

The Marcellus and Utica Plays in the Appalachian Basin

Paul Rady¹

¹CEO Antero

ABSTRACT

The Marcellus and Utica Shale Plays have emerged over the last six years as two of the premier gas shale plays in North America.

The Marcellus Shale is part of the Devonian-Mississippian Black Shale Belt that stretches from New York to West Texas. The Black Shale Belt also includes the Fayetteville, Woodford and Barnett Shales and was formed during plate collision and suturing during the Devonian and Mississippian periods. The shales young to the southwest, as does the suturing, and are Devonian-aged in Appalachia and Mississippian-aged in West Texas. These shales in the Black Shale Belt are organic rich, siliceous and brittle.

The Marcellus now produces some 19 Bcf/d, predominantly from the two sweet spots in 1) northeast Pennsylvania and 2) southwest Pennsylvania/northern West Virginia. The sweet spots have been delineated through the last six years of drilling and are governed both by rock quality and available infrastructure. Infrastructure advances have included pipelines, processing, fractionation, NGL distribution and export facilities, and even an LNG export terminal. Still on the horizon to be built (some projects are awaiting FID) are more pipelines, ethane crackers and PDH/Alkylation facilities to take advantage of the abundant natural gas, ethane and propane resources.

The Utica Shale Play is several years behind the Marcellus in its development and is still being delineated. The main pay interval of the “Utica Shale Play” is actually the Point Pleasant Shale, which underlies the classic Utica Shale. The Point Pleasant is a carbonate-rich shale formed in Ordovician time and deposited in the Point Pleasant Basin between the flanking Trenton and Lexington Platforms to the north and south. The liquids fairway of the Point Pleasant is located in southeast Ohio and is limited on its western up dip margin by the retrograde nature of the liquids. Further down dip in Ohio, the Point Pleasant is in the dry gas window and is in active development. Even further down dip in West Virginia and Pennsylvania, the deeper Point Pleasant dry gas play underlies the Marcellus Fairway and is being tested by industry. Results show that this is a very large gas resource whose commerciality is currently challenged by high well costs and low gas prices.

The Utica/Point Pleasant Play currently produces about 3 Bcf/d.

Like the Marcellus, the Utica/Point Pleasant Play has seen significant infrastructure advances in pipelines, processing, fractionation and distribution. It also awaits additional infrastructure, and, since it is located immediately adjacent to and even underlying the Marcellus, it will in many cases share facilities and infrastructure with the Marcellus.

The combined production volumes of the Marcellus and Utica/Point Pleasant have grown from a total of just 4 Bcf/d five years ago to over 22 Bcf/d today. These two plays in the Appalachian Basin promise to be a dominant force in the 74 Bcf/d North American gas market for many years to come.