



## Technical Focus, Energy & Environmental Committee Meetings

September 15-16 2015  
Radisson Hotel, Reagan  
National Airport  
Arlington, VA  
(703) 920-8600

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# MINUTES

### TUES-WED September 15-16, 2015

#### TECHNICAL FOCUS GROUP SESSION

Jason Philpott, Eastman Chemical Company, Technical Committee Chairman

The focus group topic is Natural Gas Purchasing, Delivery, and Utilization Today. The first speaker was **Michael (Mike) Housley** of the Legacy Energy Group who reported on %How to Buy and Have Natural Gas Delivered to Your Plant as Needed+. The cost components of natural gas contracting includes physical natural gas, NYMEX futures, transportation costs, and distribution costs (from the City Gate to the meter). The NYMEX futures market is based on the well head price at the Henry Hub location in the Gulf Coast Region. In the past, transportation from that location to the plant added to the cost. However, with the development of shale gas in other regions of the country, we have now seen delivered prices below the Henry Hub price.

In contracting, there are %Contract Quantity+accounts, Maximum Daily Quantity (MDQ) accounts, and spot purchases. There should be a transportation agreement with the gas utility. There should be a utility account representative. This agreement should be reviewed. Issues include the expiration date, auto renewal, maximum daily quantity, and accuracy.

For one %medium volume first transportation service+, the average monthly usage must be greater than 2000 MCF, MDQ less than 500 MCF, and be subject to availability of adequate gas transmission and distribution (T&D). There are also charges for %unauthorized or authorized overrun charges+. There is a fixed charge for being %booked up+. There was a transition charge of \$15 K. Contract language stated that the utility would consider a written request to reduce the contract MDQ. The requirement would be that a permanent change has occurred and is expected to persist for 3 years. If the reduced MDQ is subsequently exceeded, there would be substantial penalties.

Transportation agreements are generally written in favor of the gas utility. Some states do have requirements to review customer usage annually and have the MDQ adjusted. It is still incumbent upon the user to check to make sure that such adjustments have been made. An Operational Flow Order is a mechanism to protect the operational integrity of the pipeline. This order requires shippers to adjust flow in the pipeline, if needed. The term of the contract, the volume, and the type of contract (fixed price or basis) needs to be considered. Hedging strategy needs to be carefully considered (how much now, how much later, triggers, and deadlines). Hedges never go according to plan. They tend to be overly conservative (too much gas, too high price, too far out). There are also the %procrastinators+. They put off making decisions, try to wait for the %bottom+, and guess the market.

Today's market has been varying from plus 20 cents to minus 60 cents from the basis in the Pennsylvania market. In New England, the variance has been plus \$2 - 3/MMBTU over the basis,



which is already high (\$12 - 13/MMBTU). Risks still abound. Don't be in the spot market in the winter. Avoid hedging winter gas at high basis prices. Go long at the right time. Interruptible contracts need to be truly interruptible. There is still some question that needs to be clarified with state agencies. An order to be interrupted that still allows gas to flow, but at a price penalty, would not be considered a curtailment for Boiler MACT compliance purposes (i.e. using an alternate or emergency fuel).

**Tina Read** of the Energy Solutions Center reported on the Latest in Application, Use, and Safety of Natural Gas as a Boiler Fuel. World energy consumption continues to rise. Natural gas has increased market share due to lower emissions, price (in some cases), and use of existing equipment. GHG emissions have become a significant issue in the developed world. Emissions levels are typically lower for natural gas. Gas prices in several locations in the country are approaching coal prices. In many cases, an existing coal fired boiler can be converted to natural gas with modest modifications (burner mods and superheater surface). Operating conditions need to be considered (seasonal, base load, peaker, back up, etc.). On a recent boiler conversion for an industrial boiler, the first requirement is to identify the process needs of the plant. The conversion was driven by cost and compliance issues. Natural gas is lighter than air such that a leak tends to dissipate (as compared to oil or propane). On an overall basis, gas is a relatively safe fuel.

