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EPA Docket Center
EPA West (Air Docket)
U.S. Environmental Protection Agency
Mail Code 2822T
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Attention: Docket Nos. EPA-HQ-OAR-2009-0234; EPA-HQ-OAR-2011-0044

Re: Reconsideration of Certain New Source and Startup/Shutdown Issues: NESHAPS from Coal- and Oil-Fired EGUs

To Whom It May Concern:

The Northeast States for Coordinated Air Use Management (NESCAUM) offer the following comments on the U.S. Environmental Protection Agency's (EPA's) Notice of Proposed Rulemaking, published on Friday, November 30, 2012 in the Federal Register, entitled "*Reconsideration of Certain New Source and Startup/Shutdown Issues: National Emission Standards for Hazardous Air Pollutants From Coal and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units*" (77 FR 71323-71344). NESCAUM is the regional association of air pollution control agencies representing Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

I. Introduction

On December 16, 2011, EPA promulgated the first-ever standards under Section 112 of the Clean Air Act limiting power plant emissions of hazardous air pollutants (HAPs), including mercury (Hg), acid gases and such toxic metals as lead, chromium, nickel and selenium. Adoption of these MACT standards was an important step in the decades-long effort to develop a regulatory strategy that strikes the appropriate balance between protecting public health and avoiding the imposition of unnecessary costs on the regulated community. At the same time as it was considering the first ever regulation of hazardous air pollutants, EPA also conducted and implemented a periodic review of the new source performance standards (NSPS) that regulate criteria air pollutants, as required by the Clean Air Act (CAA). EPA projected that these rules would together lead to quite substantial reductions in emissions of Hg and hydrogen chloride (HCl) from fossil fuel-fired electric generating units (EGUs), as well as additional reductions in fine particulate matter and sulfur dioxide (SO_2) from those sources.

While retaining the emission limits for existing sources, EPA has now proposed to reconsider a number of the emission limits applicable to new fossil-fired EGUs. EPA proposes to reduce the mercury emissions limit for new lignite-fired units and establish an SO_2 emission limit for integrated gasification combined cycle (IGCC) EGUs. EPA's proposal also would increase the Hg, lead, selenium and filterable particulate matter (fPM) limits applicable to new coal and lignite-fired EGUs, as well as increase the SO_2 emissions limit for coal, lignite and petroleum coke-fired plants. In addition, EPA identifies a narrow set of definitional and implementation issues, including revisions to the work-practice requirements applicable during periods of startup and shutdown of units, which are largely technical in nature.

While we support EPA's determination to reconsider a number of these standards for new fossil-fired EGUs, we are concerned with the associated emission limits for these new sources under EPA's current methodology. Therefore, we are submitting for EPA's consideration several technical amendments that can improve the setting of these MACT levels. These technical amendments are relevant to four general categories in EPA's approach for establishing a new source MACT level. These general categories are:

1) **Rounding of Results**: EPA's calculation of the Hg limit for new coal-fired EGUs was 2.103 x 10^{-3} lb/GWh. Normal rounding protocols should lead to a limit of 2.1 x 10^{-3} lb/GWh, or certainly no greater than 2.2 x 10^{-3} lb/GWh. However, EPA rounds this number up to 3.0 x 10^{-3} lb/GWh leading to a nearly 50 percent increase in the emission limit.

2) **Identifying the Best-Performing Unit**: EPA employs a statistical procedure, which it calls the 99th percentile Upper Performance Limit (UPL), to calculate the performance of a unit based on available test results. EPA, however, does not then set the limit on the basis of the unit that demonstrates the lowest calculated emission rate. Instead, EPA substitutes units with significantly worse performance under this test. In addition, EPA does not consider the performance of a number of units for which CEM data and reference method test results have been submitted and the compliance history of units that have permitted emission levels far below EPA's proposed levels.

3) **Substitution of Assumed Test Conditions for Measured Emission Rates**: EPA's calculation of 2.103 x 10^{-3} lb/GWh as the Hg MACT floor is based on several assumptions about how sources in the future may choose to monitor the ongoing performance of their EGUs in lieu of the actual documented performance of the best units. EPA's assumptions result in a proposed limit that is 100 times greater than the measured performance of the best unit and 15 times greater than would be calculated using EPA's procedure for assigning variability to the performance of that unit.

4) **Calculating Unit-specific Performance Adjustment Factors**: EPA attempts to employ statistical procedures to calculate the variability in performance of each specific unit, often in cases where there has only been a single reference test. This leads to an estimate of the variability of the unit that is a function of the limited number of tests, rather than the variability that one would expect from the technology employed. This process leads to new source MACT floors (based on the performance of the best unit) that are higher than the calculation of the existing source MACT floors (based on the average performance of the top 12 percent).

NESCAUM recommends that EPA reassess and amend its methods for determining the appropriate limits for the subcategories under consideration. As currently done in this proposal, we are concerned that EPA's proposed relaxed determination of the best-performing new source emission limits will undercut state and local Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) determinations under the CAA.

II. Comments on EPA's Reconsideration

A. The Need for Reconsideration

EPA has proposed to reconsider several standards that appear to be overly strict and are not likely to be achieved by most new sources equipped with the best available technology. For example, EPA's mercury limit for new coal and lignite-fired EGUs is 0.0002 lb/GWh. The agency multiplied the test result for the Nucla unit[1] selected as the "best-performing unit"[2] by the factor (3.5) that resulted from the use of its 99th percentile UPL procedure to determine the standard. This factor is reasonable, but lower than typically generated by EPA's calculation process. This outcome appears to be a consequence of the consistency of the reported results. However, there is a notation "ADL" in the data set that may refer to the detection limit and may be responsible for the relatively low adjustment factor. On its face this result would appear to be a challenging limit that might not be achievable by other new sources.

In the course of case-by-case new source MACT permitting, it was recently determined based on reference testing of similar sources and the application of a reasonable compliance margin that a limit of 0.00088 lb/GWh, was appropriate.[3] This rate is approximately 4.5 times higher than the EPA final limit. Given the thoroughness of that review, we do not believe that the Hg limit in the final rule is technically feasible. However, for reasons explained below, we also believe that EPA's proposed limit of 0.003 lb/GWh is not based on a robust consideration of all the data. We recommend that EPA examine the emissions data reviewed in that permitting process as well as for the Logan,[4] Nucla, Seward,[5] AES Greenidge,[6] and Roanoke Valley I[7] units to determine which of those units represents the best-performing unit and set an appropriate limit – on the basis of all available data, not just the single lowest run.

Similarly, EPA has adopted an fPM limit of 0.007 lb/MWh, which should be revised on reconsideration. Such a limit is not feasible and appears to be the result of an error in interpreting or transcribing test results from one facility. However, the 0.09 lb/MWh limit that EPA now proposes is higher than would be warranted based on the data in the record.

