



BIPARTISAN POLICY CENTER

Assessment of EPA's Utility MACT Proposal

Q: What is the EPA Utility MACT Rule?

A: The Maximum Achievable Control Technology (MACT) rule requires coal and oil-fired power plants to reduce emissions of mercury, other metallic toxics, acid gases, and organic air toxics.

Q: Why is EPA proposing these regulations now?

A: EPA's March 16, 2011 Utility MACT rule complies with a Consent Decree of the D.C. Court of Appeals that requires EPA to fulfill the 1990 Clean Air Act regarding hazardous air pollution from power plants. The Clean Air Act required EPA to determine whether such regulation is "appropriate and necessary," which EPA did in 2000. The Court established deadlines of March 16, 2011 for the proposed rule and November 16, 2011 for the final rule.

Q: What does the rule require?

A: Following the Clean Air Act's approach for toxic pollutants, the rule requires "command and control" emission rate limits for mercury, acid gases, and particles. The limits must represent Maximum Achievable Control Technology, defined as the top 12% performance of existing units, which EPA set after collecting performance data from industry. In addition, the proposal establishes "work practice standards" to reduce organic air toxics, such as dioxin and furans.

Q: How will power plants comply with the rules?

A: A number of plants already have pollution controls that will comply with MACT limits. Others, in order to comply with the established emission rates, will need to install pollution controls, including *activated carbon injection*, *scrubbers* or *dry sorbent injection*, and upgrade *particulate controls* (see attached Glossary.) Nationwide, EPA projects 10 gigawatts of existing generation (1% of national electric generation capacity) will retire rather than install required pollution controls. This is because these units would no longer be economic to operate. Under a scenario of higher gas prices or greater electric demand, fewer existing units would be expected to retire.

Q: Why are EPA's retirement projections so much lower than most previous studies had predicted?

A: Previous studies, including those by the North American Electric Reliability Corporation (NERC), the Edison Electric Institute (EEI), and several investment analysts were conducted prior to EPA's proposal and made worst case estimates about what EPA was likely to require. For example, other analyses assumed that higher cost technology, such as scrubbers, would be required at every unit. In contrast, EPA assumed that lower cost pollution technologies, including dry sorbent injection, will allow some units to comply without investing in a scrubber. These units would be able to continue operation and

would not retire. In addition, EPA's analysis to support the Utility MACT rule does not include assumptions about future regulation of coal combustion ash and cooling water, as some previous analyses have. Unlike EPA, some studies have also included a future carbon price that drives additional retirements.

Q: How much will the rule cost?

A: EPA estimates the Utility MACT cost at \$10.9 billion per year with retail electricity prices increasing by an average of 3.7% and consumer natural gas prices increasing by 0.6% to 1.3%. To put this into context, annual costs of the recently proposed Transport Rule, which will reduce sulfur dioxide and nitrogen oxides, is \$2.8 billion. The Utility MACT is more expensive per ton of reduction than previous power sector rules because the cheapest reductions will already have occurred and the cost per ton removal increases as more reductions are required, particularly on smaller units.

Q: What are the projected health benefits of the rule?

A: Power plant air pollution, including metallic toxics such as mercury and arsenic, acid gases, and particles, causes several health problems, including neurological damage, cancer, lung damage, heart and respiratory disease, and premature death. EPA projects the benefits of reducing such emissions in the Utility MACT rule at \$59 - 160 billion per year. EPA argues that for every dollar spent on pollution controls, there are five to thirteen dollars in health benefits. These benefits are primarily associated with avoiding premature death from fine particle pollution, which is a co-benefit of the pollution controls used to comply with the MACT limits.

Q: Has EPA incorporated features to reduce impacts on cost and electric system reliability?

A: EPA's recent Utility MACT proposal incorporates several flexibilities that minimize costs as well as the potential for disruption to electric reliability. These include work practice standards in lieu of limits for dioxin and furans; facility-wide averaging, which could allow some individual units to exceed MACT limits; sub-categorization to establish limits by boiler-type and fuel-type; exemptions for units that infrequently burn oil; and alternative standards that could reduce monitoring requirements. In addition, although the Clean Air Act generally allows 3 years to comply with MACT, EPA's proposal emphasizes that states could provide waivers to allow a fourth year for facilities to install controls.

Q: Why didn't EPA establish less stringent "health-based emission limits" for acid gases?

A: The CAA section 112(d)(4) offers an alternative "health-based emission limit (HBEL)" approach, in lieu of the conventional MACT approach. EPA could set a less stringent health-based emission limit, as long as it can ensure a margin of safety above a pollutant-specific health standard. For one of the acid gases, hydrogen chloride (HCl), EPA previously used this discretion to exempt sources (e.g., paper and pulp, lime manufacturing) from a MACT limit. EPA notes that it did not set health-based emission limits for acid gases in the Utility MACT rule for several reasons, including: a) lack of information on cumulative impacts from other respiratory irritants, environmental effects of acid gases, and significant health co-benefits of a MACT limit for acid gases (i.e., reduced premature deaths through reductions in fine

particles). Because compliance with a less stringent health-based emissions limit could cost less, this may be a point of controversy going forward.

Q: Does the MACT rule address greenhouse gases?

A: The MACT rule is not designed to reduce greenhouse gases. However, because there would be some retirement of coal units and substitution of natural gas capacity for coal, modest reductions of greenhouse gases are expected.

Glossary of Pollution Control Technologies

Activated Carbon Injection (ACI): a commercially available technology that, in combination with particulate controls, removes mercury from the exhaust stack of a power plant. Many units currently employ ACI to remove mercury in order to comply with state regulations.

Dry Sorbent Injection (DSI): a commercially available technology (similar to ACI for mercury) that, in combination with particulate controls, has been shown to significantly reduce acid gases, as well as sulfur dioxide (SO₂). DSI is currently employed on a number of existing power plants to control other pollutants and other companies have announced installation plans. DSI has significantly lower capital costs than a scrubber, but non-trivial operating costs due to the cost of sorbent. This feature makes it best suited for certain fuels and for smaller, less frequently operated units that want to avoid a more expensive scrubber and don't need large amounts of sorbent (e.g., Trona).

Particulate controls: Particle pollution can be captured by particulate controls installed on the exhaust stack of a power plant. All existing power plants have some particulate controls, namely electrostatic precipitators (ESP) or fabric filters/baghouses. The Utility MACT rule may require upgrades, including from ESP to fabric filters for some units, depending on the other controls in use and type of fuel burned.

Scrubber or Flue Gas Desulfurization (FGD): a commercially available technology that removes SO₂ as well as acid gases from power plant exhaust. More than half of existing coal-fired generating units currently have a scrubber installed for SO₂ control. Variations include wet scrubbers and dry scrubbers. Wet scrubbers are the most expensive pollution control technology relevant to the Utility MACT rulemaking.

Selective Catalytic Reduction (SCR): is commercially available technology that removes nitrogen oxides (NO_x) from power plant exhaust and is currently installed at many facilities, particularly in the eastern states. In combination with a wet scrubber, SCR also removes mercury.

