



# Shale: Improving Safety through Affordability

David J. Spigelmyer  
September 4, 2019

## Our Membership

- 150+ diverse members
- Producers, midstream and suppliers

## Our Focus

- Public:
  - Prepare region for long-term development
  - Demystifying shale development
  - Workforce readiness
  - Addressing landowner and public issues
- Operational:
  - Continuous improvement/training
  - Information sharing
  - Focus on safety and compliance
  - Developing responsible practices
- Use:
  - Maximizing benefits of affordable natural gas to secure out region's energy future

More than 95% of the natural gas in Pennsylvania is produced by MSC member companies.

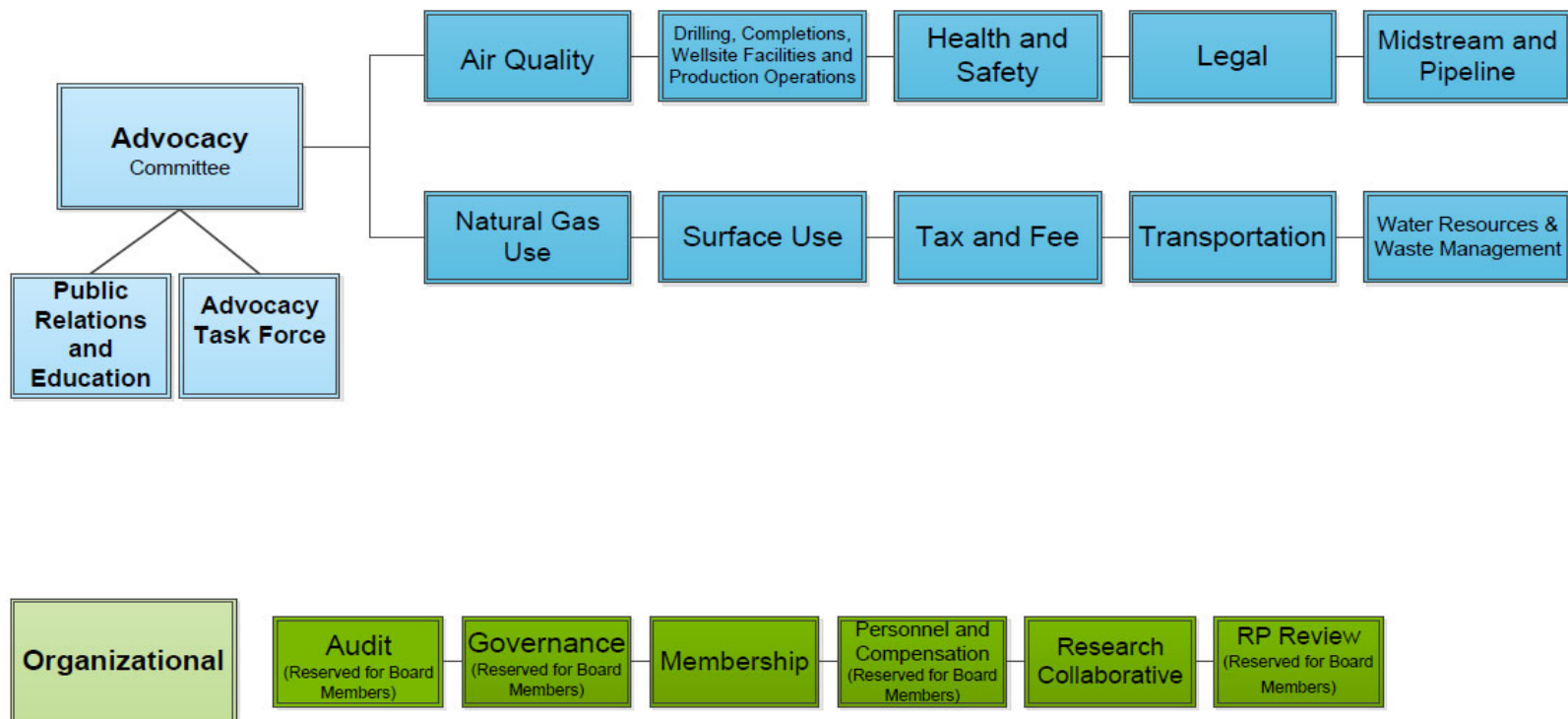
Associate Members are an integral part of the MSC and the industry's robust supply chain.

The MSC Board of Directors consists of 33 major producer and midstream companies in the Appalachian Basin.

**We recognize that to succeed in business, we not only embrace these principles, we live by them each and every day. This will be our legacy.**

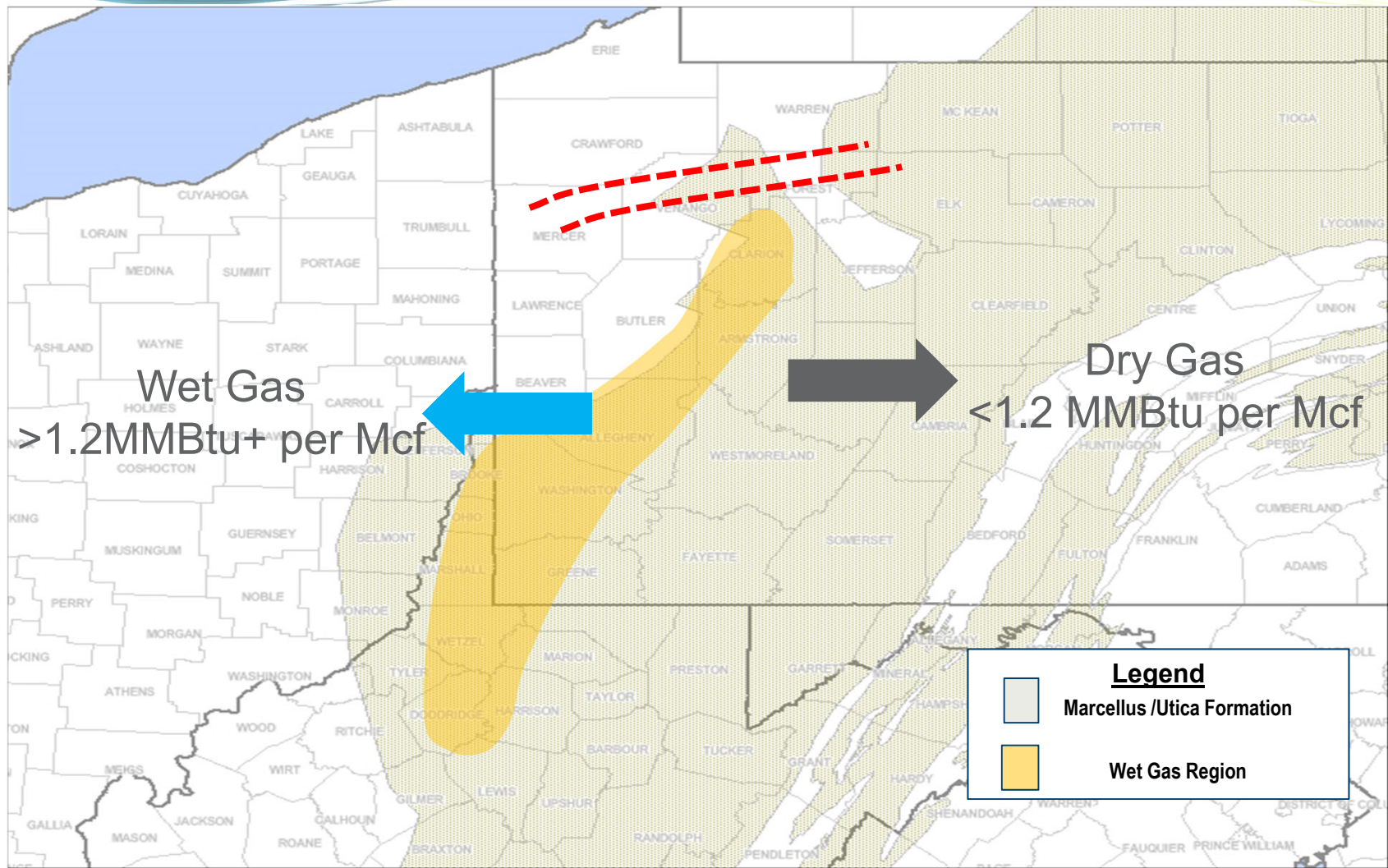
- ✓ *We provide the safest possible workplace for our employees, with our contractors, and in the communities in which we operate;*
- ✓ *We implement state-of-the-art environmental protection across our operations;*
- ✓ *We continuously improve our practices and seek transparency in our operations;*
- ✓ *We strive to attract and retain a talented and engaged local workforce;*
- ✓ *We are committed to being responsible members of the communities in which we work;*
- ✓ *We encourage spirited public dialogue and fact-based education about responsible shale gas development; and*
- ✓ *We conduct our business in a manner that will provide sustainable and broad-based economic and energy-security benefits for all.*