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[1] Nucla Station, Nucla Colorado (1991).
[2] This unit had the fourth lowest emission rate in EPA's data set. However, the two lowest emitting units are small (57 MW) units that might not be representative of new construction.
[3] See, MACT Permit for the Virginia City Hybrid Energy Center.
[4] Logan Generating Plant, Swedesboro, New Jersey (2008).
[5] Seward Power Plant, Johnstown, PA (2004).
[6] AES Greenidge Generating Plant, Dresden, NY (currently closed)
[7] Roanoke Valley Energy Facility, Weldon, NC (1995)

B. Rounding of Results

In its memorandum[8] describing how it arrived at the proposed Hg limit for new coal and lignite-fired EGUs, EPA sets out the formula and each of the values that it employs to calculate the MACT floor. EPA does not report the actual results of the calculation, rather that "when rounded," this calculation results in a limit of 3.0×10^{-3} lb/GWh. However, when the calculation is performed using each of EPA's assumptions, the result is 2.103×10^{-3} lb/GWh, which properly rounds to 2.1×10^{-3} lb/GWh. EPA's guidance requires that standards be established at no less than two significant digits. Thus, the result of EPA's calculation is no higher than 2.2×10^{-3} lb/GWh, not the 3.0×10^{-3} lb/GWh that it reports and proposes as the reconsidered Hg emission rate for new coal-fired EGUs. EPA repeats this in other proposed revisions to the final rule, including the fPM limit for coal and lignite-fired EGUs, where the result of EPA's calculation was 8.23×10^{-2} lb/MW. Expressed to two significant digits, this result properly rounds to 8.2×10^{-2} lb/MW or, arguably 8.3×10^{-2} lb/MW, but not to 9.0×10^{-2} lb/MW, as proposed by EPA.

NESCAUM recommends that EPA provide a more transparent and robust explanation for its methodology and data used in determining the applicable MACT floor. This is particularly crucial in instances where the new source floor is higher than the existing source floors. While we believe, based on our general experience with existing facilities, that some increase in several of the final limits for new facilities may be warranted, any such increase should be based on the performance of the best facilities and control devices. In the short comment period provided we have not attempted to examine either the engineering or the long-term emission test results of specific "best-performing plants" in each of the subcategories to determine the extent to which the reported test results are consistent with the long-term performance of those plants or the technologies that have been employed. Instead, we recommend that EPA undertake such an effort before making a final decision on the proposed reconsideration of the standard.

EPA has not yet provided a rationale that can be evaluated to determine whether the proposed level is appropriate. We believe that the approach utilized by EPA several years ago (where it evaluated the performance of the best available technology) produced a more reliable result than the agency's current reliance on a method that is overly sensitive to a small number of statistics. The Court rejected the earlier EPA approach, not because of its consideration of technology, but because the agency did not consider best-performing units that did not employ a technology. In this source category all of the best-performing units employ technologies; some also use cleaner fuels. We urge EPA to evaluate in detail the plants that show the best, consistent performance and determine the factors that led to this performance. EPA should then evaluate whether those factors are unique to that plant, or are of general applicability. Thereafter, EPA should use year-over-year data of better performing plants[9] to apply an objectively determined compliance margin for those plants. This compliance margin should then be applied to the best-performing plant to establish the new source MACT. We believe that any standards adopted

[8] EPA Memorandum, R.R. Segall and B.H. Parker, to Toxics Rule Docket EPA-HQ-OAR-2009-0234, *Determination of Representative Detection Level (RDL) and 3 X RDL Values for Mercury Measured Using Sorbent Trap Technologies* (November 16, 2012). Available at http://www.epa.gov/ttn/atw/utility/2012/hg3xrdl_111612.pdf.

[9] The National Association of Clean Air Agencies (NACAA) employed this process in its model permit guidance for industrial/commercial/institutional (ICI) boilers (see http://4cleanair.org/InnovationDetails.asp?innoid=20).

should be based on the reasonable worst-case conditions that the source is likely to encounter, but caution that there need not be an allowance to account for poor operating and maintenance practices at existing units.

C. Identifying the Best-Performing Unit

The procedure used by EPA to identify the best-performing sources that are the subject of the Reconsideration notice uses inconsistent definitions of the performance of the unit. EPA uses the single best run to identify what it calls the best-performing unit, but then uses all test runs, including test runs from tests conducted at other times, to determine the performance of the unit. However, the best-performing plant is not the plant that has a single low test run. A single test run does not constitute an acceptable reference method test[10] and provides no measure of the consistency in the performance of that plant that is then employed in the standard-setting process. Rather, the best-performing source is the plant that demonstrates the lowest consistent performance on the basis of all available testing, which should include at least one full Federal Reference Method (FRM) test with the three test runs that are required for such testing. New source MACT floor calculations are particularly susceptible to high statistical variability under the procedure employed by EPA because there may only be one or two FRM tests of the better performing units. EPA's inconsistent process for (1) identifying the best-performing unit and (2) calculating the performance of that unit leads to selection of units whose emissions are variable and, on average, high, rather than the unit that demonstrates the best consistent performance. This error is present throughout EPA's analysis including, by way of example, the following subcategories and pollutants:

1. HCl limits for coal and lignite-fired units

EPA identified the Logan Generating plant as the best-performing new unit for HCl emissions on the basis of the single lowest test. The average tested emission rate at this unit was 1.87×10^{-4} lb/MMBtu and the standard deviation of the test results is 1.4×10^{-4} lb/MMBtu. However, the Walter Scott Energy Center unit,[11] among others, showed better and less variable performance – the average tested emission rate for this unit was 5.69×10^{-5} lb/MMBtu (5.14×10^{-4} lb/MWh) and the standard deviation of the test results is 1.79×10^{-5} lb/MMBtu (1.6×10^{-4} lb/MWh). Application of EPA's 99th percentile UPL to the Walter Scott Energy Center test results (assumed normally distributed) yields a MACT floor of 5.8×10^{-3} lb/MWh, substantially less than the proposed "beyond the floor" limit of 1.0×10^{-2} lb/MWh.

2. SO_2 limits for coal and lignite-fired units

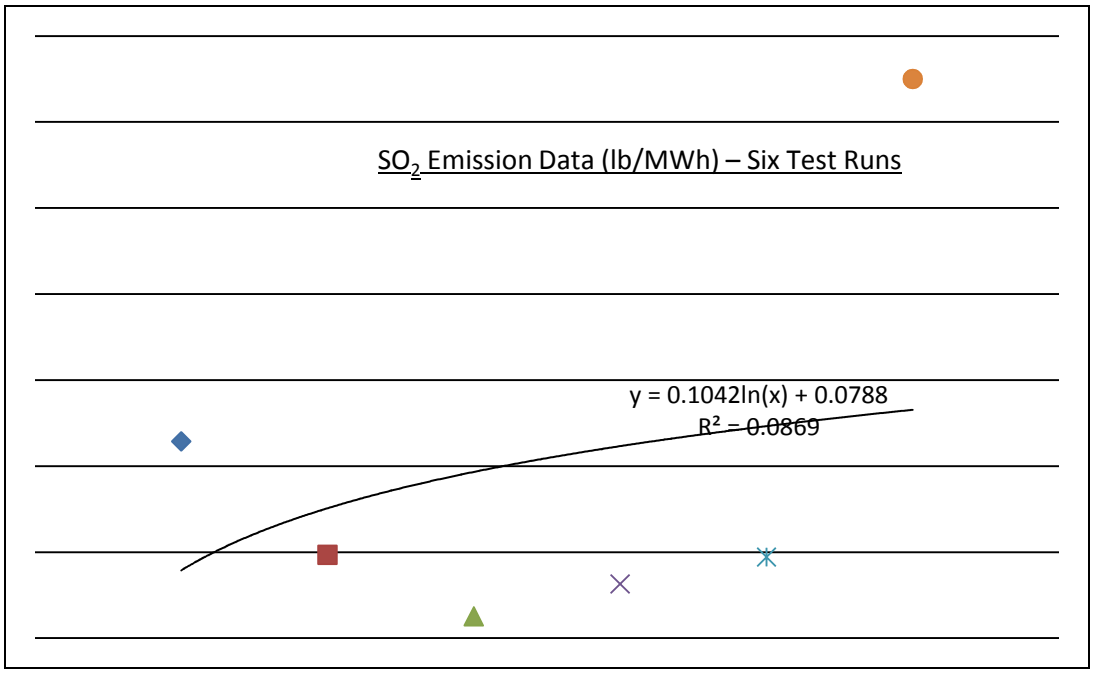
EPA set the new source SO_2 limits based on the performance of a unit, but received a comment that this unit is rated at 25 MW, and the regulations only apply to units whose capacity is greater than 25 MW. EPA then chose the Sandow 5 Unit[12] as its best performer. However, the test results for this unit are highly variable and the application of the 99th percentile UPL