**Bob Youmans** of Zeeco, Inc. reported on Natural Gas Burner Safety Requirements. For pulverized coal plants that convert to gas, many of the safety requirements are similar (NFPA requirement). For stokers, additional safety considerations need to be addressed. Gas fired burners are now capable of 9 ppm NO<sub>x</sub> (at 3% oxygen). This is equivalent to 3 ppm NO<sub>x</sub> on a gas turbine. Burner management systems provide field devices, logic, and final control elements dedicated to the safe combustion of fuel.

The National Fire Prevention Association (NFPA) has developed safety standards that avoid unsafe conditions in burner start up, operation, and shut down. The BMS monitors the condition of the firing system and executes a master trip should unacceptable firing conditions occur. Certain permissives have to be met before anything can start up. Two key concerns are drum level and air flow. The drum pressure and drum level protects the pressure parts. The air flow protects the fire side of the equipment.

When converting to gas, NFPA will require an FD fan to drive air through the burner. The pressure in the burner zone will be slightly more positive than the original design of a balanced draft, coal fired unit. For balanced draft units, the ID fan starts first and then the FD fan. The next set of premissives includes the fuel supply pressure, atomizing medium, fuel valves closed, and no flame present. The air flow purges the boiler so that no residual fuel is present. A proper purge requires at least 5 volume turnovers and 70% of the air flow. Testing is usually required to establish the 70% air level on purge. For multiple burners the minimum is 5 minutes. From the completion of purge, there is a 10 minute time limit to establish a flame. Otherwise, another purge is required. Once the purge is complete, the air damper is reset to the low fire position and the fuel valve is set to low fire position. The ignitor is energized and flame must be proven within 10 seconds. Once the flame is established, the ignitor can be turned off. Then the boiler can be warmed up in accordance with the manufacturer's requirements.

These standards and times are considerably different from the startup of a stoker fired boiler. Once in operation, there are a number of systems that are monitored to determine the need for a trip. For



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gas firing, low gas pressure, high gas pressure, loss of combustion air, loss of flame, loss of control system, loss of power, low water level, and excessive drum pressure are permissives that will trigger a boiler trip. There are also standards for safe shut down from a trip. These procedures all need to be written down and maintained for environmental compliance reasons.

## **GOVERNMENT AFFAIRS SESSION**

**Anthony Reed, Archer Daniels Midland Co., Government Affairs Committee Chairman**

**Frank Maisano, John Lee, and Curt Beaulieu** of Bracewell & Giuliani LLP were present to report on Congressional activity. Curt pointed out that Congress just returned and has a very busy schedule. The Iran Treaty vote, the end of fiscal year, as well as Congressional testimony are scheduled for September. An election year is coming up, which is overshadowing activity by Congress. In the last quarter, there are a substantial number of tax and funding issues that will need to be addressed, as a number of these are scheduled to expire. Some of these can be made permanent. Some will be allowed to expire. Most will be extended for another 2 years.

The energy bill will have hearings and discussions this year. However, it is unlikely that anything will be passed. Given that next year is an election year, should a bill come up during that time, there will be very little opportunity to have any influence over what is in the bill at that time. Input will be required now during the discussion period.

Internationally, there is the Paris climate meeting towards the end of the year that has high expectations. John Lee reviewed some of the issues for Hill visits. Thermal energy is the theme, but the Clean Power Plan and the anticipated NAAQS ozone standard could also come up. Combined heat and power will be the subject for the potential energy bill. With the election coming next year, most Congressional activity will have to get done by the end of March. There is some effort to have some bipartisan issues in the House and Senate energy bills. However, with all of the issues that are involved in energy, it is difficult to find a lot of issues that can be endorsed by both parties.

