



# **GOVERNOR'S ENERGY SUMMIT**

**Current State of the Natural Gas Industry  
From the West Virginia Producers Perspective**

**Charlie Burd, Executive Director  
October 18, 2017**

# Independent Oil and Gas Association of West Virginia, Inc.

- **Formed in 1959**
- **Largest West Virginia based trade association of oil and gas producers and those that serve them. ~ 600 members**
- **Serves ALL WEST VIRGINIA PRODUCERS: Conventional (Vertical) & Unconventional (Horizontal)**
- **Members from EVERY ASPECT of the industry.**

**IOGAWV “The Voice of ALL WV Producers”**



# WV Oil & Gas Industry Labor Statistics

**11,950 Direct Employees**

**Of which, in 2014 there are approximately:**

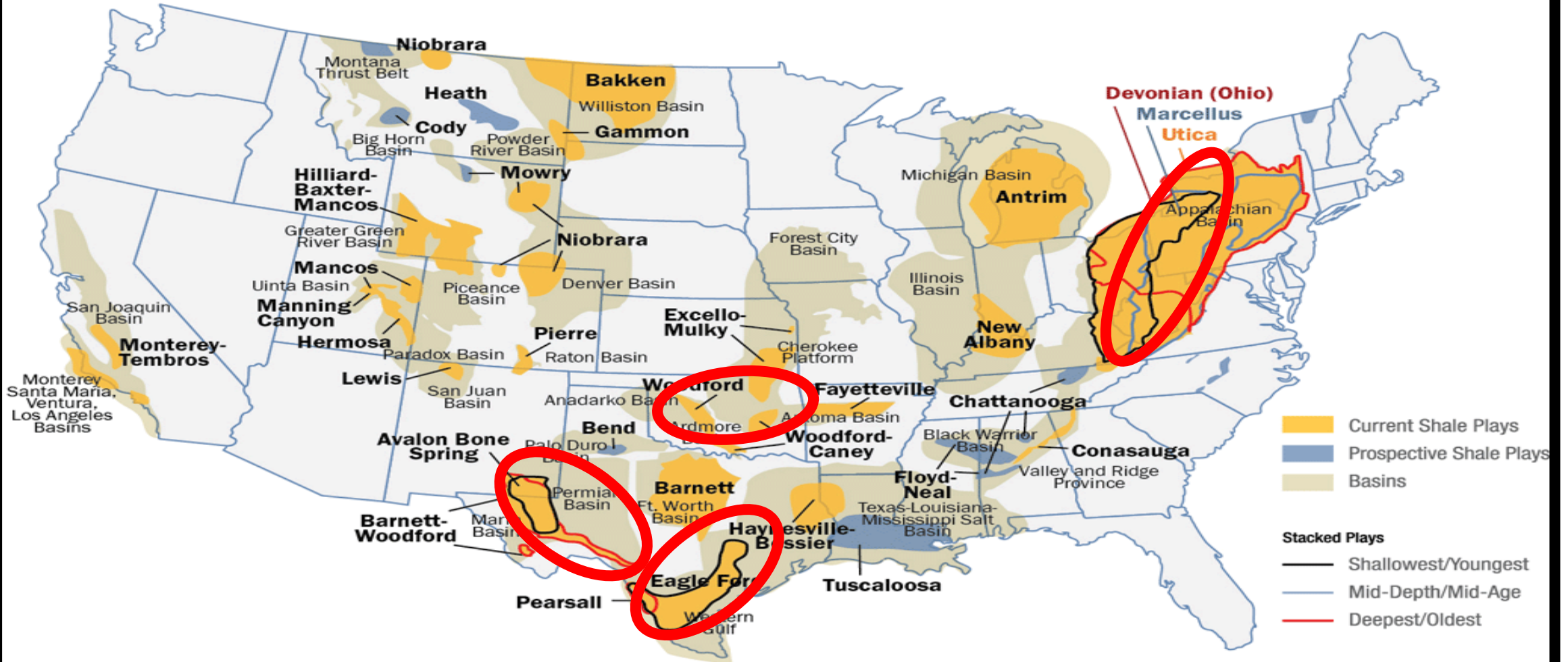
- **190 Petroleum Engineers; Average salary: \$115,940**
- **270 Drill Operators; Average base salary: \$55,600**
- **10,940 Derrick hands, field hands ; Average base salary: \$42,290**
- **450 Compressor/Station Operators; Average base salary: \$56,980**
- **5,320 Natural Gas Distribution/ Administration; Average base Salary: \$44,570**

