



Current State of the Natural Gas Industry in West Virginia:

Governor's Energy Summit
Stonewall Resort
October 27, 2015

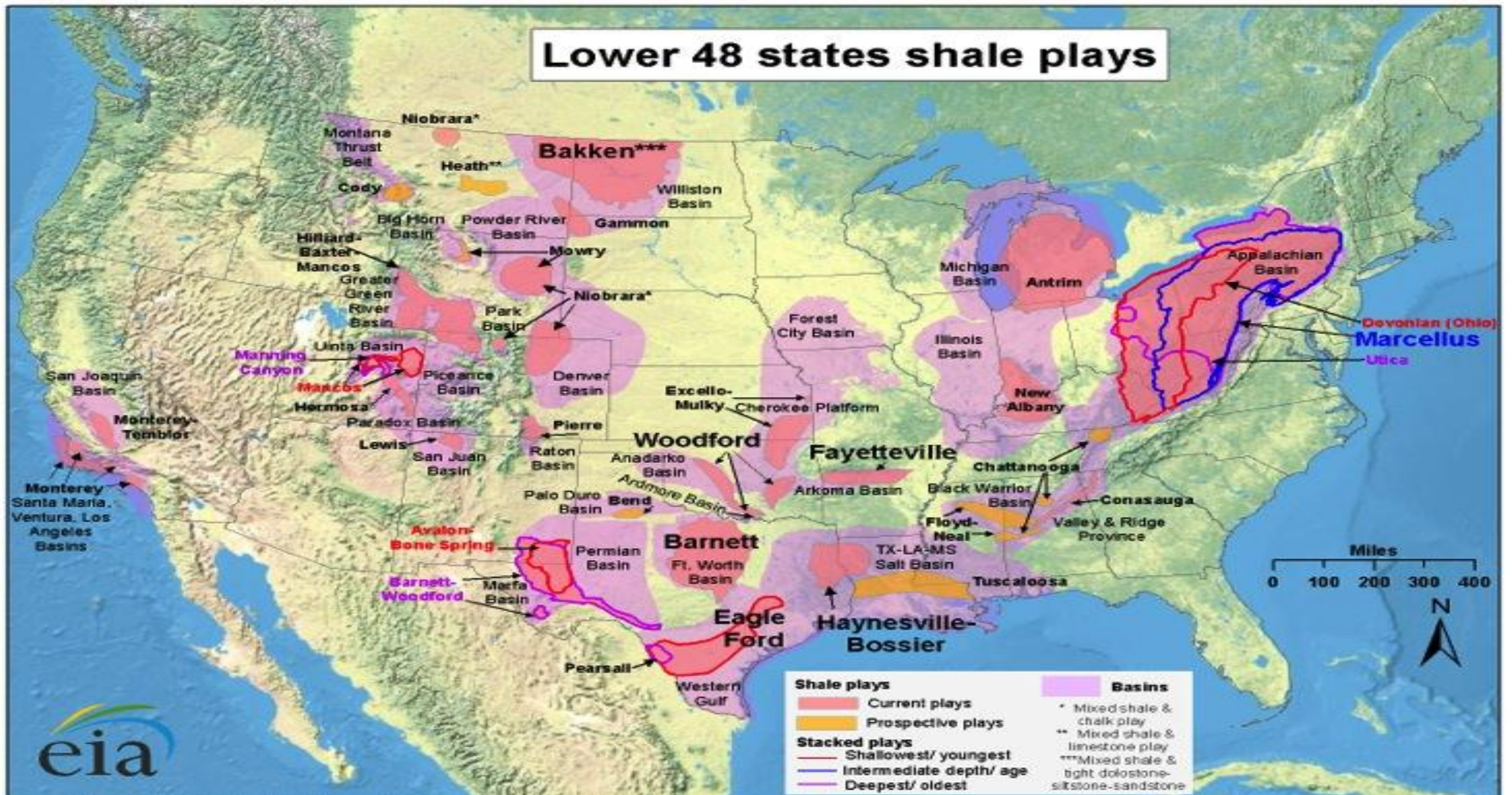


Independent Oil and Gas Association of West Virginia, Inc.

- Formed in 1959
- Over 700 members
- Serve both conventional and horizontal oil and gas producers
- Serves every aspect of the industry: Exploration, Drilling, Production, Transmission, Marketing, and Service Providers

