



# **EPA's Final Mercury and Air Toxics Standards and NSPS for Power Plants**

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# Background

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- On March 16, 2011 EPA proposed Mercury and Air Toxics Standards, (MATS) the first national standards to reduce emissions of toxic air pollutants from new and existing coal- and oil-fired power plants.
  
- Standards would reduce emissions of:
  - Metals, including mercury (Hg), arsenic, chromium, and nickel
  - Acid gases, including hydrogen chloride (HCl) and hydrogen fluoride (HF)
  - Particulate matter.
  
- EPA is also proposed a new source performance standard (NSPS) for particulate, sulfur dioxide (SO<sub>2</sub>), and nitrogen oxide (NO<sub>x</sub>) emissions from new sources.



# Overview of Actions

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- On December 16, 2011, EPA released the final National Emission Standards for Hazardous Air Pollutants (NESHAP) from Coal- and Oil-fired Electric Utility Steam Generating Units (a.k.a. “Utility MACT”) and
- Final revisions to the New Source Performance Standards (NSPS) for fossil-fueled EGUs in Subpart Da (as well as some similar changes in Subparts D, Db and DC).
- The Utility MACT rule affects all coal-fired, coke and oil-fired boilers that generated greater than 25 MW.



# Source Categories Covered by Final MATS Rule

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- Coal-fired with not low rank virgin coal (heat input  $>8,300$  btu/lb on a **moist, mineral mater-free** basis).
  - Coal refuse (anthracite culm and bituminous Gob) would meet this heat input criterion
- Coal-fired-virgin low rank coal ( $< 8,300$  btu/lb) and located close to the mine;
- Solid-oil derived fuel (for example, Petcoke)
- Liquid-oil derived fuel: Continental U.S. and non-continental U.S.
- IGCC units burning syngas derived from coal or solid-oil fired



# MATS Rule Requirements – Coal Fired EGUs

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- Emission Limits for mercury, Filterable PM ( a surrogate for non-mercury metals) and HCl 9 a surrogate for all toxic acid gases)
- Alternate emission limits – SO<sub>2</sub> (alternate to HCl), individual non-mercury toxic metals (alternate to PM)
- Work Practice –Inspection, adjustment and maintenance for optimal combustion



# MATS for Existing Coal (Not Low Rank) Fired EGU

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- Filterable PM – 0.03 lb/MMBtu/  
0.3 lb/Mwh
- Alternate non-Mercury HAP metals or individual HAP metals standards
- Hydrogen Chloride –0.002 lb/MMBtu/  
0.02 lb/MWh
- Alternate SO<sub>2</sub> standard – 0.2  
lb/MMBTU
- Mercury – 1.2 lb/Tbtu/0.012 lb/MWH



# Changes from the Proposed Rule – Utility MACT

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- **Final MACT rule is mostly unchanged from proposal**
- **Elimination of Total PM Standard** . One of the most significant changes in the final rule is that EPA has dropped total PM as a surrogate for non-mercury metallic hazardous air pollutants (HAPS) in favor of a filterable PM limit. The filterable PM limit for existing coal-fired sources is 0.03 lb/mmBtu. For new units, however, the filterable PM limit is a very stringent 0.007 lb/MWh. EPA also added a filterable PM option for oil fired-sources.
- **Reduced Stack Test Frequency**. The frequency of stack testing under some compliance options has been reduced from monthly or bi-monthly to quarterly.



# Changes from the Proposed Rule – Utility MACT

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- **PM CEMS Options.** PM CEMS can be used to demonstrate compliance, but the final rule allows sources treat particulate monitors as continuous parameter monitoring systems (CPMS) rather than CEMS.
- **Emission Limit Changes.** EPA states that it considered many of the comments that it received and corrected various problems in the way that it calculated the proposed emission limit. Nonetheless, while some of the final limits did vary somewhat from the proposed limits, many remain the same or are similar to the originally proposed limits.



# Changes from the Proposed Rule – Utility MACT

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- **Operating Parameter Monitoring.** EPA has eliminated all of the operating parameter monitoring and fuel monitoring requirements with the exception of PM CMPS and some options for oil-fired sources.
- **Startup and Shutdown Periods.** Final rule requires work practice standards in lieu of requiring compliance the limits during startup and shutdown periods. However, the Agency's definition of startup and shutdown are rigid and not consistent with the industry's practice.
  - The final rule defines that startup to end whenever the unit generates any electricity. Likewise, shutdown only ends when no electricity is produced (or there is no heat input). All control equipment must be operated any time when the unit operates with the exception of only dry scrubbers and SCR where some concession is given to "normal operation" (i.e., operating temperature issues). The rule explicitly states that only natural gas or distillate oil may be fired during startup and shutdown periods.
- **New Coal Subcategory Definitions** EPA replaced the coal subcategories in the proposed rule that were based on coal heating value with two similar subcategories based on coal rank.
- **New Limited Use Subcategory** EPA included a new subcategory for limited use liquid oil-fired units with an annual capacity factor less than 8%. These units will be subject to a work practice standard consisting of a periodic boiler tune-up.



# Emissions Averaging Provision

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- Emissions averaging allowed between units from the same category at the same facility for each pollutant
- Only applies to existing units
- Compliance with existing NSPS emissions limits on unit basis (such as Subpart Da) continues to apply



# Compliance Time Frames

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- The final rules are yet to be published in the Federal Register
- Existing sources will have up to 4 years to comply with MATS
  - 3 years provided to all sources
  - State permitting authority can grant an additional year as needed for technology installation
  - EPA expects this additional year option to be broadly available



## Costs & Benefits

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- EPA estimates the health benefits associated with meeting the standards for air toxics are \$37 billion to \$90 billion in 2016 (2007\$).
  - Most of the quantified benefits are due to collateral reduction of PM2.5 emissions
  - Hg-related Benefits \$4.1 to \$5.9 millions
- EPA estimates the total national annual cost of this rule will be \$9.6 billion.
- EPA estimates the new standards will prevent up to 530 premature deaths in Pennsylvania while creating up to \$4.4 billion in health benefits in 2016.



# Compliance with Utility MACT

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Based on available information (including EPA's ICR data)

- ~80% of the total MW have FGD/in-situ FBC
  - ~70.5% of all units (61 total coal fired EGUs)
- ~68% of the total MW meet acid gas limits (SO<sub>2</sub>, HCl)
  - ~42% of all units
- ~70% of the total MW meet non-mercury metal limits (FPM, total metals)
  - ~74% of all units
- ~84% of the total MW meet mercury limits (Hg)
  - ~83% of all units

# Questions and Answers

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