• WV Bureau of Labor Statistics: May 2014

**Our industry can help slow the outward migration of our “Best and Brightest”**

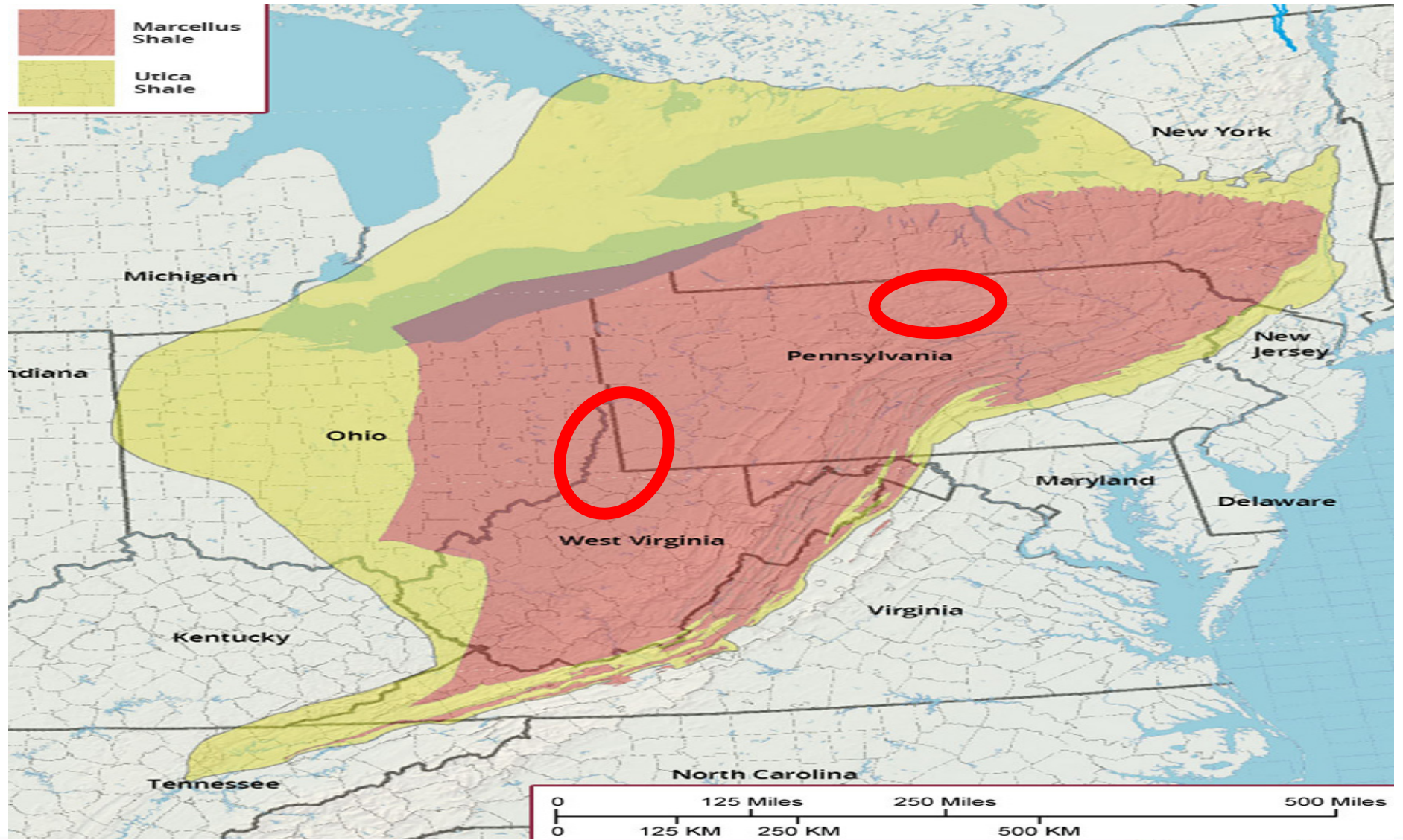


# Shale Plays, Lower 48 States



The **BIG FOUR** BASINS

# MARCELLUS & UTICA SHALES FORMATIONS



“The Sweet Spots”

