

June 7, 2012

Is MATS the end of the world for MISO?¹

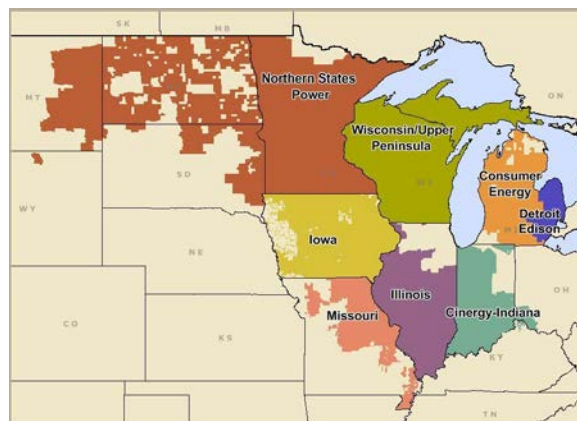
The Brattle Group recently performed a study for the Midwest ISO on the impact of EPA’s Mercury and Air Toxics Standard (MATS).² From reading it one would think that EPA’s Mercury and Air Toxics Standards were simply not achievable. If one were to believe the report for MISO and live in the Midwest, one should run out and buy a home generator and stock up on canned food and water, because the end of the world is surely near. These comments are intended to debunk the myth and provide reassurance that all will be well in MISO despite the MATS rule.

The MISO Region is Relatively Underscrubbed When Compared to Other Regions and this has implications for the assumed “soft cap” in Brattle Group’s analysis

First, it is flattering that Brattle Group has acknowledged that ATP has debunked the myth of “hard caps” on labor availability.³ They claim, however, that instead of “hard caps” there are “soft caps” that they relate to what has been done in the past. They set these “soft caps” using some faulty assumptions. But, first some background on MISO.

According to the FERC web site: MISO covers most of North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Wisconsin, Illinois, Indiana, Michigan and parts of Montana, Missouri, Kentucky, and Ohio. As shown in Figure 1, the parts of Ohio, Kentucky and Montana are relatively small parts of those states. The scrubbed and unscrubbed capacity in North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Wisconsin, Illinois, Indiana, Michigan and Missouri are compared to the rest of the country to get a rough estimate of the scrubbed capacity in the MISO region.

Figure 1. MISO Region⁴



Figures 2a and 2b compare the scrubbed capacity in the in the approximate MISO region versus the rest of the country. Outside of MISO, nearly 66% of coal capacity is scrubbed while only 40% is scrubbed in the MISO region. Brattle Group estimated a “soft cap” based upon previous retrofit effort in the Midwest. The lack of scrubbers in the MISO region has implications for establishing the MISO “soft cap” because Brattle Group looks at historical retrofits in determining their “soft cap”. The implied argument is that it’s not possible to do more than what has been done in the past, which is a flawed premise in and of itself. However, the “soft cap” they have assumed should be raised by as much as 65% to make it comparable to the rest of the country because the rest of the country has clearly demonstrated that a much greater retrofit effort is possible. Looking at it another way Figure 15 of the Brattle Group report

¹ Also considered as a title was, “Did CAIR really happen?” Read on to see why.

² The Brattle Group, “Supply Chain and Outage Analysis of MISO Coal Retrofits for MATS”, May 2012

³ See my White Paper on Availability of Resources for Clean Air Projects that is on my web site and they cite.

⁴ <http://www.ferc.gov/market-oversight/mkt-electric/midwest.asp#geo>

indicates a peak in 2009 of nearly 90 GW of FGD equivalent construction nationwide and Figure 16 shows about 16 GW of FGD equivalent construction (18% of the national estimate) that same year, both peaks. However, MISO has roughly 28% of the coal capacity in the US. MISO plants, which use a large proportion of Powder River Basin coal, haven't had as much need to scrub SO₂ as those in the rest of the country, which demonstrated a much higher pace of activity than MISO in 2009. MISO simply hasn't kept pace with the rest of the country when it comes to clean air projects on its coal power plants.