[10] Typically, reference method testing requires three test runs, the results of which are then averaged to determine the result.
[11] Walter Scott Generating Station, Council Bluffs, IA (2007).
[12] Sandow Generating Station, Milan County, TX.

generates a new source performance limit of 1.0 lb/MWh. While this limit might well be considered a reasonably stringent limit for many purposes, it is well above permitted limits for several existing units[13] and has been met by 40 percent of existing units. There appear to be at least six units that have demonstrated substantially better consistent performance than the Sandow Unit selected by EPA. Among these are the Gallagher,[14] Coffeen,[15] Stanton,[16] AES Puerto Rico Units 1 and 2,[17] Elm Road,[18] and two Rio Bravo Poso Units.[19] The 99th percentile UPL of one Rio Bravo Unit is 0.35 lb/MWh, while the other Rio Bravo unit's 99th percentile UPL is 0.38 lb/MWh. EPA states that it does not have run level data for several of these units, but this information is presumably available to the agency. We note that EPA Region 2 was the permitting agency for the AES Puerto Rico facility and presumably has the initial NSPS performance testing, additional ongoing CEM data, and other emissions information needed to determine the performance of this unit.

Figure 1 is taken from EPA's analysis.[20] It sets out the individual test run data for Sandow Unit 5 and demonstrates the presence of an extremely high individual test run, which is responsible for the high UPL calculated for this unit and EPA's determination that these results are not normally distributed.

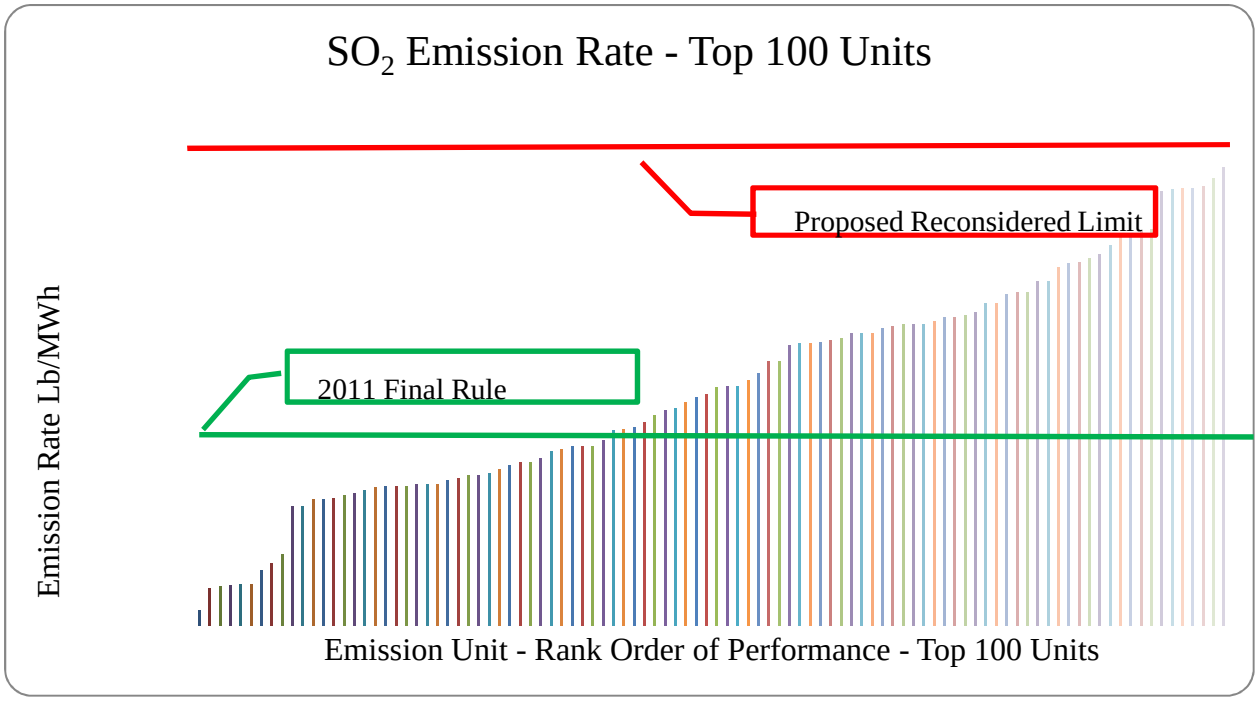
Figure 1. Sandow Unit 5 SO_2 emission data



[13] See, e.g. VCHEC (VA) 0.21 (30 day), 0.33 (3 hour), AES Puerto Rico 0.22 (3 hour).
[14] R. Gallagher Generating Station, New Albany, IN (1961, 2012 DSI).
[15] Coffeen Generating Plant, Coffeen, IL (1972, 2009 FGD).
[16] Stanton Station, Stanton, ND (1966, 2007 FGD).
[17] AES Puerto Rico, Guayama, PR (PSD Permit 1998).
[18] Elm Road Power Plant, Oak Creek, WI (2010).
[19] Rio Bravo Poso, Bakersfield, CA (38 MW, 1989).
[20] See, http://www.epa.gov/ttn/atw/utility/2012/UPL_Coal_SO2_111612.xlsm, at "Lognormal template."

Figure 2 sets out the lowest test result[21] for the top 100 units in EPA's data set, the final SO_2 limit, and the proposed limit on reconsideration. This figure demonstrates the wide disparity between the emission rate achieved by the top 10 sources and the proposed rate on reconsideration.

Figure 2: SO_2 emission rates (lb/MWh); coal and lignite–fired EGUs



At the SO_2 emission levels that are now being proposed, it is not clear that SO_2 is a reliable surrogate for MACT level of control of hazardous acid gas emissions. EPA should provide an analysis documenting the relationship between the emission levels of the different pollutants at the proposed level of SO_2 control.

3. fPM limits for new oil, coal and lignite-fired EGUs

On reconsideration, EPA is proposing to eliminate two plants, the Dunkirk[22] and Martin Drake[23] plants, as the best-performing units on the basis that these plants do not employ a FGD for SO_2 control. This would only be relevant if FGDs consistently increased fPM emissions, which we understand not to be the case. Indeed, in many applications, the FGD is considered part of the PM control system as the wet spray captures a portion of the PM present in the exhaust stream. The Martin Drake plant does not have any SO_2 control system and so, it is at least possible that the PM loading to the control device may be somewhat lower than if an FGD were in place. However, the Dunkirk plant employs low sulfur coal and dry spray injection –

[21] Most units were only tested once. For those units, this figure also represents the highest tested emission rate.
[22] Dunkirk Steam Station, Dunkirk, NY (1960, DSI 2009)
[23] Martin Drake Power Plant, Colorado Springs, CO (1979)

where finely ground trona[24] is injected into the exhaust stream to control SO_2 emissions. The source also has the capability to inject activated carbon enabling it to meet its mercury limit of 0.6 lb/TBtu in 2015. Each of these technologies adds to the load that the PM controls must be capable of addressing. The PM control system at this facility is a fabric filter system installed in 2009. On its face, there is nothing in the design of this system that would warrant disqualifying it as a best-performing unit.