Charlie Burd, Executive Director

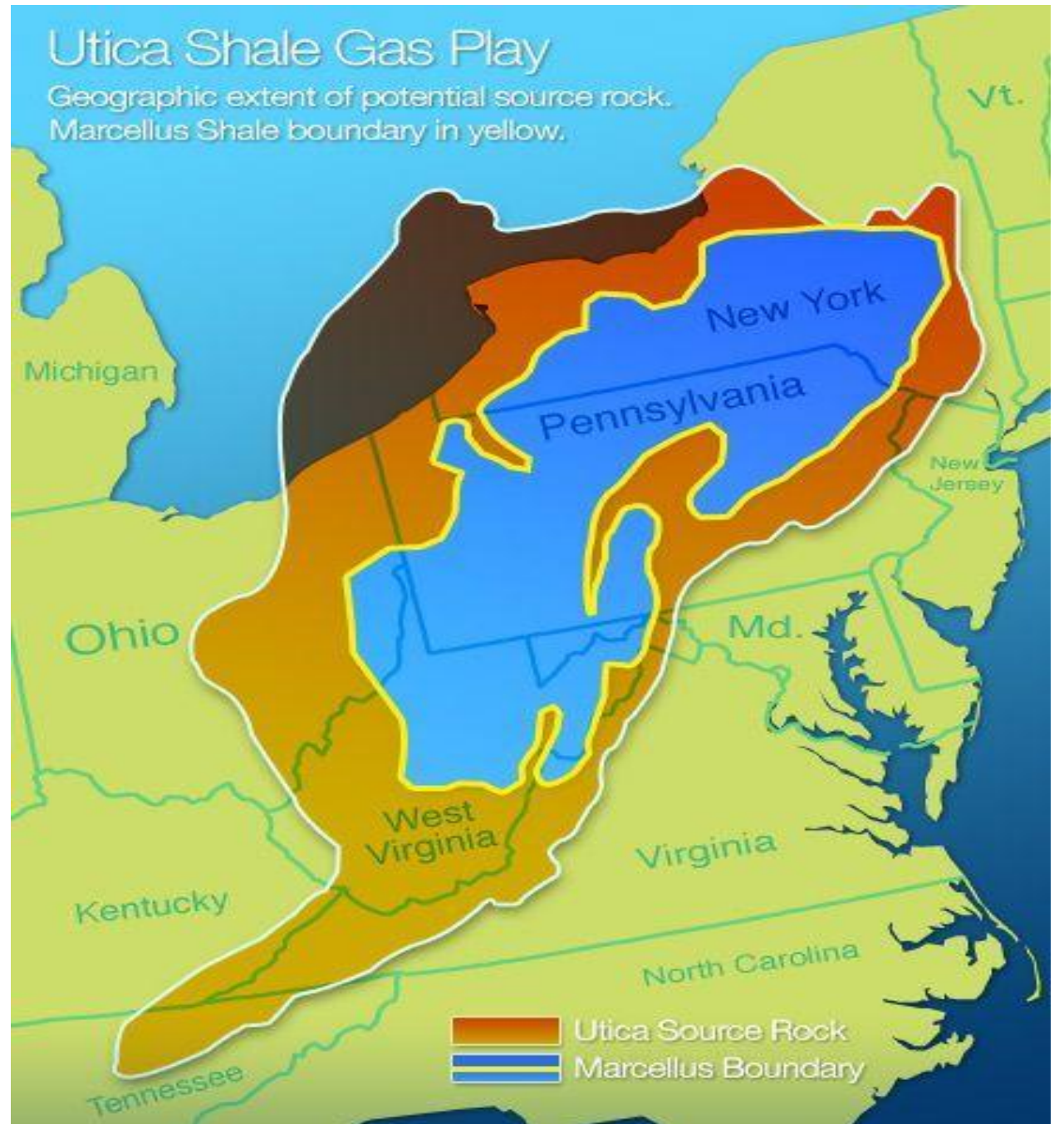
Lower 48 states shale plays



Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011

MARCELLUS AND UTICA SHALES

Source: Geology.com





Marcellus Development and Growth

- Horizontal drilling pioneered in Texas in the 1980's by companies like Range Resources in the Barnett and other shale formations
- Range Resources advanced the technology to the Marcellus Shale in 2004 with the completion of the Renz #1 well in Southwest Pennsylvania
- Barnett is approximately 5,000 square miles
- Marcellus is 95,000 square miles of development potential
- Second largest natural gas find in the world (Penn State, report)
- Purported to be the largest natural gas find in when combining the Marcellus and Utica shales
- Marcellus production exceeded 16 Bcf/day in June, 2015. Marcellus/Utica combined gas production currently exceeds 18 Bcf/day
- Many new wells already drilled but waiting for pipelines to be built.



