2025 Energy Outlook

Jim Welty, MSC President

April 8, 2025

About the MSC

MARCELLUS SHALE COALITION®

Our Membership

- Over 145 diverse members
- Upstream, midstream, downstream and industry partners

Our Focus

- Pennsylvania's leading advocate for natural gas development
- Developing end-use opportunities
- Achieving environmental excellence
- Addressing stakeholder issues
- Fostering professional development opportunities
- Maximizing benefits to ensure the region's secure energy future

About 95% of the natural gas in PA is produced, processed and transported 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 major upstream, midstream and downstream companies in the Appalachian Basin.

PA By The Numbers

- 2nd largest natural gas producer in U.S.
- 18% of total U.S. natural gas production*
- Number of wells*:
  - 13,268 active
    - 232 increase year over year
  - 11,812 in production
    - 239 increase year over year
- 33 of 67 counties with at least 1 producing well
- 21 active rigs

*** As of December 31, 2024**

PA By The Numbers

- 7.392 Trillion Cubic Feet
    - 1.8% decrease from 2023
- Top 10 counties = 91%
- Top 5 operators = 73%
- NC/NE 53.9%   SW 43.5%   NW 2.6%
- Approximately 60 total producers

PA By The Numbers

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Top Ten Producing Counties by Volume (2023)

County	Production (MCF)	% of PA Production	# of Producing Wells
Susquehanna	1,583,843,478	21%	1,925
Greene	1,181,920,157	15.7%	1,406
Washington	1,153,447,381	15.3%	1,877
Bradford	1,133,569,361	15%	1,446
Lycoming	428,685,517	5.7%	977
Tioga	424,340,287	5.6%	805
Wyoming	281,552,297	3.7%	315
Butler	266,198,784	3.5%	607
Westmoreland	215,233,884	2.9%	289
Sullivan	171,976,215	2.3%	136

PA By The Numbers

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Top Ten Producing Operators by Volume (2024)

Operator	Production (MCF)	% of PA Production	# of Producing Wells
Expand Energy*	1,823,294,471	24.66%	2,200
EQT*	1,505,843,308	20%	2,170
Coterra Energy	905,252,182	12.25%	1,093
Range Resources	786,551,274	10.45%	1,464
Seneca Resources	442,756,302	5.88%	977
CNX	427,696,979	5.79%	452
Repsol	327,916,469	4.36%	744
PennEnergy Resources	239,745,185	3.18%	433
Olympus Energy	197,147,993	2.62%	91
PGE	95,023,797	1.26 %	195

* EQT data includes its assets reporting under the name Rice Drilling;
Expand Energy includes Chesapeake Energy & Southwestern Energy

ECONOMIC BENEFITS

Economic Impacts

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2022 MSC Economic Analysis:

- Supported 123,000 Pennsylvania jobs
- Generated more than $41 B in economic activity
- Paid over $6.3 B in royalties to PA landowners
- Paid workers an average of $97,000
- Paid over $5.8 B in local, state & federal taxes