We also note that EPA's proposed new source MACT limit for fPM for liquid oil-fired EGUs (4.0×10^{-1} lb/MWh) is higher than the adopted existing source limit for this category (3.0×10^{-1} lb/MWh) and which remains unchanged by this proposal. An error of this magnitude demonstrates once again that EPA's statistical methodology is flawed as described in this and earlier comments. In the past, EPA has attempted to use the agency's "beyond the floor authority" to establish a new source limit that is at least as stringent as the limit applicable to existing sources, but does not propose to do so in this rulemaking.

4. Selenium limits for coal and lignite-fired EGUs

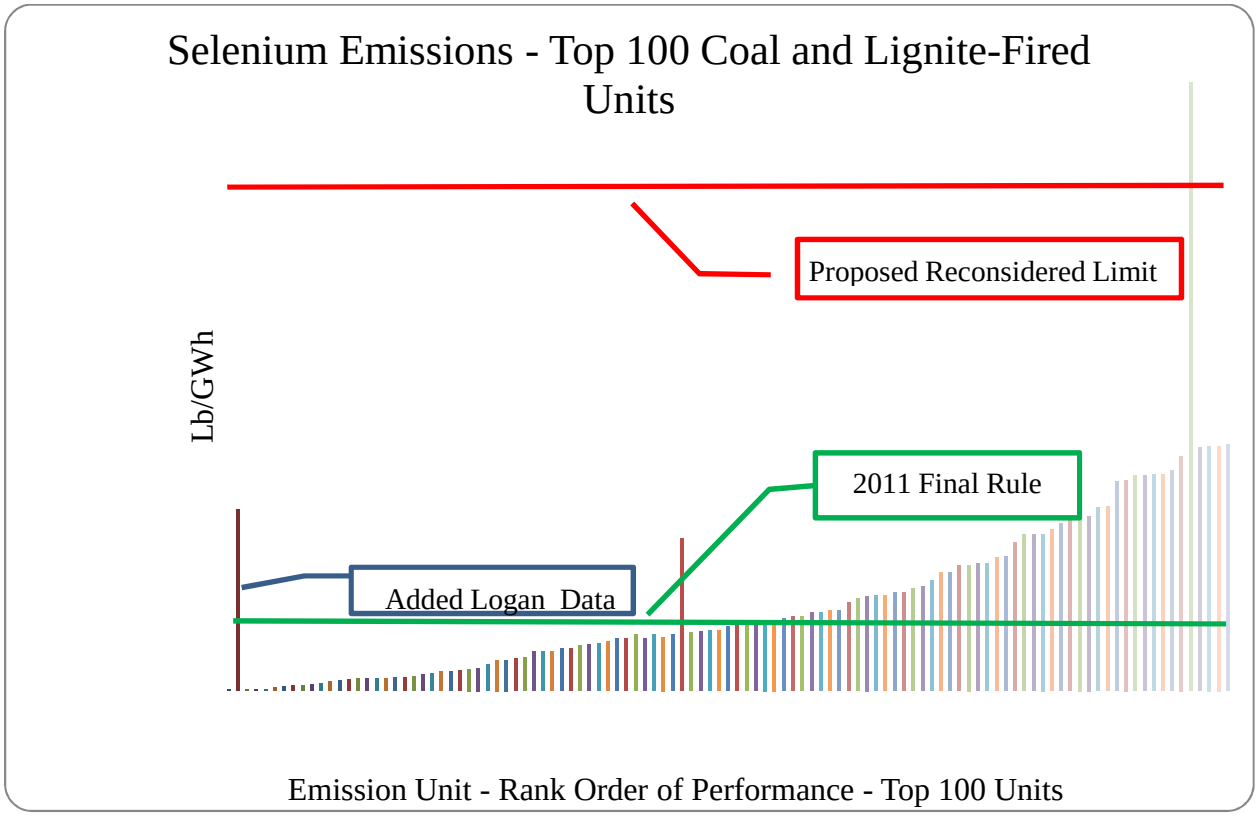
EPA's proposed reconsideration of the limit on emissions of selenium also highlights the problems associated with the agency's practice of selecting the best-performing units on the basis of a single run, but then using a different procedure for determining the performance of those units. EPA had selected the Logan Generating Station as its best-performing unit on the basis of the lowest single run even though other units in its data set had lower average emissions. Thereafter, EPA was informed of an earlier test result reporting an emission rate 75 times higher than the testing conducted in response to the agency's survey. In our experience, such variations in performance are not expected in properly functioning PM control systems, and so, EPA should contact the source and the appropriate permitting authority to determine the circumstances surrounding this test. Assuming that the earlier test result is representative of the current controls and operations at the Logan Generating Station, it would certainly be appropriate for EPA to consider this data and determine that the emissions performance of this unit is not as good as it had previously appeared.[25] However, this should also be accompanied by a determination that this unit is not the best-performing unit in the set. In fact, the average emission test result for this unit now ranks 70th out of approximately 200 test results in EPA's data set. Because the newly considered test result is so much greater than the initial result considered, EPA's 99th percentile UPL calculation generates a result that is exceedingly high – substantially higher than the top 100 test results in the data set.

A single test run is not the appropriate measure of the best-performing unit. Where EPA receives credible information that a particular unit is not the best-performing unit, EPA should look to other well performing units rather than simply recalculating the emission rate for the unit it had thought to be the best-performing unit. Figure 3 sets out the emission rate in lb/MWh for each of the top 100 results in EPA's data set, the final limit and the limit as proposed on reconsideration. These data show how much higher the added Logan test result is than what was routinely demonstrated by the better performing units and that the proposed increase is

[24] "Trona" is a trade name for sodium sesquicarbonate.
[25] EPA's memorandum does not discuss whether this is the case.

unwarranted. Overall, 135 of the 260 units in EPA's data set have demonstrated that they can meet EPA's proposed limit for new sources

