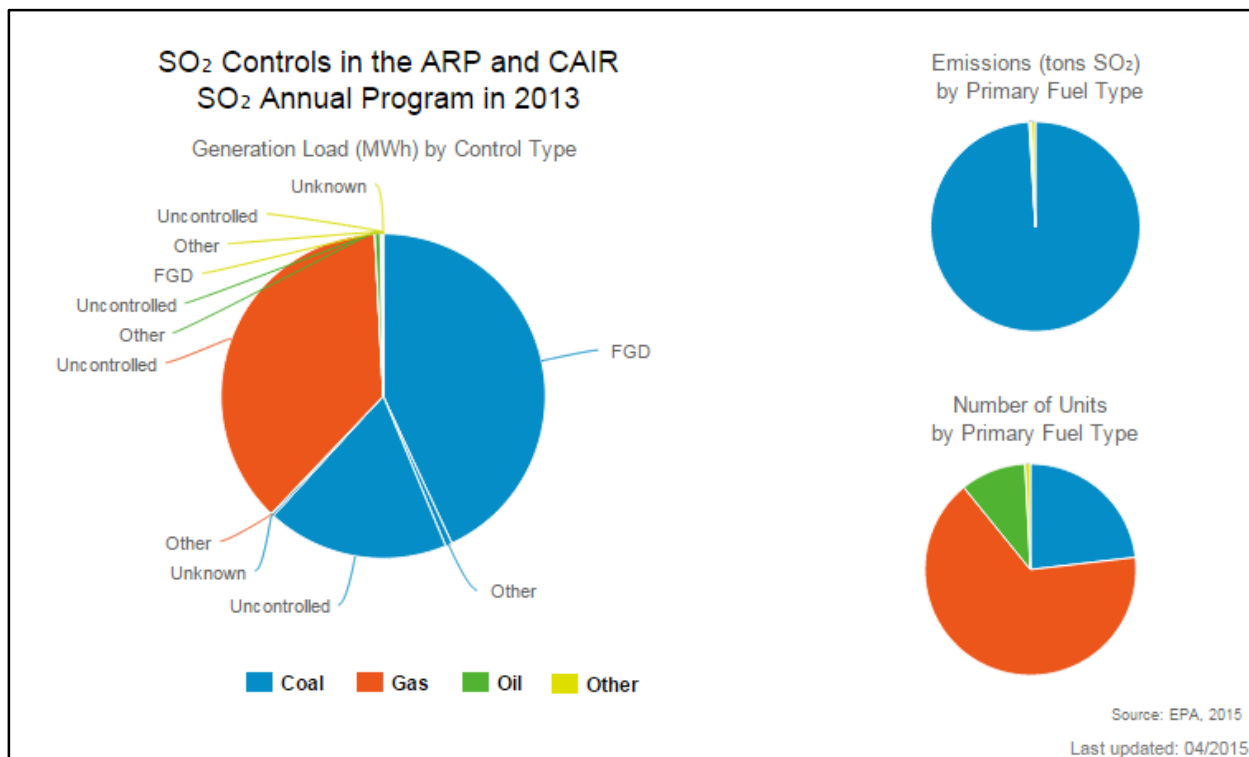
- Selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) accounted for 65 percent of coal-fired generation. At oil- and natural gas-fired units, SCR- and SNCR- controlled units produced 72 percent of generation.
- Although 77 coal-fired units remain uncontrolled, they represent one percent of coal-fired generation under the CAIR NO_x ozone season program.