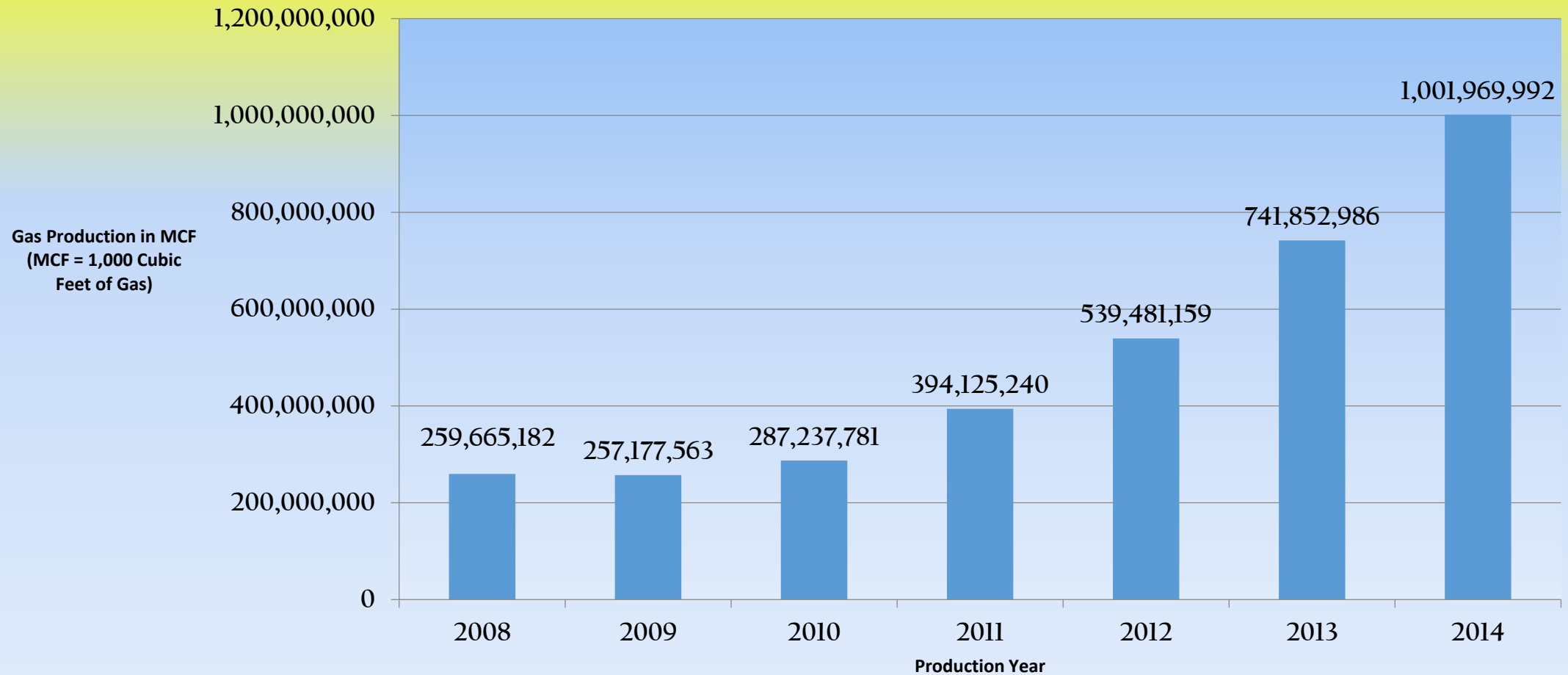
Marcellus Shale Impact in West Virginia

- First Marcellus well drilled in Marshall County, West Virginia by Chesapeake Energy in 2007
- 53 of 55 West Virginia counties have oil or natural gas operations
- All 55 counties benefit from state severance and property taxes paid by the industry
- More than \$625 million in severance and property taxes has been paid in the last three years
- Purchased gas component of residential gas rates in West Virginia have declined for last three years

Total Natural Gas Production

Source: WVDEP

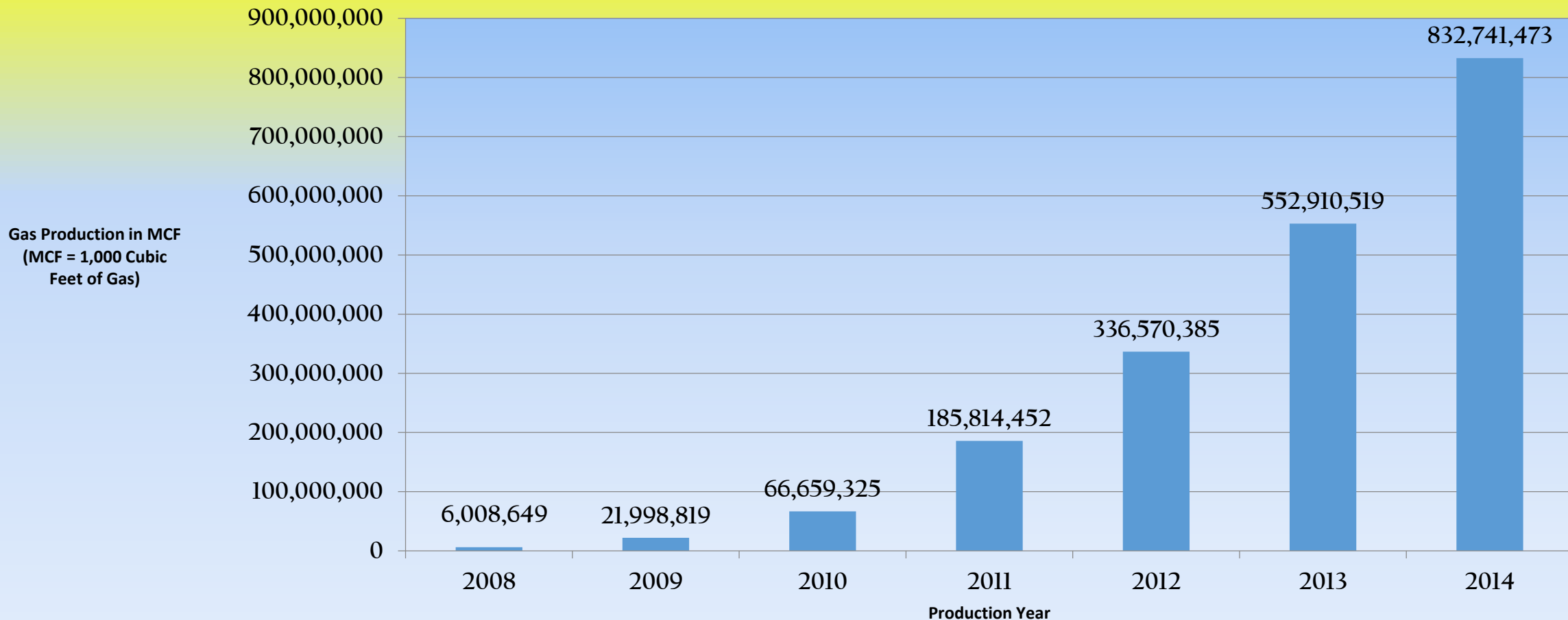
Total West Virginia Natural Gas Annual Production (MCF)