## 2019 MSC COMMITTEE STRUCTURE





# Feedstock: “Wet Gas” Region



# Drilling Activity in PA

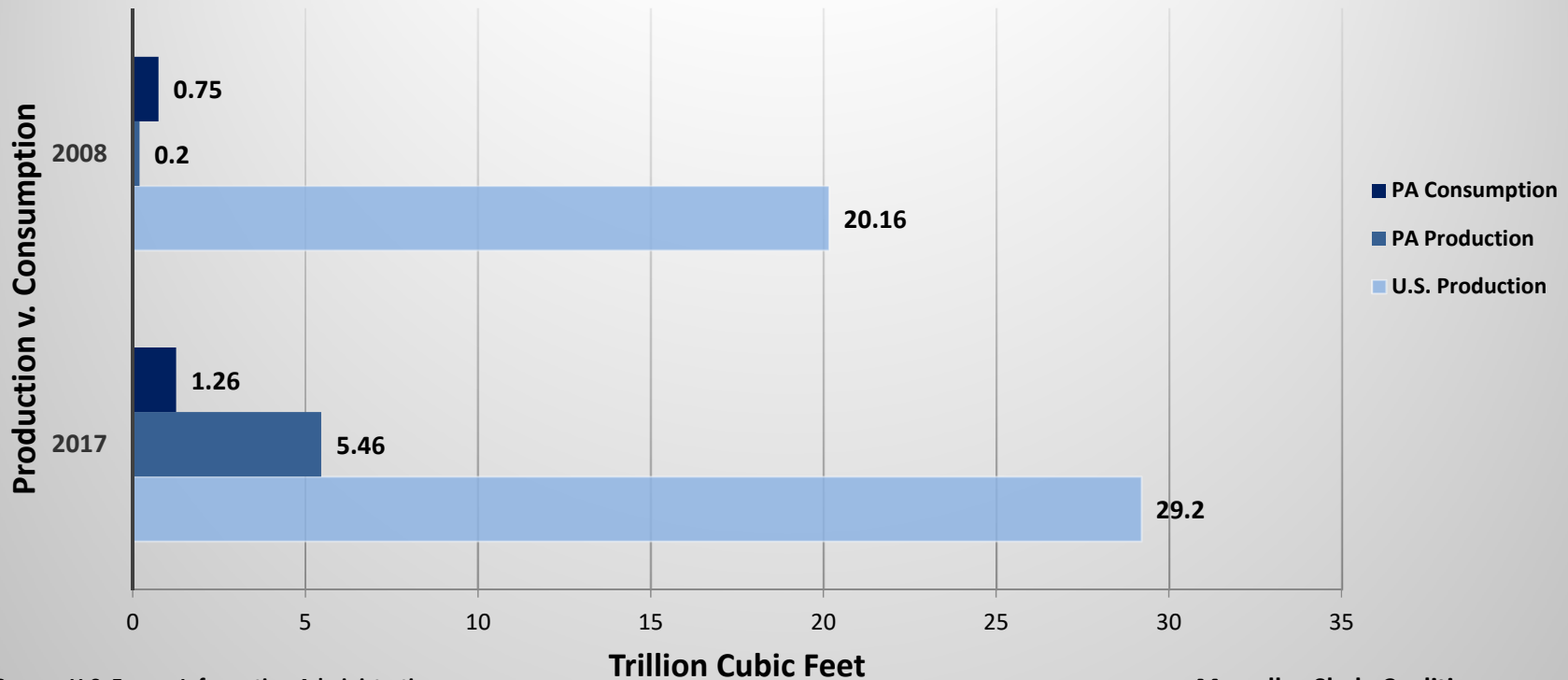
- 💧 11,003 unconventional wells\*
  - 521 inactive
  - 624 shut in
  - 731 drilling not completed
- 💧 9,082 unconventional wells producing natural gas
- 💧 3,820 unconventional well pads
- 💧 18+ billion cubic feet/day
  - 6 trillion+ cubic feet/year
  - 32% of total U.S. shale gas production
- 💧 20% of total U.S. natural gas production
- 💧 2<sup>nd</sup> largest natural gas producer in U.S.