# BIG FOUR US Land Rig Count Allocation

## Marcellus & Utica

- OH 29
  - PA 33
  - WV 16
- Total: 78

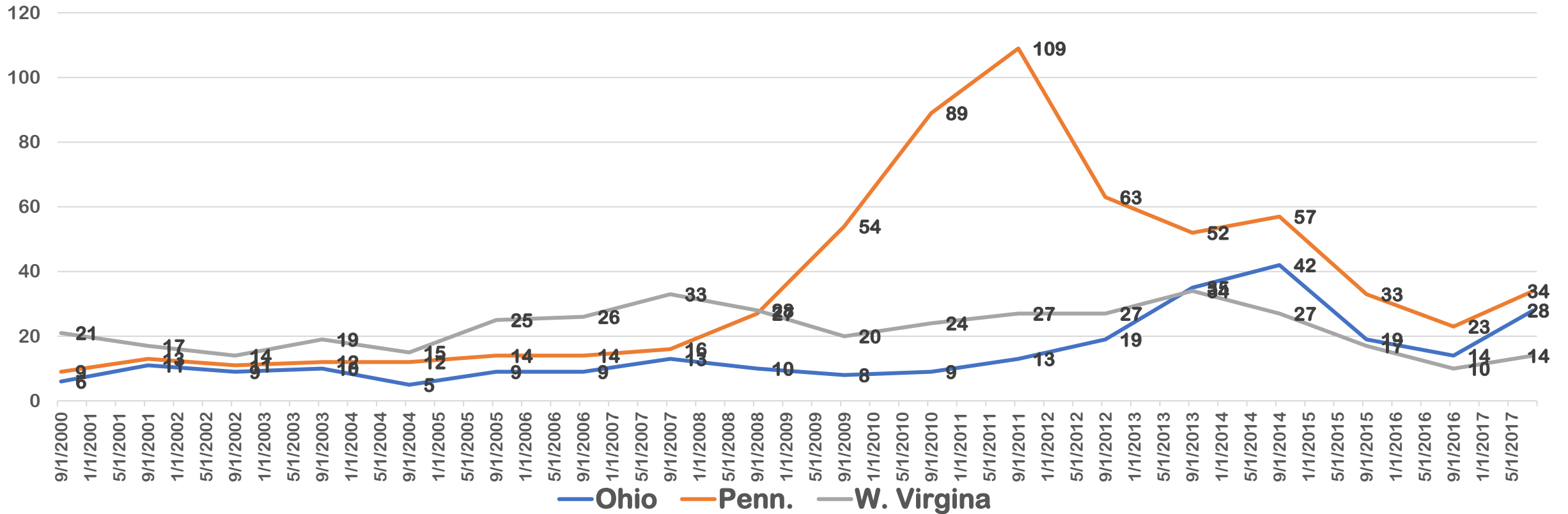
## Other Basin

- SCOOP Stack: 37
  - Eagle Ford: 68
  - Permian: 386
- Total: 491

**Drillers will drill where they have the best regulatory and economic climate.**

# WEST VIRGINIA RIG COUNT COMPARISON

Source: Baker Hughes

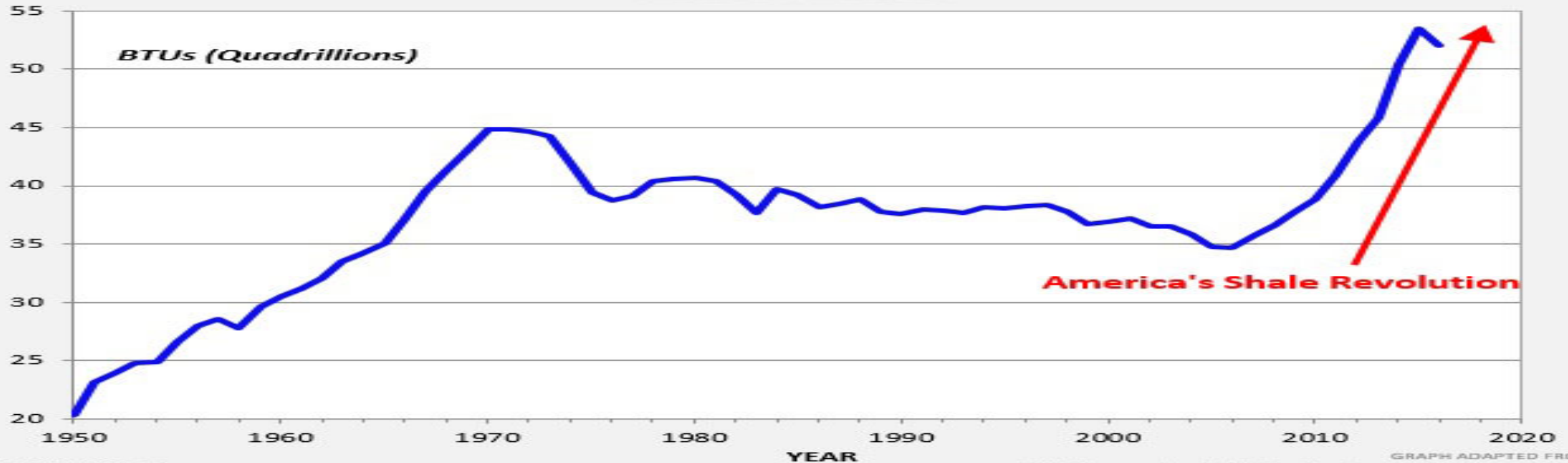


Since 2008, WV has went from the #1 state for drilling to #3 in Appalachia. Why??



# America's Shale Revolution

## U.S. NATURAL GAS & CRUDE OIL PRODUCTION 1950-2016

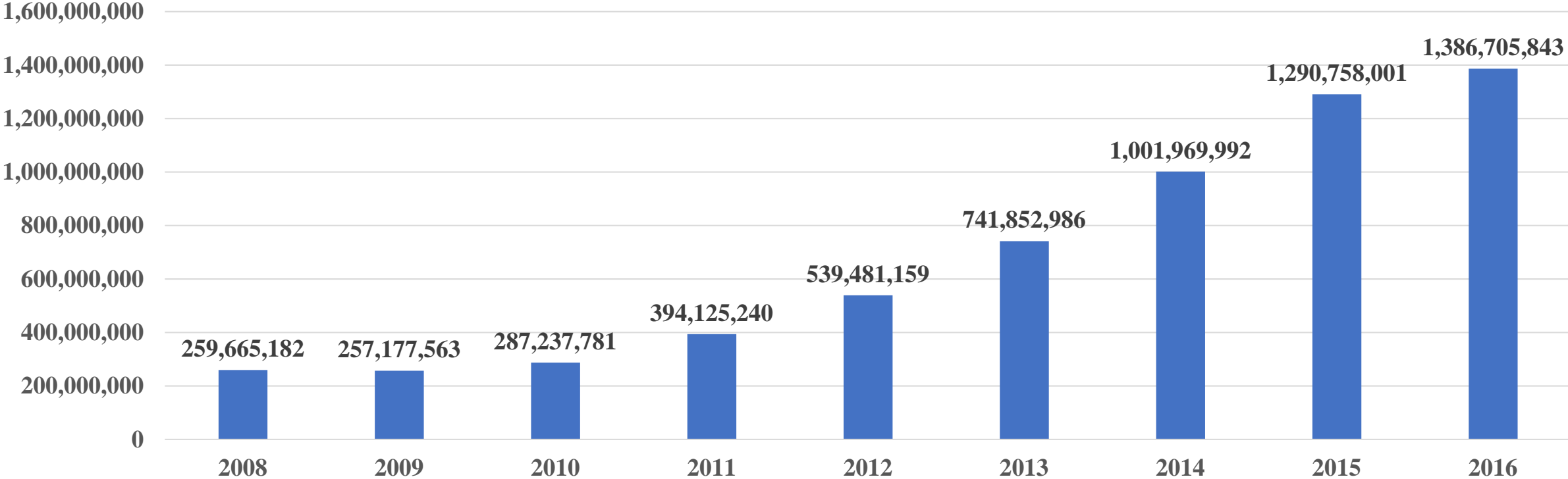


The Game Has Changed.... and natural gas presents the greatest opportunity for WV's future Generations.