Total Horizontal Natural Gas Production

Source: WVDEP

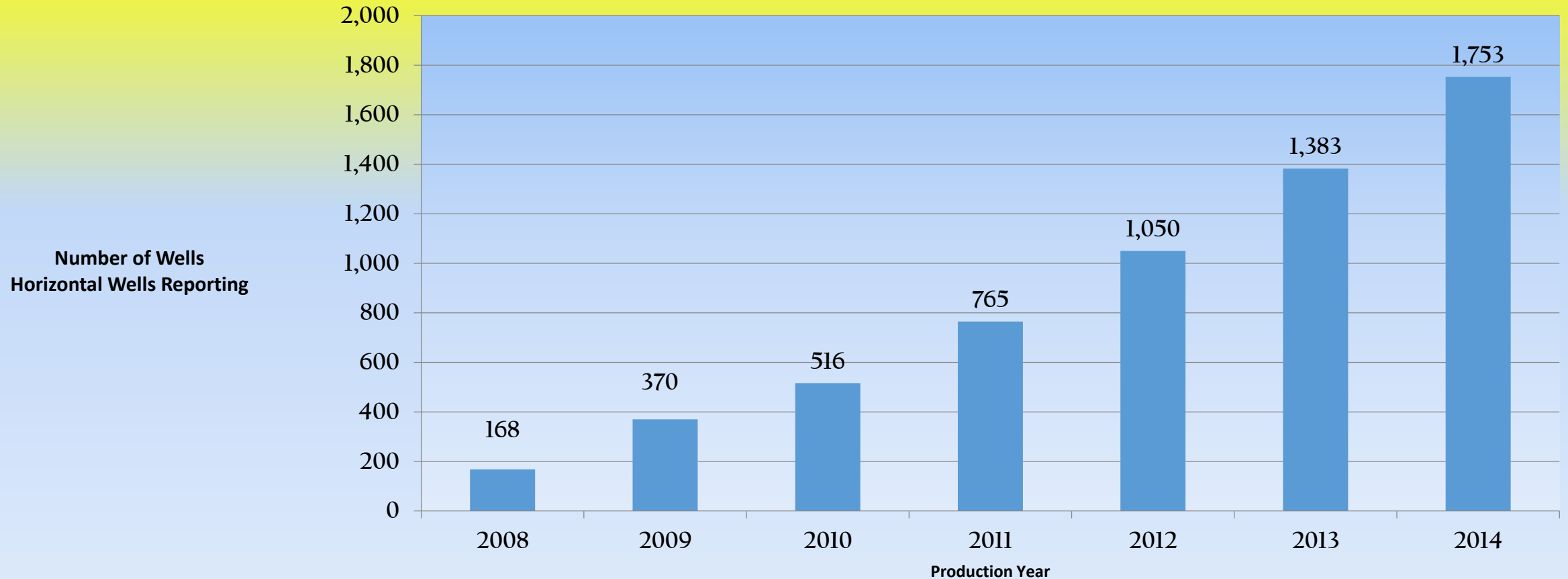
Horizontal Well Gas Annual Production (MCF)



