

Regulation Update Air & Climate

- Mercury & Air Toxics (MATS)
- Interstate Transport (CAIR/CSAPR)
- Regional Haze/Visibility
- Portland Cement NESHAP
- Greenhouse Gas Regulation (new Federal)

Mercury & Air Toxics (MATS)



Mercury & Air Toxics (MATS)

- Finalized December 2011 regulates emission of Mercury Hg, Particulate matter PM, and toxic acid gases HCl from coal and oil fired electric generating units EGUs.
- Requires retrofit or retirement of almost every coal-based unit
- Effective April 16, 2012 – 3 years to comply
- Compliance deadline April 2015
- Extensions possible, but uncertainty beyond one year
- New source standards revised March 2013
- Reconsideration of startup/shutdown issues pending

Mercury & Air Toxics (MATS)

	Operating (30 day rolling average)
PM	$3.0E-2$ lb/MMBtu ~ 49 mg/m ³
Mercury	<p>Coal-fired units designed to burn coal with GCV $\geq 8,300$ Btu/lb 1.2 lb/TBtu or 1.3×10^{-2} lb/GWh ~ 1.3 mg/m³</p> <p>Coal-fired units designed to burn low-rank virgin coal (GCV < 8,300 Btu/lb) 4.0 lb/TBtu or 4.0×10^{-2} lb/GWh</p>
HCl	~ 1.3 ppmv wet $2.0E-3$ lb/MMBtu $2.0E-2$ lb/MWh



Mercury & Air Toxics (MATS)

Particulate Compliance Options

- PM CEMS
- Continuous Parametric Monitoring System (CPMS) and perform annual reference method testing
- Quarterly reference method testing for PM/Non-Hg Hap Metals



Mercury & Air Toxics (MATS)

Mercury Compliance Options

- Continuous Monitors Must be Installed
- Two Technologies Currently Available
 - Continuous Hg Analyzer CMMS
 - Continuous Hg Sorbent Trap Monitoring System



Mercury & Air Toxics (MATS)

HCl Compliance Options

- HCL CEMS
- SO₂ CEMS as a segregate
 - Using existing Part75 SO₂ analyzers installed
 - Source must have wet or dry FGD
 - Using SO₂ as a surrogate, the 0.20 lb/MMBtu limit becomes federally enforceable (but limits fuel flexibility)
- Quarterly reference method testing for HCl

**Interstate Transport
(CAIR/CSAPR)**

+

Regional Haze/Visibility

Interstate Transport (CAIR/CSAPR)

- Clean Air Interstate Rule (CAIR) (2009-present) cap and trade system to reduce SO₂ and NO_x power plant emission Midwest and eastern states
 - D.C. Circuit vacated but allowed to remain in place
- Cross-State Air Pollution Rule (CSAPR) (Finalized July 2011) reducing power plant emissions that contribute to ozone and/or fine particle pollution
 - vacated by D.C. Circuit August 2012 before implementation
 - recently upheld Spring 2014 at Supreme Court
 - CSAPR could take effect in 2015 or EPA replace it



Regional Haze/Visibility

- Regional Haze Program (1999-present) reduce haze, and to meet requirements of the Clean Air Act, aimed at protecting visibility in 156 federal areas
- May 30, 2012 - EPA finalized rule that allows trading programs in the Cross-State Air Pollution Rule (CSAPR) as an alternative to determining source-by-source Best Available Retrofit Technology (BART). States in the CSAPR region can substitute participation in CSAPR for source-specific BART for sulfur dioxide and/or nitrogen oxides emissions from power plants.
- Ongoing due to uncertainty caused by vacated CSAPR and litigation over SIP/FIP plans.