Benefitting Communities

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NATURAL GAS TAX REVENUES REACH $2.7 BILLION FOR PA

$179 MILLION DISTRIBUTED IN 2023

$96M
Local Governments

$64M
Statewide Environmental Programs

$20M
State Agency Oversight

ROADS

BRIDGES

PARKS

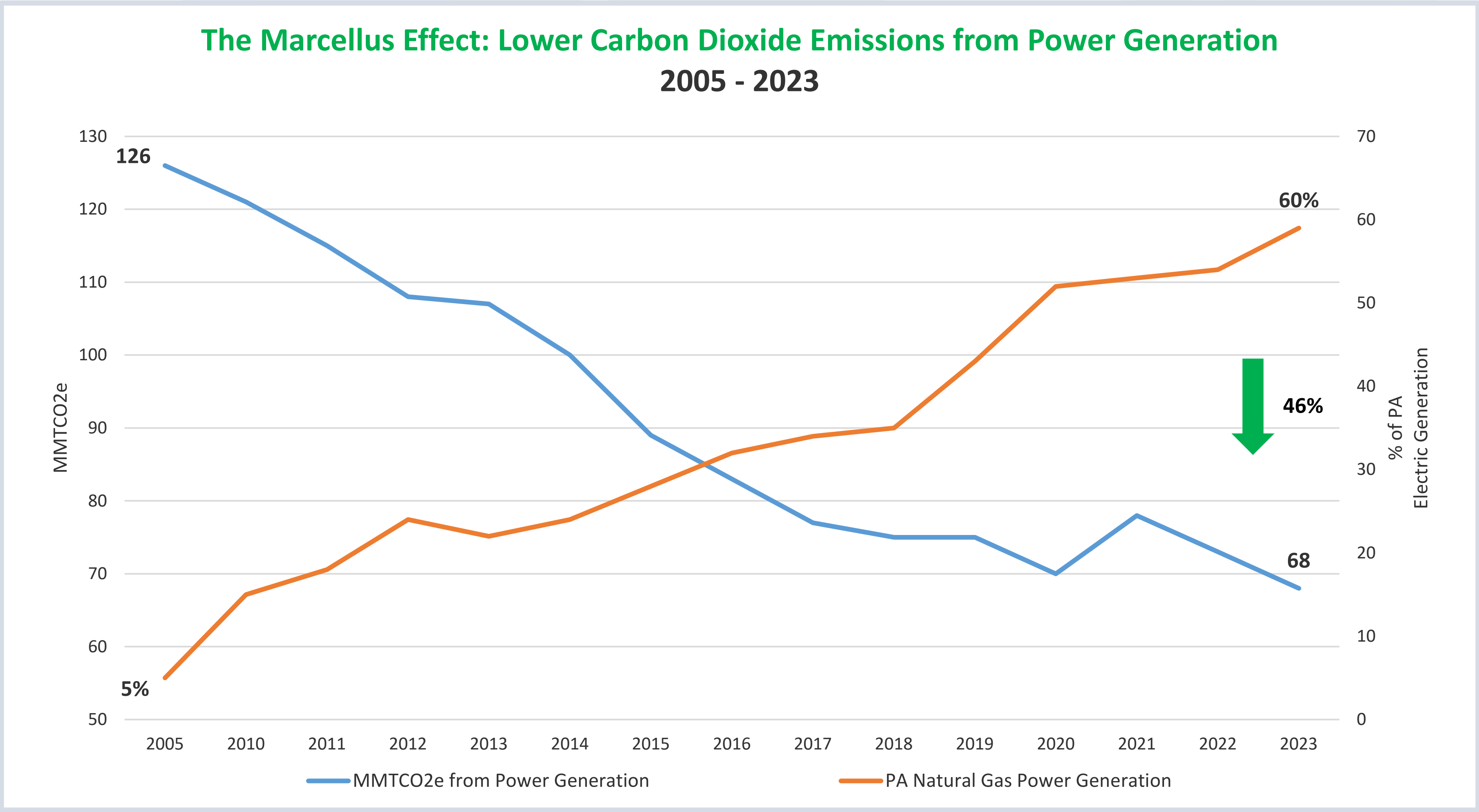
EMERGENCY SERVICES

ENVIRONMENTAL CONSERVATION

ENVIRONMENTAL BENEFITS

Leading on Climate Change

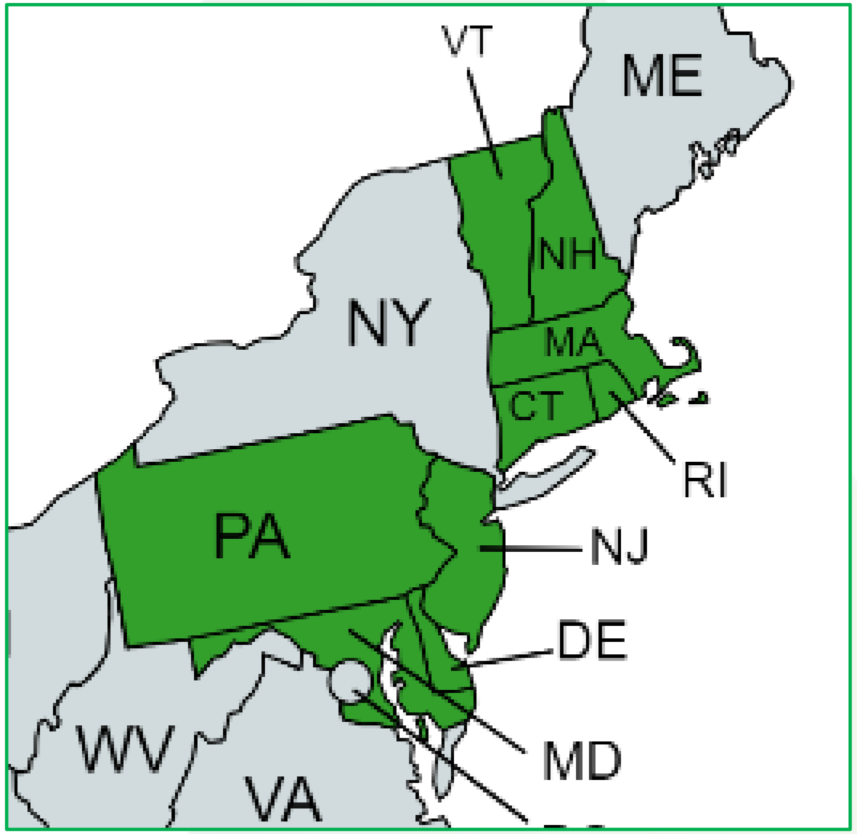
MARCELLUS SHALE COALITION®



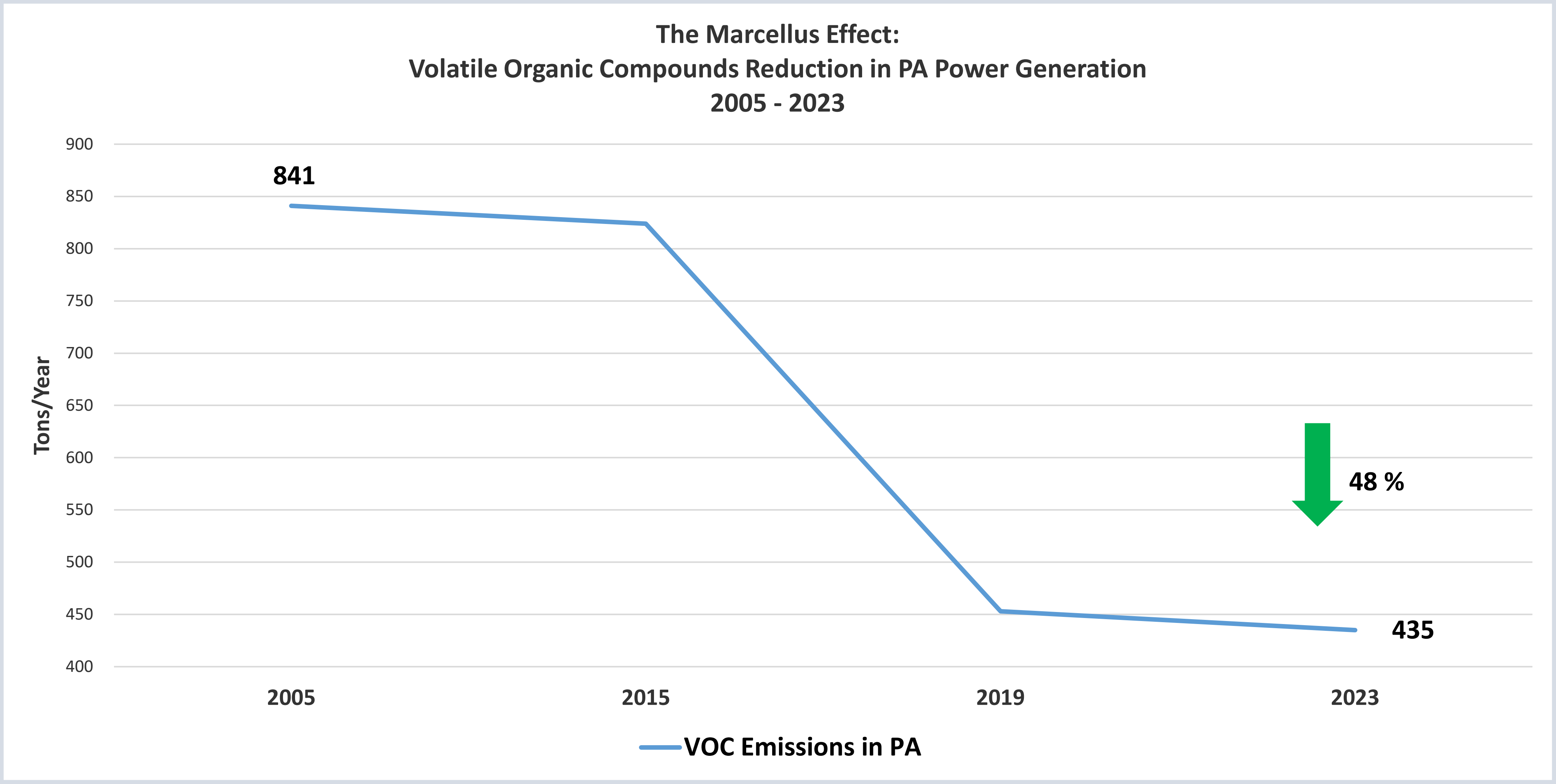
Source: U.S. Energy Information Administration; PA IFO