*Drilling rig in Potter County, PA*

# PA: World-Class Producer

## Pennsylvania Natural Gas *Net Importer to Net Exporter* 2008 vs. 2017

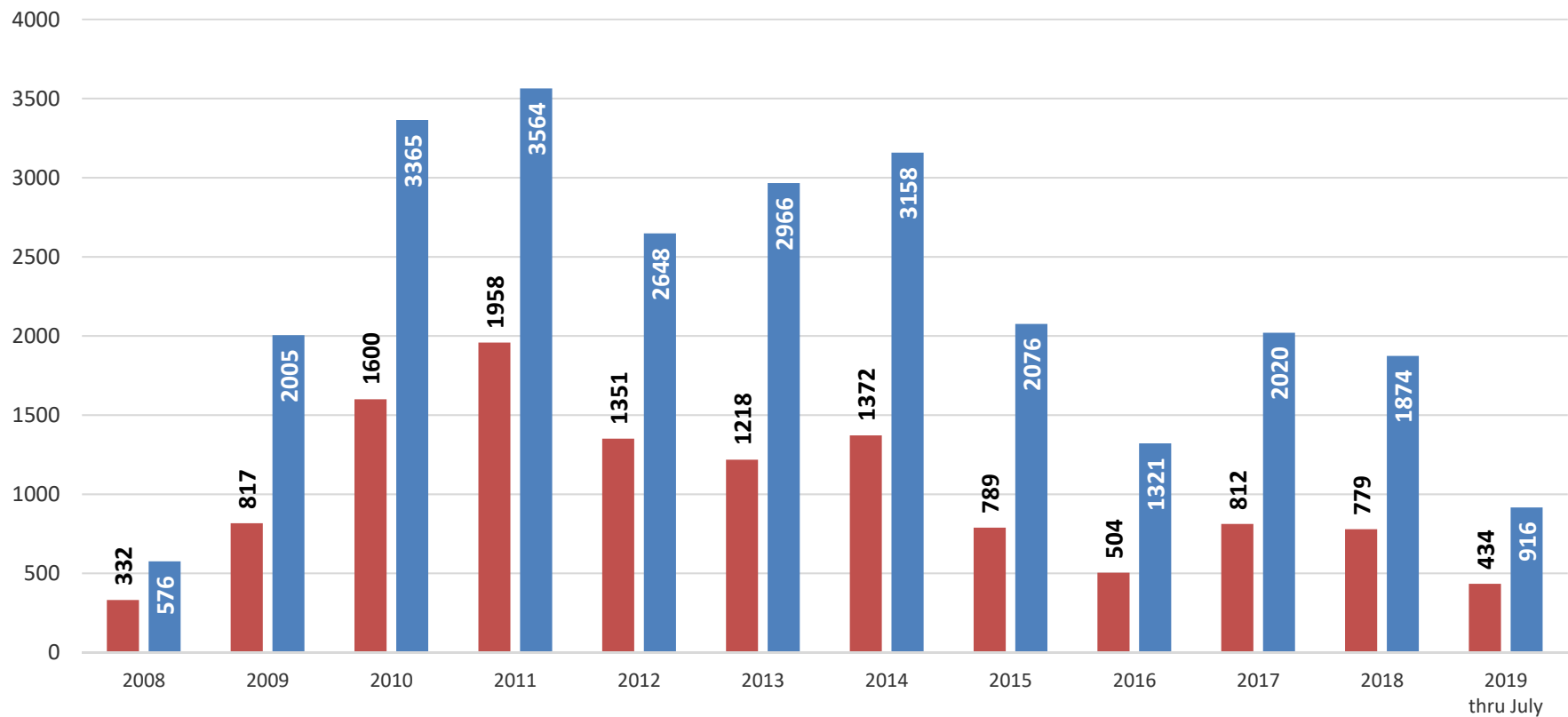


Source: U.S. Energy Information Administration

Marcellus Shale Coalition

# Drilling Activity in PA

## Unconventional Well Activity 2008-2019



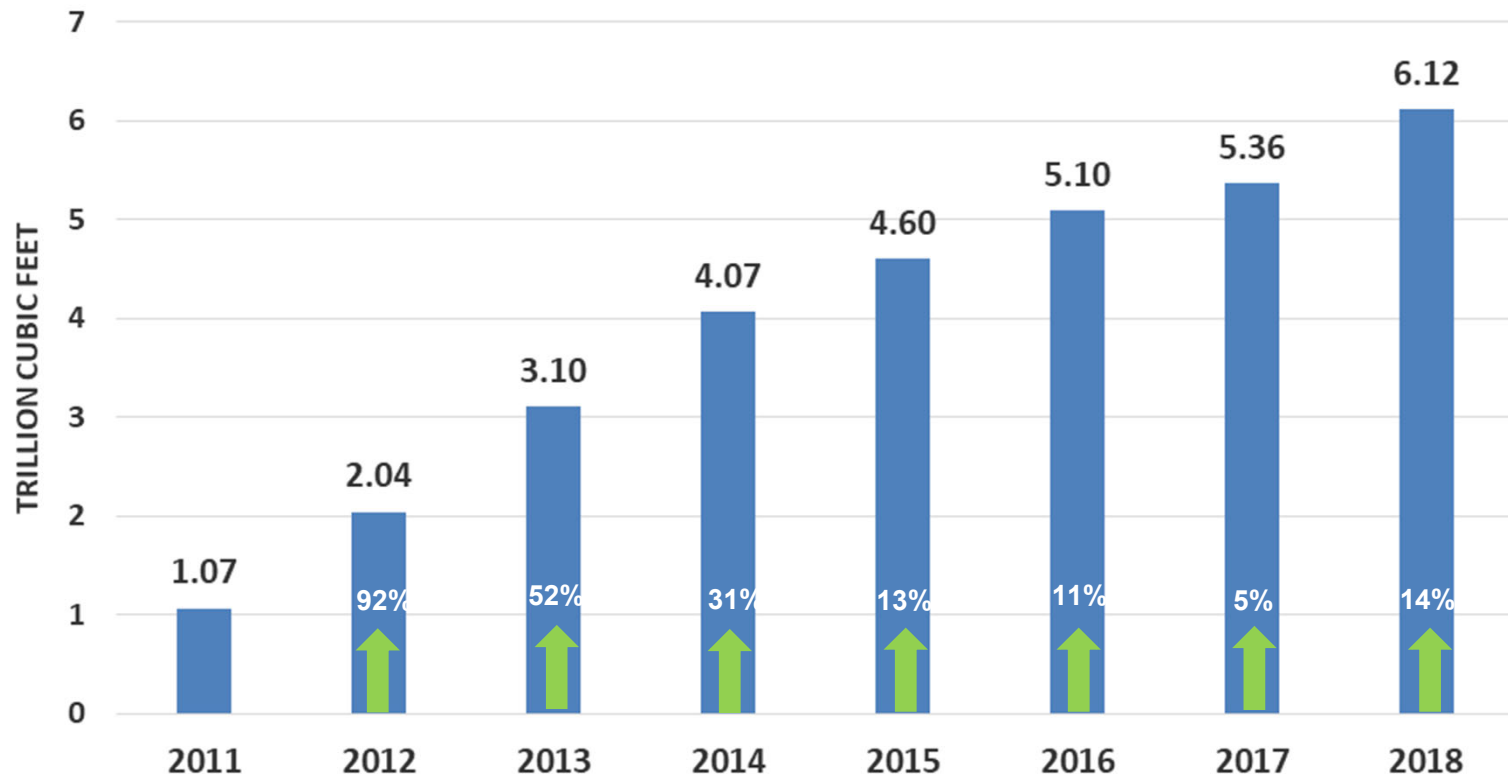
Source: PA DEP Well Permit & Spud Data Report

■ Spud ■ Permitted

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## PA Unconventional Shale Gas Production 2011 - 2018

