

# Andover Technology Partners Consulting to the Air Pollution Control Industry Clearing the Air...

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Dear Reader,

**Happy New Year!** I wish you good health for you and your family in the coming year.

Usually, I wait a quarter to issue a newsletter, but since the utility MACT was issued, I thought it worth a special newsletter.

Jim

## ATP Recent or Upcoming Presentations and Reports



On December 5th and 6th, I participated in the EUCI and ICF International meeting in Arlington, VA regarding the Future of Fossil Generation. I commented at this meeting on the utility MACT, and also learned some useful information regarding natural gas availability. I will provide some comments regarding what I learned in the last section of this newsletter

Our report for LADCO on SO<sub>2</sub> control measures for industrial sources in the LADCO region should be finalized in the next month.

## EPA's Mercury and Air Toxics (MATS) Rule for Utility Boilers Finalized

**EPA has finalized MATS.** Although most of limits on existing units were unchanged, there were a few major changes, including.

- First, the PM limit was changed from total PM (filterable and condensable) to just filterable PM. This will have a large impact on the need for retrofit baghouses compared to the original rule.
- The 30-day mercury averaging limit has remained the same; however, EPA is

allowing a 90-day average but at a lower emission limit (1 lb/TBtu versus 1.2 lb/TBtu) The change in the PM limit is a big deal since for some bituminous units the condensable PM fraction is greater than the filterable PM fraction due to the high sulfate emissions from many bituminous units. This will make it much easier to comply with the PM limitation.

EPA also has indicated that a fourth year would be available largely at the discretion of the states when a facility working to comply with the rule needs more time, and in cases of grid reliability concerns there would be a mechanism to provide a fifth year through an Executive Order process. EPA was careful to stay within the bounds of the law while trying to address some of the concerns raised about available time.

**In its Regulatory Impact Analysis, EPA** made predictions of retrofits resulting from the rule. EPA predicted the following (see page 3-15 of the RIA):

- 6 GW fewer wet FGD with MATS versus its base case
- 22 GW additional dry FGD' with MATS over its base case
- 63 GW of additional FGD upgrades over its base case
- 43 GW of additional DSI systems over its base case
- No change in SCR installations
- 141 GW of additional ACI systems versus the base case
- 101 GW of Fabric Filters over the base case

The FGD upgrades are intended to improve the SO<sub>2</sub> capture of older FGD systems and thereby meet the acid gas requirement by satisfying it through the SO<sub>2</sub> surrogate method allowed by EPA, and these presumably reduce the need for other wet FGD (explaining the reduction in wet FGD). I expect that we will see some scrubber upgrades, but it is hard to say how many. This is a difficult thing to model because the cost and improved performance of a particular scrubber upgrade will be very site specific.

Although EPA's FF projection has dropped from the forecast in the proposed rule, I still think it's too high because it just doesn't agree with what I've been seeing. I think that this is because EPA used some fairly conservative assumptions regarding HCl capture with DSI upstream of an ESP and also conservative assumptions regarding mercury capture with ACI upstream of an ESP. Regarding the HCl capture assumptions, data has been published showing that the HCl limit is achievable in many cases with DSI upstream of an ESP while firing Central Appalachian coal. PM emissions also go down if trona is used, so DSI could help with both the HCl and PM limit. I also know that some east coast utilities are blending PRB with Northern Appalachian coal, and I'd expect many of them to be able to meet the HCl limit with DSI upstream of an ESP. For those few units that are firing 100% NAP or ILB coal and are not scrubbed, they will likely need to do more than just add DSI.

Regarding EPA's ACI assumptions that impact the forecast for fabric filters, EPA assumed that any unit that currently uses flue gas conditioning must add a fabric filter to achieve adequate mercury emissions reduction with ACI. They did not factor in the possibility of changing flue gas conditioning agents to sodium-based conditioning (perhaps even trona). If it will get you where you need to be, a change in conditioning agents is a lot less expensive than a fabric filter. Since some utilities have already received permits to change conditioning agents from SO<sub>3</sub> to something that doesn't interfere with ACI, this will reduce the number of fabric filters from the 100 GW projection. Also, without going into details, while EPA did try to incorporate ESP upgrades into their forecasts for complying with the PM limit, they are still not fully factored in when ACI is planned for mercury control on a unit with flue gas conditioning.

So, regarding the forecast for fabric filters, I just don't see it reaching 100 GW. 50 GW is roughly half of the total capacity that is neither scrubbed nor has fabric filters, and that is what I think may be a pretty reasonable starting point as an estimate for fabric filters. It might be higher than that, especially with some dry scrubbers likely to be installed, but I just don't see it reaching 100 GW.

**Regarding the "hot button" issue of coal plant retirements, EPA projects 4.7 GW** of coal retirements due to MATS, or units becoming uneconomical, which is less than 2% of the installed base. Bear in mind that these are incremental retirements attributable to this rule over and above what may be retired for other reasons. This 4.7 GW estimate for MATS alone seems more reasonable than what I've seen from others (such as NERC, as I commented in my last newsletter), and I expect EPA's forecast is even a bit high due to the conservative assumptions EPA has made in their analysis.

I would not be surprised to see total retirements for all reasons above this number (the coal fleet is aging). Keep in mind that some folks out there are forecasting 50 GW or more of total retirements for all reasons. I think that's far too high, because as I've discussed in previous newsletters the assumptions that underlie those "doom and gloom" forecasts are what I'd call worst-case, "alien invasion" assumptions (scrubbers needed on all bituminous units, fabric filters on nearly all units, cooling towers on nearly all facilities, etc.). The biggest factor that will determine coal retirements is the relative price of gas to coal (even NERC agrees with this - see p 149 of their report), and that gets to the next topic.

## **Lessons from the EUCI Meeting: Gas Prices, and the Threat to Coal Generation**

My last newsletter discussed the dynamic going on with fuel prices - increased coal prices and lower gas prices - and even provided some statistics on coal and gas prices to support the argument. This was in fact a topic that was discussed at the EUCI meeting that I presented at earlier in December. Several experts from the gas industry made presentations - some corroborating my previous comments with some better data, and I wanted to pass on what I learned from them.

Lower gas prices are being attributed to new "unconventional" sources of gas coming onto the market. Questions regarding the size of these reserves and cost of recovering these reserves of US and Canadian shale gas were discussed and debated at the meeting. While these experts may not have been in complete agreement about how much natural gas is economically recoverable from US and Canadian shale, they did seem in general agreement that current pricing - based upon a perception that supply is so vast - is probably unsustainable. Weak US pricing and stronger pricing elsewhere has even motivated some gas companies to explore possible *export* of US LNG. Some of the experts argued that pricing needs to get up to \$8/million Btu (henry hub) in order to reach a point where gas can sustainably be produced from these shale reserves. At current pricing, some argued, some producers are not covering their cost and until some of the small producers get into financial difficulty, the problem with this pricing may not become apparent.

What are the implications for coal? If gas pricing is currently too low, and bounces back up to \$8/million Btu, many of the coal power plants that look questionable today will start

looking far more attractive. Some facilities are already looking at switching to gas to avoid or delay environmental upgrades while buying some time to see what happens with fuel pricing.

Thank you for taking the time to read this. Should you have any feedback, just shoot me an email.

Sincerely,

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