Number of Horizontal Producing Wells

Source: WVDEP

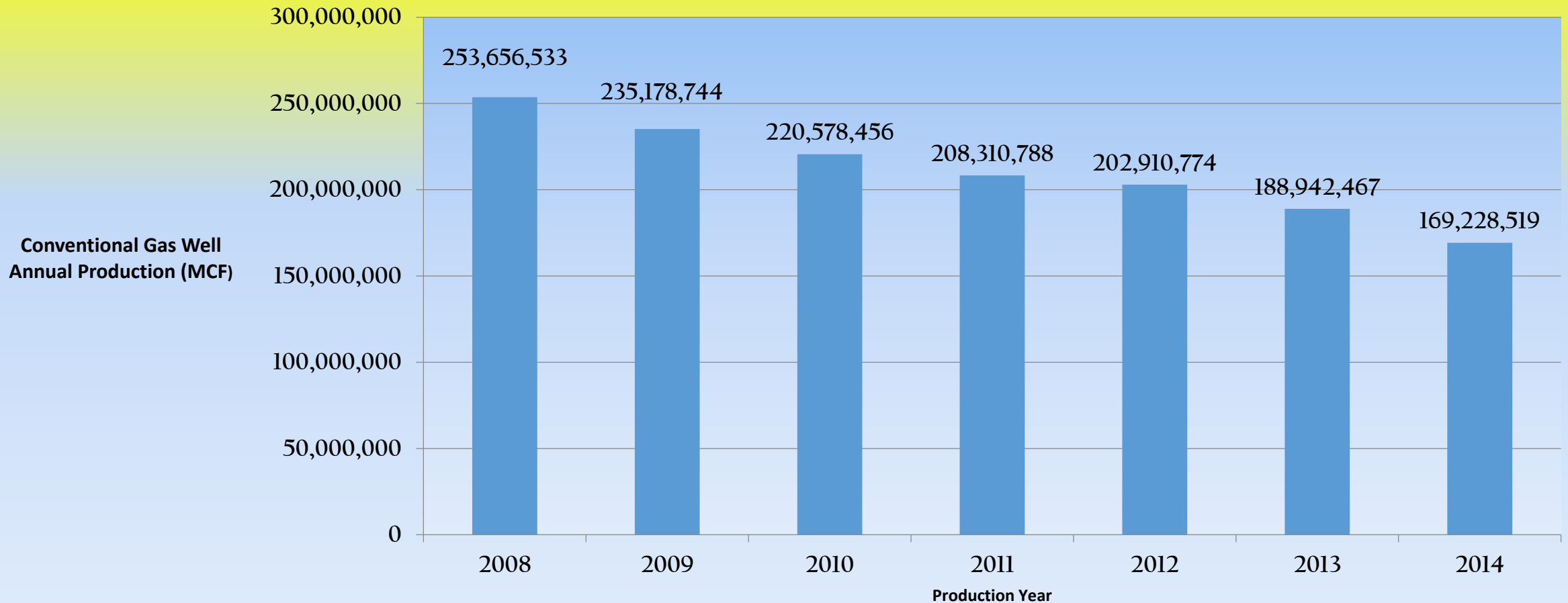
Number of Horizontal Wells Reporting Production