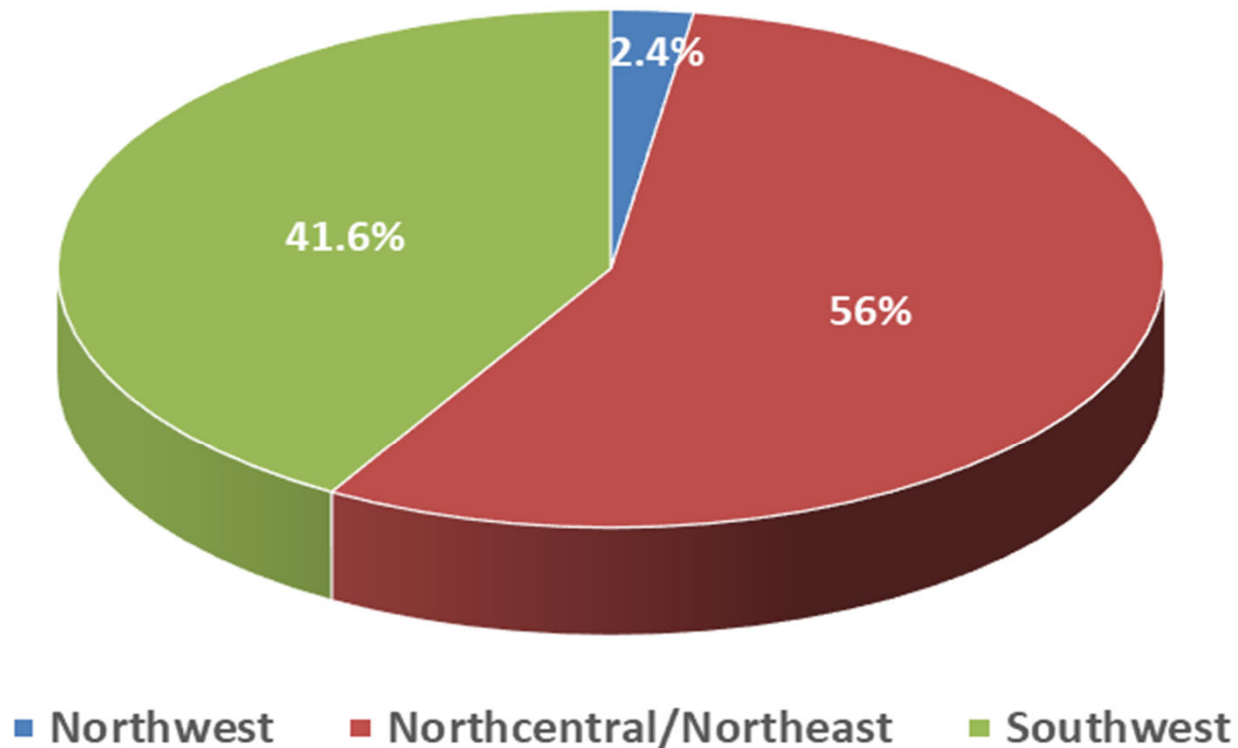


Source: Marcellus Shale Coalition & PA DEP

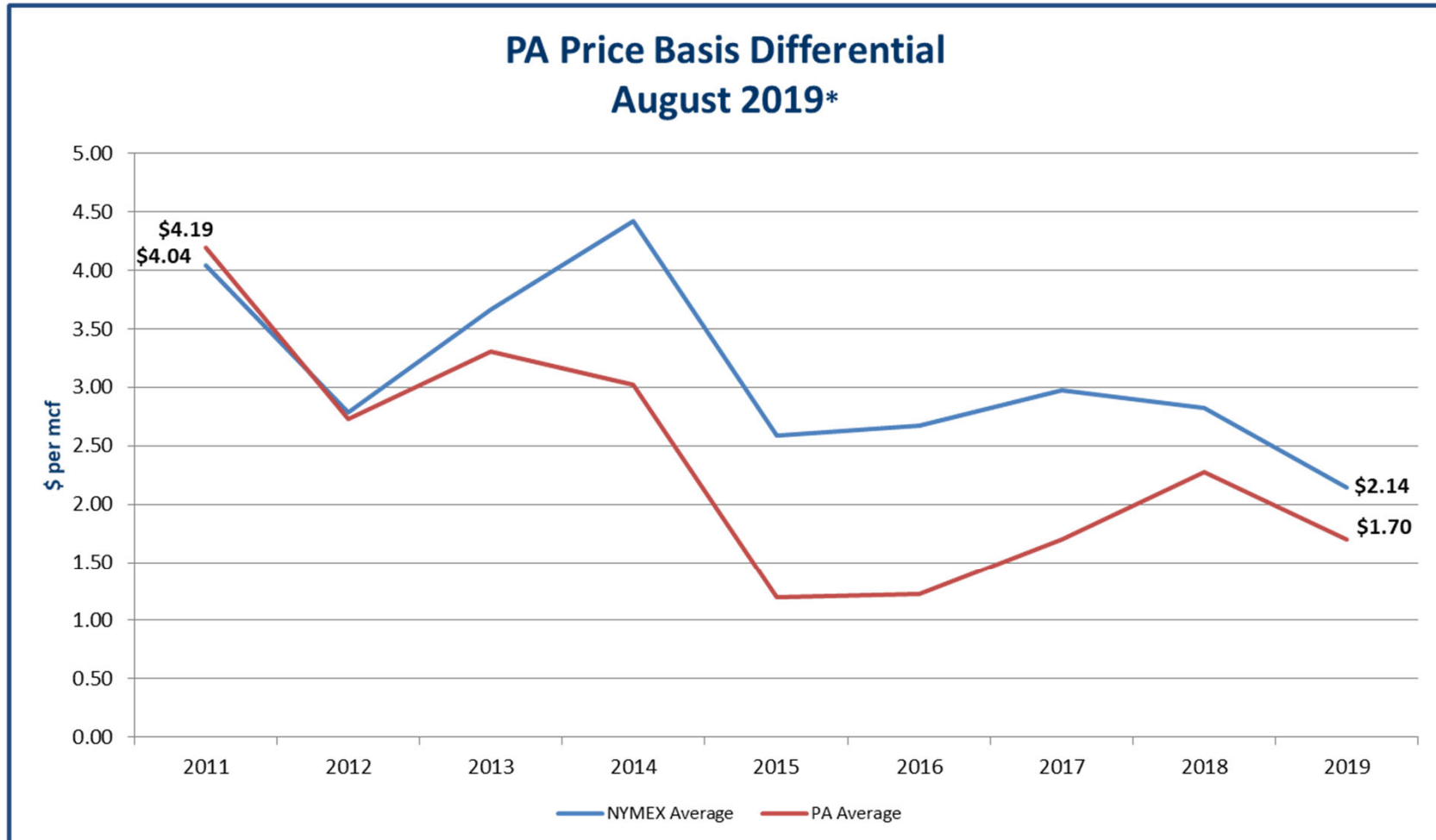
## Top Ten Producing Counties by Volume (2018)

County	Production (MCF)	% of PA Production	# of Producing Wells
Susquehanna	1,464,724,606	24%	1341
Washington	1,160,009,919	19%	1346
Greene	798,336,876	13%	1059
Bradford	765,241,867	13%	1193
Lycoming	355,824,382	6%	806
Wyoming	344,825,491	6%	243
Tioga	301,415,390	5%	623
Butler	216,607,396	4%	456
Sullivan	135,481,511	2%	119
Westmoreland	77,804,422	1%	229

## Unconventional Natural Gas Production By Region - 2018



# Where Are We On Price?



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\* August 2019 Monthly Bidweek Price

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# Benefiting Consumers

## Lower Prices = Customer Savings

- 💧 Wholesale electric prices down 41% since 2008
- 💧 Natural gas prices for end-use customers down 56% - 76% since 2008
- 💧 Average annual savings > \$1,100 - \$2,200 per household

# Benefiting Consumers

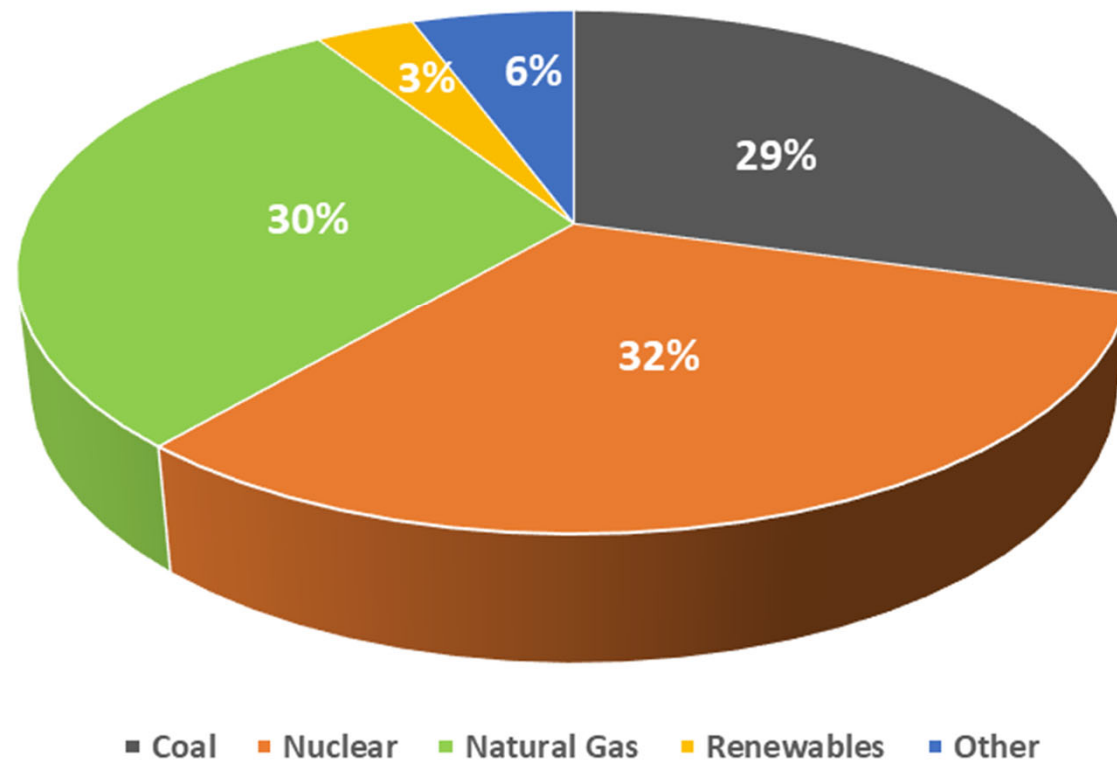
## Lower Prices = Customer Savings 2008 - 2018

