2874

ConocoPhillips

Marla K. Benyshek
Director, Fuels Regulatory Issues

132 AL BTC
Highway 60 & 123
Bartlesville, Ok. 74004
Phone 918-661-4056
e-mail marla.k.Benyshek@conocophillips.com

November 22, 2010

Environmental Quality Board
P.O. Box 8477
Harrisburg, PA 17101-2301

ConocoPhillips appreciates the opportunity to comment on the proposed amendments to the Pennsylvania Code regarding commercial fuel oil sulfur limits for combustion units. ConocoPhillips is one of the largest producers and suppliers of heating oil to the northeastern and mid-Atlantic states. We own and operate 12 refineries throughout the United States; five of our refineries have local, pipeline and/or waterborne access to the northeast region. We would be directly affected by this rulemaking. **ConocoPhillips strongly opposes the proposed cap of 15 ppm sulfur for No. 2 fuel oil and the 0.5% cap for No. 5 and No. 6 fuel oil in 2012.** We offer the following comments and recommendations.

ConocoPhillips supports a reduction in heating oil (No. 2 fuel oil) sulfur content to 500 ppm in 2014

The refining industry, through the American Petroleum Institute (API) and the National Petrochemical and Refiners Association (NPRA), uniformly supports a heating oil sulfur reduction to 500 ppm in 2014. This industry position was conveyed at a MANE-VU meeting with industry stakeholders held in February, 2009. It represents a significant reduction in sulfur that recognizes the national transition of transportation fuel sulfurs and the timing necessary to affect changes with large capital outlay requirements.

A step down to 500 ppm sulfur in 2014 would also be consistent with the rules recently adopted by the neighboring state of New Jersey. The State of New Jersey looked at timing considerations during their rulemaking process and set a 500 ppm standard effective July 1, 2014. In the New Jersey rulemaking, it states that a study by Hart Consulting in February 2010, entitled "Ultra Low Sulfur Heating Oil Assessment," concluded that given the tight market outlook, higher premiums of 20 to 30 cents per gallon for distillate oil would prevail if sulfur content in heating oil were significantly reduced without sufficient time for installing additional desulfurization capacity at the refineries. According to the New Jersey DEP, the Hart Study concluded the needed time for refineries to install desulfurization capacity was four-years.

Industry need for 4 years advance notice

The refining industry has invested extraordinary sums of capital under the U.S. EPA distillate sulfur reduction programs for transportation fuels. These programs encompass motor vehicle, non-road, locomotive and marine applications and are phased in over an 8 year time period. Refiners, under the provisions of the Federal rule and through the use of banked credits, can continue to produce and supply 500 ppm non-road diesel through mid 2012 and 500 ppm locomotive and marine diesel through mid 2014.

The Pennsylvania proposed rulemaking states "the Department believes that this sophisticated industry has the technical capacity for implementing the program because sulfur limits have been established for 30 years". The refining industry does have the technical expertise to remove sulfur from diesel streams. However, the refining industry has not fully invested in new equipment and infrastructure required to remove sulfur from distillates that are currently sold as heating oil and, in particular not to the ultra low levels suggested by the Pennsylvania regulation.

Installing new processing equipment to reduce diesel sulfur content is both capital and time intensive. Project development for new or expanded diesel desulfurization units takes at least 4 years, and refiners have recently been experiencing additional time required to secure necessary permits. One reason the Federal diesel sulfur reduction program has been so successful is that EPA provided ample time for the refining industry to plan and execute the necessary projects. The EPA adopted the Highway Diesel rule in June 2001, giving refiners 5 years to invest in desulfurization. EPA adopted the Non-road Diesel rule in June 2004 giving refiners 3 years to invest in additional desulfurization capacity to produce 500 ppm sulfur diesel for the non-road, locomotive, and marine markets with an additional 3-5 years to further reduce to 15 ppm sulfur levels. EPA also included credit banking and trading provisions that allowed continued production and use of 500 ppm sulfur diesel for an additional 2 years.

