

COMMONWEALTH OF PENNSYLVANIA



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IRWINA. POPOWSKY  
Consumer Advocate

April 16, 2010

James J. McNulty  
Secretary  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building  
400 North Street  
Harrisburg, PA 17120

RE: Marcellus Shale En Banc Hearing on PUC  
Jurisdictional Issues  
Docket No. I-2010-2163461

Dear Secretary McNulty:

Enclosed are the Comments of the Office of Consumer Advocate, in the above-referenced proceeding.

Should you have any questions, please contact our office at the number above.

Respectfully Submitted,

A handwritten signature in cursive script, appearing to read "James A. Mullins".

James A. Mullins  
Assistant Consumer Advocate  
PA Attorney I.D. # 77066

Enclosed

cc: Jennifer Kocher, Office of Communications – via e-mail only

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BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Marcellus Shale En Banc Hearing  
on PUC Jurisdictional Issues

Docket No. I-2010-2163461

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COMMENTS OF THE  
OFFICE OF CONSUMER ADVOCATE

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Dated: April 16, 2010

## I. INTRODUCTION

The Office of Consumer Advocate (OCA) commends the Public Utility Commission for initiating this examination of the myriad issues related to the Marcellus Shale drilling operations and looks forward to participating in the En Banc Hearing to be held by the Commission on April 22, 2010. In the OCA's view, the development of the Marcellus Shale could have profound impacts not just on natural gas consumers in Pennsylvania, but on electric, water, and wastewater customers as well. Many of these impacts, particularly for natural gas and electric consumers, could be extremely beneficial. To the extent that natural gas supplies in this Commonwealth and in this region can be significantly expanded, there is a potential to reduce and stabilize natural gas prices, which will benefit the more than half of Pennsylvania residents who heat their homes with natural gas, and could also help reduce wholesale and retail electric rates, which have become increasingly influenced by the cost of natural gas as a fuel for electric generating plants. At the same time, however, if the development of Marcellus Shale resources is not done in the most environmentally prudent manner, there could be severe negative consequences on the quality and quantity of Pennsylvania water supplies, which could ultimately be seen by Pennsylvania water and wastewater customers in the form of higher rates and degraded service.

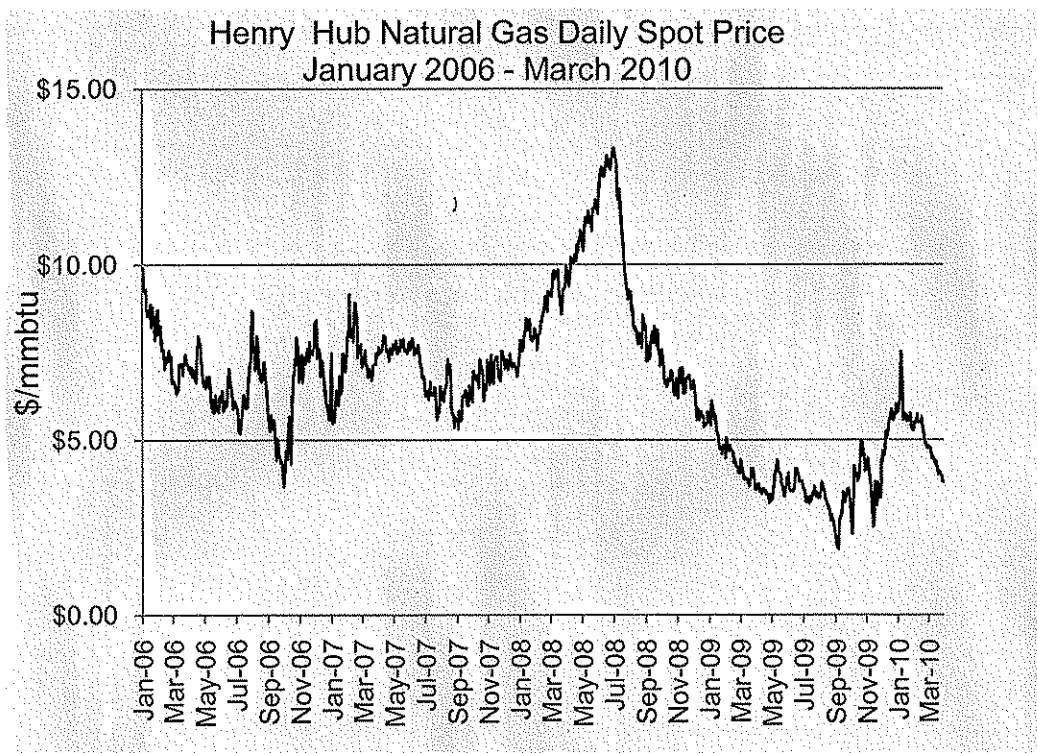
The PUC is absolutely correct in proactively opening this investigation now, rather than simply reacting to the results of Marcellus Shale operations after they occur. In these Comments and at the En Banc hearing, the OCA will not attempt to respond to all of the technical and jurisdictional questions that are directed primarily to the industry participants. Rather, the OCA will attempt to identify some of the promises and concerns raised by this development from the perspective of Pennsylvania consumers.