Panel Discussion - **Frank Maisano**, Bracewell & Giuliani, LLP

Frank introduced two media specialists (**Nick Giuliano** and **Jean Chemnick**) that attempt to translate complex issues into news issues that can be reasonably understood. Nick is the deputy editor at Politico. Their readership tends to be government, legal, and lobbyist types. The House and Senate are preparing energy bills. Topics such as combined heat and power, oil exports, renewable energy credits, and energy efficiency are being considered in these bills. Jean covers the Clean Power Plan and the upcoming COP meeting in Paris. The goal of this year's conference is to come to some kind of international agreement on GHG reductions. While Politico is primarily DC oriented, they are expanding into some of the states. They would look at something new, or at least a new approach. Exclusive stories are a favorite. Relative to the GHG issue, China and India may be difficult for an international agreement. The Administration is pushing hard to include China and India ahead of the Paris meeting.

## **ENERGY SESSION**

**Frederick (Fred) P. Fendt, The Dow Chemical Company, Energy Committee Chairman**

**Robin Mills Ridgway, Purdue University, Energy Committee Vice-Chairman**



**Robert (Bob) Corbin**, CIBO Member Consultant, introduced the guests and new members. **Robert (Bob) Bessette**, CIBO President, provided the antitrust admonition. The introductions were done. DOE has issued a report on the barriers to industrial energy efficiency. The report breaks down the barriers into end use issues, demand management, and CHP. The end use issues include scarce capital, financial returns, split incentives, failure to recognize co-benefits, and organizational structure. Regulatory issues were also noted. New Source Review got a one sentence mention. Congress requested the report with the intent of allocating some funding towards industrial energy efficiency issues.

**Frederick (Fred) P. Fendt**, The Dow Chemical Company reported on moving energy opportunities forward. In his case, anything with a payback longer than 2 years would not be accepted at his company. Initially, something like 9% of the proposed projects were executed. Subsequently, this figure has increased to 12%. One of the problems is actually confirming the savings. As production levels change and products change, the energy use changes. Of necessity, there have to be corrections to the savings calculations to make the comparisons correct. This leads to credibility issues.

Another business culture issue is the emphasis on growth. An energy savings project that produces a million dollars of savings with a one or two year payback is not treated the same as a project that adds a million dollars per year of growth. Another issue is the level of metering at the plant. Many older plants harken back to the time when sensors were expensive. Now that sensors are much cheaper, it is easier to meter and monitor usage, which can lead to better justification for efficiency projects.

Rate plans are another issue for plant owners. There are many different rate plans from a utility system. Examining the plans and understanding the operation to make sure that the plant is in the right (i.e. lowest cost) plan is required in order to benefit. Case studies might be one way to gain both credibility and attention. Perhaps a database of successful projects would also be a good tool for members. Corporate sustainability programs could also include energy efficiency. The EPA energy star program provides awards to companies that demonstrate good energy efficiency programs. Another idea might be for CIBO to advertise some kind of award for members.

**Gary Merritt**, Inter-Power/AhlCon Partners, L.P., pointed out that we are organizing a Fuels Sub Committee. A statement of purpose and objectives has been prepared. Members are encouraged to go to the CIBO website and review the document and comment. A fuel/energy equivalent comparison has been generated to provide a means for looking at the delivered price of fuel and comparing on a common basis.

## **ENVIRONMENTAL COMMITTEE SESSION**

**Stephen (Steve) Gossett**, Eastman Chemical Company, Environmental Committee Chairman  
**Robert (Rob) Kaufmann**, Koch Companies Public Sector, LLC, Environmental Committee, Vice-Chairman

**Brittany Pemberton**, Bracewell & Giuliani, LLP noted that CIBO participated in the review of the EPA NOx Cost Estimating Manual. The Congress pressed EPA to update the manual, which was last revised in 2002 and used 1998 cost data. Both installation and O&M costs were to be



estimated. The American Chemistry Council led the coalition that filed comments. The comments focused on the fact that there was too much reliance on utility data, too much emphasis on capital cost vs operating cost, incorrect treatment of capital charge rate, performance testing costs, retrofit costs, product life, and contingency factors. The EPA has scheduled September 2017 to complete the manual. **Vince Albanese**, Fuel Tech, Inc., pointed out that while there are many SNCR installations on industrial units, there are very few SCRs on industrial units. The scale down from an 800 Mw unit to a 10 . 20 Mw unit can result in substantial increases in cost/Kw. Considerable scrutiny should be applied to those cost figures.