Enhancing the Environment…Now and in the Future

- Thanks to natural gas electric generation, PA emitted 58 million metric tons fewer of CO_2 in 2023 compared to 2005.
- This is equivalent to removing **12.5 Million** cars from the road for a year.
- Or – removing every car in PA, CT, DE, MA, MD, NH, NJ, RI & VT – *combined*

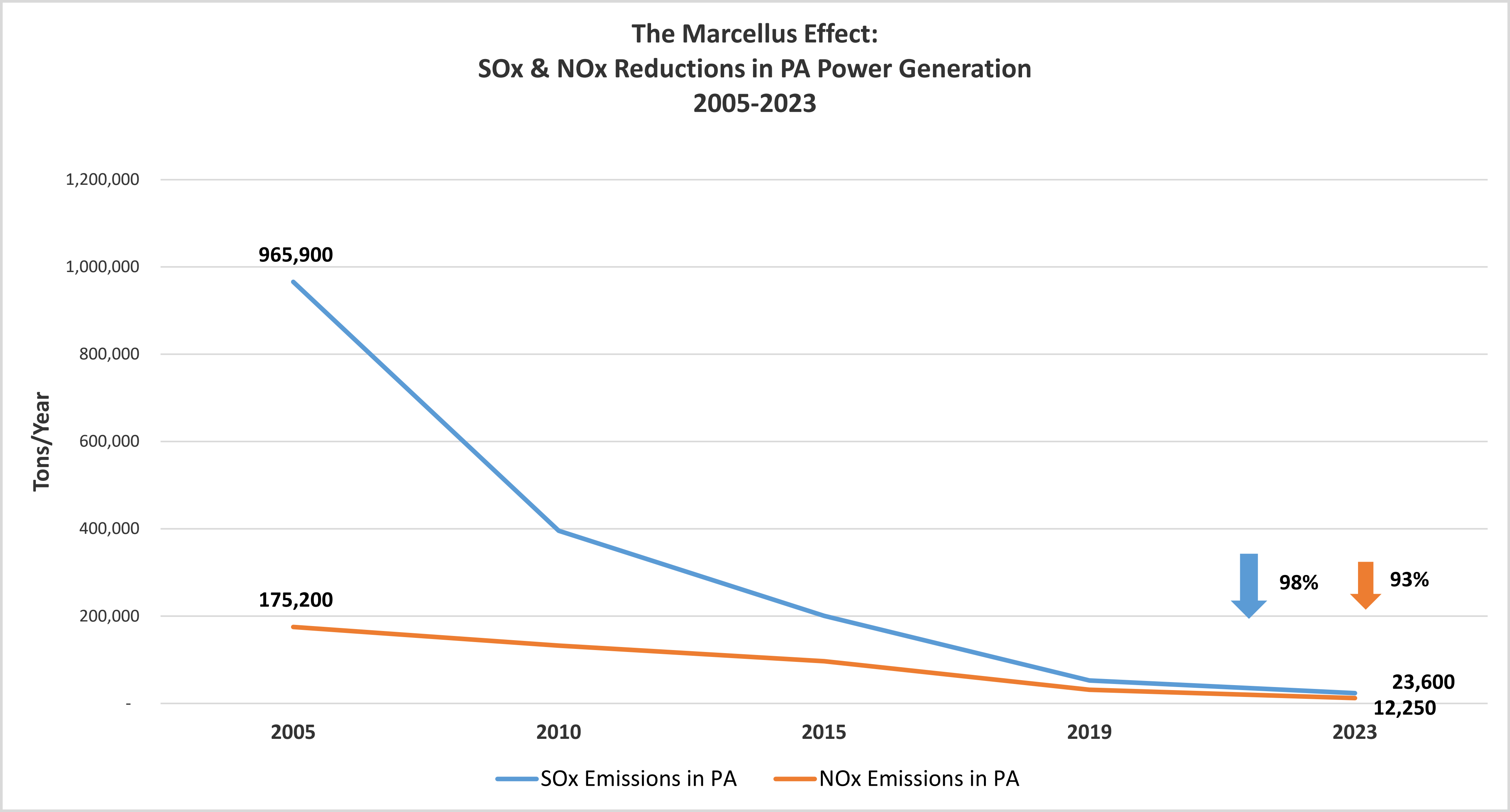


Enhancing Air Quality



Source: PA Department of Environmental Protection – Air Emission Report (Power BI) – Accessed February 2025

Enhancing Air Quality



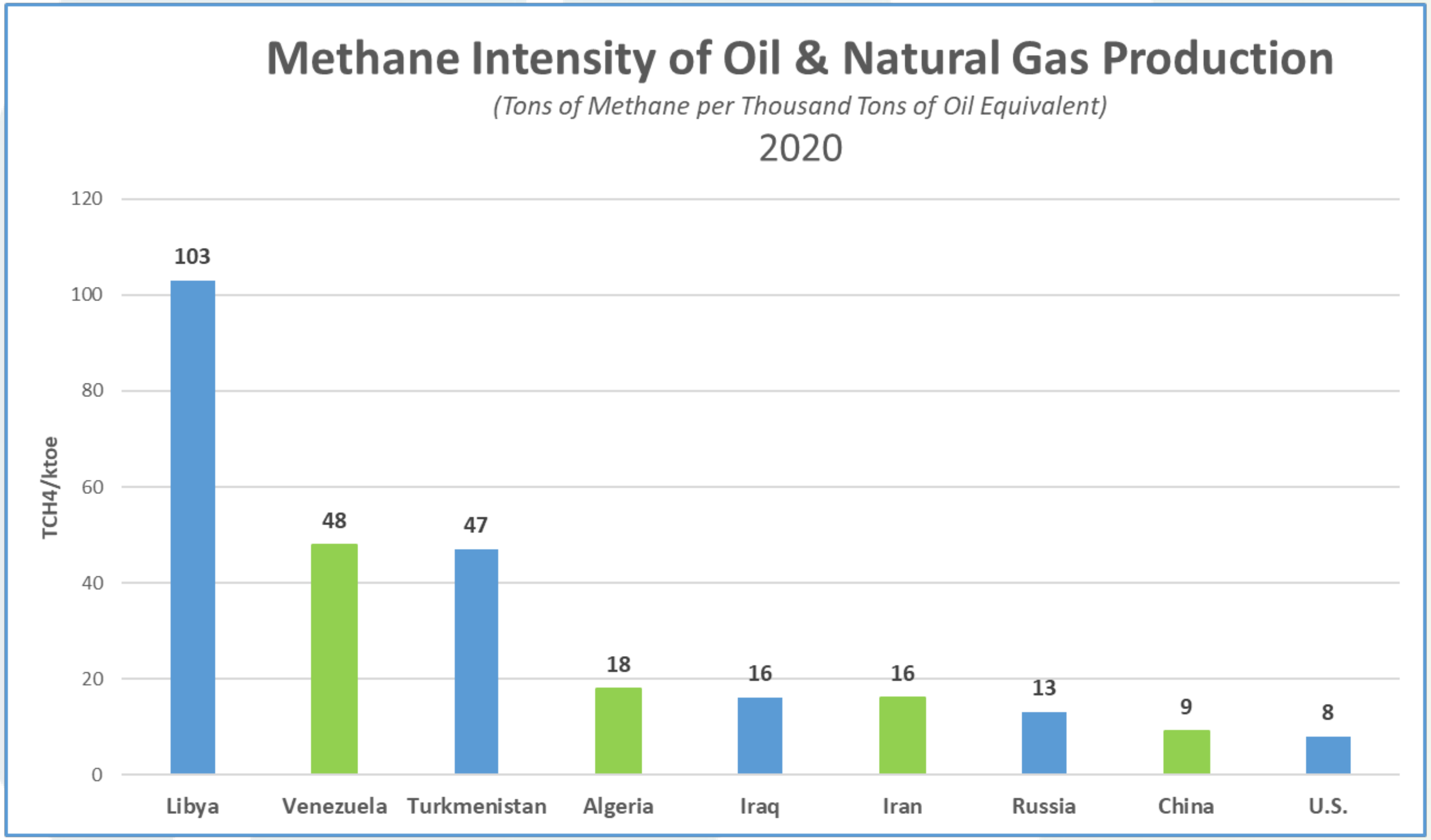
Source: PA Department of Environmental Protection – Air Emission Report (Power BI) – Accessed February 2025