## II. COMMENTS

### A. Impacts on Natural Gas Consumers

The most obvious, and in many ways the most obviously beneficial, impact that the development of Marcellus Shale as a source of natural gas can have on Pennsylvania consumers is by increasing the supply, and thereby reducing or stabilizing the price of natural gas.

According to the Energy Information Administration, more Pennsylvania residents heat their homes with natural gas than with all other fuel types combined. Yet, as this Commission knows all too well, the price of natural gas at both the wholesale and retail levels has been on a roller coaster ride for years. The chart below shows the wholesale price of natural gas at the Henry Hub from January 2006 through the end of March 2010.



As shown on this chart, natural gas prices reached an extraordinary height of \$13.31 per million btu in July of 2008, only to drop as low as \$1.87 in September of 2009.

Although the volatility of retail natural gas prices in Pennsylvania is moderated somewhat by the quarterly updating of prices through the Pennsylvania purchased gas cost rate process, we have seen similar results at the retail level. For example, the following chart shows the purchased gas cost rates per mcf for Columbia Gas of Pennsylvania during the 2006-2010 period.

2006 January	\$14.03
2006 April	\$8.37
2006 July	\$7.33
2006 October	\$8.67
2007 January	\$8.67
2007 April	\$9.30
2007 July	\$9.64
2007 October	\$10.25
2008 January	\$9.53
2008 April	\$11.70
2008 July	\$15.94
2008 October	\$13.14
2009 January	\$11.57
2009 April	\$7.66
2009 July	\$5.73
2009 October	\$4.85
2010 January	\$7.53
2010 April	\$5.34

As shown above, the purchased gas cost rate for Columbia was a remarkable \$15.94 per mcf in July 2008, but had dropped to \$4.85 in October 2009.

As the Commonwealth and the Nation emerge from the current economic recession, the potential of significant amounts of new domestic natural gas supplies from the Marcellus Shale is an extremely positive prospect. To the extent that the overall supply of natural gas can be expanded at a reasonable cost, there should be a moderating, or at least stabilizing, impact on natural gas prices.

In its Order opening this investigation, the Commission asks: "What effect will the availability of natural gas from Marcellus Shale have on natural gas distribution companies' least cost fuel procurement policy?" In the OCA's view, the availability of gas from Marcellus Shale generally will have an indirect, but nevertheless positive, impact on Pennsylvania's least cost gas procurement policy.<sup>1</sup>

The customers of Pennsylvania's natural gas distribution companies ("NGDCs") should receive substantial benefits from the production of Marcellus Shale gas even if their NGDC has not purchased or does not purchase a single Mcf of Marcellus Shale gas. This is because Marcellus Shale gas could substantially increase the overall available supply of natural gas, thus lowering overall gas prices in the entire region. As set forth below, the actual gas from the Marcellus Shale may not generally be suitable for injection directly into the systems of our local NGDCs, but the customers of our NGDCs can still benefit by the impact on overall natural gas prices resulting from those new supplies.

