WRI FACT SHEET

EPA Mercury Rules and Power Reliability

New rules from the U.S. Environmental Protection Agency to reduce mercury and other toxic air emissions will affect dozens of antiquated power plants currently operating without pollution controls. These rules have stirred debate in some circles as to whether retrofitting or retiring outdated plants will cause shortfalls in electricity capacity. How will EPA mercury rules influence the electricity system? This fact sheet updates earlier assessments[1] by taking a close look at recent studies on the reliability of the electricity grid to answer that question.

Electricity generation capacity adequacy and transmission and ancillary services reliability are difficult to quantify and forecast due to the inherently local scale of power flow modeling.[2] However, the lack of reliability problems over decades of previous Clean Air Act[3] regulation and the flexibility of the standards suggest that the U.S. can keep the lights on while cost-effectively removing toxic pollutants from power plant emissions.

Power plants are the largest source of mercury emissions to the air. This mercury eventually makes its way into water, and can cause neurological problems for people who eat contaminated seafood.[4] Because of the dangers of mercury emissions, especially to children and pregnant women, a court order mandated[5] that the EPA issue a final set of Mercury and Air Toxics Standards (MATS) by December 16, 2011.

Recent modeling assessments have typically focused more broadly on the cumulative impacts of EPA regulations, including: the Cross-State Air Pollution Rule (CSAPR),[6] the Coal Combustion Residuals rule,[7] the 316 (b) Cooling Water Intake Structures rule,[8] and the yet-to-be announced New Source Performance Standards for greenhouse gases.[9] Recent studies (listed in box below) have varied largely based on assumptions regarding the stringency of pending regulations, the costs of compliance measures, and the legal flexibility of regulatory enforcement.

RULES ARE FLEXIBLE, AND STATES ARE PREPARED

While there are modeling and forecasting limits for assessing long-term electricity system reliability, recent studies indicate that MATS and other EPA rules can be effective and implemented in a timely way while allowing for a range of compliance outcomes. The feasibility of cost-effectively complying with new regulations while maintaining electricity system reliability is supported by four key points:

1. **Both state and federal regulators have a suite of flexible enforcement options,** which they have been using for decades, to delay power plant closures when this is necessary to preserve grid reliability; for example, the Cooling Water rule requires states to first consider reliability in implementing new regulations;[10]
2. While states often have the authority to set more protective pollution control standards in the interest of public health and welfare, there is no evidence that they would do so at the risk of grid reliability. **Many states have already exercised this authority without imperiling electricity reliability**—as of 2011, 17 states have already imposed rules[11] on mercury and other toxic emissions from power plants, including Montana;[12]
3. **Adequate new plant capacity is in the pipeline to replace the majority of potentially affected power plants** (see below); most American power companies are on record as already having prepared for expected environmental regulations;[13]
4. In terms of compliance, **the MATS rule allows for temporal and technological flexibility.** As this fact sheet goes to press, the final rule has not yet been published but is expected to allow three years for compliance, with an optional 4th year extension from the EPA or additional security-based extension from the President. A wide range of commercially-viable, proven compliance technologies from Flue Gas Desulphurization (FGD) to Dry Sorbent Injection (DSI) and Activated Carbon Injection (ACI) are available to help reduce toxic air emissions and can be installed in 10 to 30 months, providing ample time for America's skilled engineers, manufactures and technicians to conduct plant upgrades within the legally allotted time frame.[14]

RECENT ELECTRICITY RELIABILITY ASSESSMENTS

North American Electric Reliability Corporation (NERC). (November 2011) *2011 Long-Term Reliability Assessment.*

M.J. Bradley & Associates, LLC; Analysis Group. (November 2011) *Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability; Fall 2011 Update.*

DOE. (December 2011) *Resource Adequacy Implications of Forthcoming EPA Air Quality Regulations.*

Bipartisan Policy Center. (June 2011) *Environmental Regulation and Electric System Reliability.*

CERES. (November 2011) *New Jobs-Cleaner Air Part II: An investment in American Businesses and American Jobs.*

Edison Electric Institute. (January 2011) *Potential Impacts of Environmental Regulation on the U.S. Generation Fleet.*

PUTTING PLANT RETIREMENTS IN PERSPECTIVE

For more perspective on the rule, it is also useful to put projected power plant retirements into context, since this is where most of the current debate over MATS impact has been focused. At the end of 2010, the U.S. electricity generation fleet consisted of more than 7,000 power plants that include over 16,000 generating units, with a combined capacity of 1,100 GW.[15] Between 2007 and 2010, a total of 18 GW of capacity were retired throughout the United States. According to recently-released Department of Energy survey data, regulatory approval has already been granted for 27 GW of new capacity, which is expected to come on line between 2012 and 2015.[16] **Approved capacity additions already exceed many baseline retirement forecasts.**