# Total WV Natural Gas Production

Source: WVDEP

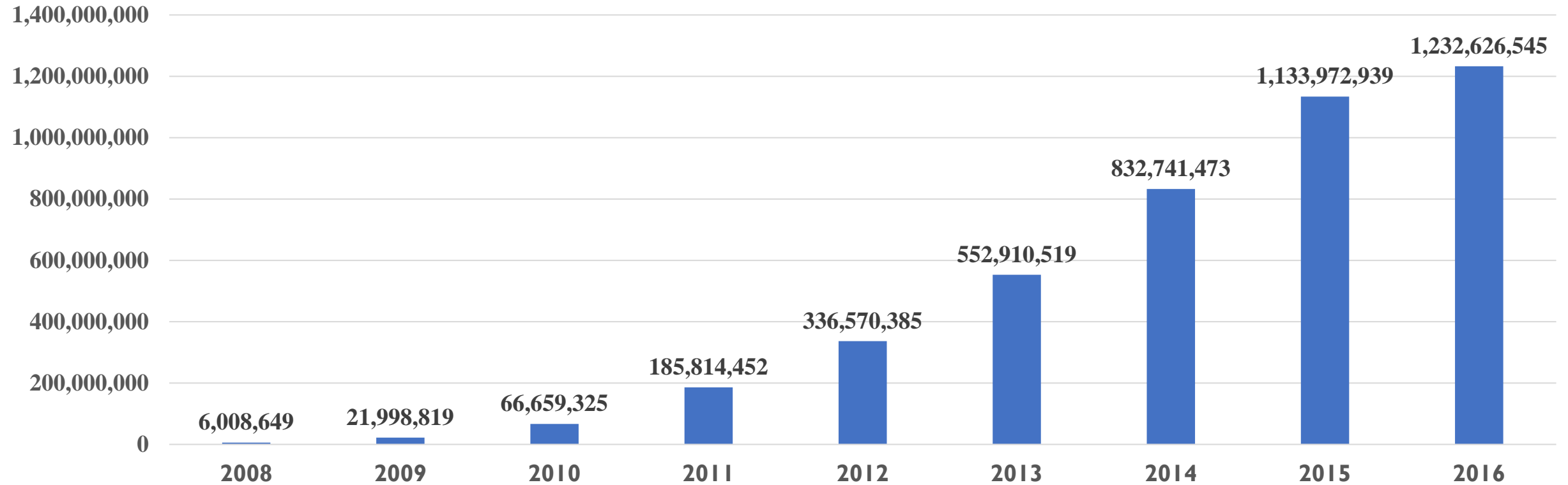


**WV Production Has Increased > 5X Since 2008.**



# Total Horizontal WV Natural Gas Production

Source: WVDEP

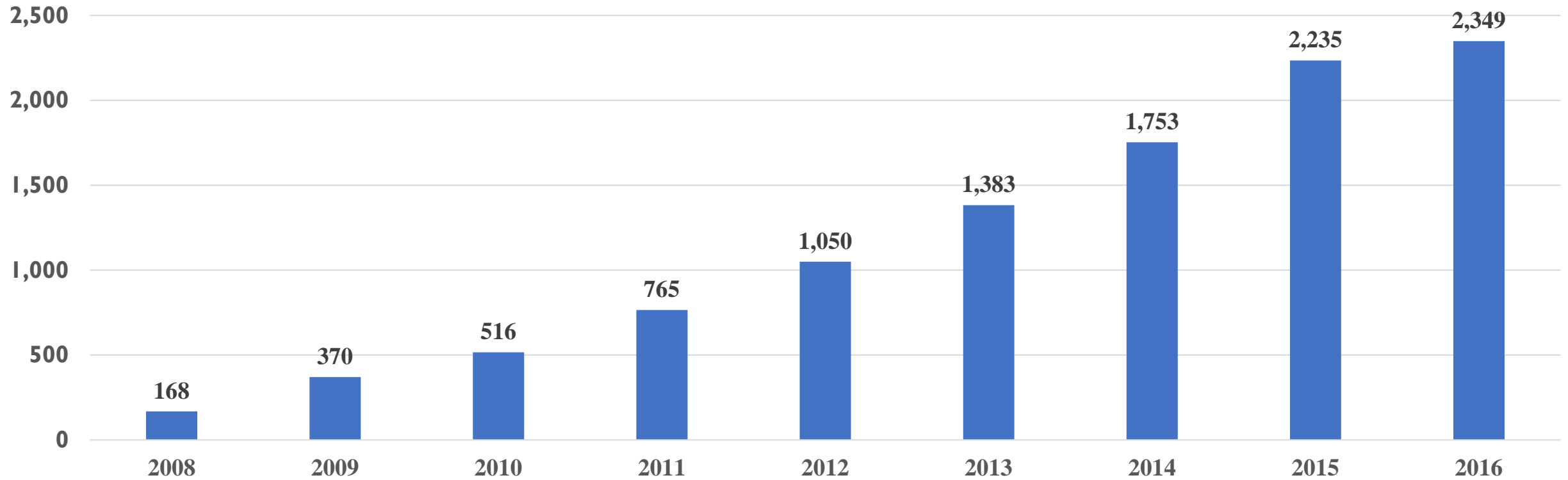


Since 2008, WV Gas Production from Horizontal Wells has increased > 20 X.