Enhancing the Environment…Enhances Public Health

Since 2005

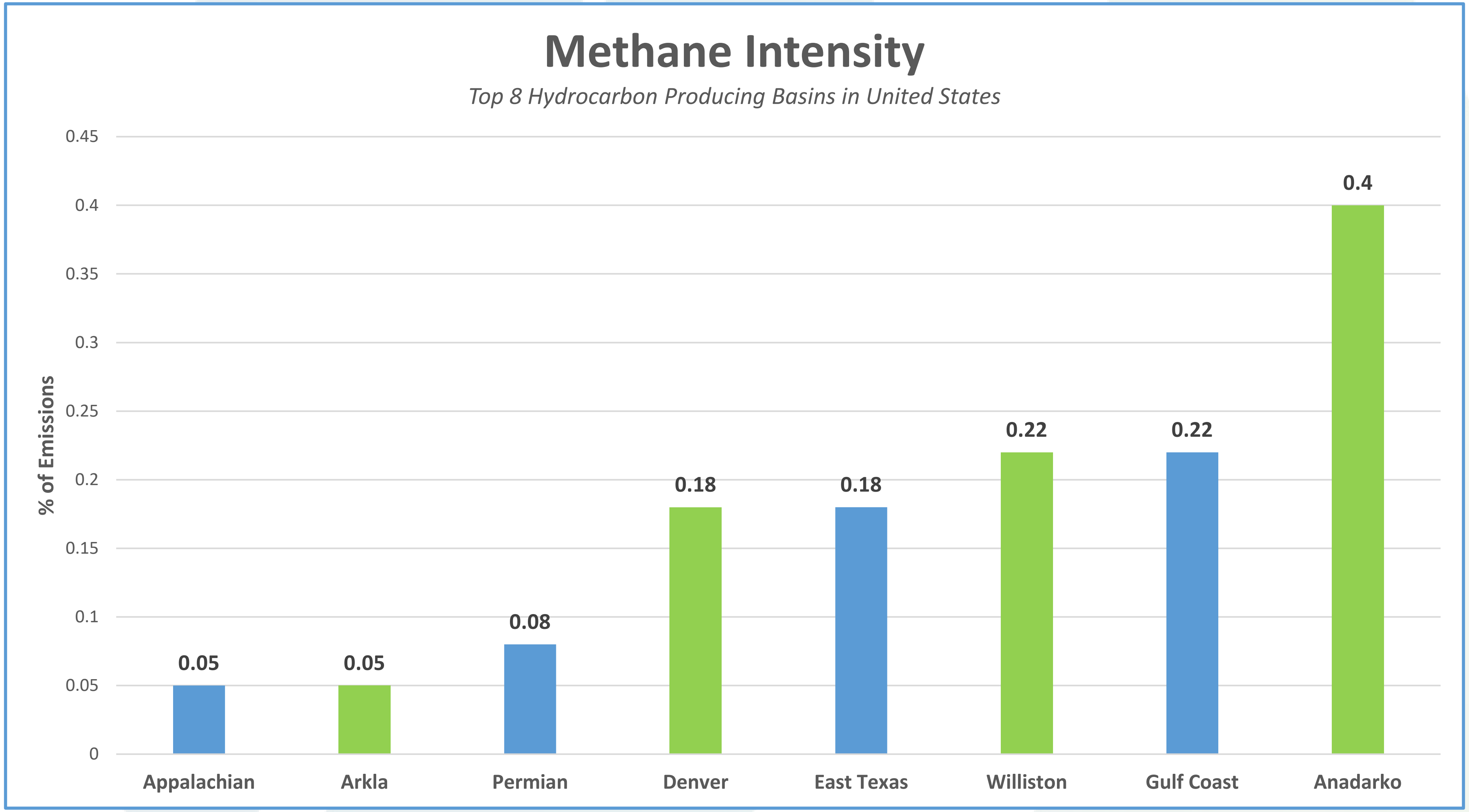
- **Nitrogen oxide emissions** are **down 93%** (1,317,000 *fewer* tons emitted) and **sulfur oxide emissions** are **down 98%** (11,126,000 *fewer* tons emitted) in the PA electric generation sector.
- These emission reductions equate to public health benefits of between **$450 Billion - $1.04 Trillion** for Pennsylvania residents.