It is the OCA's understanding that there are significant differences between the conventional local Pennsylvania production historically relied upon by NGDCs and Marcellus Shale production. Conventional production wells, drilled vertically into Upper Devonian formations, generally produce a relatively low volume of gas (less than 50 Mcf per day) at low pressure (50 to 350 psig or less) with a normal heating value in the 1,030 to 1,050 MBtu per Mcf range. Conventional gas wells are shallow (4,400 feet down or less), relatively low cost (\$235,000 to \$255,000), and typically yield gas reserves of approximately 130,000 to 150,000 Mcf per well. The quality of gas from conventional wells is such that it generally meets industry

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<sup>1</sup> The OCA was assisted in this portion of these Comments by Jerry Mierzwa. Mr. Mierzwa is a principal in the utility consulting firm of Exeter Associates and has been affiliated with the firm since April 1990. During his tenure with Exeter, Mr. Mierzwa has specialized in, among other things, evaluating the gas purchasing practices of natural gas utilities, and has testified on behalf of the OCA in numerous 1307(f) proceedings. Prior to joining Exeter, Mr. Mierzwa worked for four years with National Fuel Gas Supply Corporation.

quality standards and can be introduced into an NGDC's system without processing. The economic life of a conventional well can often exceed 50 years.

Marcellus Shale wells are initially drilled vertically to depths which commonly exceed one mile, and then horizontally at lengths which can range from 3,000 to 5,000 feet. Several horizontal wells can be drilled from a single well location. A Marcellus Shale well can often produce 2,000 to 3,000 Mcf per day at pressures which typically range from 750 to 2,500 psig. The heating value of Marcellus Shale gas can exceed 1,200 MBtu. This relatively high Btu content is due to the ethane, propane and natural gas liquids frequently found in gas produced from Marcellus Shale wells. The high Btu content and liquids can damage NGDC distribution systems and, therefore, the gas generally must be processed before being introduced into the systems of an NGDC. The investment associated with Marcellus Shale production is significantly greater than that associated with conventional wells. A typical single horizontal well typically costs in excess of \$3.5 million. The cost of a gas processing facility may exceed \$5 million.

The characteristics of Marcellus Shale production generally make it more suitable for delivery to interstate pipelines than to NGDCs. Proposals have been made, for example, to transport Pennsylvania Marcellus Shale gas to interconnections with interstate pipelines for delivery to markets in the eastern and northeastern United States. Tennessee Gas Pipeline Company ("Tennessee") has filed with the FERC to increase the capacity of its pipeline facilities located in Pennsylvania in order to deliver Marcellus Shale gas to markets in New Jersey and New York (Tennessee 300 Line Project). Dominion Transmission, Inc. ("DTI"), through its Dominion Keystone pipeline project, is planning a pipeline expansion to move Marcellus Shale

gas to east coast markets. Many other projects designed to move Marcellus Shale gas to east coast markets are in the planning stages.

It appears that a significant percentage of Marcellus Shale production is destined for east coast markets outside of Pennsylvania. These east coast markets are currently capacity constrained and are able to support and offer higher prices for Marcellus Shale gas supplies. Pennsylvania NGDCs should not pay higher prices just to keep this gas in Pennsylvania, but the availability of Marcellus Shale gas to serve those higher cost eastern and northeastern markets should have a moderating and stabilizing impact on the price of the interstate gas supplies that are already coming in to Pennsylvania. The purchase of Marcellus Shale gas supplies at prices that exceed the price of other local and interstate gas supplies available to Pennsylvania NGDCs would be inconsistent with least cost gas procurement. However, the demands for Marcellus Shale gas supplies by east coast markets will encourage the production of Marcellus Shale supplies and provide benefits for the overall natural gas supply market.