Because the capital investment to remove sulfur from fuels is so costly, refiners tend to limit investments to cover only those volumes needed to meet demand for volumes subject to regulatory requirements. Although the technology is the same to remove sulfur from heating oil, the current equipment in place at refineries to remove sulfur from highway diesel has limited capacity and is not adequately sized to also treat heating oil volumes to remove sulfur. According to the EPA's Summary and Analysis of the 2009 Non-road Diesel Pre-compliance Report, refiners reported plans to continue to produce high sulfur diesel for the heating oil market at some of their facilities. The summary report contains the following

> As mentioned previously, 140 refineries reported to EIA that they produced low and/or high sulfur distillate fuel in 2003. Twelve of these refineries either reported that they have no plans at present to produce 15 ppm diesel fuel by June 1, 2014, and 11 refineries did not send an NRLM pre-compliance report to EPA in 2009. In 2003, these 23 refineries produced a total of 122,000 bbls/day of diesel fuel containing less than 500 ppm sulfur, and 136,000 bbls/day of distillate fuel containing more than 500 ppm sulfur. We cannot tell at this time if or when these refineries might choose to produce 15 ppm diesel fuel, or whether they will simply choose to produce heating oil indefinitely.

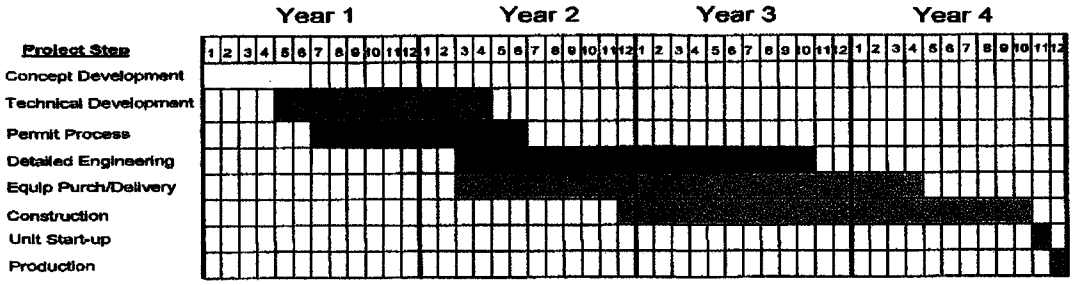
Facilities need a 4 year lead time to accomplish the budgeting, engineering, installation and start-up of the necessary hydro-desulfurization equipment to reduce the sulfur content in heating oil. The proposed timing of this rulemaking of May 1, 2012 is infeasible. From start to finish, these large-scale desulfurization investments involve numerous activities that occur either simultaneously or on an overlapping schedule, which include:

- Capital planning and project financing
- Engineering design, equipment procurement and fabrication
- Obtaining numerous state and federal environmental permits

- On-site construction and integration into existing refinery infrastructure
- Operator training and startup of new process units

Shown below is a chart that illustrates a realistic project timeline for a heating oil sulfur reduction investment in a major refinery. This timeline does not consider new timing schedule that may result from additional green house gas permitting requirements.

Project Development Schedule
Heating Oil Hydro-Desulfurization Investment



Key Milestones:
- Securing required permits
- Delivery of major equipment

Distribution System Impacts
Heating oil supply to Pennsylvania comes from multiple sources, including in-state refineries, Gulf Coast refineries via Colonial Pipeline, and foreign imports via ship. Currently, the distribution pipeline and terminal systems are accommodating multiple grades of distillate (ultra-low sulfur diesel, low sulfur diesel, heating oil, and jet fuel). The Pennsylvania proposed rule states "another benefit is that consistency of No. 2 commercial fuel oil sulfur content limits with highway and nonroad, locomotive and marine (NRLM) transportation diesel sulfur content limits would help refinery owners and operators ..... minimize the number of tanks.. needed". Since refineries and terminals are already currently handling the multiple grades, even if some consistency were achieved, minimizing the number of tanks is not a significant benefit and is completely dwarfed by the capital and time requirements to install additional refinery desulfurization equipment.

Currently, pipeline interfaces between higher sulfur jet fuel and ULSD can be blended into low sulfur diesel or heating oil. Once the ULSD non-road diesel is fully implemented, this interface could still be blended into heating oil. The Pennsylvania proposal for 15 ppm sulfur heating oil would eliminate this key distribution system flexibility, resulting in the interface having to be returned to a refinery for reprocessing. The additional transportation and reprocessing induced by the proposed rule creates otherwise avoidable inefficiencies in the system.

Supply from Imports
According to a recent study by Hart Energy Consulting, approximately 20% of the East Coast's heating oil supply comes from refineries outside the United States. The

importance of heating oil imports should not be underestimated, particularly during periods of extreme cold when heating oil demand increases. ULSD demand in the transportation sector is expected to rebound further as the economy recovers. Furthermore, the potential for resurgence in ULSD demand as the European economy strengthens cannot be overlooked – cars are fueled predominantly by ultra-low sulfur diesel rather than gasoline throughout the EU. Refineries in Canada, the Virgin Islands, Europe and elsewhere that provide heating oil volumes to the United States have the same lead time needs to install additional desulfurization equipment making a May 1, 2012 date infeasible. The proposed 15 ppm sulfur standard for heating oil would establish the lowest sulfur standard for heating oil in the world.