Safeguarding the Environment



Inte[illegible]al Energy Agency – 2020 Methane Int[illegible]

Safeguarding the Environment



Source: Clean Air Task Force & Ceres: Benchmarking Methane & Other GHG Emissions – June 2024

CONSUMER BENEFITS

Benefiting Consumers

Lower Prices = Customer Savings

- Wholesale electric prices generally stable since 2008
- Market transition through rate caps, fuel generation shift
- Natural gas prices for end-use customers down 35% -86% compared to 2008
- Average annual natural gas savings > $388 - $1,182 per household

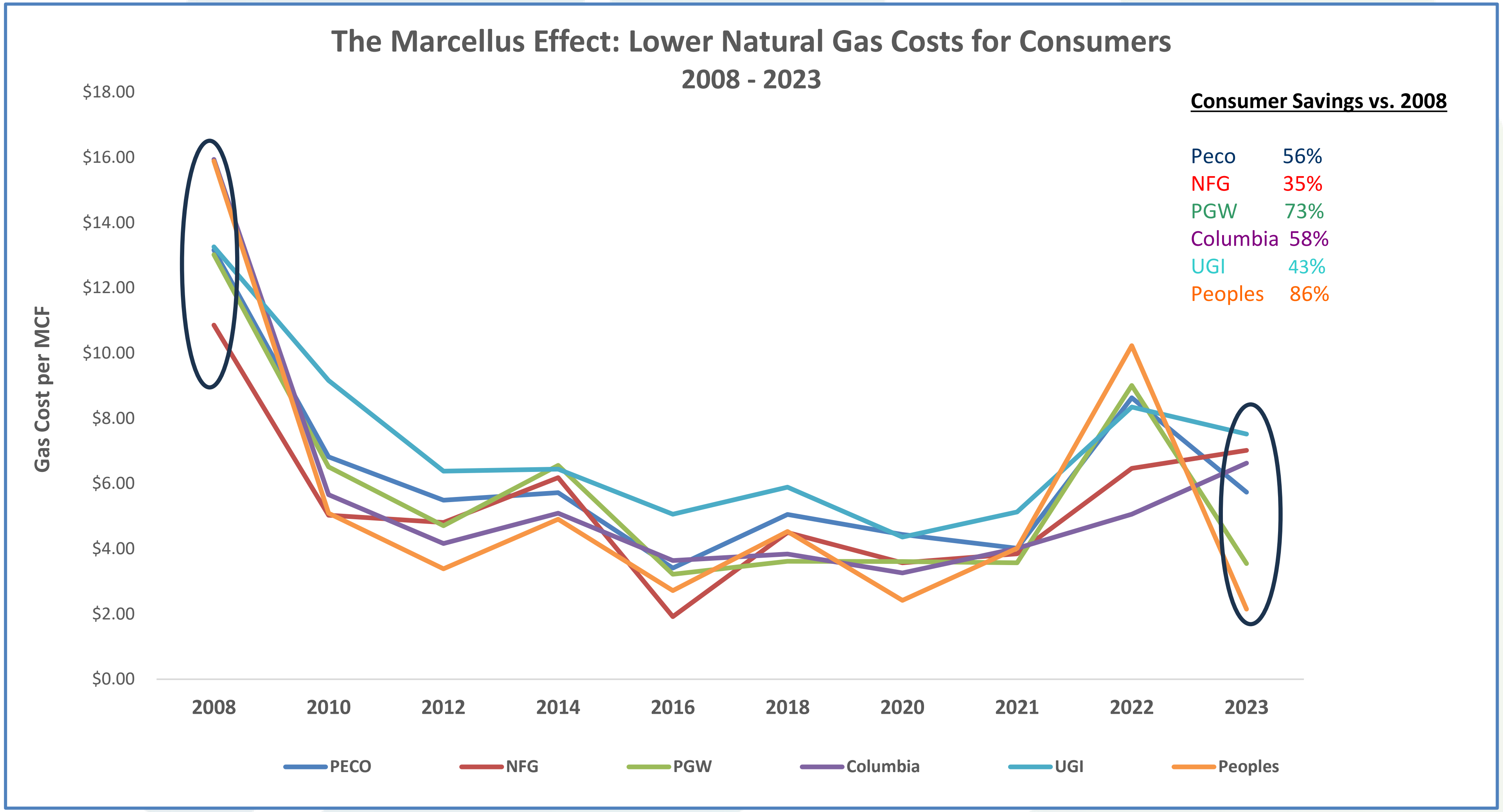
Lower Prices = Customer Savings
2008 vs 2023

Utility	PGC Rate / MCF		% Change	Annual Customer Savings**		
	2008*	2023*	2008-2023	Residential	Commercial	Industrial
PECO	$13.16	$5.74	-56%	$623	$3,873	$12,985
NFG	$10.86	$7.02	-35%	$388	$1,110	$7,484
PGW	$13.02	$3.55	-73%	$634	$3,400	$9,678
Columbia	$15.94	$6.63	-58%	$754	$3,221	$27,930
UGI	$13.26	$7.52	-43%	$471	$2,043	$7,296
Peoples/Equitable	$15.89	$2.15	-86%	$1,182	$3,586	$65,512

* PUC Purchased Gas Cost (PGC) Rate in Effect Prior to Annual Review

** Based on average customer usage for each utility as reported in PA PUC Natural Gas Outlook 2023

Benefiting Consumers



Source: PA PUC Purchased Gas Cost by Utility

Benefiting Consumers

$8,963,221,586

PA Natural Gas Consumer Savings in 2023 compared to 2008 prices

Based on average customer usage for each PA utility as reported in PA PUC Natural Gas Outlook 2023. Savings adjusted to reflect inflation 2008-2023 (Bureau of Labor Statistics)

GROWTH OPPORTUNITIES:
DOWNSTREAM DEMAND

Opportunities on the Horizon

Electric Generation

- PJM reliability concerns emphasize need for new generation
- Data centers, AI, electrification of everything…

Liquified Natural Gas

- Global growing demand for LNG
- Europe largest destination for U.S. LNG

Domestic Manufacturing

- Push to onshore manufacturing
- Chemical Industry growth since shale revolution

Hydrogen Hubs & CCUS

- ARCH2 and MACH2(?)
- Need Class VI well carbon disposal permit primacy from EPA