Total Conventional Natural Gas Production

Source: WVDEP

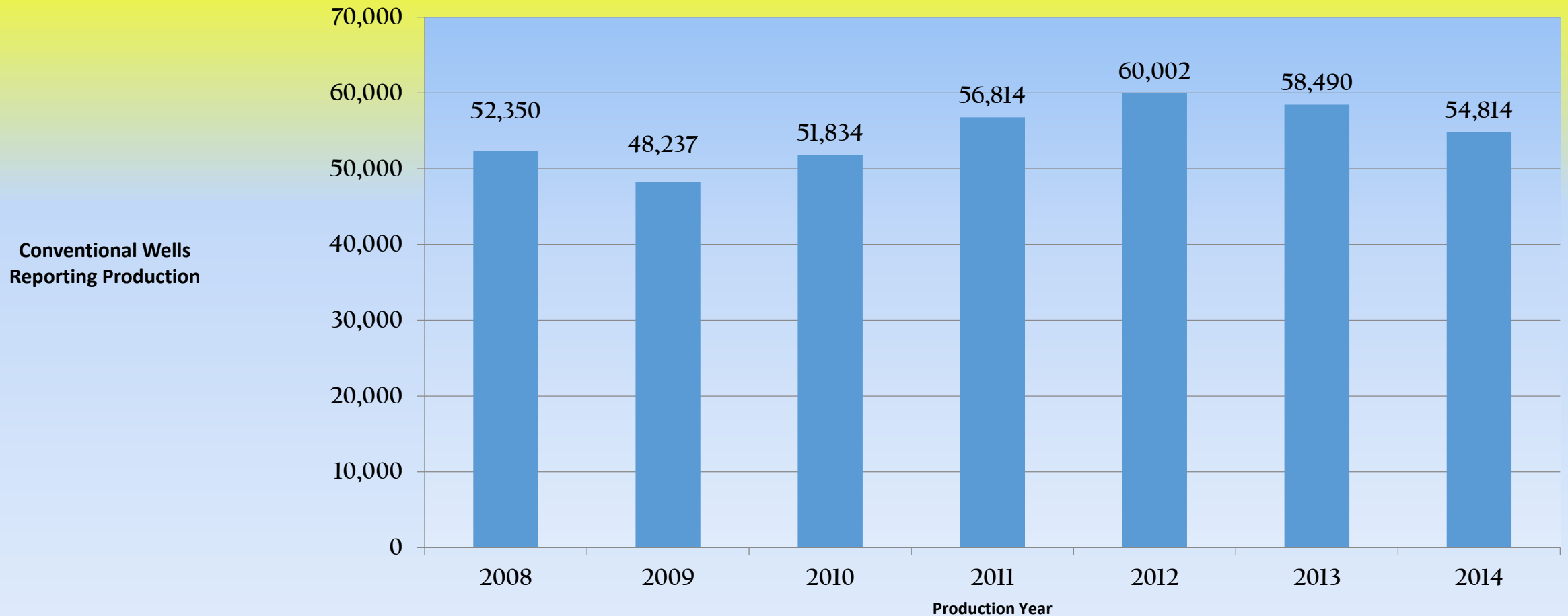
Conventional Gas Well Annual Production



Number of Conventional Producing Wells

Source: WVDEP

Conventional Wells Reporting Production



Top Gas Producing Counties In 2014 *

Source: WVGES

1. Doddridge (225.0 Bcf)
2. Harrison (173.6 Bcf)
3. Wetzel (151.7 Bcf)
4. Marshall (90.2 Bcf)
5. Tyler (40.0 Bcf)
6. Ritchie (33.0 Bcf)
7. Ohio (32.1 Bcf)
8. Taylor (23.9 Bcf)
9. Marion (19.9 Bcf)
10. Barbour (17.4 Bcf)

- 2013: Harrison (147.4 Bcf)*
2013: Wetzel (102.7 Bcf)
2013: Doddridge (94.8 Bcf)
2013: Marshall (66.3 Bcf)
2013: Ohio (21.3 Bcf)
2013: Marion (21.0 Bcf)
2013: Ritchie (17.3 Bcf)
2013: Taylor (15.6 Bcf)
2013: Tyler (14.5 Bcf)
2013: Upshur (14.2 Bcf)

*These production volumes represent data acquired by WVGES as of July 22, 2015. This dataset uses the data posted by WVDEP as of 6/4/2015. 2014 production data from several operators reporting Marcellus production in 2013 may not have been available at the time of this report; therefore, the values listed above may change as more data become available. Additionally, these volumes represent the total production from a given well and may be commingled from multiple formations, including the Marcellus Shale.