Utility	PGC Rate / mcf		% Change	Customer Savings**
	2008*	2018*	2008-2018	Annual
PECO	\$13.16	\$5.05	- 62%	\$1,460
NFG	\$10.86	\$4.50	- 59%	\$1,145
PGW	\$13.02	\$3.62	- 72%	\$1,692
Columbia	\$15.94	\$3.84	- 76%	\$2,178
UGI	\$13.26	\$5.89	- 56%	\$1,327
UGI Penn	\$11.68	\$4.33	- 63%	\$1,323
Peoples/Equitable	\$15.89	\$4.53	- 71%	\$2,045

\* PUC Purchased Gas Cost (PGC) Rate in Effect Prior to Annual Review: 2008 & 2017

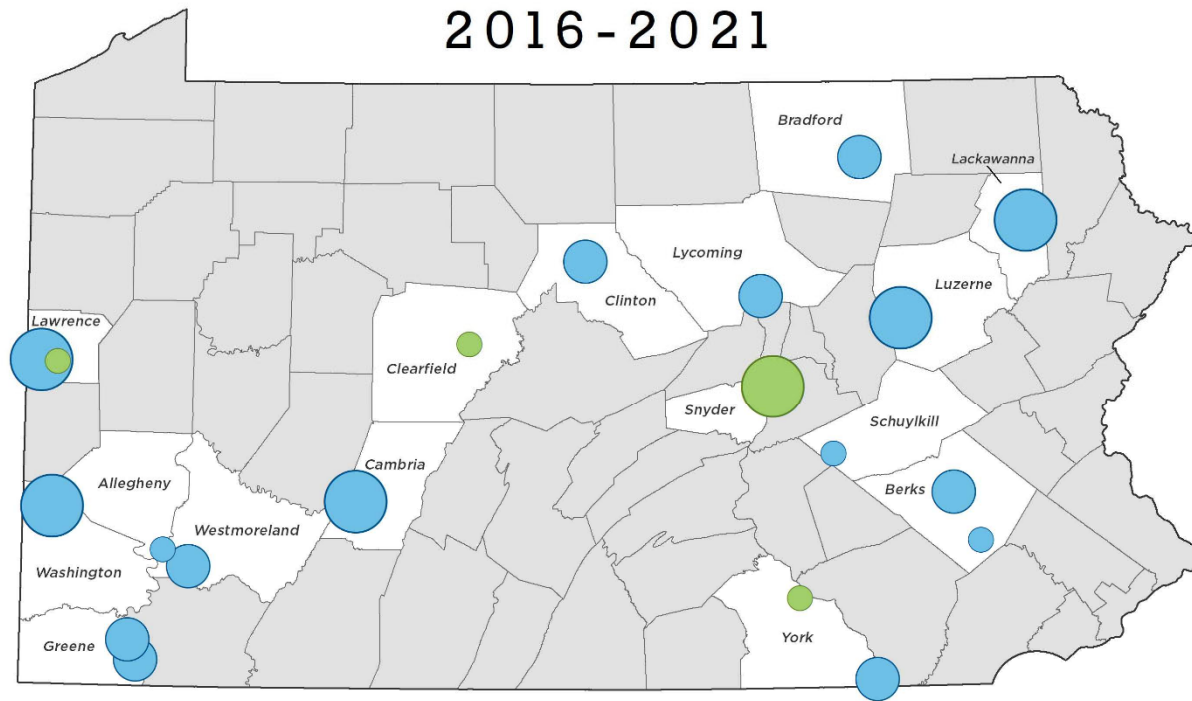
\*\* Residential heating customer using 15 MCF/month

PA Electric Generation by Fuel Source  
2018



Source: PA Department of Environmental Protection – Energy  
Assessment Report




## NEW PA NATURAL GAS GENERATION 2016-2021





Total Amount  
Invested: \$13 Billion

Total New Generating  
Capacity: 17,000 MW

**Generating Facility Capital Investment**

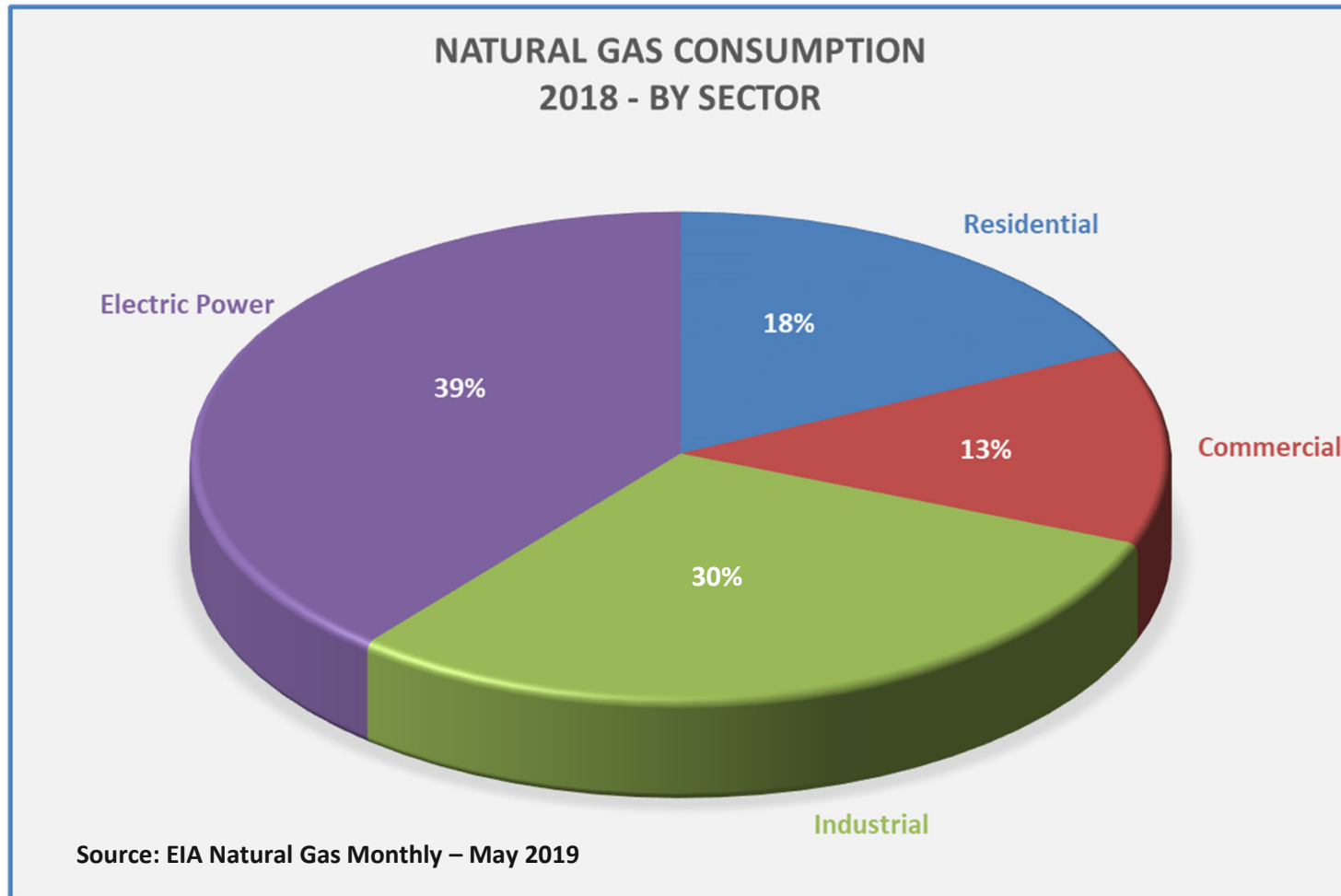
 \$850 Mil +  
 \$400 Mil - \$850 Mil  
 < \$399 Mil