Figure 2a. MISO Coal Capacity

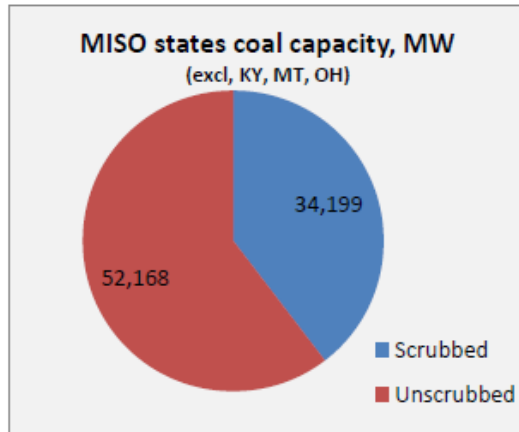
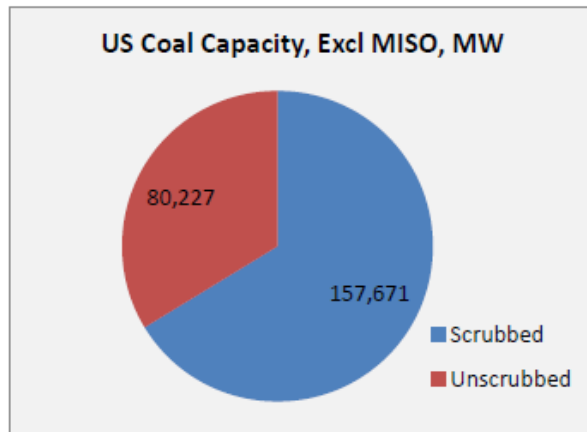


Figure 2b. US coal capacity, excluding MISO



Brattle Group uses boilermaker numbers that are far too low.

Brattle Group also states that they use BLS data on available boilermakers and use this data to argue that the projected retrofit effort will exceed available boilermakers. The May 2012 BLS Occupational Employment Survey shows 18,850 boilermakers in total and in the Industry Profile for the boilermaker occupation it shows only 1,850 in Utility System Construction and this is what they latch on to as the available number of boilermakers (there are also other occupational areas including Building Equipment Contractors, Industrial Machinery Repair and Maintenance that also might apply to retrofit of power plant equipment that Brattle Group did not include).

What is troubling, or perhaps telling, is that the Brattle Group didn't do a sanity check of such a critical assumption – only 1,850 boilermakers available for utility construction work. They didn't ask themselves, "If there are only 1850 boilermakers in the US, how on earth could all of those CAIR Retrofits and new builds have taken place?"

For example, Figure 15 of their report shows a peak of nearly 90 GW FGD equivalent in construction in 2002 and in 2009 which definitely occurred. In fact from 2007 to 2011 there are four solid years over 50,000 MW FGD equivalent. Yet, comparing the EPA case in Figures 18 and 20 of their report, it appears that there are only enough boilermakers in the US (1,850 in all) to support an effort that is about 50 GW a year – about half of what they acknowledge happened in past peak years.

In other words, using the Brattle Group's own assumptions and data, the CAIR retrofits and SCRs installed for the NO_x SIP call could not possibly have happened!

Perhaps the moon landings didn't happen either.

Brattle Group should have sanity checked such a critical assumption, but when an assumption is key to supporting the intended goal of a study, one may be reluctant to challenge it.

The BLS labor force data is reliable for most common occupations (teachers, plumbers, dentists, etc.) but for a very specialized trade like boilermakers it doesn't provide the same resolution as industry data. BLS conducts monthly surveys of 60,000 households⁵ out of roughly 114 million US households,⁶ or about 0.05% of all US households. If the 18,850 total boilermakers that BLS has estimated were spread evenly among the households, only about 10 of the 60,000 households surveyed would have a boilermaker. A one boilermaker difference in the survey equates to about 10% of the boilermakers, or about as many as Brattle Group claims are available for utility work. So, when BLS shows estimates of the number of boilermakers that work in the five different industry groups that they list for boilermakers and how they are distributed among various states from this sample of only about 10 boilermakers, it should be recognized that an accurate *measurement* is not possible from their sampling approach.⁷ One could compare it to trying to measure the size of a flea with a yardstick. As a result, the BLS data doesn't have as much resolution as data available from industry. BLS data can also be misinterpreted, which is what Brattle Group likely did in arriving at only 1850 boilermakers being available for power plant construction work.

Data on construction boilermaker employment is available from the National Association of Construction Boilermaker Employers (NACBE) and information on available union boilermakers⁸ is available from the International Brotherhood of Boilermakers. Detailed boilermaker statistics were provided in a recent report to EPA.⁹ Figure 3 shows a graph taken out of that report showing the construction boilermaker membership – all of whom are available for utility construction work, and this isn't too far off of the 18,500 total boilermakers estimated by BLS. In contrast, Brattle Group assumes only 1850 boilermakers available for utility construction out of the BLS estimate of 18,850 total boilermakers, which makes one wonder, "*What are all those other guys doing?*"

Figure 4 shows boilermaker employment manhours from the NACBE plotted against SCR and scrubber retrofits, and there is a high correlation between the two. This does not show MW equivalent construction of new units or the routine boiler maintenance that occurs every year which make up the balance of the utility work construction boilermakers do. According to NACBE, over 27 million manhours were logged by boilermakers in 2011 (Figure 4 doesn't have full year data for 2011). From these figures, it is clear that a lot more than 1,850 boilermakers are involved in utility work.