Electric Generation Demand in PJM

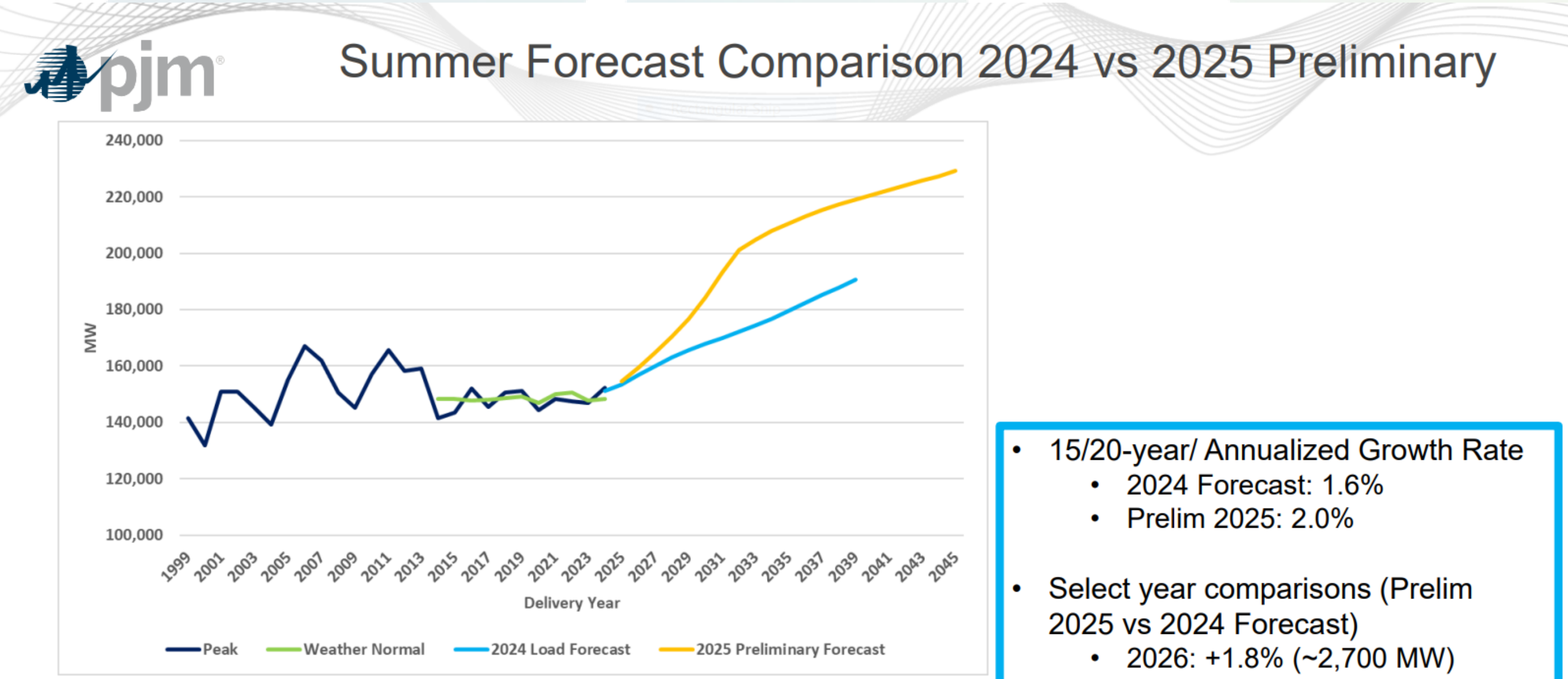
- Generation Retirements
  - PJM Projecting 40,000 MW going offline

- Significant Demand Growth
  - SUMMER peak demand to increase by 55,779 MW in 10 Years
    - 74,400 MW in 20 Years

  - WINTER peak load to increase by 62,048 MW in 10 Years
    - 82,633 MW in 20 Years

- Total Energy Demand in PJM to Increase 37% in 10 Years
  - 44% Increase in 20 Years

Electric Generation Demand



- 15/20-year/ Annualized Growth Rate
  - 2024 Forecast: 1.6%
  - Prelim 2025: 2.0%
- Select year comparisons (Prelim 2025 vs 2024 Forecast)
  - 2026: +1.8% (~2,700 MW)
  - 2028: +4.7% (~7,600 MW)
  - 2030: +9.9% (~16,600 MW)
  - 2039: +14.9% (~28,300 MW)

Homer City Energy Campus

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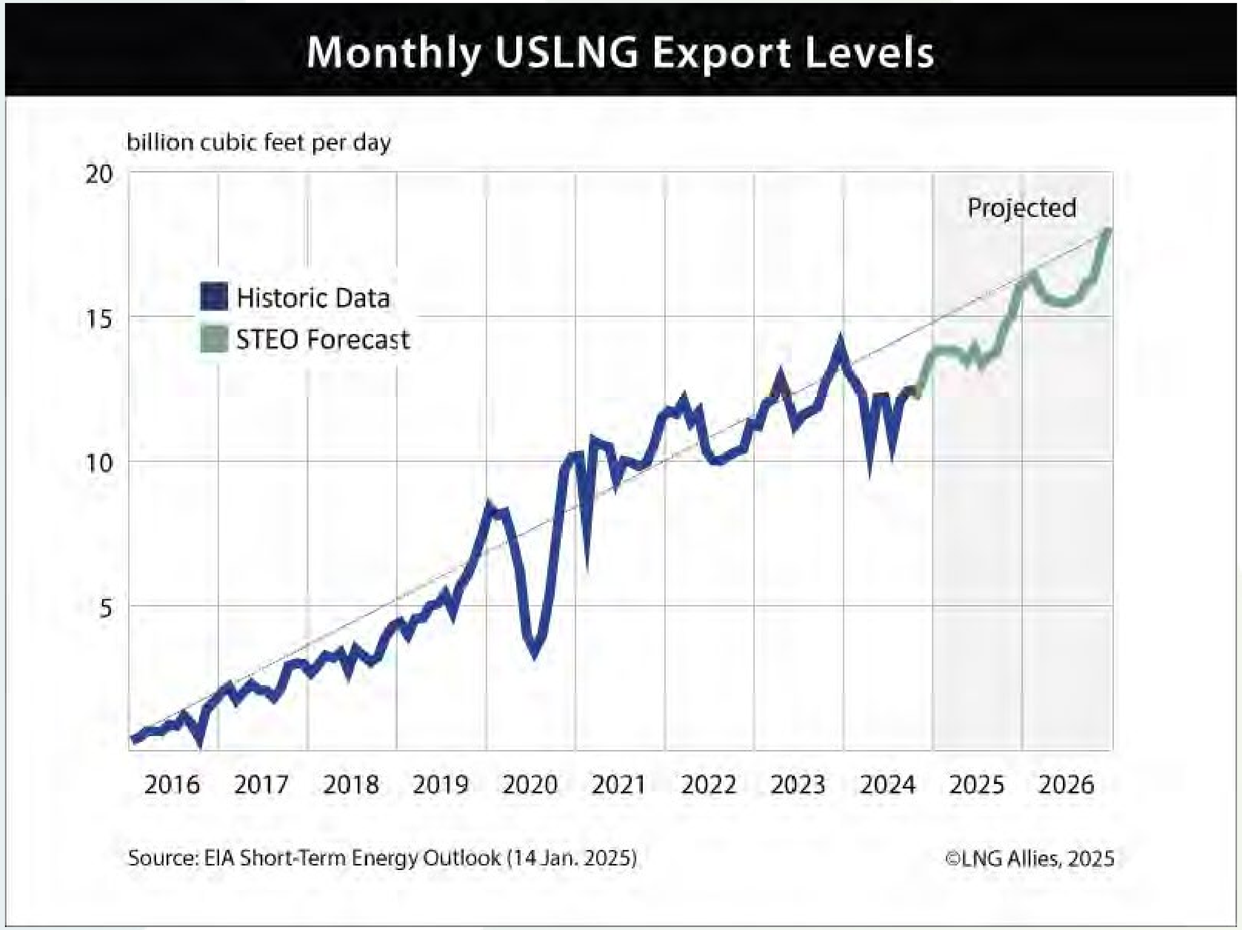
- Coal-fired Electric Generating Station Decommissioned 2023
  - 3,200 Acre Site
- Announcement of $10 Billion Investment
  - 10,000 Construction Jobs
  - 1,000 Permanent Jobs
- 4.5 GW of Energy Production
  - Largest Power Plant in United States
  - Powered by Natural Gas
- AI Driven Data Centers