# Number of Horizontal Producing Wells

Source: WVDEP

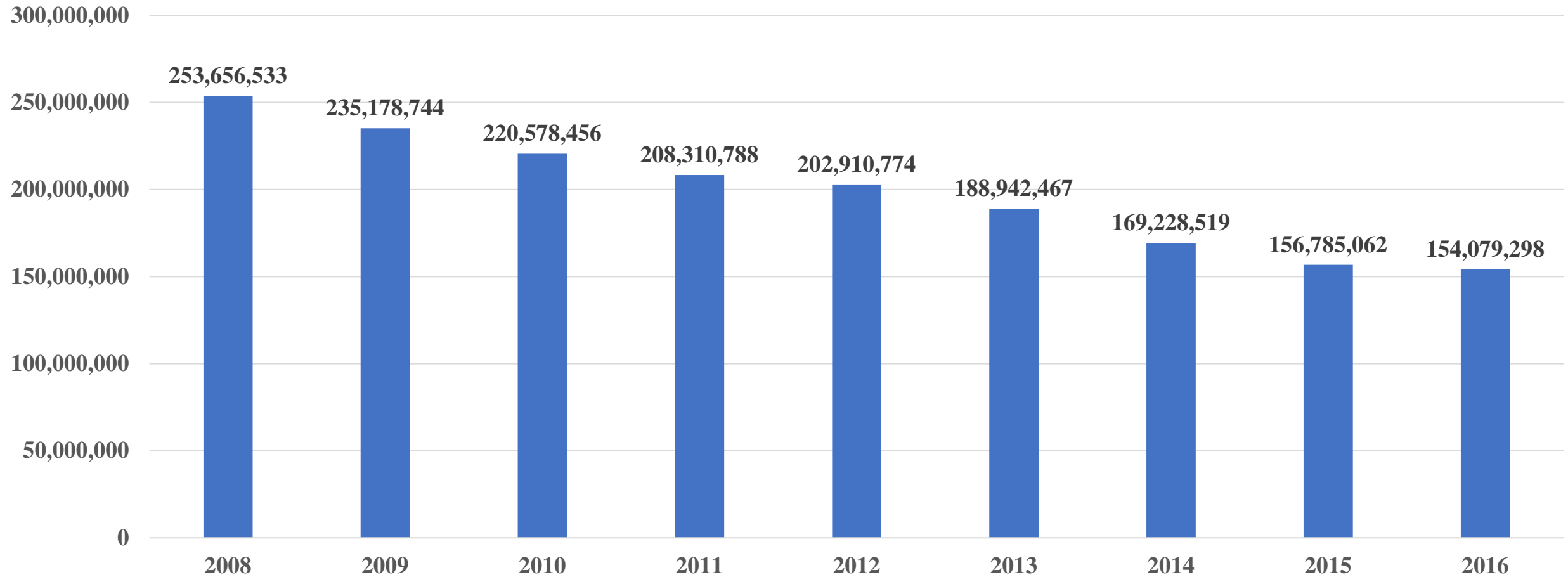


**Today, 89% of WV's Total Production is from 2,349 Horizontal Wells operated by ~ 15 Producers.**



# Total WV Conventional Natural Gas Production

Source: WVDEP

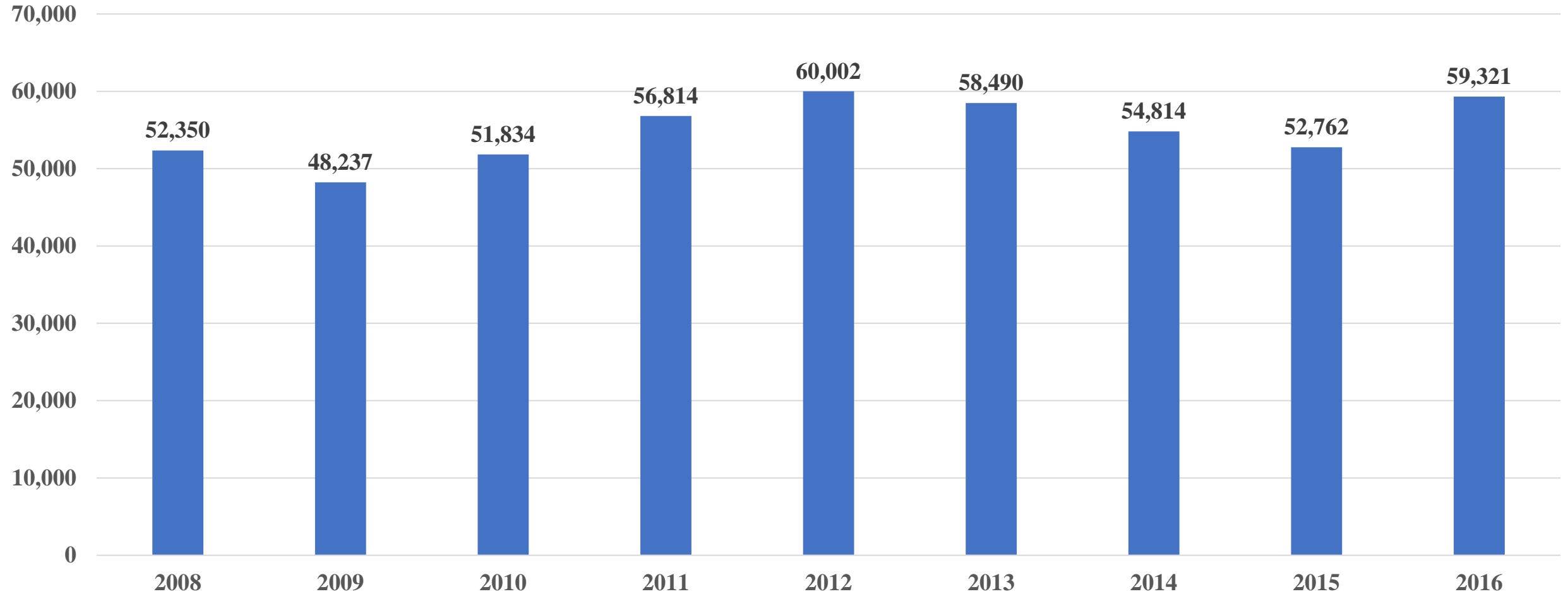


**Since 2008, WV Gas Production from Conventional Wells has decreased 40%.**



# Number of Conventional Producing Wells

Source: WVDEP



**11% of WV's Total Gas Production is from 59,321 conventional, vertical wells operated by ~ 1,422 Producers (many of which are family owned companies operated by life long West Virginians).**



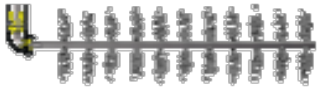
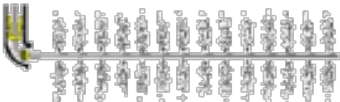
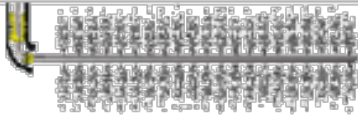

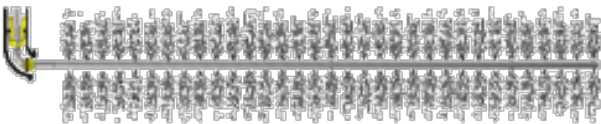
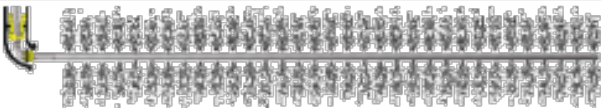
# Top Natural Gas Producing Counties In 2016

Source: WVGES

<b>1. 2016: Doddridge (334.5 Bcf)</b>	<b>2015:Doddridge (364.0 Bcf)</b>
<b>2. 2016: Wetzel (208.7 Bcf)</b>	<b>2015: Wetzel (200.4 Bcf)</b>
<b>3. 2016: Marshall (143.1 Bcf)</b>	<b>2015: Harrison (143.5 Bcf)</b>
<b>4. 2016: Ritchie (130.7 Bcf)</b>	<b>2015: Marshall (138.1Bcf)</b>
<b>5. 2016: Harrison (128.3 Bcf)</b>	<b>2015: Ritchie (84.3 Bcf)</b>
<b>6. 2016 Tyler (120.9Bcf)</b>	<b>2015: Tyler (62.1 Bcf)</b>
<b>7. 2016: Ohio (49.0 Bcf)</b>	<b>2015: Ohio (39.1 Bcf)</b>
<b>8. 2016: Taylor ( 36.7 Bcf)</b>	<b>2015: Taylor (29.8 Bcf)</b>
<b>9. 2016: Marion (30.0 Bcf)</b>	<b>2105: Barbour (29.7 Bcf)</b>
<b>10. 2016: Barbour (23.0 Bcf)</b>	<b>2015: Marion (25.7 Bcf)</b>

While Northern WV production has grown exponentially, Southern WV (a historic development area) has lacked any significant development for nearly a decade = GAS SHORTAGE?

