WEST VIRGINIA DEPARTMENT OF COMMERCE GEOLOGICAL & ECONOMIC SURVEY

2015 Marcellus Shale and Utica-Point Pleasant Production Summary

Prepared by Philip A Dinterman September 22, 2016

This summary was prepared by the West Virginia Geological and Economic Survey (WVGES). The data summarized herein were reported by operators to the West Virginia Department of Environmental Protection (WVDEP) Office of Oil and Gas for calendar year 2015. Despite the decrease in drilling, Marcellus Shale production in West Virginia continued to increase from 2014 to 2015. This report documents the increases in both gas production as well as natural gas "liquids" production. This report also documents emerging activity in the Utica-Point Pleasant play.



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data posted by WVI Utica-Point Pleasant values listed above	volumes represent data a DEP as of 8/23/2016. 201 t production in 2015 may may change as more data given well and may be cor	5 production data fr not have been avail a become available.	om several operato lable at the time of Additionally, these	ors reporting Marce this report; therefore volumes represent	ellus and ore, the the total
Glossary					
bbl-barrel Bcf-billion cubic fee Mcf-thousand cubic MMcf-million cubic	feet				
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2015 Marcellus Shale Production Summary

Wells included in this overview all report production from the Marcellus Shale, but volumes may also include gas or liquids produced from commingled formations. "Liquids" refer to all heavier-chain hydrocarbons produced and may include oil as well as the natural gas liquids ethane, pentane, butane, hexane, etc. Beginning in 2013, WVDEP Office of Oil and Gas reporting requirements stated that natural gas liquids (NGLs) were to be reported separately from oil production. An examination of the numbers shows that many operators still included NGLs in oil production; therefore, reported oil and NGL numbers were combined and are referred to as "Liquids" in this report. Selected 2014 data is shown in blue for comparison.

Number of horizontal Marcellus wells reporting production: 1668 (2014: 1420 wells)

Average measured depth reported: 13,142 ft.

Longest/Deepest measured depth reported: 20,294 ft.

Number of vertical Marcellus wells reporting production: 1298 (2014: 1458 wells)

Total 2015 Marcellus Liquids Production*: 10,210,805 bbl (2014: 8,356,593 bbl)

Top Liquids Producing Counties 2015*

 1. Tyler (2,689,253 bbl)
 2014: Marshall (2,464,528 bbl)

 2. Marshall (2,413,282 bbl)
 2014: Ohio (1,652,949 bbl)

 3. Ohio (1,571,894 bbl)
 2014: Tyler (1,572,566 bbl)

 4. Wetzel (1,416,341 bbl)
 2014: Brooke (1,013,904 bbl)

 5. Brooke (715,943 bbl)
 2014: Wetzel (928,718 bbl)

 6. Doddridge (712,948 bbl)
 2014: Ritchie (361,484 bbl)

 7. Ritchie (676,459 bbl)
 2014: Doddridge (348,242 bbl)

Top Operators for Liquids Production 2015*

1. Southwestern Production Co (2,533,373 bbl)

2. Jay-Bee Oil & Gas (1,867,236 bbl)

3. Noble Energy (1,418,769 bbl)

4. Triad Hunter (1,070,060 bbl)

5. Antero Resources Corp (844,678 bbl)

6. Trans Energy (655,323 bbl)

7. Stone Energy Corp (596,604 bbl)

8. Gastar Exploration Inc (594,622 bbl)

9. EQT Production Co (281,477 bbl)

10. Chevron Appalachia (192,734 bbl)

2014: Chesapeake Energy Appalachia (2,834,473 bbl)

2014: Noble Energy Inc (2,112,414 bbl)

2014: Jay-Bee Oil & Gas (782,050 bbl)

2014: Triad Hunter LLC (743,413 bbl)

2014: Stone Energy Corp (723,788 bbl)

2014: Gastar Exploration USA Inc (446,164 bbl)

2014: Antero Resources Corp (411,919 bbl)