Whether Brattle Group simply ignored industry data or were just ignorant of it is unclear. But they clearly missed the ball. And, they didn't sanity check the critical assumption of how many boilermakers are available for utility work.

⁵ http://www.bls.gov/opub/hom/homch1_b.htm

⁶ <http://quickfacts.census.gov/qfd/states/00000.html>

⁷ BLS does some guesswork in estimating where the boilermakers work, but that's because they simply can't measure it directly with their normal sampling method.

⁸ There are some non-union boilermakers, but data is less available on them

⁹ Andover Technology Partners, "*ENGINEERING AND ECONOMIC FACTORS AFFECTING THE INSTALLATION OF CONTROL TECHNOLOGIES*", December 15, 2011

Figure 3. Construction Boilermaker Membership.

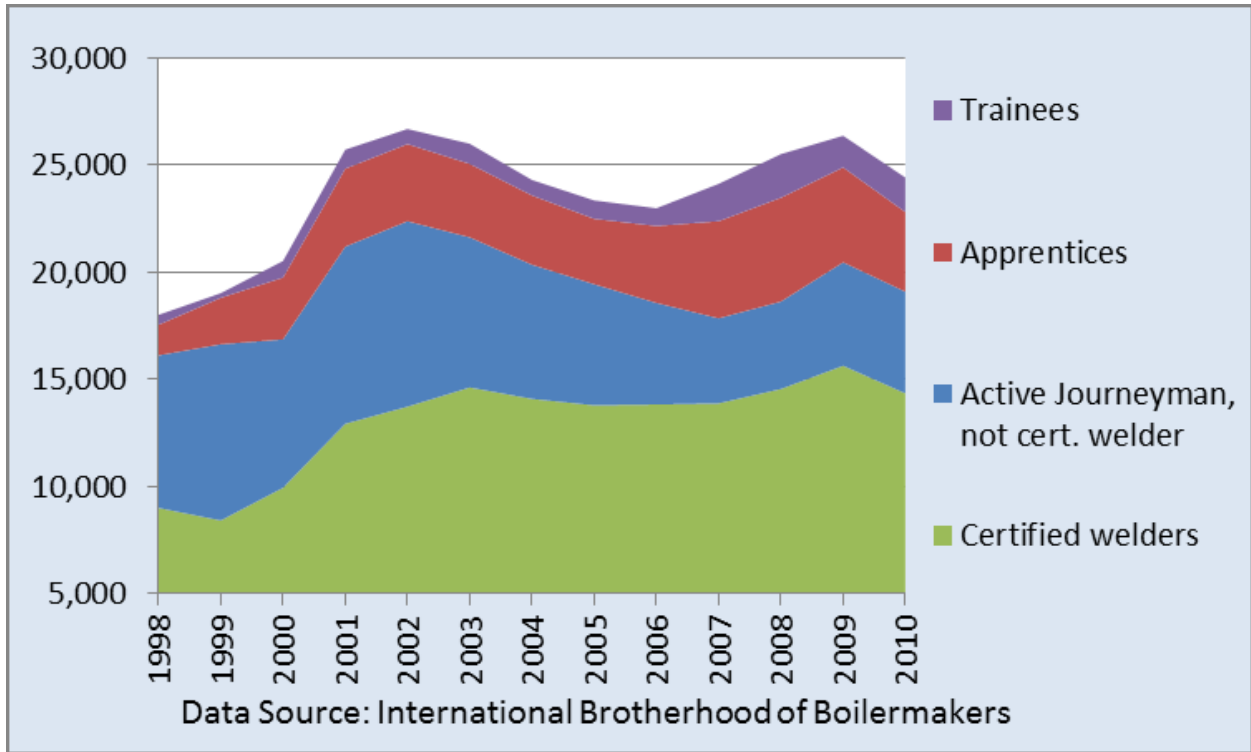
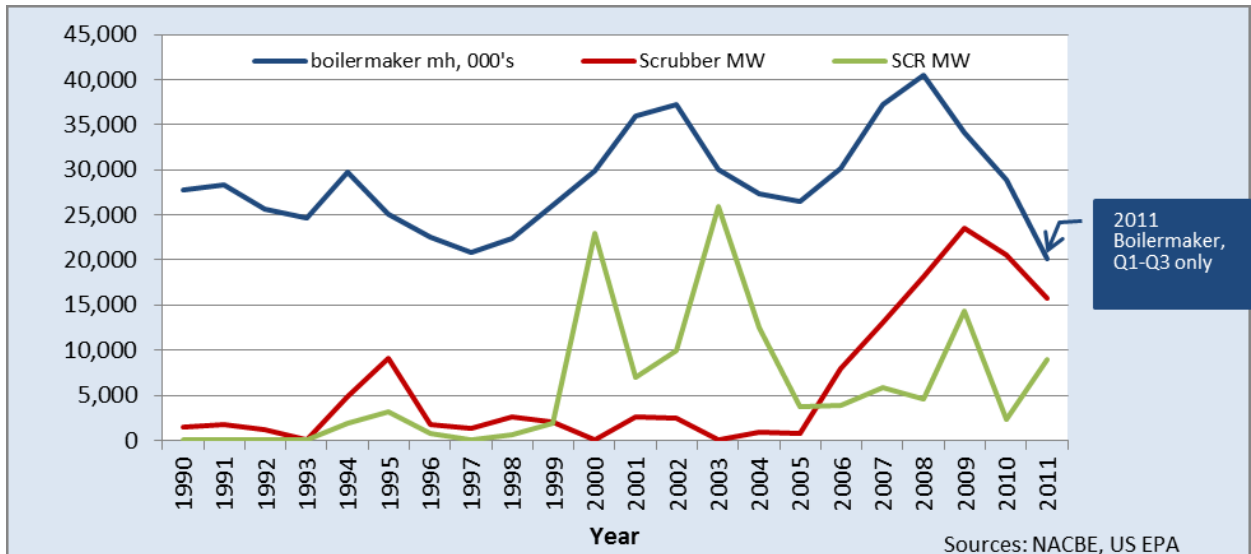