LNG Exports

- 15 planned LNG terminals in lower 48 states
  - 8 operational
  - 4 under construction
  - 3 permitted
  - 8 awaiting permits

- Global distribution
  - 53% Europe
  - 34% Asia
  - 9% Americas
  - 4% Middle East

- Top destinations
  - Netherlands
  - France
  - Japan
  - South Korea
  - India



Source: EIA Natural Gas Weekly – September 11, 2019

Fueling Manufacturing

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- **$208 Billion Chemical Industry Investment Tied to Shale Gas**
  - $109 Billion (completed projects)
  - $31 Billion (under construction)
  - $68 Billion (planning phase)

- **351 Total Projects**
  - 786,000 total jobs
  - $61.1 Billion payroll
  - $309.5 Billion economic output

"Thanks to this versatile resource, American chemistry has experienced more than a decade of growth. Our new investment boosts employment, payrolls, and tax revenue in local communities and nationwide."

Chris Jahn, President & CEO, ACC

Source: American Chemistry Council. Economic contributions tied to higher chemical industry output 2010 – 2030.

Shale Gas Liquids in PA

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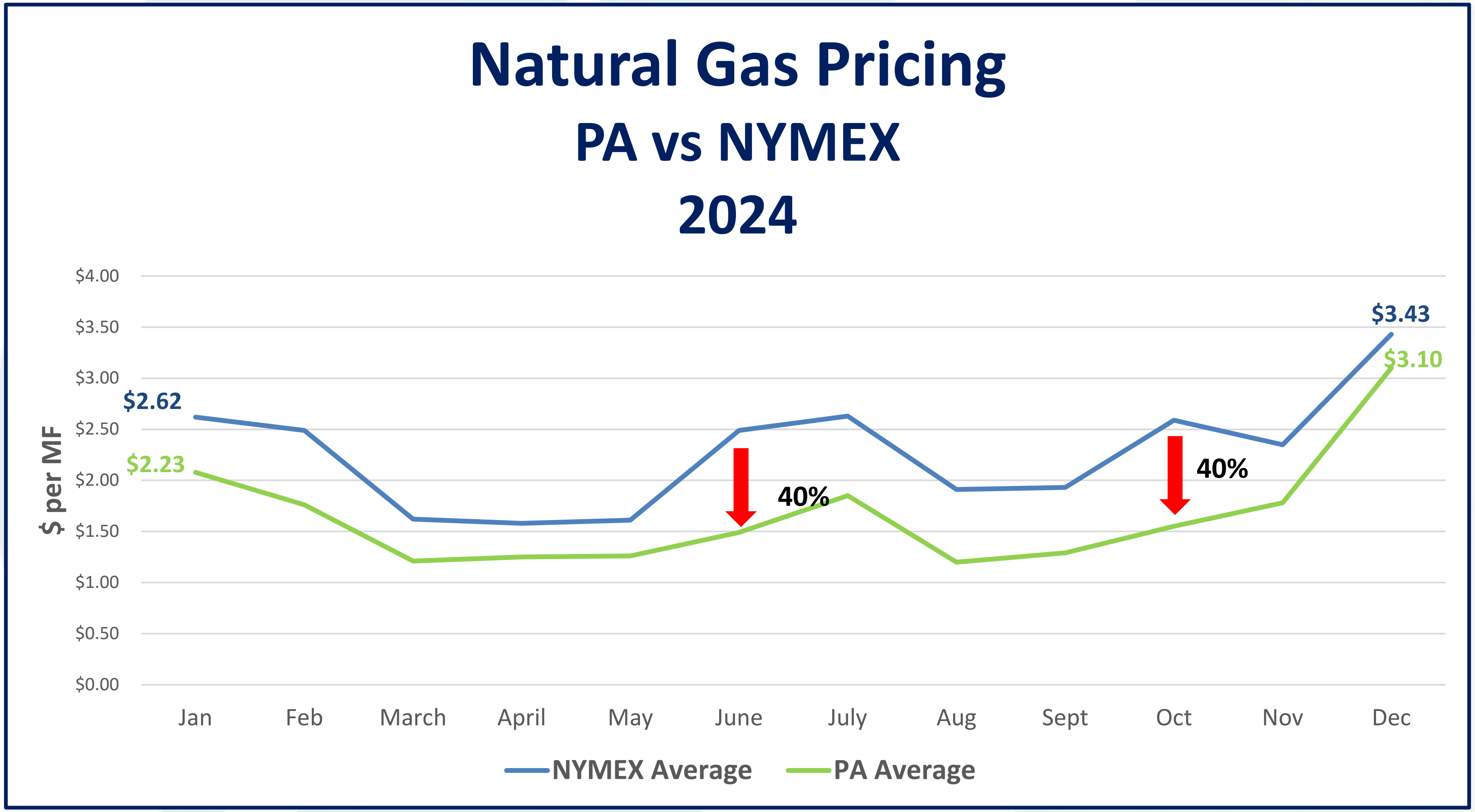
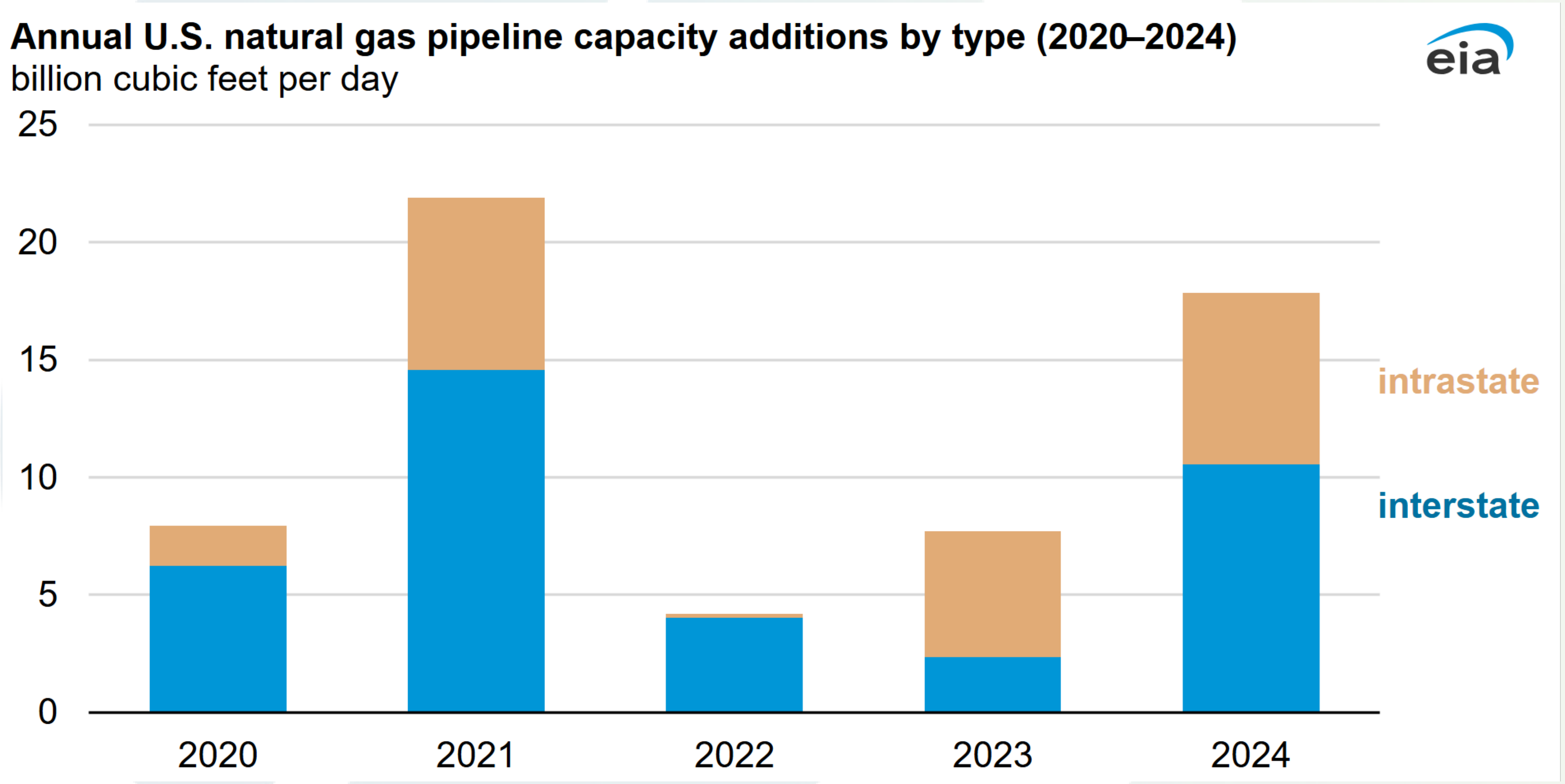
- Natural gas liquids are the basic feedstock for chemical companies
  - Propane, ethane, butane, isobutane, natural gasoline
- U.S. production up from 1.8 M barrels/day in '08 to 5.4 M in '21
- U.S. ethane production up 2.5x since 2013 (2.6 M barrels/day in 2021)
  - Appalachian up 20x to 640,000 barrels/day
- Shell's facility will use 5% of the ethane produced in the U.S. (107,000 barrels/day)
- 70% of U.S. & Canadian demand for polyethylene resin falls within a 700-mile radius