The Ozone NAAQS are expected to be released by October. Industry has filed comments on EPA's proposals and recommended that there be no change in the ambient NOx standard. EPA has estimated the cost (see above) of a 65 - 70 ppb standard at \$3.9 billion/yr. Others have estimated figures at \$140 - 150 billion/yr. Current rumor is that a proposal is at OMB that requests 70 ppb. Rumor also has it that the White House is pushing for 68 ppb. There is also a rumor that the unions are lobbying the White House for 75 ppb (current standard) on the grounds of protecting jobs. With a 70 ppb standard, between utility shut downs of coal units and industrial conversions of coal units to gas, there may not need to be a substantial requirement on industrial units for this round of the standard. Anything lower than 70 ppb requires substantial cost.

**Jay Hofmann**, Trinity Consultants, Inc., reported on NAAQS Dispersion Modeling. SO2 designations and data requirements refer to EPA's approach to non-attainment designations. SO2 doesn't disperse as rapidly from a plume. EPA was concerned that there were not enough monitors to pick up ambient air violations. There were some areas with very large SO2 sources that were not designated. There were 29 areas that were designated as non-attainment from monitors. By December 31, 2020, all areas must be designated (either attainment or non-attainment). The mid-west had most of the non-attainment areas. The source applicability threshold is 2000 ton/yr of actual SO2 emissions. Based on 2011 emissions data, this value accounts for about 400 sources and covers about 90% of all US SO2 emissions. Based on current data, about 10% fewer units are affected.

The problem for industrial units comes in when the plant is in relatively close proximity to one of these large sources. The states have to then come up with a monitoring or modeling program to further characterize air quality. If a state can demonstrate enforceable limits on sources below 2000 ton/yr by Jan 2017, it can be exempted. Theoretically, states are required to do all the modeling and monitoring work. Any source on the final list will be modeled or monitored. By January, states have to identify the list of sources. By next July, states have to specify whether an area will be modeled or monitored. States have to submit documents by Jan. 2017.

A major conference on air quality modeling was held in August. Updates have been made to Appendix W and changes have been made to AERMOD. Appendix W is the rule book on modeling. A lot of guidance has been issued since the last modification in 2005. A formal revision is now planned for spring 2016. AERMOD is now the work horse model. Some of the older algorithms have been replaced. For reactive chemistry (ozone formation and secondary PM2.5), atmospheric chemistry has to be addressed to get to the final concentration of ozone, for example. CALPUFF is no longer required. Prior requirements added 50 km to the significant impact limit (SIL) distance. Now, EPA is indicating that the SIL distance would be the requirement (something closer to 2 or 3 km). There is also an indication that actual emissions might be modeled as opposed to permitted limits for existing units.



Background monitors can now be thrown out for establishing background levels if they fall within a 90 degree cone from the plant. Overall, there are reduced nearby source inventory requirements, smaller modeling domains, some reduced consistency, and perhaps some reduced modeling costs. One of the issues is the ambient ratio of NO<sub>2</sub> to NO. At the stack most of the NO<sub>x</sub> exists as NO. As the plume disperses, the NO converts to NO<sub>2</sub>. The question becomes how much. The new default ratio is 0.5. This assumes that more NO<sub>2</sub> is formed. In the past, as low as 0.2 could be used (i.e. less NO<sub>2</sub> is formed).

**Ann McIver**, Citizens Thermal reported that CIBO is doing some work with Alpine Geophysics on industrial contributions of ozone to the East coast with the Mid-West Ozone Group (MOG). A lot of data analysis is being done to look at potential contributions from the Mid-West to the I-95 corridor. There has been a request for several of these states to join the Ozone Transport Region (OTR). Preliminary analyses appear to show the most of the ozone in the I-95 corridor is now due to mobile sources. With the shutdown of a number of coal fired power plants and the conversion of industrial coal units to gas, the industrial contribution is expected to be small (<10%).