Figure 4. Boilermaker manhours and new scrubber and SCR's in service on coal units



On the positive side . . .

Figure 17 of the Brattle Group report is interesting because it shows that, except for wet scrubbers, they acknowledge that every conceivable control technology can be installed in the MATS time frame when a one-year extension is available. MATS will not be a driver for wet FGD (EPA estimated that it actually lowered FGD retrofits from the base case that includes scrubbers installed for compliance with CSAPR). So, in a sense, this is supportive that MATS doesn't impose a problem vis-à-vis time lines. There are industry reports that try to claim that wet scrubbers would be installed for MATS compliance (see next paragraph), but there is no reason why anyone would install a wet scrubber for MATS because other less costly technologies are available. No one has announced any wet scrubber retrofits for MATS or even a desire to install one for MATS. In fact, with about 60% of US coal generating capacity already scrubbed, and wet scrubbers economically viable only for large facilities using high sulfur coal, it is hard to argue that there are many facilities that would seriously consider adding a wet scrubber. The wet scrubber argument is a red herring.

On the other hand . . .

When examining projected retrofits to comply with MATS, Brattle Group uses EPA's analysis as well as an old analysis from EEI.¹⁰ They are presented as if they are equally relevant or reliable. The EEI study was issued about a year prior to the rule being finalized, and was likely prepared before MATS was even proposed. There were of course major changes between the proposed and final rule that would impact what is necessary to comply with the rule. In this EEI study numerous assumptions are made that overstate the cost to comply with MATS. They assume that all or nearly all boilers need scrubbers to comply with the HCl limit, and that ACI is always used with a fabric filter. As a result they predict many scrubbers, especially wet scrubbers and far too many fabric filters. These projections of course are overly conservative. Moreover, the only difference between the EEI low and EEI high cost estimates is a slight difference in the relative cost of equipment, not whether certain equipment, such as scrubbers, would be used in a particular situation. Figure 18 of the Brattle Group report demonstrates that there is virtually no difference between the EEI high and EEI low estimates. Was the EEI low estimate seriously intended to establish a lower bound? *The EEI report that Brattle Group relies on is at best outdated and is more likely completely unrealistic.*

To make a long story short . . .

The bottom line is that the Brattle Group report for MISO is unreliable for several reasons:

- The local MISO "soft cap" premise is incorrect in assuming that historical efforts cannot be surpassed. Moreover, in estimating the "soft cap" it does not compensate for the fact that the MISO region is relatively unscrubbed compared to the rest of the country, which demonstrates that much greater effort can actually be achieved in the MISO region.
- It severely underestimates the number of boilermakers that are available for utility work and therefore reach bad conclusions about availability of labor for retrofits. To make matters worse, they didn't sanity check this number against their own information about what actually occurred. If they had, they might have looked for better data.
- They also rely on an outdated report by EEI that uses unrealistically conservative assumptions to estimate future retrofit needs.

¹⁰ Edison Electric Institute. (2011). Potential Impacts of Environmental Regulation on the U.S. Generation Fleet. Final Report. January, 2011