

## Industry Dynamics and NOx Control

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A lot of people are planning to burn natural gas to make electricity when there is no gas infrastructure there to supply them, and none planned. Coal is a significant option, which will mean a huge new market for NOx control technologies.

The numbers are stark. To begin with, a power plant building boom is finally underway. I have been warning that we are rapidly running out of capacity for several years, including at this conference, now things may be changing big time.

According to a new report from Energy Ventures Analysis, over 280,000 MW of new iron is to be built by 2005. More specifically, EVA projects 53.8 GW in new capacity this year, 82.8 GW next year, and 79.6 GW in 2003, or a whopping 216,200 MW in less than 3 years. What a boom! This probably won't happen since much of it is speculative, and EVA notes that the situation is fluid, but let's assume it is true for purposes of analysis.

In addition, many generators are considering switching existing coal fired plants to burn, or at least co-fire with gas. In fact EPA is insisting on some switching to gas in its NSR settlements. This thrust could add tens of thousands of MW of additional iron to the gas lines. Let's say 50,000 MW, also due on line before 2005, or 330 Gigawatts counting all the new stuff.

How much gas all these plants will need depends on the mix of combined cycle, simple cycle and straight boiler iron. Let's assume an average heat rate of 10,000 Btu/kwh for convenience. At that rate the combined peak demand works out to around one billion cubic foot per hour per 100,000 MW of iron. A very simple number indeed. But since gas pipeline and production capacity is usually figured in Bcf/day we get 24 Bcf/day per 100,000 MW of new generating demand. For the 330 Gig we get about 80 Bcf/day.

This projected new demand is roughly equal to the capacity of the entire pipeline system of the United States, estimated at 93 Bcf/day by EIA. A system which can barely keep up with existing winter demand as it is. Moreover, EIA's projected pipeline additions, over the next two years at least, are only about 2.5 Bcf/day.

Conclusion -- the proposed gas-fired power plant boom can't be done with the gas infrastructure we have, or have planned.

The gas is not available, period. Unless we go on what amounts to an emergency war footing, suspend the regulations, etc., and double the nation's pipeline capacity "overnight", at a cost of perhaps a trillion dollars. Not to mention opening huge new gas fields and doubling production. Not likely.

Time to think coal. Coal is widely available, cheap and easy to move.

Of course if you use a lower heat rate, like 6000 Btu/kwh, the potential demand gets smaller. But consider this -- EIA's Bcfd estimates are not for peak capacity. Piping networks don't have a peak capacity, as such. It all depends on how much you want to put in and get out where? The "where" is crucial, which raises a strategic issue of the first order for power plant developers. Where in the present system should power plants be built, and under what input-output scenarios? This is a very complex issue.

Once again, coal is a significant option. Unlike gas, it is widely available throughout the nation. Moreover, it is relatively easy to greatly increase the amount transported. It is a lot easier to add new trains than to add new railroads.

So if we are really, finally, going to build a bunch of new power plants, coal may be a significant part of the fuel mix. In fact it should be. The industry dynamics favor coal, and coal means NOx control.

For more detail, check out my NOx Control Issue Tree at:  
<<http://www.poweronline.com>>.