More Information

Visit EPA's Quarterly Emissions Tracking site for the most up-to-date emissions and control data for sources in CAIR and the ARP <http://www.epa.gov/airmarkets/quarterlytracking.html>
Air Markets Program Data <http://ampd.epa.gov/ampd/>
Emissions Monitoring <http://epa.gov/airmarket/participants/monitoring/index.html>
Learn more about CEMS <http://www.epa.gov/ttnemc01/cem.html>
Plain English guide to 40 CFR Part 75
http://epa.gov/airmarket/documents/monitoring/plain_english_guide_part75_rule.pdf



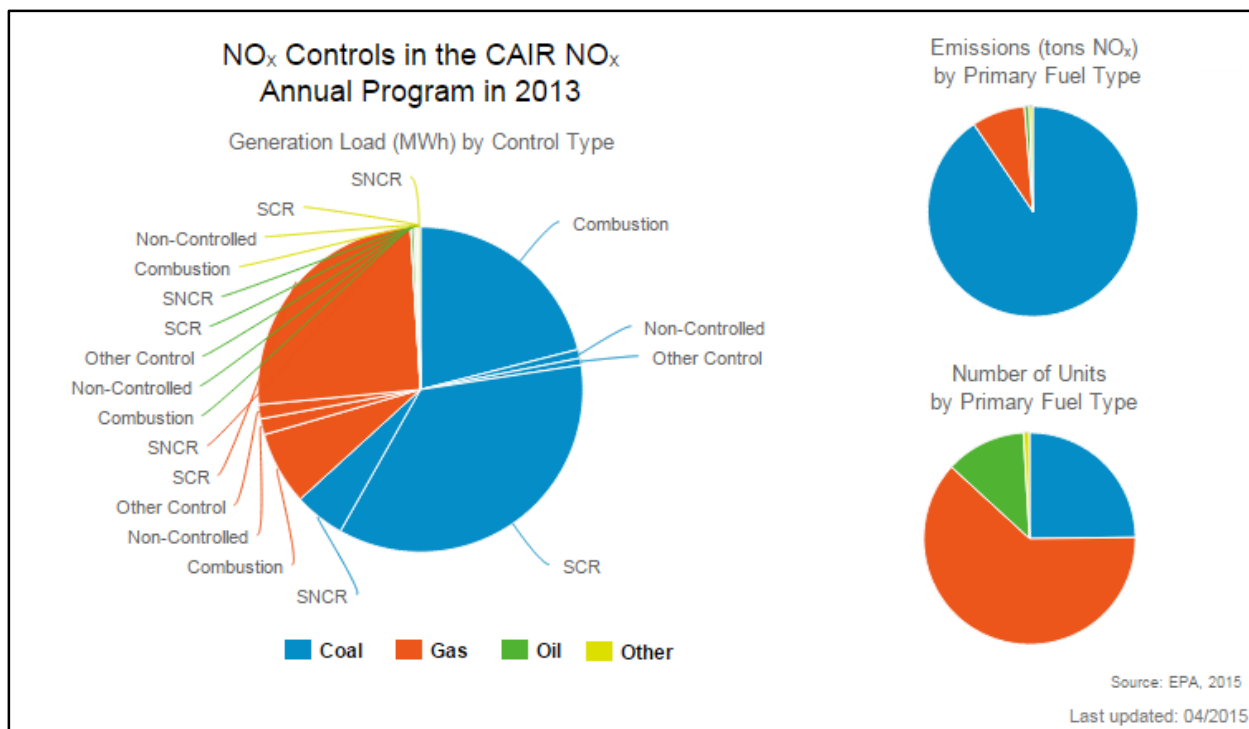
Figures



Notes:

- Due to rounding, percentages shown may not add up to 100%.
- “FGD” refers to Flue-gas desulfurization; “Other” fuel refers to units that burn waste, wood, petroleum coke, tire-derived fuel, etc.; “Unknown” is counted as uncontrolled.
- Emissions data collected and reported using CEMS.
- EPA data in this figure are current as of March 2015, and may differ from past or future reports as a result of resubmissions by sources and ongoing data quality assurance activities.