Top Liquids Wells In 2015

- 1. **4709502140**, Bashful 2 (142,502 bbl; Jay-Bee Oil & Gas; Tyler County)
- 2. **4709502138,** Scooby Doo 3 (134,769 bbl; Jay-Bee Oil & Gas; Tyler County)
- 3. **4709502133**, Bashful 6 (134,336 bbl; Jay-Bee Oil & Gas; Tyler County, Completed January, 2015)
- 4. 4709502139, Maddie Mae 4 (115,372 bbl; Jay-Bee Oil & Gas; Tyler County, Completed April, 2015)
- 5. **4709502142**, Gorby 5 (108,122 bbl; Jay-Bee Oil & Gas; Tyler County, Completed February, 2015)

Total 2015 Marcellus Gas Production 2015*: 1,133.1 Bcf (2014: 851.8 Bcf)

Top Gas Producing Counties 2015 *

1. Doddridge (351.3 Bcf) 2014: Doddridge (225.0 Bcf) 2. Wetzel (195.0 Bcf) 2014: Harrison (173.6 Bcf) 3. Harrison (133.5 Bcf) 2014: Wetzel (151.7 Bcf) 4. Marshall (126.6 Bcf) 2014: Marshall (90.2 Bcf) 5. Ritchie (78.9 Bcf) 2014: Tyler (40.0 Bcf) 6. Tyler (75.5 Bcf) 2014: Ritchie (33.0 Bcf) 7. Ohio (37.9 Bcf) 2014: Ohio (32.1 Bcf) 8. Taylor (27.1 Bcf) 2014: Taylor (23.9 Bcf) 9. Barbour (25.2 Bcf) *2014: Marion (19.9 Bcf)* 10. Marion (24.1 Bcf) 2014: Barbour (17.4 Bcf)

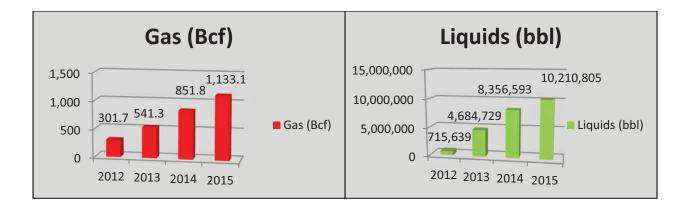
Top Operators for Gas Production 2015*

1. Antero Resources Corp (442.3 Bcf) 2014: Antero Resources Corp (344.2 Bcf) 2. EQT Production Co (175.4 Bcf) 2014: EQT Production (128.6 Bcf) 3. Southwestern Prod Co (111.3 Bcf) 2014: Chesapeake Appalachia (112.7 Bcf) 4. Noble Energy Inc (99.1 Bcf) 2014: Noble Energy Inc (43.4 Bcf) 5. Ascent Resources (42.1 Bcf) 2014: Stone Energy (41.0 Bcf) 6. Stone Energy Corp (39.7 Bcf) 2014: CNX Gas/Consol Gas (30.5 Bcf) 7. Jay-Bee Oil & Gas (34.0 Bcf) 2014: Jay-Bee Oil & Gas (27.9 Bcf) 8. CNX Gas (32.5 Bcf) 2014: HG Energy LLC (27.2 Bcf) 9. Trans Energy (23.6 Bcf) 2014: PDC Mountaineer (19.0 Bcf) 10. Triad Hunter (22.5 Bcf) 2014: Gastar Exploration USA Inc (18.6 Bcf)

Top Gas Wells In 2015

- 1. **4709502126**, Weigle Unit 1H (3.85 Bcf; Antero Resources Corp; Tyler County, Completed May, 2014)
- 2. 4701706450, Arters Unit 1H (2.92 Bcf; Antero Resources Corp; Doddridge County, December, 2014)
- 3. **4701706398**, McMillan Unit 2H (2.92 Bcf; Antero Resources Corp; Doddridge County, Completed February, 2015)
- 4. **4701706376**, Arters Unit 2H (2.91 Bcf; Antero Resources Corp; Doddridge County, Completed January, 2015)
- 5. **4708510082**, Myrtle Unit 2H (2.88 Bcf; Antero Resources Corp; Ritchie County, Completed February, 2015)