Figure 3: Selenium emissions (lb/GWh) from the top 100 units in EPA's data set



5. Lead limit for coal and lignite-fired EGUs

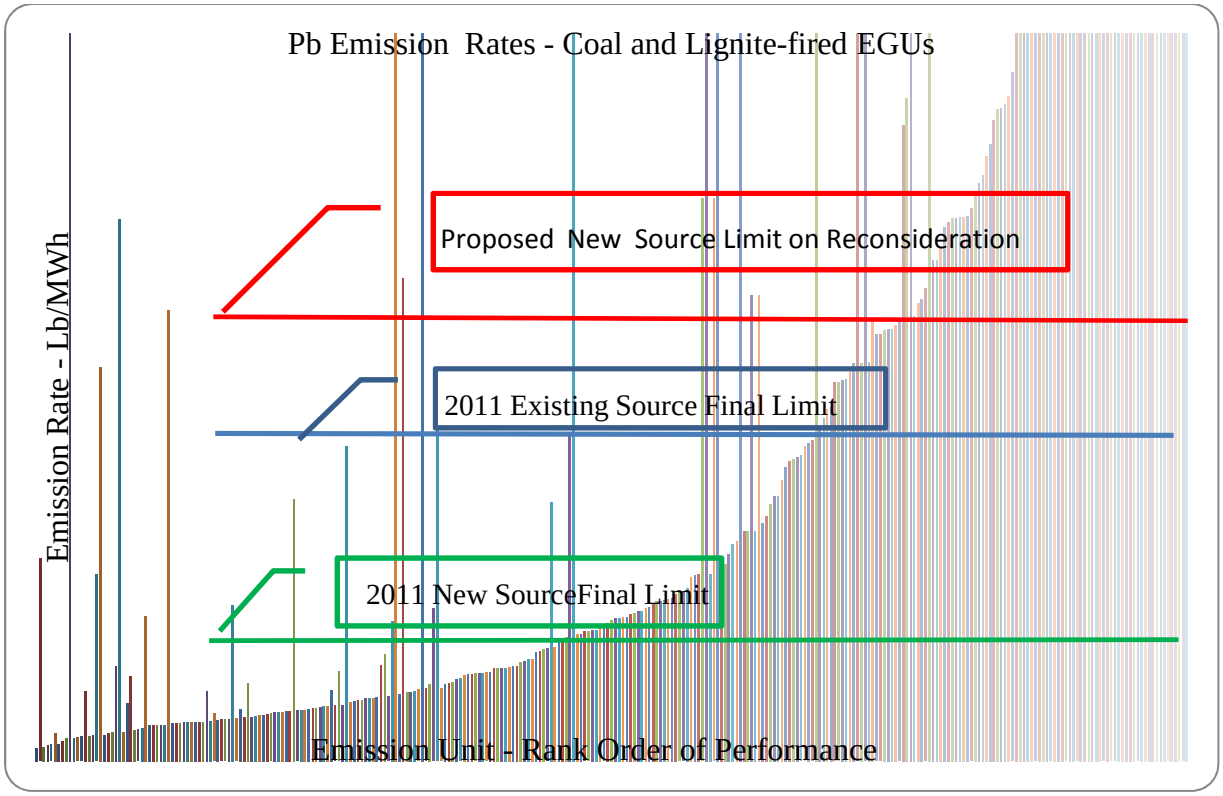
In the course of determining the new source lead (Pb) limit for coal or lignite-fired units, EPA had selected the Weston unit[26] as the best-performing unit. On reconsideration, EPA has included a test result that is 60 times greater than the test that it used to identify this unit as a best-performing unit. It appears that the Dallman unit is a far better performer in that data set because its average emission rate is close to that of the Weston unit, but the test-to-test variability is far less. However, these data also show that a number of other sources have apparently identified highly differing test results. Figure 4 sets out the lowest emission rate for each of the units in EPA's data set and also shows the additional test results for the unit. The Logan Unit, discussed above, is the #11 source in this figure. The 75-fold increase in fPM emissions during a 2005 stack test was accompanied by a 238-fold increase in Pb emissions. These results are of concern as they may suggest that (1) even EPA's proposed reconsidered limit cannot be consistently met by well-controlled units or (2) annual Reference Method testing will not provide a reasonable assurance of compliance with (any) limit. More likely, these results may reflect the fact that permitted PM control limits often provide a substantial

[26] Weston Unit 4 Power Plant, Wasau, WI (2008)

compliance margin for such units and the higher emission levels may not reflect the full performance of the unit. We recommend that EPA examine this issue in more detail before acting on its proposed reconsideration limits.

Once again, EPA's proposed new source MACT limit for Pb for coal and lignite-fired EGUs (3.0×10^{-2} lb/GWh) is higher than the adopted existing source limit for this category (2.0×10^{-2} lb/GWh) and remains unchanged by this proposal. In the past, EPA has used the agency's "beyond the floor authority" to establish a new source limit that is at least as stringent as the limit applicable to existing sources, but does not propose to do so in this rulemaking.

Figure 4: Pb emission rates (lb/MWh)[27]



6. Considering permitted emission levels

EPA established the MACT limits for Integrated Gas Combined Cycle (IGCC) units on the basis of the permitted EPA emission limits for new units. Petitioners objected to this decision on the basis that they had no notice that EPA was considering such an approach. EPA has, on numerous occasions, identified this option and the Courts have determined that EPA is entitled to consider this information and rely on it in the absence of better information on the performance of units. EPA is not proposing to modify the emission limits in the final rule, but has indicated that it will review emissions test results for installed IGCC units provided in the comment period.

[27] EPA expresses these limits in lb/GWh.

NESCAUM believes EPA has adopted a prudent course of action and recommends that EPA consider permitted emission levels for all subcategories and all pollutants, not just IGCCs. EPA is obliged to set MACT standards on the basis of all of the information that is available to it. This information includes permit determinations, including those listed in the Reasonably Available Control Technology "RACT"/BACT/LAER (RBL) Clearinghouse. EPA established the RBL Clearinghouse and intended that this information be relied on by permitting authorities to assist in the identification of the best-performing sources. Pre-construction permitting, however, is necessarily based on conservative engineering assumptions and such limits should be considered an upper bound on the actual performance of the unit. Often, in-use testing reveals far better performance than that assumed in the permitting process and, where available to EPA, must also be considered in determining the performance of the unit. Where EPA identifies any such new units, it should make reasonable efforts to obtain all relevant emissions performance data.

Even as it seeks to rely solely on permitted limits in establishing MACT limits for IGCCs, EPA proposes to set MACT limits for Hg, SO_2 and other pollutants that are higher than permitted levels that sources have complied with for many years. Again, by way of example, the two AES Puerto Rico units are subject to an SO_2 emission limit of 0.022 lb/MMBtu (three hour) limit, approximately equal to a 0.2 lb/MWh limit, while the Virginia City Hybrid Energy Center[28] is subject to a 30-day limit at the same level. We set out a process herein where individual run level data are not necessary to develop MACT floors, but note that the individual test information is at least as "available" as information obtained under EPA's section 114 information request and clearly "available" to the agency where (1) the agency is the permitting authority, (2) the permitting authority acts under a delegation from EPA, or (3) EPA has an interagency cooperative agreement.[29] Where individual run data are not available, EPA must nonetheless consider the performance of these units in setting a new source MACT floor.

7. Considering CEM data

The hourly CEM data in the record for the AES Puerto Rico units show a 30-day average SO_2 emission rate of 0.011 and 0.012 lb/MMBtu and a standard deviation of 0.009 and 0.007 lb/MMBtu. There are far more data available documenting the performance of these units than any other units in EPA's data set and, as noted above, these units have complied with an SO_2 limit for over 10 years that is one-fifth the level proposed by EPA on reconsideration.

D. Substitution of Assumed Test Conditions for Measured Emission Rates

EPA proposes to relax the final standard for mercury emissions from coal-fired EGUs by a factor of 15. This proposal is not based on any new information concerning the emissions performance of the best-performing unit, but is in response to petitions received from industry members that they need to be able to determine compliance on an ongoing basis. These petitioners assert that if they use the sorbent trap test method (EPA Method 12B), they cannot

[28] Virginia City Hybrid Energy Center, Virginia City, VA (2012)
[29] Of course, such information is also "available" where it is posted online by the permitting agency.

determine their compliance with monthly average emission limits on an ongoing basis and are at risk of unknowingly violating the statute. The petitioners sought to have EPA raise the applicable limit to a level that could be monitored by continuous mercury emission monitors (Hg CEMs). In its initial testing request, EPA had advised sources that it anticipated that the sampling period might need to be extended to up to two weeks to obtain the required precision. Because EPA has multiplied the results from the best-performing unit by a factor of 3.5, that length of sampling should no longer be required to ascertain compliance with the standard. It is reported that, because of the Quality Assurance requirements that could cause a sample to be rejected, most users replace sorbent traps every four to seven days. This assures that if a sample is rejected for QA reasons, only four to seven days of data are lost.[30] However, in response to petitioners' representations, EPA has proposed to assume that the time for sorbent trap sampling is reduced from the normal period of several days to a week[31] to just 30 minutes. The selection of 30 minutes is intended by EPA to reflect the sampling time available with the use of Hg CEMs.[32] EPA then makes a number of assumptions about the use of sorbent traps to calculate its 3 x RDL "alternate" approach to setting standards.[33] This approach leads the agency to propose a limit that may be higher than would have resulted from petitioners' suggestion to raise the emission limit to facilitate the use of Hg CEMs.