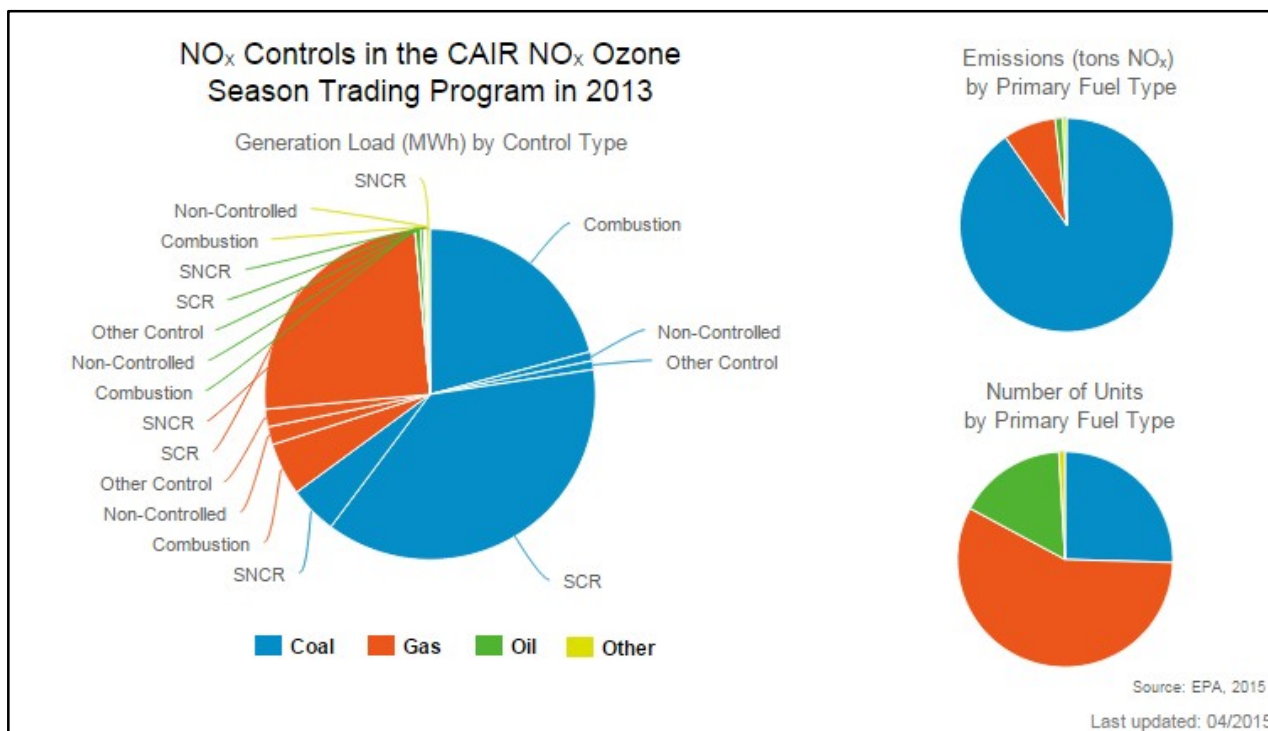
Figure 1. SO₂ Controls in the ARP and CAIR SO₂ Annual Program in 2013



Notes:

- Due to rounding, percentages shown may not add up to 100%.
- “SCR” refers to selective catalytic reduction; “SNCR” fuel refers to selective non-catalytic reduction; “Other” fuel refers to units that burn waste, wood, petroleum coke, tire-derived fuel, etc.
- Emissions data collected and reported using CEMS.
- EPA data in this figure are current as of March 2015, and may differ from past or future reports as a result of resubmissions by sources and ongoing data quality assurance activities.

Figure 2. NO_x Controls in the CAIR NO_x Annual Program in 2013



Notes:

- Due to rounding, percentages shown may not add up to 100%.
- “SCR” refers to selective catalytic reduction; “SNCR” fuel refers to selective non-catalytic reduction; “Other” fuel refers to units that burn waste, wood, petroleum coke, tire-derived fuel, etc.
- Emissions data collected and reported using CEMS.
- EPA data in this figure are current as of March 2015, and may differ from past or future reports as a result of resubmissions by sources and ongoing data quality assurance activities.

Figure 3. NO_x Controls in the CAIR NO_x Ozone Season Program in 2013