Technical need for 15 ppm sulfur heating oil is unfounded

There is no technical need for a 15 ppm sulfur standard for heating oil. EPA imposed a 15 ppm sulfur standard for highway diesel and non-road diesel for the specific purpose of enabling the use of vehicle engine and equipment after-treatment devices to achieve wide-scale reductions of nitrous oxide and particulate matter emissions. There is no comparable technology-enabling device that requires 15 ppm sulfur *heating oil*. In fact, the highest efficiency condensing boiler/furnace systems can be fired by either natural gas or heating oil. We have not found any equipment manufacturer's specifications that require the use of ultra-low sulfur heating oil or any study demonstrating the emissions benefits of condensing boiler/furnace systems. From an engineering thermodynamics perspective, a more advanced heating system does not automatically mean it produces fewer emissions.

In the Proposed Rulemaking, in the Background and Purpose section, reference is made to NESCAUM's study and evaluation of emission reductions using low sulfur heating oil. A 2005 NESCAUM study entitled Low Sulfur Heating Oil in the Northeast States: An Overview of Benefits, Costs and Implementation Issues states "Reducing the sulfur content of heating oil from an average of 0.20 percent to 0.05 percent lowers the rate of sulfur oxide emissions by 75 percent". As stated earlier, the industry does support a reduction in heating oil sulfur to 500 ppm in 2014. This would result in sulfur oxide emission reductions of over 80% (using Pennsylvania's current 0.30 percent specification going down to 0.05 percent) and would implement a sulfur reduction plan and timing that is supported and doable by the refining industry - the producers of heating oil.

No. 5 and No. 6 fuel oil proposed sulfur levels are too stringent

ConocoPhillips produces heavy fuel oil streams from our East Coast refineries located in Linden, New Jersey and Trainer, Pennsylvania. Any change in heavy fuel oil sulfur specifications will directly impact these refinery operations. In ConocoPhillips view of the residual fuel oil marketplace, a sulfur standard reduction all the way to 0.5% (5000 ppm) will leave refineries with no viable options for disposition of these fuels other than export.

Sulfur removal from residual fuels (heavy fuel oils) is technologically difficult, very costly, and usually economically prohibitive. As a result, refiners would not invest only for the purpose of desulfurizing heavy fuel oils. They might alternately assess the massive investments required to upgrade these heavy fuel oils to lighter distillates such as highway or non-road distillates.

Dilution of these heavy fuel oils to meet a 5000 ppm sulfur standard is not a viable solution. For example, a 10,000 ppm (or higher) sulfur content No. 6 oil cannot be blended down to 5000 ppm using heating oil or transportation diesel as these lighter distillate fuels results in certain No. 6 fuel oil properties being off-specification (such as density, flash point, and viscosity). In addition, dilution would swell the volume of residual fuel oil to a level that far exceeds the size of the market, yielding product volumes with no outlets but perhaps export.

Additionally, there is strong economic disincentive to downgrade higher-valued heating oil or transportation diesel to the lower-valued residual fuel oil product (i.e. attempting to meet the specification through dilution). Significant downgrading of these higher-valued products would result in greater supply-demand tightness in the heating oil and transportation diesel markets.

Should sulfur reductions be necessary in these heavy fuel oil products, a standard higher than 0.5% is needed with 0.7% offering some needed flexibility.

Sampling and Testing Requirements

The proposed rule calls for every terminal to develop and implement a sampling and testing plan. Requiring every terminal to test the commercial fuel oil for sulfur is unwarranted. Pipeline and terminal operators have vast experience in transporting, storing, and dispensing products in a manner that is protective of product quality. Refineries must test and certify that their products meet applicable specifications prior to leaving the refinery. Pipelines transport the products from the refineries and deliver the products into terminal tankage while maintaining the integrity of the product. Re-testing of all volumes in the terminal is an unnecessary burden on the terminal and should not be required.

Conclusions

The State of Pennsylvania should not adopt the proposed 15 ppm sulfur heating oil or the 0.5% sulfur heavy fuel oil standards effective May 1, 2012. If heating oil sulfur reductions are necessary, the state should consider a 500 ppm sulfur standard for mid-year 2014, which would align it with the neighboring state of New Jersey. A 500 ppm sulfur standard in 2014, which is supported by the refining industry, provides significant sulfur oxide and particulate matter emission reductions as well as the necessary lead time for refineries to complete needed modifications to be able to produce lower sulfur heating oil.