Yearly Comparison of Marcellus Production



2015 Activity in Utica-Point Pleasant Play

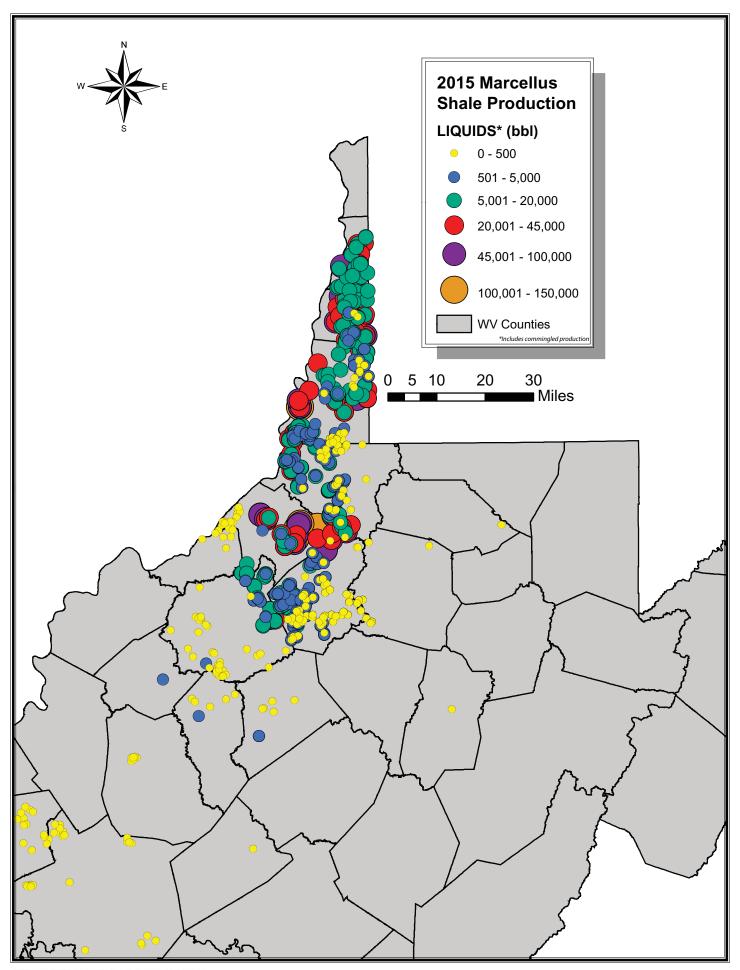
Development of the Utica-Point Pleasant play in West Virginia is continuing. Using records currently on file with WVDEP and/or WVGES, nine wells have reported 2015 production. Thirty-five wells have been permitted, remain in the permitting process or are in various stages of completion. Other wells targeting the Utica-Point Pleasant interval may be in the permitting process but may include other geologic intervals. Several other wells that may have been completed will likely show production for 2016.