Portland Cement NESHAP



Portland Cement NESHAP

- National Emission Standards for Hazardous Air Pollutants (NESHAP) from the Portland Cement Manufacturing Industry (40 CFR Part 63, Subpart LLL)
- New Source Performance Standards (NSPS) for Portland Cement Plants (40 CFR Part 60, Subpart F)
- Compliance deadline September 2015
- Compliance for Particulate Matter (PM) standards changed from a Continuous Emissions Monitoring System (CEMS) to a manual three (3) run stack test



Portland Cement NESHAP

- Sources must establish a site-specific parametric operating limit for PM, which requires continuous monitoring. Corrective actions based on an exceedance of the parametric limit using a continuous parametric monitoring system (CPMS).
- Emission standards for mercury (Hg), hydrogen chloride (HCl), and total hydrocarbons (THC)
- Account for commingled Hazardous Air Pollutant (HAP) emissions from coal mills that are an integral part of the kiln
- Work practice standards for periods of startup and shutdown

Portland Cement NESHAP

Emission Limits - Existing Portland Cement Plants

Parameter	*Limit (averaged over 30 days)
PM (Kiln & Clinker Cooler)	0.07 #/ton clinker (continuous) 3-run test average
Mercury	55 #/MM ton clinker * ~12 mg/m ³
THC	24 ppmv dry@7%O ₂ as propane *
Organic HAP (alternative to THC)	12 ppmvdry@7%O ₂ *
HCL (Major Source only)	3 ppmv dry@7%O ₂ *



Portland Cement NESHAP

Particulate Compliance options

- Continuous Parametric Monitoring System (CPMS) and perform annual reference method testing
- Need a Continuous Flow Rate Monitoring System for continuously measuring and recording the stack gas flow rate to allow determination of the pollutant mass emissions rate to the atmosphere from sources subject to an emissions limitation that has a pounds per ton of clinker unit



Portland Cement NESHAP

Mercury Compliance options

- Continuous Monitors must be installed in conjunction with flow rate monitors
- Two technologies currently available
 - Continuous Hg analyzer CMMS
 - Continuous Hg Sorbent Trap Monitoring System



Portland Cement NESHAP

THC Compliance options

- Continuous Monitors must be installed
- Total Hydrocarbon THC CEMS
- HAPS CEMS
- Oxygen analyzer



Portland Cement NESHAP

HCl Compliance options

- HCL CEMS
- SO₂ CEMS as a segregate must have wet scrubber, tray tower or dry scrubber, and establish an operating limit during initial HCl source test parametric limit
- Oxygen analyzer and moisture correction for HCl CEMS



Greenhouse Gas Regulation - Clean Power Plan (CPP) Proposal



Greenhouse Gas Regulation - Clean Power Plan (CPP) Proposal

- Released on June 2, 2014
 - First attempt by EPA to regulate GHG emissions from existing power plants
- Projected to reduce national average power sector CO₂ emissions approximately 30% below 2005 levels by 2030
 - State-specific interim and final goals calculated from 2012 baseline
- Compliance measured starting in 2020
- Architecture
 - State-specific emission rate goals
 - State compliance plans



Greenhouse Gas Regulation (CA GHG Reg and New Federal)

- States submit plans for meeting goal
 - Plans due in 2016 with possible extensions to 2017 or 2018
- EPA must approve plan
 - Approved plan becomes federally enforceable
- States have discretion in designing plans
- EPA rule provides guidance on design of plans



Greenhouse Gas Regulation (CA GHG Reg and New Federal)

- State plans will be evaluated on four criteria:
 - Enforceable measures that reduce CO₂
 - Projected achievements of the goals established by the guidelines
 - Quantifiable and verifiable emissions reductions
 - Process for annual reporting on implementation and progress
- States can either:
 - Submit plans that hold the affected EGUs fully and solely responsible for achieving the emission performance level, or
 - Submit plans that rely in part on measures imposed on entities other than affected EGUs to achieve at least part of that level, as well as on measures imposed on affected EGUs to achieve the balance of that level (“portfolio approach”)



Greenhouse Gas Regulation (CA GHG Reg and New Federal)

- State must meet interim goals from 2020-2029
 - The 2020-2029 interim goal is expressed as a 10-year average emission rate
 - Reductions need to be made early (before 2020) to meet interim targets (2020-2029)
 - Beginning in 2022, annual progress reports required
 - Corrective measures required if actual performance not within 8-10% of projected performance
- State must meet its final goal from 2030 on
 - Starting at the end of 2032, emission performance must be compared against final goal on a 3-year rolling average
- The comment period has been extended to **December 1, 2014**