The North American Electric Reliability Corporation (NERC) estimated that environmental regulations would lead to the retirement of 7.5 to 18 GW of capacity nationally by 2015 and that total cumulative retirements would rise to 33 to 54 GW by 2018.[17] The NERC plant retirement estimates are higher than those of other studies due to stringent enforcement and cost assumptions, and inclusion of other EPA rules such as 316(b) and CSAPR when modeling the impact of MATS regulation. More than 70% the forecast NERC report retirements are in fact due to expected Cooling Water rule impacts based on assumptions of stringent state-level implementation of the rule.[18] **Over the initial period covered by the MATS rule (to 2015), already-approved capacity additions exceed NERC's expected retirements by at least 50%.**

The decision of whether to retrofit or retire older generator units is informed by market, infrastructure, and regulatory factors that vary with local grid and load configurations. Over a longer time frame, the Edison Electric Institute has recently announced that its member companies will close 231 coal-fired units with a combined capacity of 48 GW between 2010 and 2022 in response to low expected natural gas prices, old equipment, and the need for modern pollution controls.[19]

To the extent that natural gas prices continue to stay low,[20] **MATS and other EPA regulations fit with the ongoing market-driven shift toward gas-fired electricity generation in the U.S.**[21]

Not all of the modeled retirement numbers have equal likelihood. In its report on "Resource Adequacy Implications of Forthcoming EPA Air Quality Regulations", the Department of Energy estimated total coal plant retirements between a baseline of 8 GW and an extreme "Stringent Test Case" scenario of 29 GW by 2015.[22] Accounting for past experience and keeping in mind the regulatory and technological flexibility of new EPA regulations suggests that the amount of coal plant retirements will not overwhelm new builds.

Beyond the debate over total scale of expected retirements, the specific time and place of generation retirements will be the most important determinant of the impact on resource adequacy, transmission, and ancillary services reliability.

This review of recent assessments suggests that **removal of mercury and other toxic air emissions from power plants will not jeopardize U.S. electricity system reliability**.

Some industry assessments have relied on pessimistic assumptions to argue that new rules will force costly retrofits, triggering a large number of coal plant retirements. Meanwhile, evidence from other recent studies, statements by power companies, well-established regulatory flexibility, and historical experience suggest that MATS compliance can be readily achieved without undermining electricity system reliability.

The lights will stay on while we clean our air.

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Notes

1. http://www.wri.org/stories/2011/01/electric-reliability-under-new-epa-power-plant-regulations-field-guide
2. http://web.mit.edu/mitei/research/studies/documents/electric-grid-2011/Electric_Grid_Full_Report.pdf
3. http://www.epa.gov/air/caa/
4. http://www.epa.gov/hg/effects.htm
5. http://www.epa.gov/airquality/powerplanttoxics/actions.html
6. CSAPR has been finalized and is due to be implemented in 2012; for more information, see: http://www.epa.gov/airtransport/
7. This rule, otherwise known as "Standards for the Management of Coal Combustion Residuals Generated by Commercial Electric Power Producers", is currently a proposal open for comment and under consideration; for more information, see: http://yosemite.epa.gov/opei/rulegate.nsf/byRIN/2050-AE81?opendocument
8. The comment period for these rules closed on August 18, 2011; however, the rules have yet to be finalized; for more information, see: http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/index.cfm
9. These standards are also referred to as Section 111 of the Clean Air Act. They are currently under review by the White House Office of Management and Budget; for more information, see: http://www.epa.gov/compliance/monitoring/programs/caa/newsource.html
10. http://www.mjbradley.com/sites/default/files/MJBAandAnalysisGroupReliabilityReportAugust2010.pdf
11. http://www.americanprogress.org/issues/2011/06/mercury_falling.html
12. http://deq.mt.gov/dir/legal/Chapters/CH08-07.pdf
13. http://www.mjbradley.com/sites/default/files/ReliabilityUpdateNovember202011.pdf
14. http://www.supportcleanair.com/resources/studies/file/4-8-11-URSTechnologyReport.pdf
15. http://www.eia.gov/pub/electricity/f860y10.zip
16. http://www.eia.gov/cneaf/electricity/page/eia860.html
17. http://www.nerc.com/files/2011LTRA_Final.pdf
18. http://www.nerc.com/files/2011LTRA_Final.pdf
19. http://insideepa.com/public_docs/epa2011_2270.pdf
20. http://www.eia.gov/naturalgas/data.cfm#prices
21. http://www.eia.gov/forecasts/aeo/MT_electric.cfm
22. http://energy.gov/sites/prod/files/2011%20Air%20Quality%20Regulations%20Report_120111.pdf

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