Total 2015 Utica-Point Pleasant Liquids Production*: 38,010 bbl

Total 2015 Utica-Point Pleasant Gas Production*: 14.2 Bcf

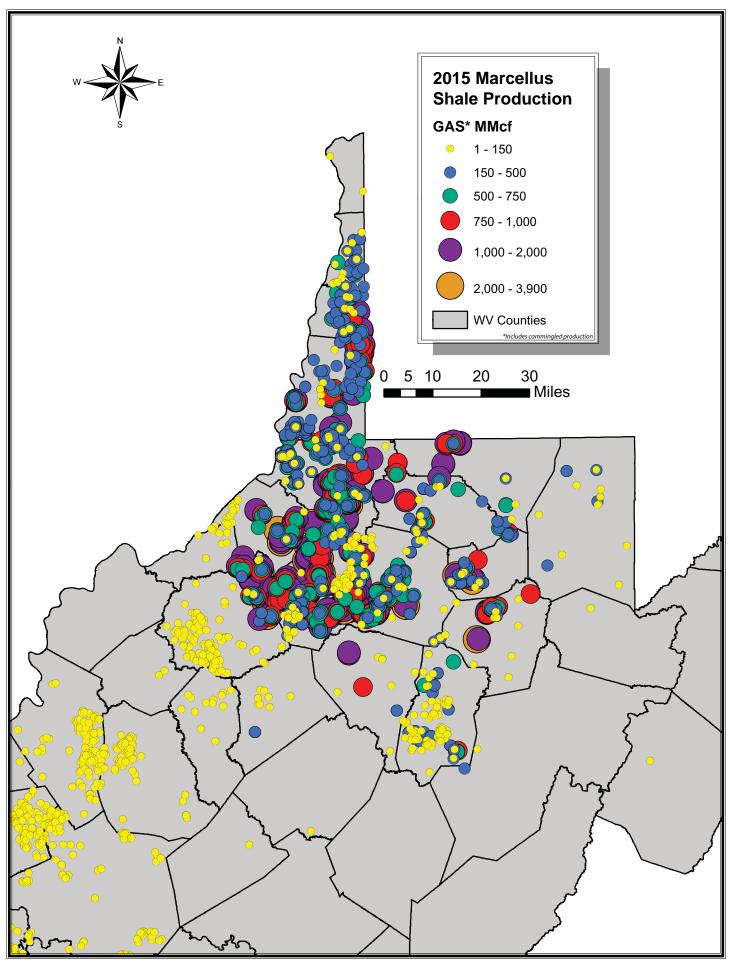
Individual Utica-Point Pleasant Well Production In 2015

- 1. **4705101766**, Blake U-7H, Gastar Exploration, 2,909 MMcf Gas
- 2. 4705101599, Conner 6H, Chevron Appalachia, 2,621 MMcf Gas
- 3. 4710302973, Messenger WTZ 3H U, Southwestern Production Co, 2,222 MMcf Gas, 699 bbl Liquids
- 4. **4709502128**, Stewart Winland Unit 1300, Triad Hunter, 2,207 MMcf Gas, 37,070 bbl Liquids (4777 Oil, 32,293 NGL)
- 5. 4705101731, Simms U-5H, Gastar Exploration, 2,199 MMcf Gas
- 6. **4710302976**, Pribble 6HU, Stone Energy, 1,184 MMcf Gas
- 7. 4705101732, MND6HHS, Noble Energy, 437 MMcf Gas, 2 months of production in 2015
- 8. 4709502273, Rymer Unit 4HD, Antero Resources Corp, 186 MMcf Gas, 2 months of production in 2015
- 9. 4700900106, Samuel Hubbard BRK 3H, Southwestern Production Co, 185 MMcf Gas, 241 bbl Liquids