Top Operators for Gas Production In 2014*

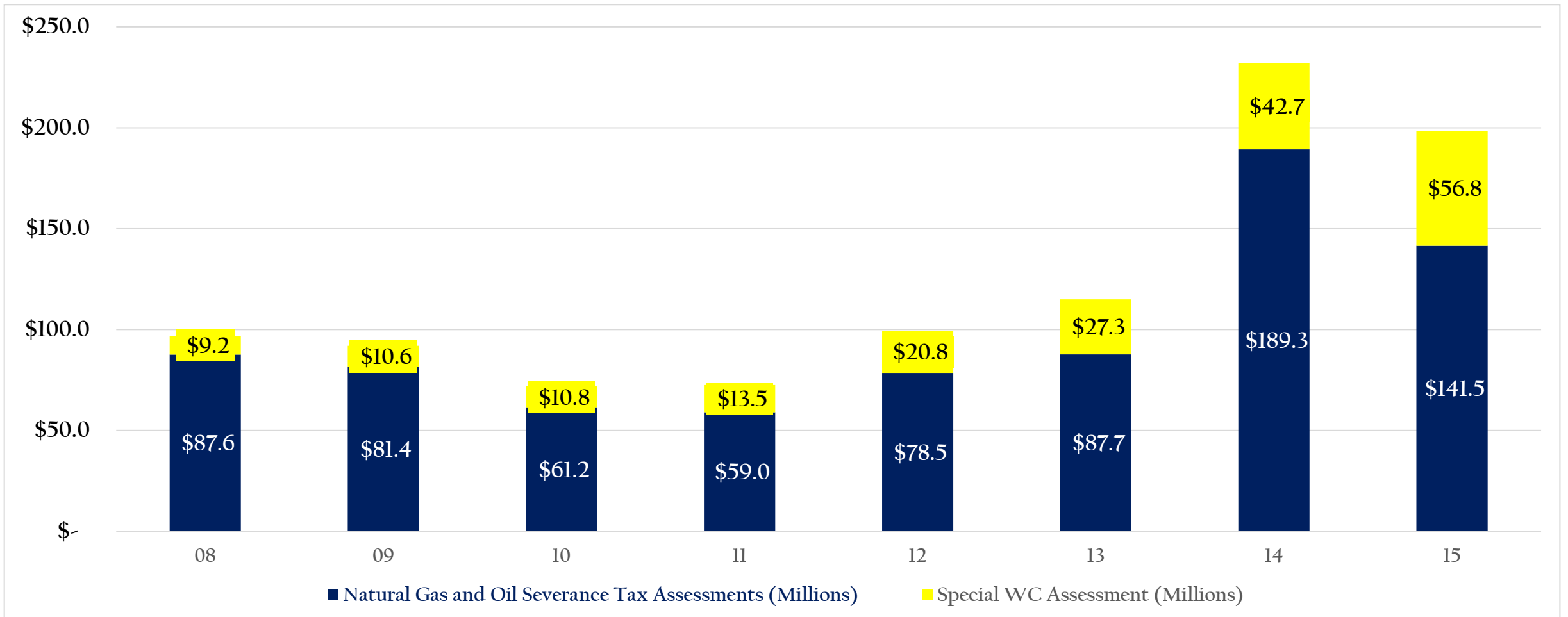
Source: WVGES

1. Antero Resources Corp (344.2 Bcf)	<i>2013: Antero Resources Corp (205.9 Bcf)</i>
2. EQT Production (128.6 Bcf)	<i>2013: Chesapeake Energy Appalachia (95.2 Bcf)</i>
3. Chesapeake Appalachia (112.7 Bcf)	<i>2013: EQT Production (82.5 Bcf)</i>
4. Noble Energy Inc (43.4 Bcf)	<i>2013: Stone Energy (25.8 Bcf)</i>
5. Stone Energy (41.0 Bcf)	<i>2013: CNX Gas/Consol Gas (24.6 Bcf)</i>
6. CNX Gas/Consol Gas (30.5 Bcf)	<i>2013: Gastar Exploration USA Inc (22.5 Bcf)</i>
7. Jay-Bee Oil & Gas (27.9 Bcf)	<i>2013: HG Energy LLC (14.7 Bcf)</i>
8. HG Energy LLC (27.2 Bcf)	<i>2013: XTO Energy (14.0 Bcf)</i>
9. PDC Mountaineer (19.0 Bcf)	<i>2013: JAY-Bee Oil & Gas (13.7 Bcf)</i>
10. Gastar Exploration (18.6 Bcf)	<i>2013: PDC Mountaineer (12.6 Bcf)</i>

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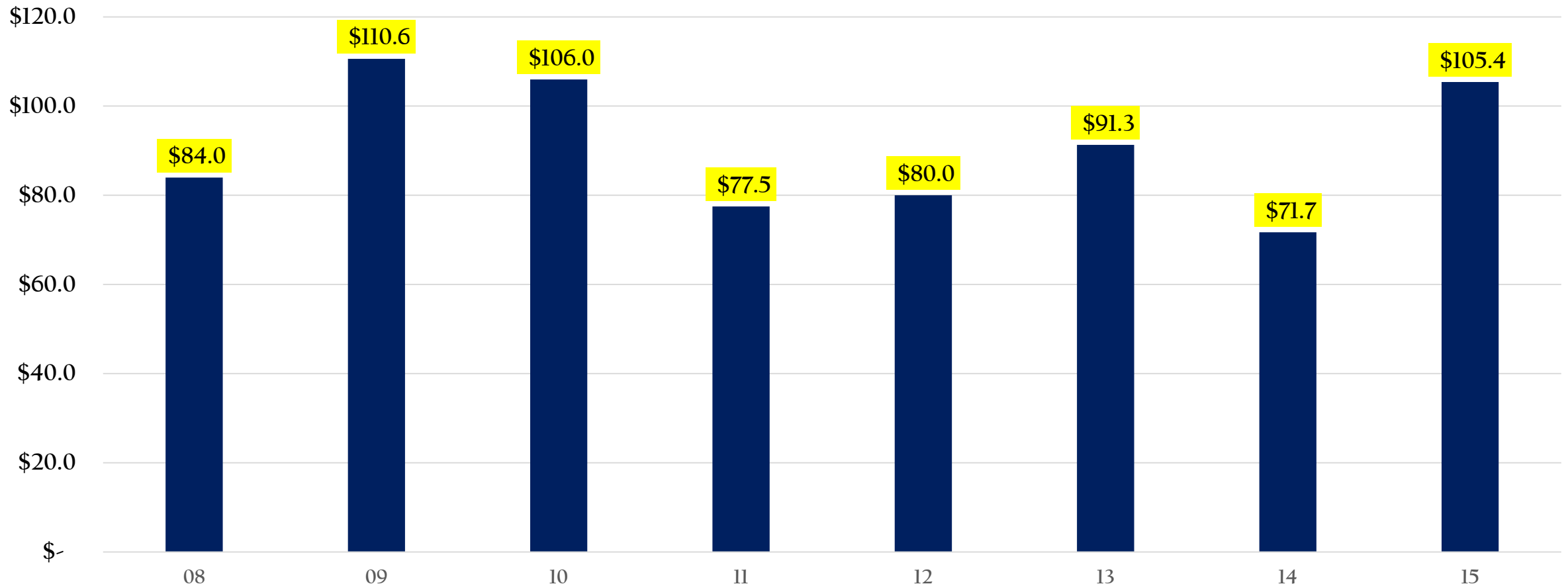
Economics: WV Severance Tax Contributions