 New Natural Gas  
 Coal to Natural Gas Conversion

*This product is for illustrative purposes only. Original data has been provided by public sources. Neither Bertison-George nor the Marcellus Shale Coalition can be held liable for any errors or omissions. This map is not to be used in any legal capacity.*



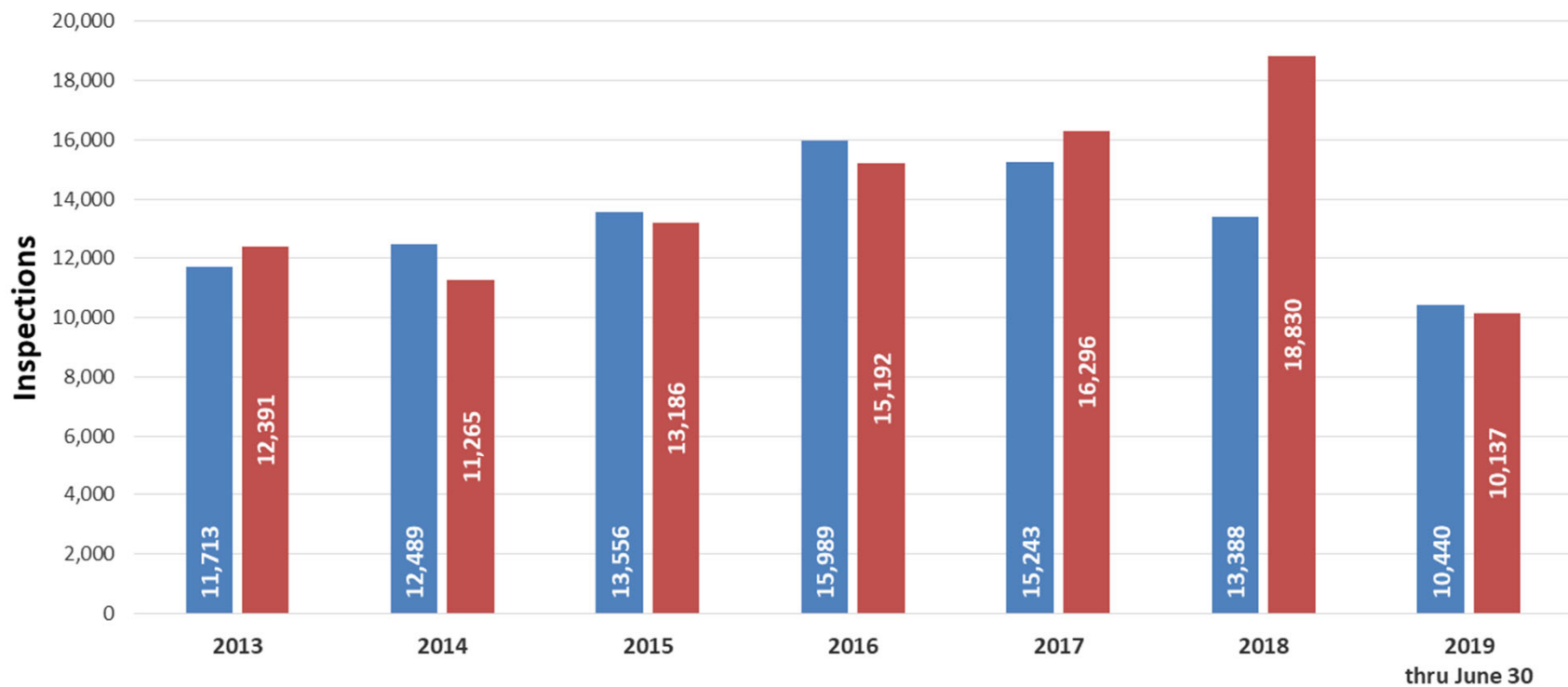
# Natural Gas End Use



# Protecting Our Environment

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## PA DEP Inspections Conventional & Unconventional 2013 - 2019



Source: PA Department of Environmental Protection Annual Report ('13-'18) and Compliance Report website ('19)

■ Conventional ■ Unconventional

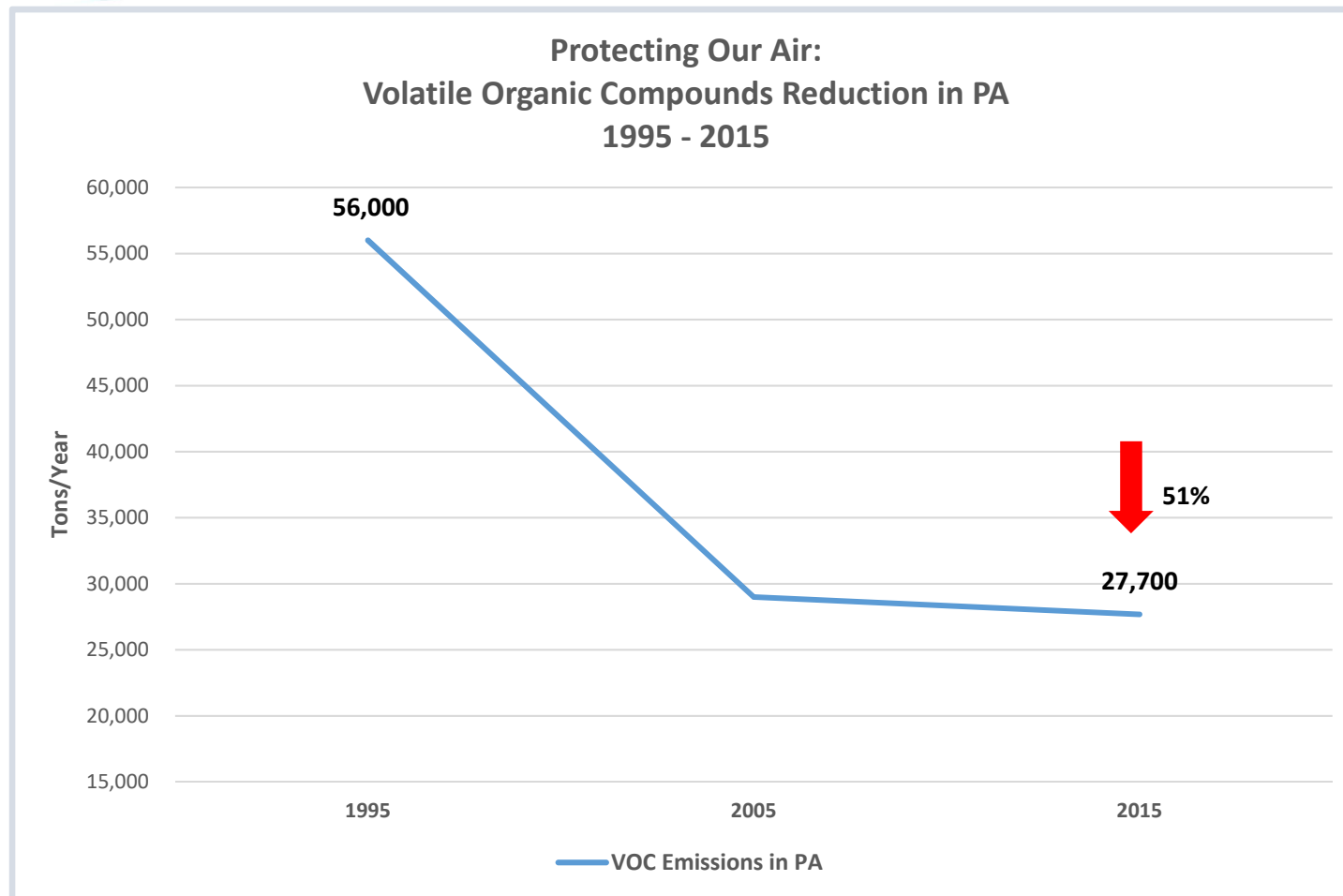
## Unconventional Natural Gas Environmental Compliance Rate