In the first instance, we note that it may be possible for new units to employ Hg CEMs that have sufficiently low detection levels to allow their use in ascertaining compliance. The final Hg emission limit for coal-fired EGUs is 0.00020 lb/GWh, roughly equivalent to 0.020 lb/TBtu assuming 10,000 Btu/kWh and 0.033 $\mu g/m^3$. Tests conducted on the newest generation of Hg CEMs demonstrate an ability to detect and to quantify Hg emissions at levels at or below these levels.[34] The manufacturer of the Tekran Hg CEM asserts[35] that its system has a quantification level of approximately 0.033 $\mu g/m^3$. We note that for internal compliance assurance purposes a measurement greater than the detection level, but less than the quantification level, should be sufficient to alert the operator that corrective action is required. Further, there is no reason why sampling times in Hg CEMs cannot be extended beyond 15 minutes and sampling volumes increased to provide for lower detection levels as desired.[36]

Second, we believe it is reasonable to assume that over the next several years operators can develop and implement continuous parametric operating plans to assure compliance with operating limits. Such compliance assurance monitoring (CAM) plans correlate those operating parameters, such as the Hg content of the fuel, the rate of addition of activated carbon, and the performance of those pollution control devices, such as PM and SO_2 controls, that affect the emissions performance of the unit. These plans are in addition to, and not in lieu of, the enforceable compliance demonstration requirements.

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[30] Tekran Comments regarding: Final Technical Report, ICCI Project Number: 10/6A-1, *"Determining the Variability of Continuous Mercury Monitors (CMMS) at Low Mercury Concentrations"* Rev 1.03 June 16, 2011.
[31] "Typical monitoring periods for normal, day-to-day operation of a sorbent trap monitoring system range from about 24 hours to 168 hours." Section 12.8 http://www.epa.gov/ttn/emc/perfspec/ps-12B.pdf EPA provides a sample calculation that assumes that they run for five days to achieve 5 $\mu g/m^3$.
[32] Hg CEMs typically report an emissions result every 15 minutes.
[33] http://www.epa.gov/ttn/atw/utility/2012/hg3xrdl_111612.pdf
[34] http://www.icci.org/reports/10Laudal6A-1.pdf
[35] See, footnote 32, supra. The fact that this level is identical to the final rule limits is coincidental.
[36] http://www.seefelder-messtechnik.com/V73-5-01-general-e.pdf

Third, there is no documentation that the performance of affected units is so variable that sources must be able to determine emission levels on either a 15 minute or 30 minute basis to maintain compliance with a 30 operating-day average. The scenario posed by EPA is economically unrealistic. Given the available alternatives, we find it difficult to believe that sources will routinely volunteer to change sorbent traps every half hour and then pay for laboratory analyses of the 17,520 samples per year that would result from such an exercise and with the short-term turnarounds that would be required to use such samples as a short-term monitoring system. Petitioners have not suggested that any source would engage in such an exercise. EPA has selected 30 minutes in an attempt to duplicate the frequency of measurement of Hg CEMs, but Hg CEMs have much higher sampling flow rates than cited by EPA for sorbent traps.[37] For this reason, EPA's assumption of extremely short sampling times and low flow sampling rates for sorbent traps leads to levels of quantification far higher (less precise) than ordinarily achieved by either Hg CEMs or sorbent traps.

EPA has not explained why a determination of ongoing emission rates 5 to 10 times per month – or 100 times per month – will not suffice to complement ongoing parametric monitoring. Sources are, of course, free to conduct additional monitoring as they see fit, and can generate hourly updates to the rolling monthly average by employing more than one trap at a time and staggering the start times of the sampling by different traps.

Finally, we note that EPA's 3 x RDL calculation contains several problems. This calculation employs four factors: (1) the minimum detection level ("MDL") of the test, (2) the sample collection time, (3) the sample collection rate and (4) the heat rate of the unit. With respect to the MDL, EPA states that it has calculated the average MDL for measuring mass from a number of tests of the best-performing units, included multiple results from three sources owned by a single operator that are several times higher than other values in the set. There is no reason why EPA should base its determination of the detection level that can be achieved by new sources in the future on the basis of the choice of MDL where there was no obligation or incentive to employ more accurate methods to determine the mass of the sample in the sorbent trap. EPA should use either the best, or at least one of the best MDLs reported by a lab in the group. If EPA were to do this, the applicable limit would be unaffected by the 3 x RDL test.

EPA uses a sample collection time of 30 minutes.[38] If EPA assumes a sample collection time of 360 minutes (six hours) and makes no other change to its assumed values, the 3 x RDL level is less than the final standard and so the applicable limit would not affected by the 3 x RDL test. Sources that employed sample collection times of six hours would be able to determine their compliance status 120 times per month. This should be more than sufficient to assure compliance with applicable standards, especially since sources should be assumed to establish a baseline emission rate that takes into account the level of emissions variation shown by EPA's 99th percentile UPL procedure.

[37] http://www.seefelder-messtechnik.com/V73-5-01-general-e.pdf.
[38] EPA intended to use a sample collection time of 20 minutes, but erred.

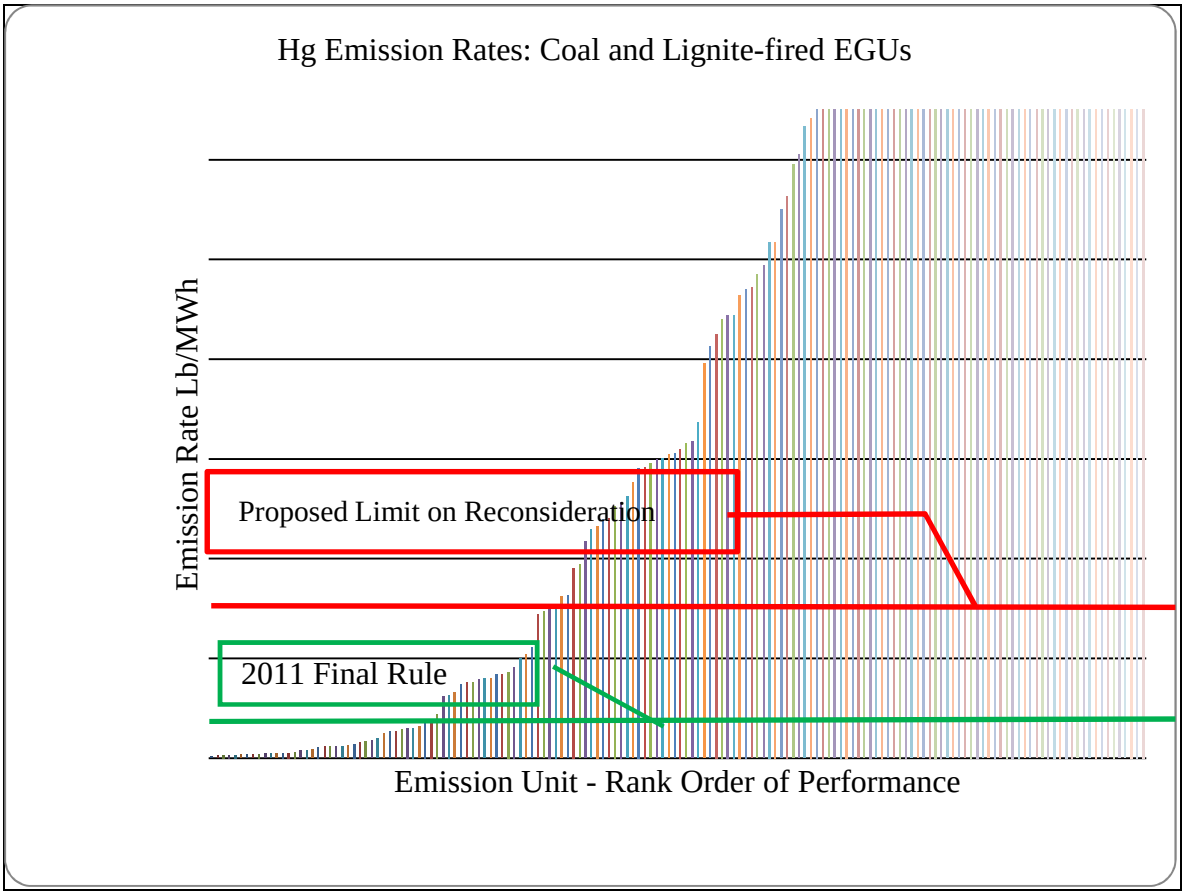
EPA assumes a sample collection rate of 0.5 liters per minute, based on "an informal survey on the normal sampling rates." This rate of sample collection may be the practice today, where there is no reason to sample at higher rates, but there is no reason why, if the final rule remains in place, sources cannot elect to sample at the rates available with commercially available equipment.[39] If EPA assumes that the source samples at the maximum rate of commercially available units, and makes no other change to its assumed values, the final limit is not affected by the 3 x RDL test.