Source: WV State Tax Department: August 2015



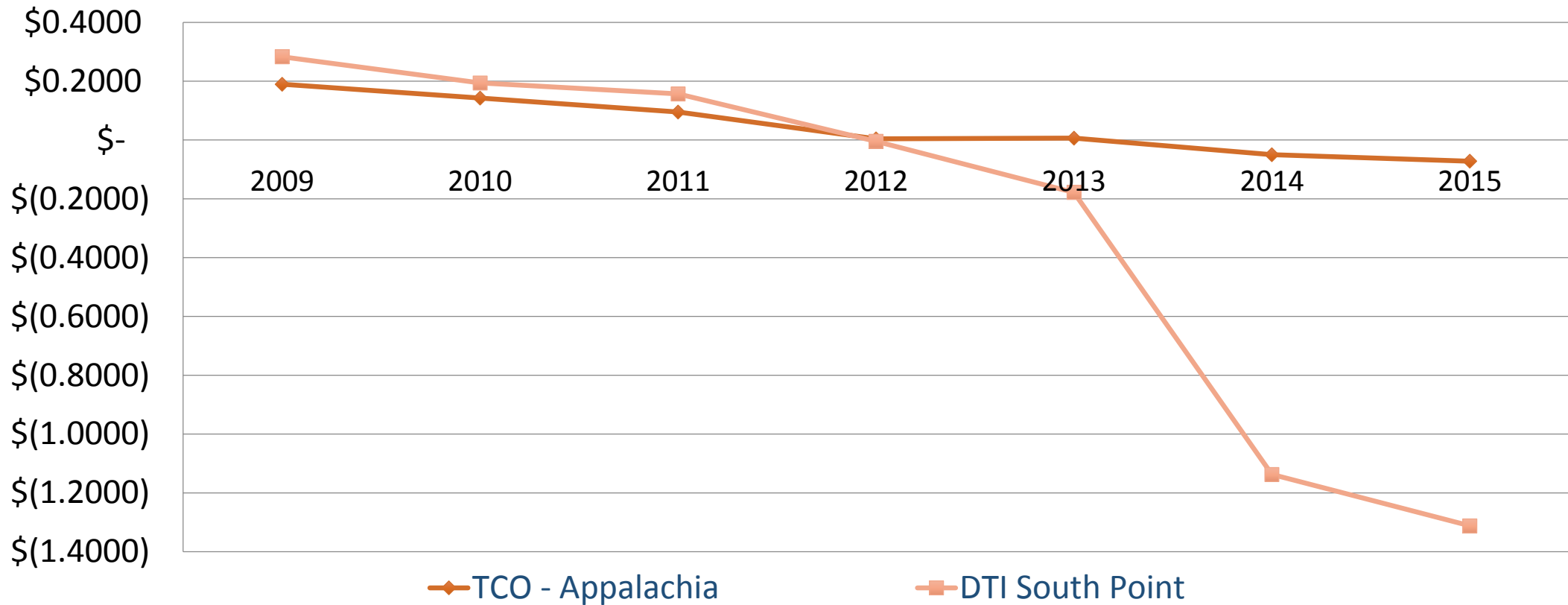
Economics: Oil and Gas Property Tax Contributions (Millions)

Source: WV State Tax Department: April 2015



Negative Basis Differential

Basis Differential to Henry Hub Spot



Recent Industry Investments

- **MarkWest Energy Partners**
 - Sherwood Processing (Doddridge County); Majorsville (Marshall County)
- **Williams Ohio Valley Midstream:**
 - Gathering, processing, fractionation and natural gas liquid (NGL) processing
 - 5 Bcf/d gathering capacity
- **Southwestern Energy**
 - Recent \$5.6 B purchase of Chesapeake Energy wells and lease holds in Northern Panhandle
- **Antero Resources** (JV with Veolia Water Technologies Inc. and Veolia North America)
 - \$275 million state-of-the-art, 60,000 barrel per day water treatment complex

- **ELECTRIC GENERATION**

- Such as MOUNDSVILLE POWER: 540 MW Gas/Ethane Fired Base-load Plant
- A twin facility being discussed at the Beech Bottom location
- With an MOU in place for a third plant in Harrison County, WV

- **NATURAL GAS FUELED VEHICLES**

- New natural gas fueling stations being developed—5 Stations thus far

- **LNG EXPORTS**

- Dominion is moving forward to liquefy NG for exportation at its Cove Point, MD import terminal. \$3.4-\$3.8B project will begin in 2014, with an in-service date of 2017.

- **INDUSTRIAL EXPANSION**

- Ethane crackers, plastics manufacturing, chemical manufacturing, glass, fertilizer, auto parts, etc.



Pipeline Infrastructure Projects

<u>Project Name</u>	<u>Operator</u>	<u>Miles</u>	<u>Cost</u>	<u>Bcf/d</u>	<u>In Service</u>
Atlantic Coast	Dominion	550	\$5 B	2.0	Fall 2018
Mountain Valley	EQT	330	\$3 B	2.0	Fall 2018
Stonewall	Momentum	50	\$0.5 B	1.4	Dec. 2015
ET over	Energy Transfer	711	\$4.3 B	3.25	2017
Leach Express	Columbia	160	\$1.4 B	1.5	Fall 2017
WB Express	Columbia	26	\$1.0 B	1.3	Summer 2018
Mountaineer Express	Columbia	165	\$1.5 B	2.7	Fall 2018



Thank You