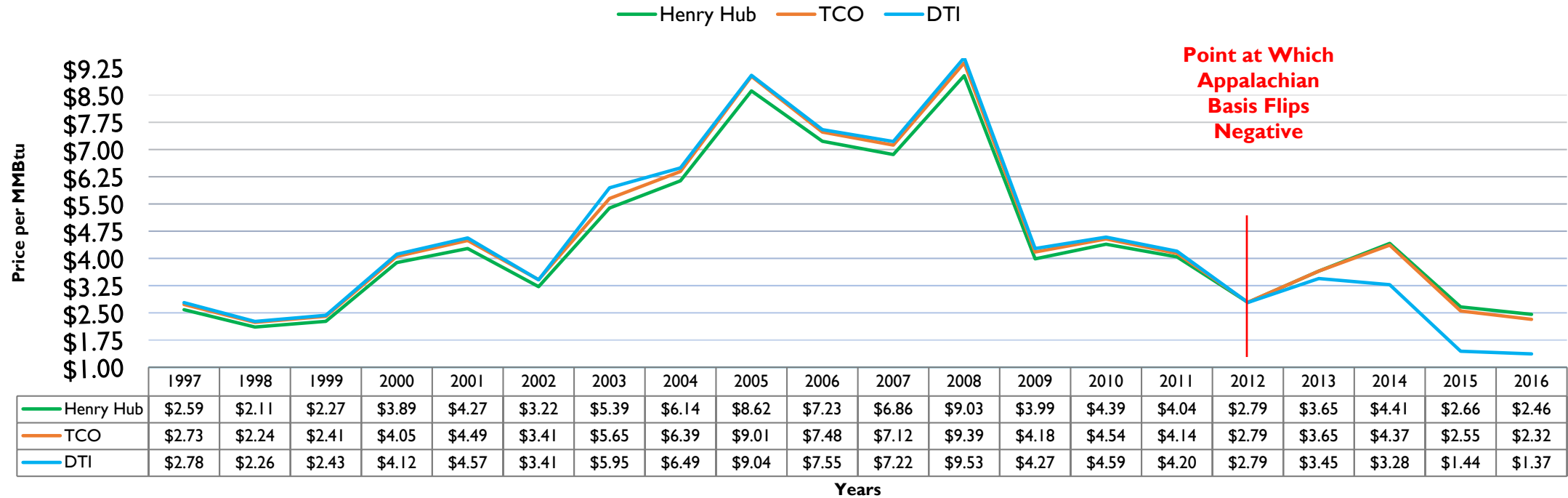
# How'd We Do It? Technology & Efficiency

Company	Illustrative	Description	Years	EUR / F&D
<b>Gen 1</b>		<ul style="list-style-type: none"> <li>4,200' Laterals</li> <li>677 lb/ft</li> <li>11 frac stages</li> </ul>	2008 - 2012	<ul style="list-style-type: none"> <li>EUR: 3.8 BCF</li> <li>BCF/1,000': 0.9</li> <li>F&amp;D: \$3.04/MCFE</li> </ul>
<b>Gen 2</b>		<ul style="list-style-type: none"> <li>4,200' Laterals</li> <li>1,200 lb/ft</li> <li>13 frac stages</li> </ul>	2008 - 2014	<ul style="list-style-type: none"> <li>EUR: 5.8 BCF</li> <li>BCF/1,000': 1.4</li> <li>F&amp;D: \$2.01/MCFE</li> </ul>
<b>Gen 3</b>		<ul style="list-style-type: none"> <li>4,500' Laterals</li> <li>2,700 lb/ft</li> <li>21 frac stages</li> </ul>	2015	<ul style="list-style-type: none"> <li>EUR: 10 BCF</li> <li>BCF/1,000': 2.3</li> <li>F&amp;D: \$0.90/MCFE</li> </ul>
<b>Gen 4</b>		<ul style="list-style-type: none"> <li>7,500' Laterals</li> <li>2,700 lb/ft</li> <li>27 frac stages</li> </ul>	2015	<ul style="list-style-type: none"> <li>EUR: 15 BCF</li> <li>BCF/1,000': 2.0</li> <li>F&amp;D: \$0.88/MCFE</li> </ul>
<b>Gen 5</b>		<ul style="list-style-type: none"> <li>7,500' Laterals</li> <li>3,600 lb/ft</li> <li>33 frac stages</li> </ul>	2015	<ul style="list-style-type: none"> <li>EUR: 20 BCF</li> <li>BCF/1,000': 2.7</li> <li>F&amp;D: \$0.69/MCFE</li> </ul>
<b>Next Gen Completions</b>		<ul style="list-style-type: none"> <li>7,500' Laterals</li> <li>4,200 - 4,500 lb/ft</li> <li>33 frac stages</li> </ul>	2016+	<ul style="list-style-type: none"> <li>EUR: 22 BCF +</li> <li>BCF/1,000': 2.9 +</li> <li>F&amp;D: \$0.65/MCFE</li> </ul>

Today, the current record lateral is 19,300 ft. and located in OH while WV is averaging ~6,000 ft. WV policies are negatively impacting our competitiveness for investment dollars.