EPA assumes that the heat rate of new coal-fired boilers using high Btu coal will be 11,180 Btu/kWh. The agency states that this number represents the average of the units that it selected for evaluation for this purpose. However, this rate is substantially greater than one would anticipate for a new coal-fired plant burning high Btu coal and is higher than the average of all coal-fired units in EPA's data set (10,478 Btu/kWh). It is also somewhat higher than the average of the top 29 units in EPA's data set (8,449 Btu/kWh).[40] These somewhat smaller differences turn out to be more significant than might be apparent.

EPA's 3 x RDL calculation should have no impact on the determination of the standard for this subcategory. Figure 5 shows the lowest emission test result for the 158 units in EPA's data set. These data demonstrate that EPA's calculation leads to a result that is not consistent with the ongoing improvement in control technologies – a limit for mercury for new sources that is less than the measured emission rates of about one-third of existing units.

[39] Two to three liters per minute, *supra*. http://www.seefelder-messtechnik.com/V73-5-01-general-e.pdf.
[40] Taken from the 11.16.02 EPA worksheet for SO_2. There are 290 units in this data set, and so 29 represent the top 10 percent.

Figure 5: Hg emission rate for existing coal and lignite-fired EGUs[41]



E. Calculating Unit-specific Performance Adjustment Factors

In lieu of the Dunkirk plant, EPA is proposing to base the new source MACT floor for fPM on the performance of Springerville Unit 3,[42] because that unit has the next lowest test run. However, at least five other units in EPA's data set have lower average emission test results and lower standard deviation than Springerville Unit 3. The Springerville Unit 3 test results average 1.91 $x10^{-3}$ lb/MW with a standard deviation of 1.48 x 10^{-3} lb/MMBtu and a 99th percentile UPL of 8.23 $x10^{-2}$ lb/MW.[43] Mercer Unit 2's average test results were 1.23 $x10^{-3}$ lb/MW with a standard deviation of 6.68 $x10^{-4}$ lb/MW and 99th percentile UPL of 6.0 $x10^{-2}$ lb/MMBtu. EPA's estimate of the performance of the number two performing unit, at 6.0 $x10^{-2}$ lb/MMBtu, is much higher than the 2.5 x 10^{-2} lb/MMBtu that the agency would calculate as the average performance of that unit and the next higher emitting unit. This is the same problem that led to a number of subcategories where the EPA calculation of the new source MACT floor generated a result that was higher than the existing source MACT floor. The source of the problem is EPA's

[41] EPA expresses its limit in terms of lb/GWh. The proposed limit is 3.0 x 10^{-3} lb/GWh or 3.0 x 10^{-6} lb/MWh.
[42] Springerville Generating Station, Springerville, AZ Unit 3 (2005), Unit 4 (2009)
[43] As explained above, expressed to two significant digits, this result properly rounds to 8.2 $x10^{-2}$ lb/MW or, arguably 8.3 $x10^{-2}$ lb/MW, but not 9.0 $x10^{-2}$ lb/MW.

methodology that attempts to determine the variability in performance of each individual unit, where there are not sufficient data to do so.

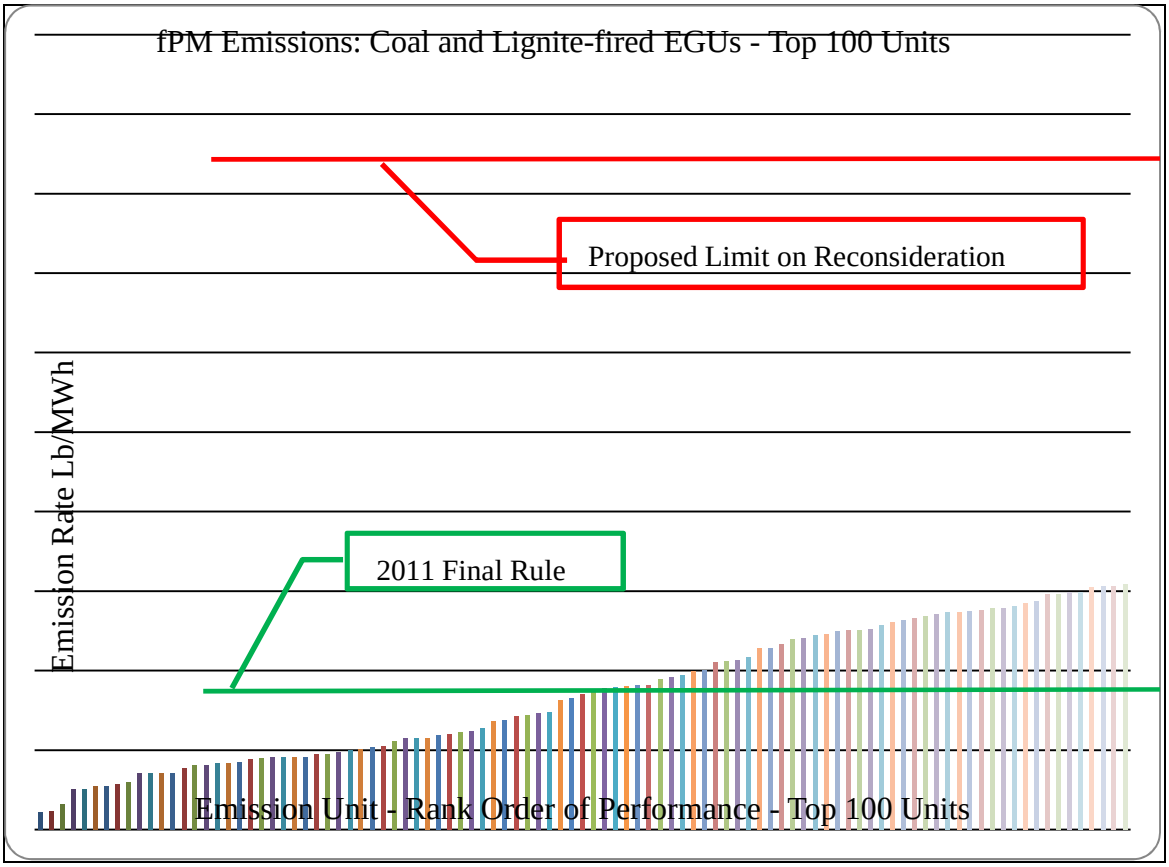
This subcategory also reveals an inconsistency in EPA's treatment of test results where individual run level data are not available. In determining the new source MACT floor for SO_2, EPA rejected low emitting units at Gallagher and Coffeen plants, as well as CEM data for AES Puerto Rico, because it did not have run level data for those plants. Here, the run level data for Springerville 3 yields a UPL of 0.009 lb/MWh, but EPA decided to include additional testing, where run level data were not available in its calculation. This resulted in an order of magnitude increase in the calculated MACT floor. If one includes test results where run level data are not available, this unit is not the best-performing unit. Rather, it appears that the Mercer[44] 1 and 2 units are better performers. We are not suggesting that EPA should have ignored the higher test result simply because run level data are not available. Instead, EPA should include in its analysis all units where reliable emissions data are available[45] and determine the variability factor using a process that employs a sufficient number of data points.