This does not mean that Pennsylvania NGDCs should not investigate opportunities to purchase Marcellus Shale supplies directly where it is economical to do so. The economics of each Marcellus Shale project is different, and not all Marcellus Shale production can be delivered to east coast markets. The Commission should require NGDCs to investigate Marcellus Shale opportunities and require NGDCs to report in their annual 1307(f) filings on the status of their efforts to purchase Marcellus Shale gas. An option which may be available to NGDCs that is generally not available with conventional local production and which the Commission may wish to encourage is joint participation in Marcellus Shale projects by NGDCs. Marcellus Shale projects may produce more gas than one NGDC can accept, and joint participation by NGDCs may make certain projects viable options.



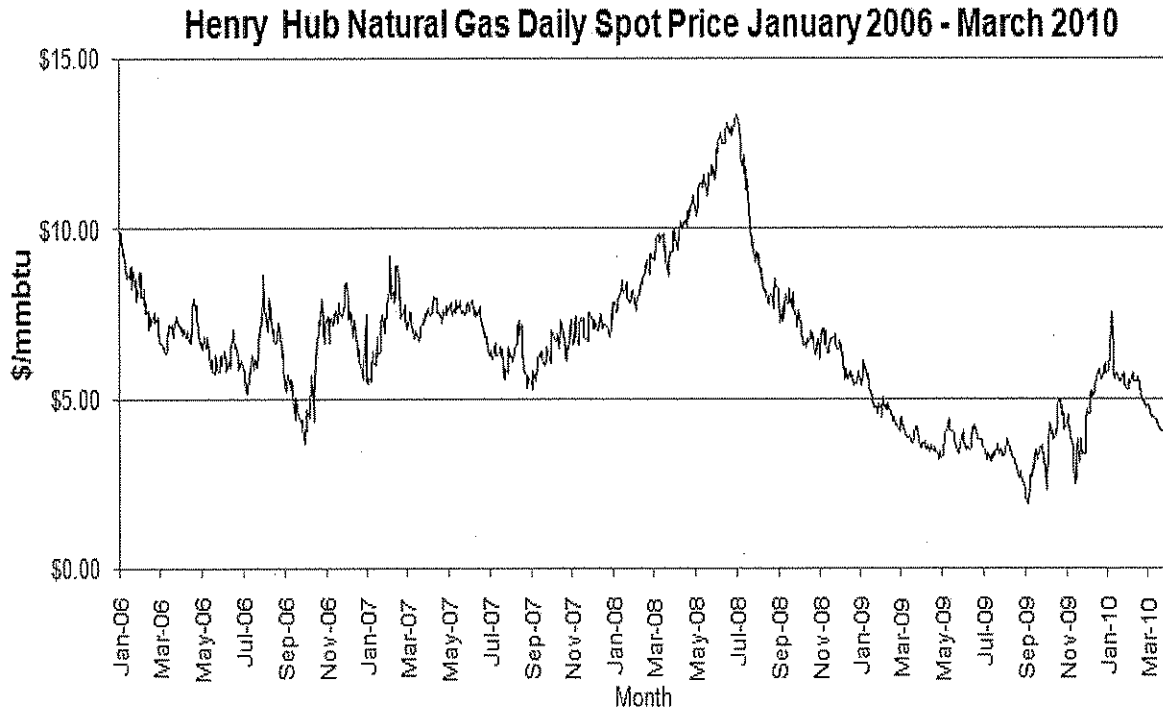
The Commission seeks input as to whether it should encourage NGDCs' expansion efforts into Marcellus Shale production with the use of long-term contracts to support drilling and processing capital requirements. The OCA supports the use of long-term contracts for Marcellus Shale gas provided such purchases are economic and consistent with least cost procurement. In evaluating such projects, however, non-gas costs such as new facilities which the NGDC may require to process and transport the Marcellus Shale gas must be considered. Failure to consider new facility costs would again be inconsistent with a least cost procurement policy.