💧 2017	16,793 inspections	97.7%
💧 2018	19,617 inspections	98.3%



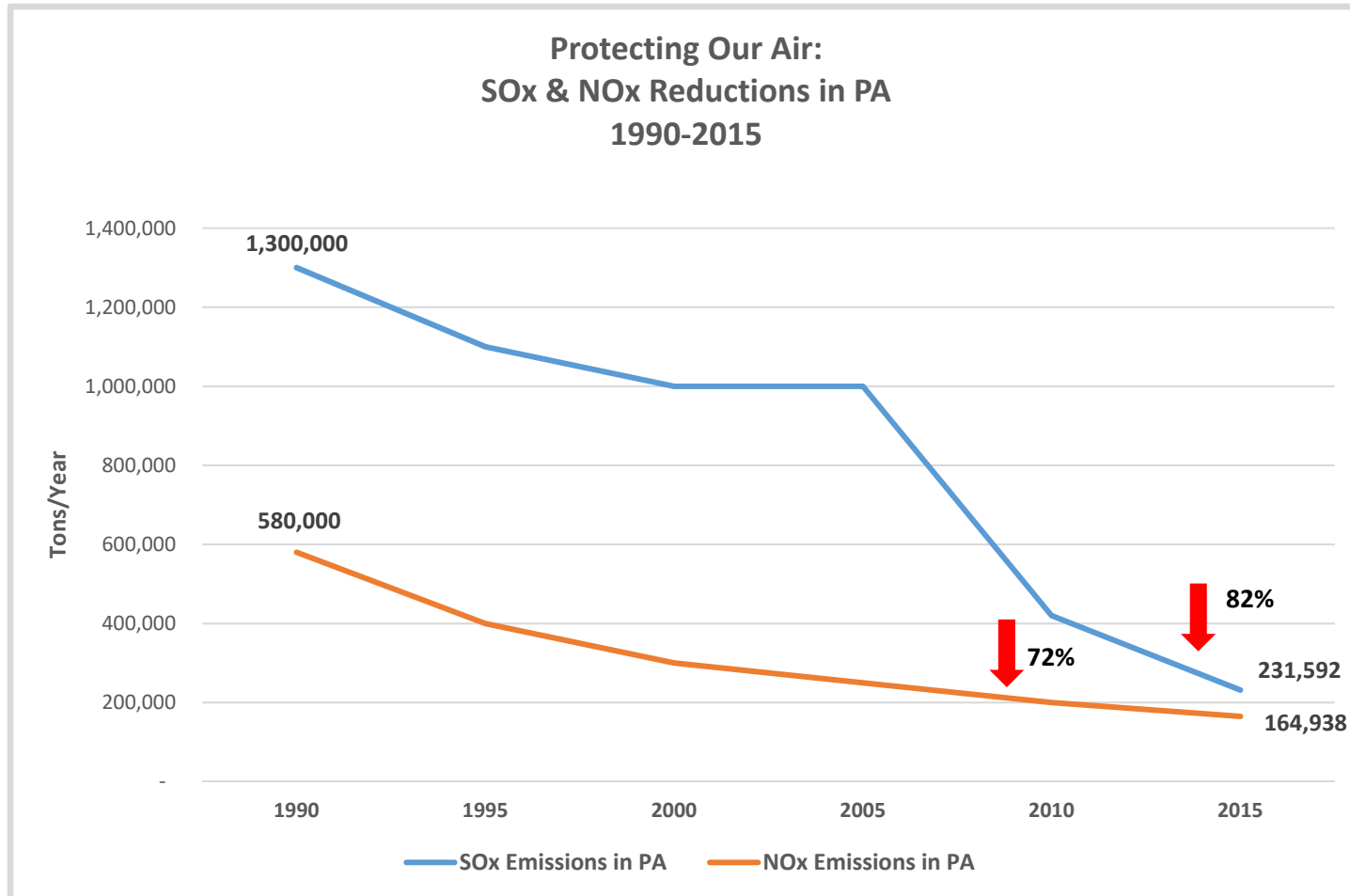
# Enhancing Air Quality

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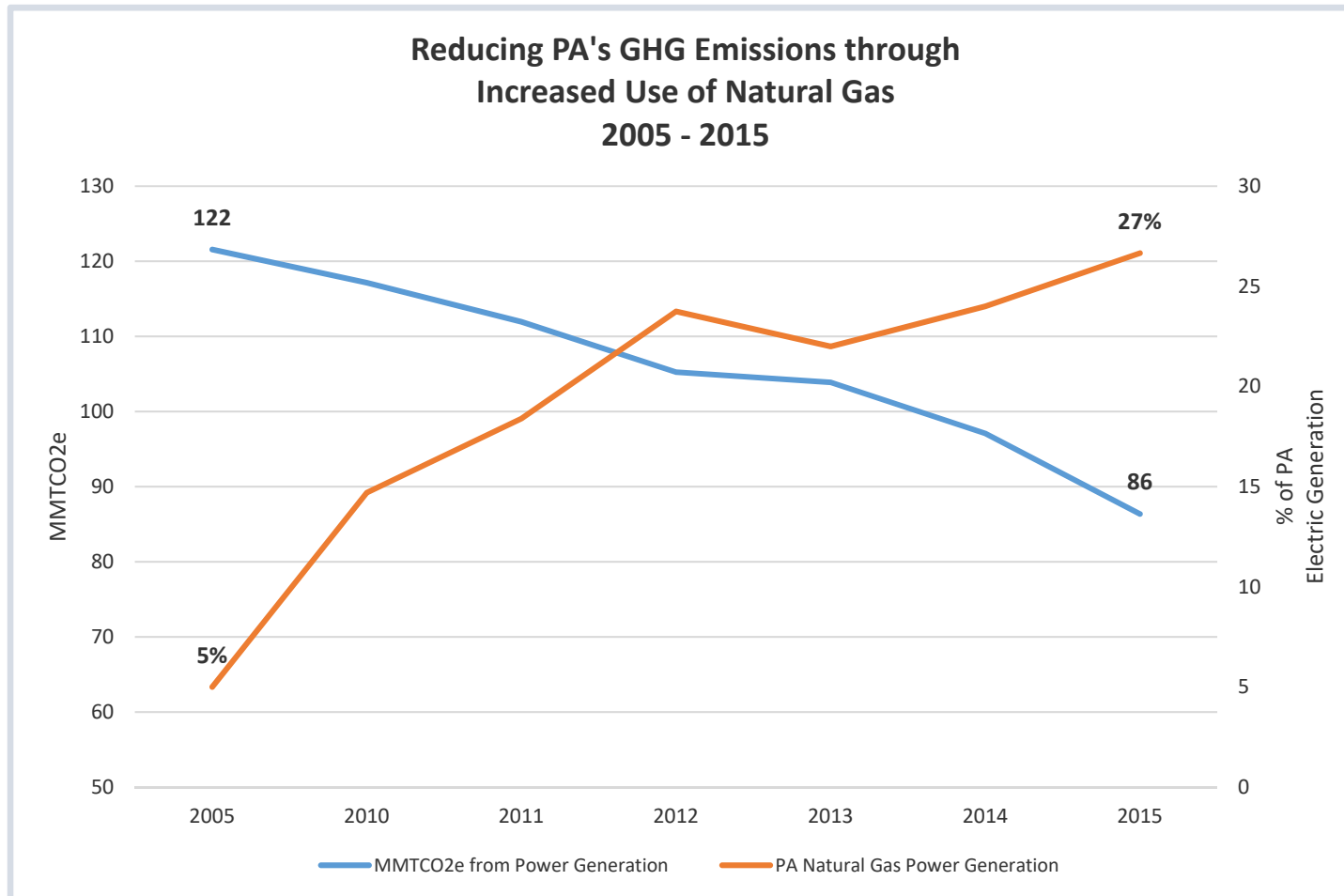
Source: PA Department of Environmental Protection – Stationary  
Source Emission Inventory 2012-2015

# Enhancing Air Quality



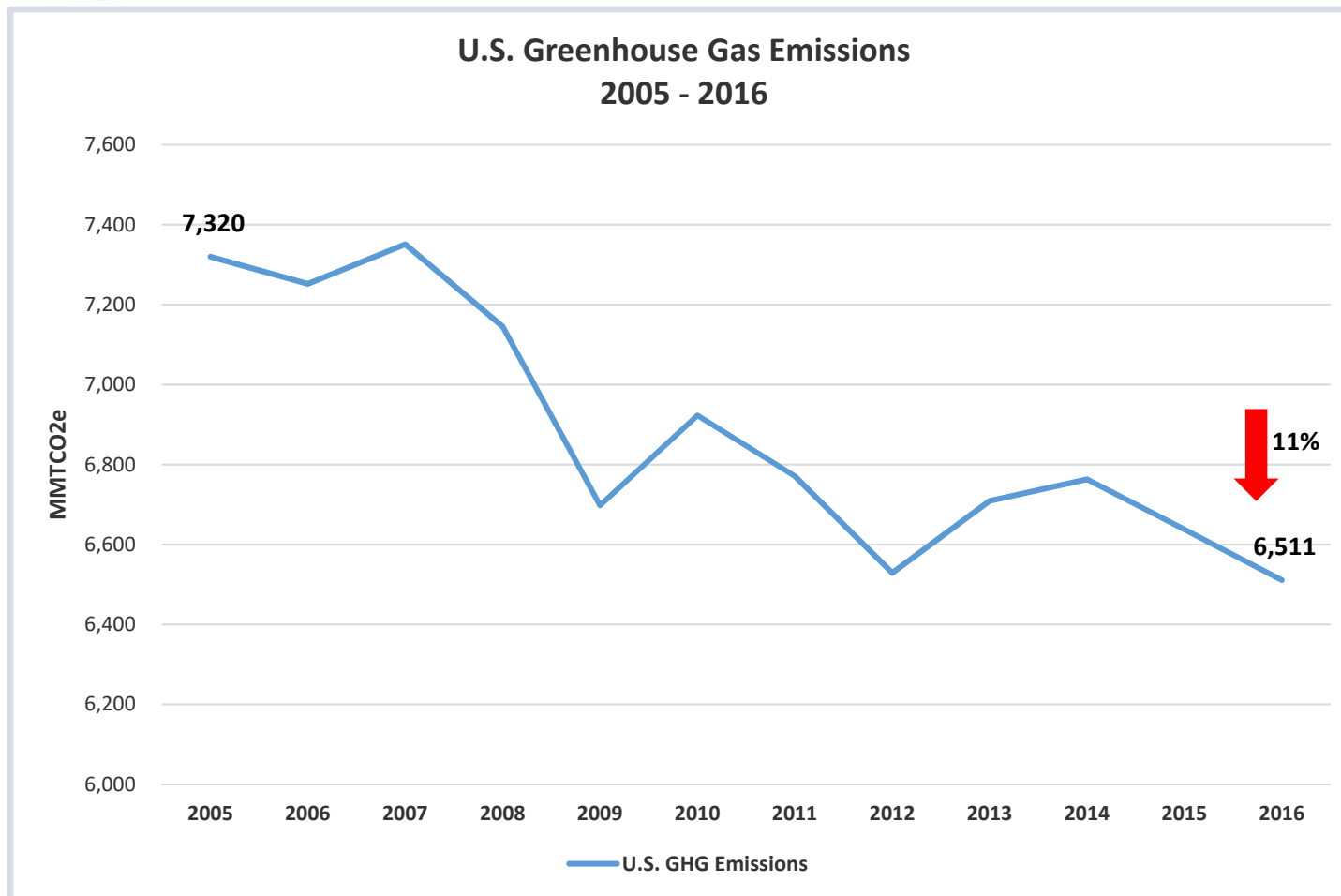
Source: PA Department of Environmental Protection – Stationary  
Source Emission Inventory 2012-2015

# Leading on Climate Change





# Leading on Climate Change



**Source:** U.S. Environmental Protection Agency – Inventory of U.S. Greenhouse Gas Emissions & Sinks

## The MSC has conducted the following trainings in collaboration with state and federal regulatory agencies:

- Pipe Up: Pipeline Safety, Regulatory and Operational Experts Share Their Knowledge
- Appalachian Oil and Gas Emergencies Workshop
- Successful Managing Horizontal Direction Drilling, Slope Stabilization and Landslide Mitigation
- Transportation Safety Day and Flagger Certification
- Successfully Preparing for and Managing a Well Control Incident
- Preparation & Action: Communications Strategies for Navigating a Crisis
- PA DEP Pipeline E&S Workshop
- NORM/TENORM Radiation Safety Training
- FERC Environmental Seminar
- Managing Solid Waste: From Analysis and Reporting to Permitting and Disposal
- PA DEP Air Quality General Permit Training



## Upcoming training:

### Pipeline Safety, Operations and Maintenance

Blair County Convention Center

September 12, 2019

- Pipeline Safety Update
- PHMSA Class I Gathering Line Regulations
- Pipeline Construction, Integrity and Operation Management
- PA DEP and Industry Collaborate: HDD and Pipeline Guidance Document

For more information and to register, please visit:

[www.marcelluscoalition.org/events](http://www.marcelluscoalition.org/events)



# MSC supports Act 50

**PA Underground Utility Line Protection Law,  
including Mapping and Notification for Class One  
Facilities**



**Pennsylvania 811**

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**Thank you!**

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