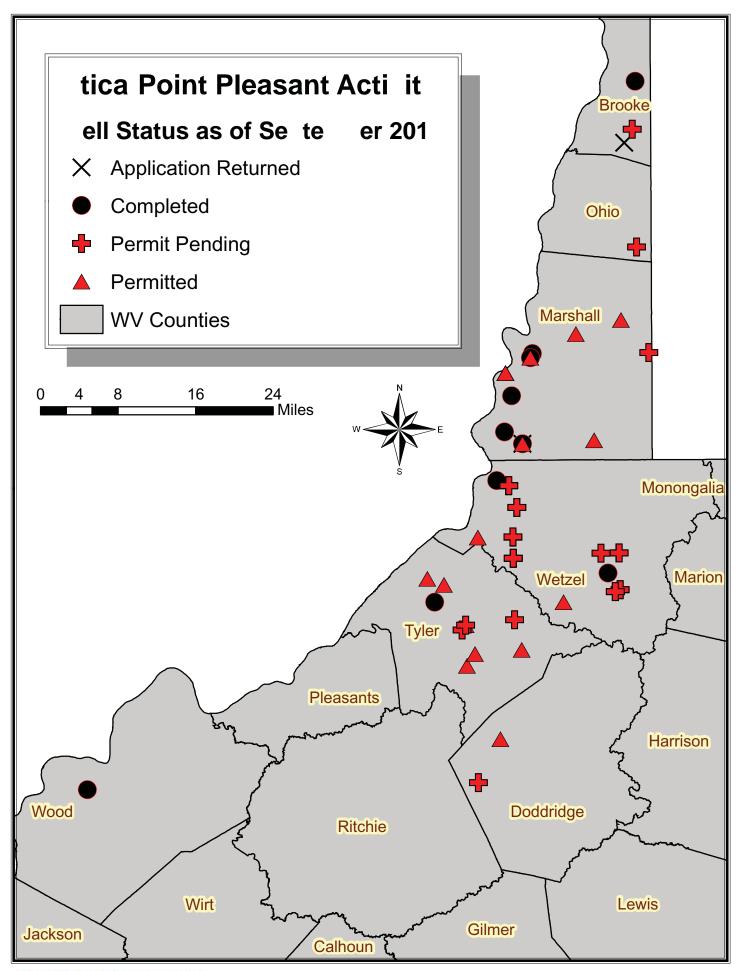


Data Source: WVDEP Prepared by Philip Dinterman, WVGES September 22, 2016



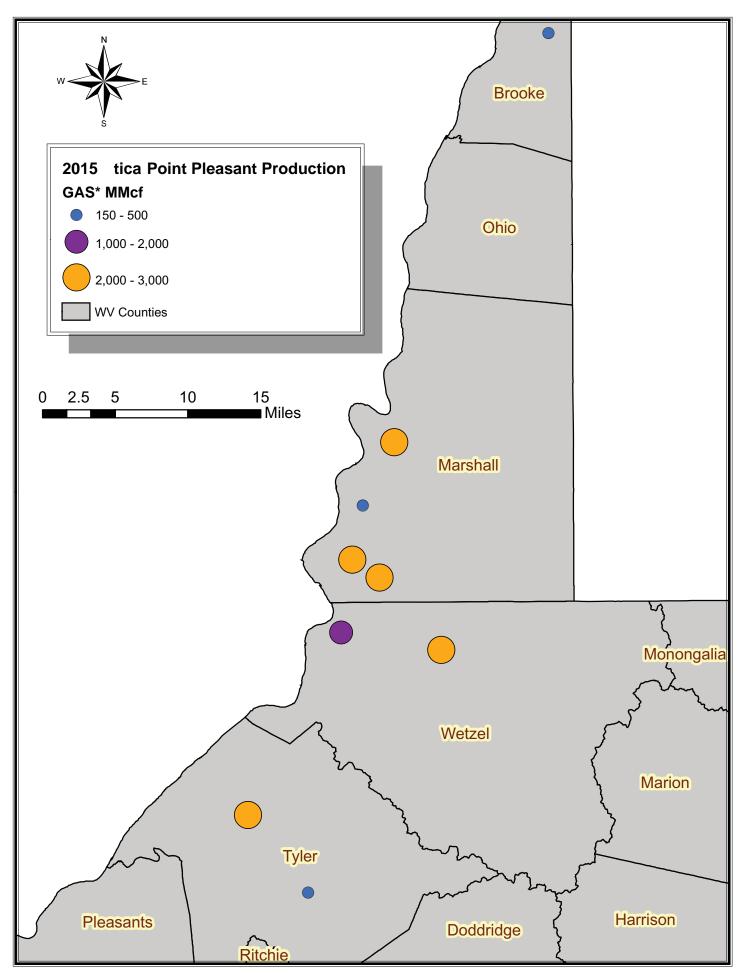


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