In sum, the OCA would not support a mandate on Pennsylvania NGDCs to include Marcellus Shale gas in their procurement programs at this time, but would support a reporting requirement as part of each 1307(f) proceeding that the NGDC report on its consideration of available Marcellus Shale supplies and whether or not the acquisition of such supplies would be consistent with a least cost gas policy. The OCA would also encourage NGDCs to consider joint development of facilities that might enable them to secure economical access to Marcellus Shale gas that would not be possible for each company to obtain on an individual basis.

B. Impacts on Electric Consumers

There is no question that the cost of natural gas has a significant impact on the price of electricity in Pennsylvania and throughout the PJM region. While natural gas fired generation represented only 9.5% of the fuel used for PJM generation in 2009, natural gas fired plants set the market clearing price in 22% of the hours during the year. Moreover, there appears to be a strong correlation between prices in the highly volatile wholesale natural gas markets with the wholesale PJM prices during the same period. This correlation is shown on the chart below,

which shows the Henry Hub natural gas prices noted above along with the PJM locational marginal prices during the same period.



It is also important to recognize that natural gas could play an even more prominent role in future electric market decisions if and when the Nation decides to regulate carbon dioxide emissions in order to combat global climate change. That is because the production of every

kilowatt hour of electricity from a natural gas plant emits only about half as much carbon dioxide as the production of a kilowatt hour of electricity from a coal plant. That means that the cost of carbon emission regulations will hit coal generation twice as hard as natural gas and would reduce the current price differential between coal and natural gas generation.

It is already much cheaper in terms of capital costs to build natural gas plants than it is to build coal plants. This capital cost differential has long been offset by the fact that natural gas has been much more expensive to burn on a kilowatt hour basis than coal. This latter differential will be reduced, however, if a price is placed on carbon emissions, and the differential will be reduced even further if the price of natural gas comes down as a result of the development of the Marcellus Shale.

Increased natural gas supplies are not the sole answer to volatility and high prices in the wholesale electricity markets. The OCA submits that a diversity of resources – baseload and peaking, renewable and non-renewable, supply side and demand side – will all be needed to meet the future requirements of Pennsylvania electric consumers in the most reliable and economical manner. But the availability of major new natural gas supplies in this region should certainly have a beneficial impact on electric consumers, particularly if we must rely more on natural gas as part of a national effort to reduce carbon emissions.

C. Impact on Water and Wastewater Consumers

In its Order giving rise to these Comments and the upcoming En Banc Hearing, the Commission stated that “We do not intend to examine issues outside of this Commission’s jurisdiction, such as water quality and other environmental issues.”

The OCA understands that the PUC does not wish to examine issues that are outside of its jurisdiction, but respectfully submits that some of the water and wastewater issues arising

from the development of the Marcellus Shale may well have an impact on water and wastewater issues that are within the Commission's jurisdiction. In particular, issues related to the cost and quality of the service provided by PUC-regulated water and wastewater utilities may be presented by Marcellus Shale development. As such, the Commission should be aware of these potential impacts and, if necessary, be prepared to address these issues in the future.

For example, on April 6, 2010, Department of Environmental Protection (DEP) Secretary John Hanger issued a press release warning of the threat of increased levels of total dissolved solids (TDS) from natural gas drilling to major sources of drinking water. As stated by Secretary Hanger:

In 2008 and 2009, TDS levels exceeded drinking water standards along the Monongahela River, which is a major source of drinking water. Drinking water treatment plants do not have the equipment available to remove TDS, so any water polluted with TDS goes into Pennsylvania's homes and businesses.

