

Output-based Allocation Methodology under CT's NOx Budget Programs & CHP Set-Aside under CT's RGGI Rule

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Overview for

EPA Clean DG Policy and CHP Webinar Series

Jan 29, 2009



Through the years...

- Use of output-based allocation methodologies in CT's NOx Budget Programs (NBPs) has evolved over time and continues to evolve
 - 1999-2002: No output data used
 - 2003-2008: Updating output (MWh) data used for older electricity generating units (EGUs)
 - 2009-2011: Updating output (MWh) data used for both older & newer EGUs, but applied differently
 - 2012-?: Updating output (MWh) data used for both older & newer EGUs and applied in a consistent manner

NBP (OTC years) 1999-2002



- Cogens & Industrials: Allocations based on heat input for that ozone season (OS).
- New EGUs and other new units (any unit that commenced operation after 1990): Allocations based on heat input for that OS .
- Baseline EGUs: Remainder pool of allowances prorated to baseline EGUs based on 1990 OS heat input.
- New source set-aside: No specific set-aside account established.

NBP (SIP Call years) 2003-2008



- Cogens, Industrials and other new units (commenced operation after 1990 and operated in two previous ozone seasons): Allocations based on avg heat input for two previous OS.
- New source set-aside: Allocations based on # of operating hours in current OS.
- Baseline EGUs: Remainder pool of allowances (including leftovers from new source set-aside) prorated to baseline EGUs based on avg MWh output from two previous OS.

NBP (CAIR years) 2009-2011



- Cogens & Industrials: Allocations based on avg heat input from 2005/2006 OS.
- New source set-aside: Allocations based on # of operating hours in that current OS.
- EE/RE set-aside: Allowances allocated to qualifying EE/RE projects.
- Phase I EGUs: 1.2 lb/MWh x avg MWh output from 2005/2006 OS.
- Phase II EGUs: Remainder pool of allowances prorated to newer EGUs based on avg MWh output from 2005/2006 OS.
- Unallocated allowances from set-asides accounts: Prorated to both Phase I and Phase II EGUs based on avg MWh output from 2005/2006 OS.

NBP (CAIR years) 2012-?



- Cogens & Industrials: Allocations based on avg heat input from 5th/6th previous OS (e.g., 2006/2007 for 2012 allowances).
- New source set-aside: Allocations based on # of operating hours in the previous OS.
- EE/RE set-aside: Allowances allocated to qualifying EE/RE projects
- Phase I & Phase II EGUs: **Remainder pool of allowances prorated to all EGUs based on avg MWh output from 5th/6th previous OS.**
- Unallocated allowances from set-asides accounts: **Prorated to both Phase I and Phase II EGUs based on avg MWh output from 5th/6th previous OS.**

Effective NOx Allocation Rate to Baseline EGUs



| Year | OS NOx Tons Emitted | # Allowances Received | OS Generation in previous 2 years (MWhs) | Effective Allocation Rate (lb/MWh) |
|------|---------------------|-----------------------|--|------------------------------------|
| 2003 | 1552 | 3712 | 2,651,448 | 2.800 |
| 2004 | 1562 | 3752 | 1,867,275 | 4.019 |
| 2005 | 2430 | 3838 | 1,660,528 | 4.623 |
| 2006 | 1893 | 3862 | 2,097,620 | 3.682 |
| 2007 | 1544 | 3829 | 2,319,671 | 3.301 |
| 2008 | 1204 | 3824 | 1,892,217 | 4.042 |

- Average NOx emission rate for 2003-2007 for Baseline EGUs was 1.862 lb/MWh

NOx Allocation Methodology Comparison



| | Cogen / Industrial Units | Baseline (Phase I) EGUs | New (Phase II) EGUs |
|------------------------------------|-------------------------------------|------------------------------------|----------------------------------|
| Ozone Season Emissions (tons) | 445 | 1,561.7 | 177.1 |
| Ozone Season Generation (MWhs) | N/A | 1,655,899 | 4,352,224 |
| Average NOx Emission Rate (lb/MWh) | N/A | 1.886 lb/MWh | 0.081 lb/MWh |
| 2003-2008 Methodology | 437 allowances | 2,268 allowances 2.739 lb/MWh | 187 allowances 0.086 lb/MWh |
| 2009-2011 Methodology | 437 allowances | 1,240 allowances 1.5 lb/MWh | 1,215 allowances 0.558 lb/MWh |
| 2012-? Methodology | 437 allowances | 675 allowances 0.817 lb/MWh | 1,780 allowances 0.817 lb/MWh |

- Analysis based primarily on 2004 ozone season data.

CO2 Allocations under RGGI



- The Regional Greenhouse Gas Initiative (RGGI) is a cap & trade program for large, fossil fuel-fired EGUs
- CT originally considered output-based methodology similar to NBP (CAIR – Phase 2)
 - Looked at gathering useful thermal data to include cogens in output-based approach, but good data was difficult to find
- Ultimately evolved to a methodology under which a majority of allowances were to be auctioned

Distribution of CT's RGGI CO₂ Allowances



Under 22a-200c, CT distributes allowances as follows:

- 77% (minimum) of allowances offered for sale at auction, with proceeds supporting clean energy and energy efficiency
- 23% of allowances set aside to support CT energy policies
 - CHP Long-term Power Purchase Agreement (13% offered for sale at a fixed price)
 - Combined heat and power (CHP) useful thermal output (up to 5%)
 - Customer-side distributed resources (up to 3.5%)
 - Voluntary clean energy purchase (1.5%)

CHP Useful Thermal Output Set-aside



- CT RGGI units that produce useful thermal output in addition to electricity can apply for free allowances from CT set-aside account.
- Additional support for CHP units of all sizes may come from RGGI auction revenue directed to CT clean energy and energy efficiency funds (92.5% of total auction revenue).

Emissions Performance Standards (EPS) in CT



- CT DEP drafted an output-based EPS regulation (based on a NESCAUM model rule from Dec 1999)
 - Included output-based (lb/MWh) standards for NO_x, SO₂, CO₂, Hg
- CT rule is on hold
 - Statutory triggers have kept regulation from being implemented



questions?

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