**Mike Zebell**, Environmental Resources Management, reported on the Clean Power Plan. There were 4 million comments which resulted in changes to the proposed rule. There is now a little more flexibility for the States. The rule applies to fossil power EGUs. Mass based and rate based goals are allowed in the rules. State wide plans are preferred over EGU specific standards. Trading Ready+criteria for intra and interstate trading allows for more trading possibilities.

The final goal is 32% reduction in CO<sub>2</sub> emissions by 2030. State plans are due in September 2016, with the possible extension to 2018. Interim goals are given for 2022. Some states will need to go to the State legislature for approval to implement some of these rules. However, in order to get an extension some plan has to be submitted by 2016.

There are now 3 building blocks: power plant efficiency, fuel switching, and increased renewables. There are provisions for exceptions, particularly for grid reliability. States can design rate based or mass based plans that will make their units trading ready+. Emission rate credits will be given to early reductions (2020 - 2021). There will likely be legal challenges. There are implications for multi-state plans. There is potential for stranded assets.

There is an exclusion for CHP units. The traditional definition of an EGU is one that is more than 25 Mw and sells 1/3 of the power to the grid. Now as long as there is a significant thermal host, the unit could be exempt. Thus, with a large steam host and a small electrical output, the 1/3 sales requirement no longer applies. Also, there will be a set aside in a trading system for adding a more efficient CHP system. The wording on the CHP changes still needs to be carefully reviewed. The purpose statement was modified to be connected to the grid+and capable of selling 25 Mw to the grid. This wording has caused confusion.

Also, states that want to trade with each other must be based on the same system (i.e. either rate based or mass based). States are being urged to talk to their neighbors. Emissions monitoring and verification can also be a problem.



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**Gary Merritt**, Inter-Power/AhlCon Partners, L.P., pointed out that a number of issues on ash and water are in litigation. Effluent guidelines are due to be finalized. There is also an aggregating proposal that could turn an independent source into a covered source. More to follow.

Boiler MACT - **John C. deRuyter**, E.I. DuPont de Nemours & Company

**Robert (Bob) Bessette**, CIBO, reported that we are in the process of updating the Boiler MACT database. **Jack Fuller**, West Virginia University, and his graduate students are working to get the latest information. The goal is to determine how each plant is addressing MACT compliance. With the information that is received, we will be able to have some input to states that will need to file SIPs as a result of the anticipated new ozone standard. The information will also help with our work with Alpine Geophysics and MOG.

**John C. deRuyter**, E.I. DuPont de Nemours & Company, reviewed the presentation done by **Jim Eddinger** of EPA at the Industrial Emissions Control Technology XIII Conference and Natural Gas Conversion Workshop in August. The various rules that are in place for utility and industrial boilers were reviewed. The time line for Boiler MACT was reviewed, but no date was given for the final reconsideration. The definition of startup and shut down, the CO discussion, and the use of PM CPMS were the issues taken up in the reconsideration. There are a number of issues in litigation. Oral arguments are scheduled for Dec. 3, 2015. Issues include the pollutant by pollutant approach for setting standards, work practice standards for CO, work practice for malfunctions, health based standards, use of CO as a surrogate, and the type and number of sub categories. Area Sources also have some issues including start up and shut down, alternative PM for oil, and work practice for malfunction.

The MATS rule for EGUs was reviewed. The Clean Power Plan schedule had just been released, so not much was covered on that topic. Relative to the reconsideration, the basic work appears to be done. However, the words are being tweaked in an attempt to avoid sending the rule to OMB. There is also some thought that EPA would like to wait until the oral arguments are done in case some issue needs to be revisited. At this point, the compliance date will not change. A letter to EPA requesting the release of the reconsideration rule might be in order.