This issue has also been addressed by one of our largest Pennsylvania water utilities, Aqua America, Inc., in a Statement submitted to the Pennsylvania Senate Environmental Resources Committee regarding Marcellus Shale development on January 27, 2010. As stated by that Company:

While we recognize the significance of this domestic energy resource for the country, as well as the potentially substantial economic benefit for Pennsylvania, we also share the Commonwealth's deep and justifiable concerns over responsible development of this resource. Aqua CEO, Mr. Nicholas DeBenedictis who is a former Secretary of the DEP himself, recently met with DEP officials to discuss the impacts of high Total Dissolved Solids (TDS) from flow back on our surface water supply. As a result, the DEP has invited Aqua to participate in their TDS Taskforce which is focused on the proposed 2011 TDS standards. Aqua has been involved in these meetings and will continue to monitor any progress with this endeavor.

...

Aqua shares the Commonwealth's commitment to fully engage in the development and implementation of responsible strategies for water supply

delivery, treatment, and recycling of flow-back water produced by development of the Marcellus Shale, Aqua wishes to remain involved in the ongoing dialogue on this issue.

Just as Aqua and other Pennsylvania water utilities quite properly seek to remain involved in the “dialogue” on these difficult issues, so too should the Commission keep itself informed of these issues as they arise.

Concerns over the impact of Marcellus Shale drilling on water service have been raised by Pennsylvania consumers in public hearings and in contacts with the OCA as well. In particular, consumers who are currently served by wells fear that potential contamination from nearby drilling will force them to seek public water service at a cost of many thousands of dollars under current utility main extension policies. Even if the OCA is able to help these customers obtain water service from a regulated utility without a requirement of massive individual customer contributions, those costs would still have to be borne by the water utility or its remaining customers, when in fact it may be more appropriate to impose such costs on the entities that would be responsible for the contamination. Consumers also have expressed concern regarding the higher risk of fire hazards associated with drilling operations, particularly in those areas where public fire service is unavailable in the vicinity. As these concerns heighten, the demand for public water and public fire service may increase, adding to the capital requirements of water utilities in the vicinity of the drilling operations. In sum, both water quality and water quantity issues affecting our jurisdictional water utilities and their rates may well arise from Marcellus Shale drilling operations as they move from the exploratory to full operations.

Similarly, with respect to wastewater, it must be recognized that large volumes of chemically treated fluids are required for hydraulic fracturing operations. Most of these fluids use very large quantities of water, in some instances measured in millions of gallons, as a base

and include mixtures of chemicals many hydraulic fracturing companies consider proprietary. While some percentage of the fluid remains underground after the drilling operations are complete, the majority returns to the surface. In addition to additives designed to aid the hydraulic fracturing process, these fluids may also contain high levels of naturally occurring underground contaminants. All this material must be disposed of or else treated and recycled in some way.

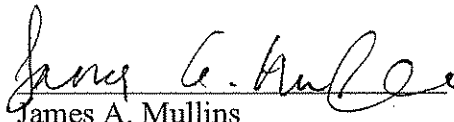
Given the high level of contaminants in this water, and the proprietary nature of the mixtures of chemicals used in the hydraulic fracturing process, it is unclear if many of the Commonwealth's existing wastewater treatment operations are designed to adequately handle this new source of wastewater, or handle hydraulic fracturing fluids in any quantity. Updating existing wastewater infrastructure to handle the quality and quantity of hydraulic fracturing wastes would likely require significant capital expenditures that, for regulated utilities, must be addressed in the ratemaking process.

All these issues, while not the subject of this initial hearing, could end up on this Commission's docket in one way or another and the OCA respectfully urges the Commission to include these issues in future considerations of the costs and benefits of Marcellus Shale development.

### III. CONCLUSION

The OCA commends the Commission for taking this proactive approach to addressing the broad array of costs and benefits that this Commonwealth and its consumers may see in the future as a result of the development of the Marcellus Shale in Pennsylvania. This is a critical period in the formulation of policy regarding this development, and the OCA looks forward to working with the Commission and all interested and affected parties in seeking to ensure that the Marcellus Shale produces the greatest possible level of benefit for the Commonwealth and its consumers.

Respectfully Submitted,



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Dated: April 16, 2010

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