# A Victim Of Our Own Success?

## Average Annual Natural Gas Prices 1997-2016 WV Producer Markets vs. Henry Hub

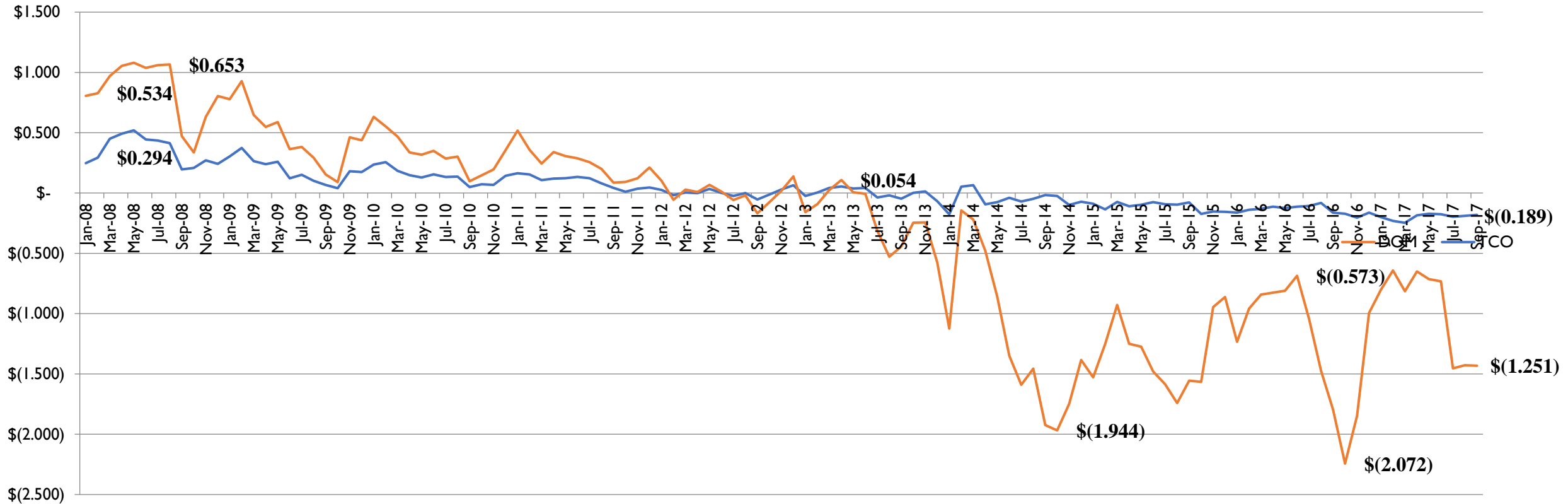


With current pricing, continued drilling and operating efficiencies are the only path to survival for WV producers.



# Basis Differential to Henry Hub Spot

Source: Direct Energy Business Marketing LLC



**Due to the current over supply situation in the Northeast, WV gas no longer affords a premium  
And is significantly discounted from the published Henry Hub price.**



# The Players are Changing/Consolidating in WV

- **Chesapeake is out. Sold to SWN (Northern WV) and CORE Southern WV)**
- **Cabot is out (concentrating on NE PA). Sold to NYTIS/Carbon Natural**
- **Stone Energy is out. Filed Chapter 11. Sold to EQT**
- **TransEnergy is out. Sold to EQT**
- **Statoil is out. Sold to EQT**
- **Gastar is out. Sold to Tug Hill Operating**
- **Noble is out. Sold to HG Energy**
- **Magnum Hunter is out. Filed Chapter 11, reorganized to Blue Ridge Mountain Resources**

WV competitiveness with other states and the market downturn is having a real impact in WV

# WV Producers Impact

- **First Marcellus well drilled in Marshall County, West Virginia by Chesapeake Energy in 2007. Now, the biggest natural gas producing basin in the US**
- **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 \$870 million in severance and property taxes has been paid since the implementation of horizontal drilling (2008-2016)**
- **More than \$255 million in special production assessment taxes paid to help retire the Unfunded Workers' Comp Debt (2008-2016)**
- **Estimated \$500 Million (or one half BILLION) in net (after expenses) royalty payments in 2016 (many of which are to fellow West Virginians).**