This result also provides an opportunity to highlight the impact of EPA's choice of confidence level. At the 90th percentile UPL rate, the Springerville Unit with all testing included would generate a UPL of 0.05l lb/MMBtu. At the 99th UPL level, Mercer Unit 1's emission rate is 0.06 lb/MMBtu; at the 90th percentile UPL level the rate would be 0.024 lb/MMBtu. The average emission rate for Mercer Units 1 and 2 yields a rate of 0.023 lb/MWh at the 99th percentile UPL level and 0.0163 at the 90th percentile UPL. These are fairly significant differences in rates. EPA has not to date provided an objective rationale for the 99th percentile, as opposed to the 99.9th percentile, the 90th percentile or any other choice and we urge EPA to do so in the final rule. We do not believe that Congress intended a set of MACT standards that cannot be complied with on a consistent basis. But we submit that any set of assumptions that are not based on documented engineering analysis or analysis of performance that results in a new source MACT floor that is far higher than consistently achieved by a substantial number of existing sources should be revised.

Figure 6 sets out the lowest tested emissions, in lb/MWh, for the top 100 units in EPA's data set. These results demonstrate that the final fPM limits for new EGUs initially adopted by EPA were too stringent and that the proposed limits on reconsideration are too lenient.

[44] PSEG Mercer Generating Station, Hamilton, NJ (1961, pollution controls added 2011).
[45] Including CEM data.

Figure 6: fPM emissions coal and lignite-fired EGUs; top 100 units



F. Lignite-fired Units Located "At or Near" the Mine

EPA has proposed more lenient limits for certain pollutants for sources that are designed to burn "nonagglomerating virgin coal" having a heat value of less than 8,300 Btu/lb "that are constructed and operated at or near the mine that produces such coal."[46] The agency states that its proposed language is an effort to close a potential loophole where sources burn only nominal amounts of lignite and assert that, for that reason, the unit is subject only to the more lenient limit. EPA also has withdrawn its earlier attempt to define this category by a height-to-depth ratio in response to several commenters that the approach was not workable.

The term "at or near" is not defined and new coal-fired facilities could still claim the more lenient standard if they burn nominal amounts of lignite and are within a short distance of the lignite mine where they purchase the nominal amount of lignite. One potential solution to this issue would be to write the rule so that only those units that combust a minimum percentage of lignite would qualify for the more lenient standard. This percentage would be a reasonably high figure based on the fuel-use of the units that were the basis of the standard. The rule should be written to ensure that there is not a third class, such as lignite-fired units that are not near the mine, for which no standards are applicable.

[46] We have referred to such coal as lignite throughout this comment.

G. Testing Issues

NESCAUM does not support EPA's proposal to retain an option for quarterly stack testing in lieu of PM CEMs. This option reduces the quality of the information provided to operators of these sources and increases the risk of inadvertent excess emissions. It provides no meaningful cost savings or other benefit to operators of EGUs, but poses a significant resource burden on state and local permitting authorities. Similarly, we do not support the proposal to reduce or eliminate RATA testing for CEMs. If such CEMs are to be installed, they should be calibrated so that the reported results accurately reflect the performance of the EGU. We do agree with EPA's proposal to index parametric monitoring to the average of the parameters in three run reference method tests rather than to the parameters in the highest emitting run. Because the highest emitting run would show emissions greater than the average of the three runs, the parameters associated with the highest run would not be sufficient to assure compliance with the applicable limit.

H. Enforcement Issues

EPA proposes to define a separate violation when more than four reference method tests result in a year because of exceedances of 30-day PM Continuous Parametric Monitoring System ("CPMS") parameters. However, this limit is a 30-day limit, rolled monthly, and the source has 45 days to conduct the reference method test. During this time period additional exceedances of the CPMS parameters do not count and there is no violation unless the source is required to conduct more than four reference method tests in a year. Thus, up to 375 days of continuous noncompliance may elapse before a fifth reference method test occurs. Finally, EPA undercuts its establishment of a separate violation by asserting that this provision merely creates a rebuttable presumption. This "separate violation" therefore is illusory and of no particular benefit. Instead, it can be read to limit the authority of permitting agencies to prove a violation based on a single gross exceedance of a parametric limit – such as data showing that the ESP has been turned off. Paragraph 63.10021(c)(2) is unnecessary and unhelpful. We suggest that it be removed.

If EPA intends to address those who chronically exceed their CPMS parameters, we suggest that it identify a number of months in a year, perhaps two or three, where exceedances of a monthly CPMS parameter will require conversion of the monitoring system to a PM CEMS. EPA should also make clear that the permitting agency has the authority and the ability under the Credible Evidence rule to determine whether a CPMS deviation is a violation of the underlying limit. If a facility reports, for example, that it has been operating at a level twice as high as its operating limit, the enforcement authority should be able to determine that there has been a violation of the standard.

III. Conclusion

EPA should consider revising its procedure for identifying and calculating the performance of the best-performing units. Improving EPA's methodology will not result in limits that cannot be met by new sources, but will increase the public's confidence that the

resulting limits are sufficiently protective and minimize the possibility that the inevitable challenges to EPA's final rules will lead to further delay and uncertainty. The resulting limits will also provide a more accurate reflection of the performance of the controls that are likely to be installed as well as an ample compliance margin. EPA's statistical approach has the appearance of objectivity, but, because there are insufficient data to conduct a reliable statistical analysis of the performance of individual units, the MACT floors that result from this process are largely a result of several subjective choices for which a robust record has not been identified.

Importantly, EPA's proposed rationale on reconsideration is set out in lieu of a detailed technical investigation that might identify and correct emission limitations that are overly restrictive, as well as those that are unduly lenient. Because the amount of testing that would be needed to make an accurate determination of the variability in the performance of each unit would be prohibitively expensive, NESCAUM recommends that EPA develop a variability factor based on the variability in performance of a larger data set comprised of units employing similar designs. Such an evaluation would be based on all relevant information, including engineering information, CEM data, and the variability in performance of units of similar design. We would be pleased to provide any additional information or assistance that EPA may need to assist it in this challenging and important task.

Sincerely,

Arthur N. Marin
Executive Director

Cc: NESCAUM directors
Dave Conroy, EPA R1
Bill Baker, EPA R2
Mary Sullivan Douglas, NACAA