Litigation - **Lisa Jaeger**, Bracewell & Giuliani, LLP

The Boiler MACT litigation will have oral arguments in December. The NHSM rule was upheld. The environmental groups requested rehearing, but the Courts have denied the request. There are a number of cases that will be consolidated in 2016 on the Boiler MACT reconsideration issues. The MATS reconsideration is in abeyance. The 316 (b) challenge is in the 2cd Circuit Court. The SSM SIP Call is in the DC Circuit Court. Waters of the US is a mess. The Chromium MACT decision went in our favor, but the environmental groups have requested a rehearing. The affirmative defense for malfunctions is in abeyance.

For the NHSM rule, the request for rehearing was based on arguments that EPA had interpreted and discarded, ignored waste exemptions, and would allow waste combustion by area sources not subject to standards. EPA and industry opposed. The Court denied the request for rehearing.



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The Clean Power Plan (CPP) for existing sources will be published in late October. It is anticipated that the NSPS rule will be published at the same time. Any law suits would have to be filed by late December. The CPP Federal Plan is anticipated in October. There will be a 90 day comment period. This plan will provide a model for the states for implementation of the CPP. The law suits to block the rule were denied on the basis that the rule is not final. With the announcement of the rule, the suits were refiled. The Court again denied on the basis that the rule is not final. In the WV District Court, Murray Energy claimed the EPA did not conduct sufficient analysis. The Court has allowed this case to proceed.

On the MATS rule, the Supreme Court held that the EPA must consider cost when determining whether to regulate HAP emissions from utilities. The MATS rule was remanded to the DC Circuit Court. EPA has stated that the MATS rule will be re-issued by April 2016 complete with cost/benefit analysis as required by the Supreme Court. They will seek to remand the rule without vacatur, which leaves MATS in place. The suits in abeyance would still be held off.

The affirmative defense issue was denied by the Court. EPA is working to remove affirmative defense from 9 rules. In the SSM SIP Call case, 17 states and a number of industrial groups challenged the EPA SIP call sent to 36 states. There are 5 additional cases in Texas. These will likely be consolidated as well. Texas has separate permit limits for startup, shut down, and maintenance+(not malfunction).

There is a law suit over the coal ash rule. The environmental groups have claimed that the EPA rule is not protective of health and the environment. Industry has claimed that regulation of inactive surface impoundments is illegal as well as a number of procedural issues. Some of the requirements were objected to as arbitrary. In Waters of the US (WOTUS), the number of law suits is growing. With the number of cases and Courts involved, EPA has filed for a Multidistrict Litigation request to consolidate the requests into one suit in one Court. There will be a hearing on this request in October. The filing in North Dakota was allowed and this Court has issued an injunction in 13 states. There is also a request to the Circuit courts for a Multi Circuit jurisdiction.

The Utility Effluent Limit Guidelines are anticipated by the end of the month. There have been 2 Freedom of Information Act (FOIA) requests claiming that data submitted as confidential (CBI) should not be confidential and that business had undue influence on the rule. The latter has been denied.

On the social cost of carbon (SCC), a number of comments have been filed. On the definition of solid waste, the case is at the DC Circuit Court.

Natural Gas Conversion Options - **Amber LeClair**, The Babcock and Wilcox Company

**Amber LeClair** reviewed the material that she presented at the Industrial Emissions Conference in Portland. Options for conversion include co-firing, burner replacement, full modification (pressure parts), and a new boiler. The combustion of gas generates more water vapor due to the high concentration of hydrogen in methane (25%). The additional water vapor increases the stack loss so that the boiler efficiency decreases by 3 percentage points when compared to coal. Heat distribution will be different due to the change in radiative properties. The OEM should be involved with the conversion to check the need for pressure part modifications. A general conservative guidance would be that a coal fired boiler could be converted to fire gas without pressure part changes and attain 70%



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capacity. Lead times range from 18 to 52 weeks depending upon fans, burners, valves, and the burner management system (BMS). Of these, the BMS has the longest lead time. Fans and motors are next on the list.

**Next Technical Focus Group/Environmental & Energy Committee Meetings**

**TUESDAY & WEDNESDAY, December 8-9 2015**

**Please note the location change for the December Meetings Only**

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