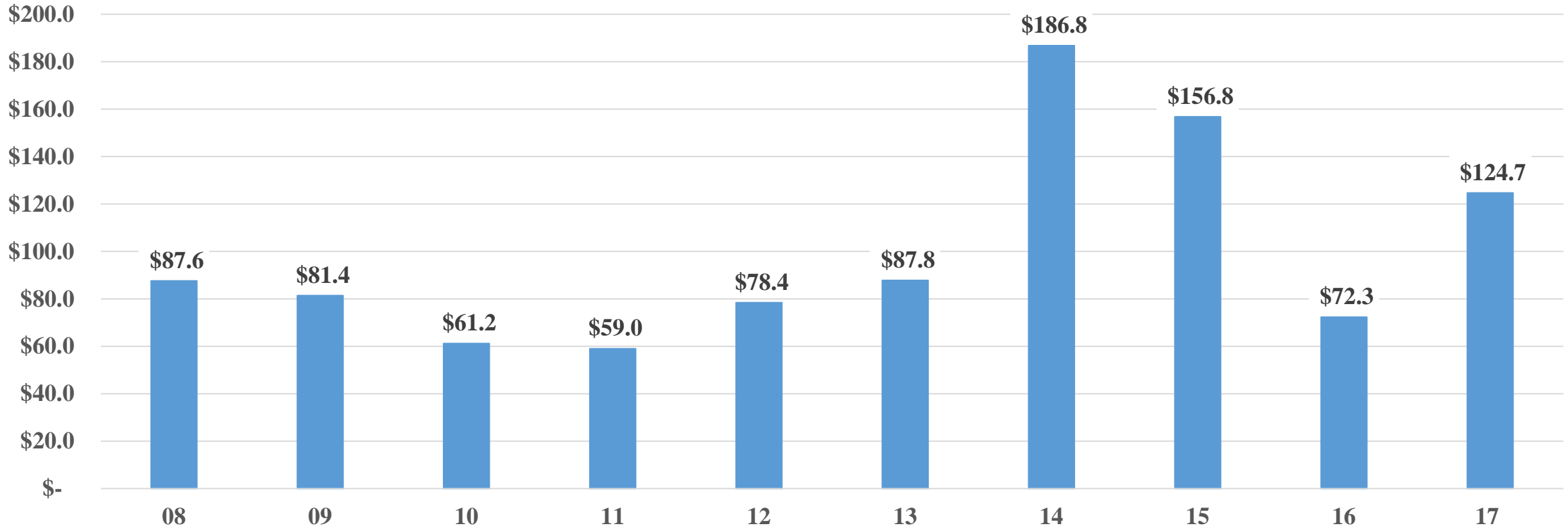
• Source: WV State Tax Department

**One** WV producer distributed \$160 Million to the mineral owners in 2016 alone.



# Oil & Natural Gas Severance Tax Contributions (Millions)

Source: WV State Department of Revenue

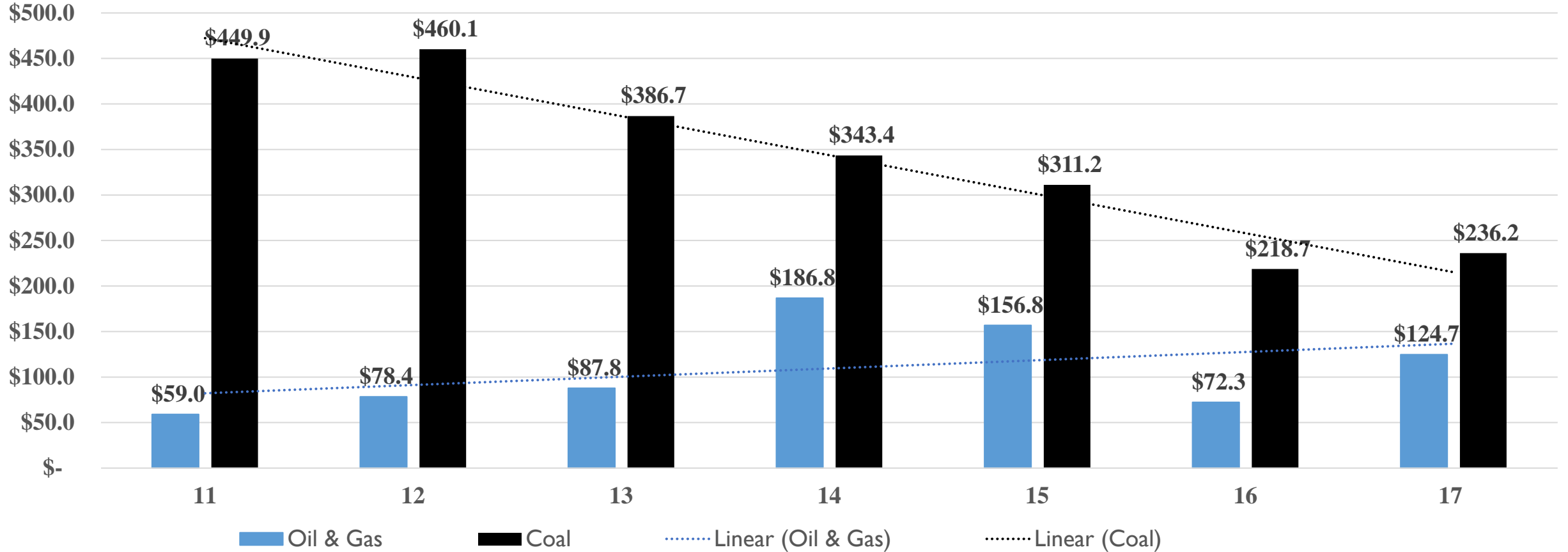


**Market prices do impact severance tax collections. Producers believe that by building new pipelines to new markets, the basis differential will improve => Severance Taxes.**

# WV Severance Tax Coal Vs Gas Comparison

(Millions)

Source: WV State Department of Revenue



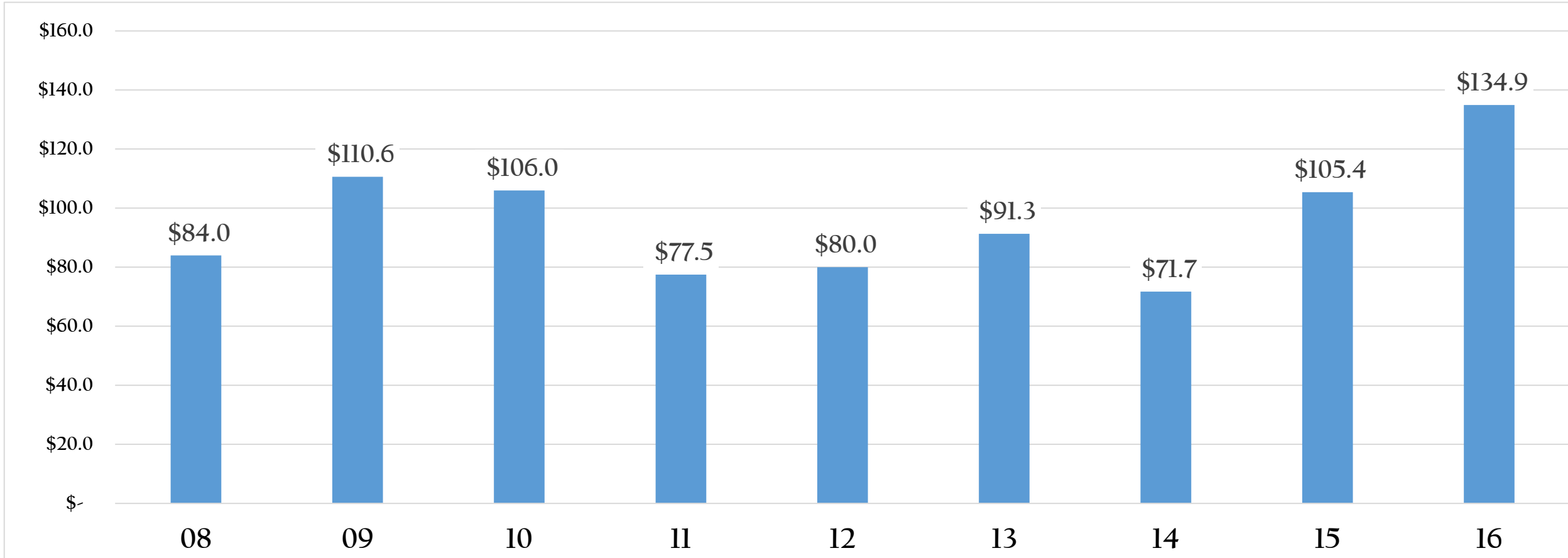
Since 2011, Natural Gas severance tax has more than doubled while Coal has decreased nearly 50%.



# Producers Oil and Gas Property Tax Contributions

(Millions)

Source: WV State Department of Revenue



**WV Producers are contributing \$100's of millions to the state and local tax coffers. NOT including the estimated \$500 million in 2016 in royalty payments.**



# HOPE FOR THE FUTURE

- **Safer, Cleaner, Greener & More Efficient**
  - **Increased Workforce Training**
  - ***Water Treatment & Re-Use (e.g. Antero Clearwater)***
  - **Longer laterals (Co-Tenancy needed to allow WV to better compete)**
- **Value Creation**
  - **Natural Gas Power Generation (Moundsville Power, Harrison County, & Brooke County Power)**
  - **Downstream Industries (i.e., “Rebuild the Rust Belt”)**
  - **Appalachian Storage Hub**

**Did you know: PA has 60 operating Natural gas fired power plant and 22 under construction. Ohio has 17 operating plants and 4 under construction. West Virginia has 4 operating and 0 under construction.**



**Natural Gas Can Be the Fuel and the HOPE  
for WV's Future**

**THANK YOU**