Source: American Chemistry Council; U.S. EIA

ECONOMIC CHALLENGES TO DEVELOPMENT


Natural Gas Pricing
PA vs NYMEX
2024
$4.00
$3.50
$3.00
$2.50
$2.00
$1.50
$1.00
$0.50
$0.00
$ per MF
$2.62
$2.23
$3.43
$3.10
40%
40%
Jan
Feb
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec
NYMEX Average
PA Average

By the Numbers



Slowing Infrastructure Build-Out

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Natural Gas, Oil Project Delays, Cancellations

CRUDE OIL · REFINED PRODUCTS · NATURAL GAS

PROJECT	COMMODITY	OPERATOR	STATUS	YEARS ELAPSED PROPOSAL TO CANCELLATION[1]
KEYSTONE XL	CRUDE OIL	TC Energy	CANCELLED	13
PORTLAND TO MONTREAL PIPELINE REVERSAL	CRUDE OIL	SUNCOR	CANCELLED	13
DAKOTA ACCESS PIPELINE EXPANSION	CRUDE OIL	ENERGY TRANSFER	PERMIT VACATED	3
BYHALIA (DIAMOND TO CAPLINE)	CRUDE OIL	Valero / PLAINS	CANCELLED	2
PALMETTO	REFINED PRODUCTS	KINDER MORGAN	CANCELLED	2
ATLANTIC COAST	NATURAL GAS	Dominion Energy	CANCELLED	6
CONSTITUTION	NATURAL GAS	Williams	CANCELLED	8
MOUNTAIN VALLEY	NATURAL GAS	equitrans	UNDER CONSTRUCTION	9
PENNEAST PIPELINE	NATURAL GAS	PennEast	CANCELLED	6
JORDAN COVE ENERGY PROJECT	NATURAL GAS	PEMBINA	CANCELLED	14

Note: Based on data from Rystad Energy; For Mountain Valley Pipeline, years elapsed represents from project's proposal to today.

Source: American Petroleum Institute

FEDERAL SHIFT

Cabinet Appointments

- U.S. Department of Energy
  - **Chris Wright**, CEO of Liberty Energy, natural gas completions company
- U.S. Environmental Protection Agency
  - **Lee Zeldin**, former member, U.S. House of Representatives (NY)
- U.S. Department of the Interior
  - **Doug Burgum**, former Governor, North Dakota
  - Chair of new National Energy Dominance Council
- Commissioner Mark Christie named FERC chair by President Trump
  - Originally nominated by President Trump in 2020; confirmed in 2021

President Trump Executive Orders

Unleashing American Energy (EO #14154)

- Resume review and processing of LNG export license applications
- Permit decisions limited to only ‘relevant legislated requirements’; subjective and ideological considerations are rescinded
- Rescinds a host of climate-related prior Executive Orders and cancels for convenience contracts related to ‘clean’ energy subsidies
- Authorize leasing of oil and gas rights on federal lands/offshore
- Repealing EV mandates

Declaring a National Energy Emergency (EO #14156)

- Emergency expedited consideration of permits to increase domestic energy production on federal lands
- Require agencies to ‘*expedite the completion of all authorized and appropriated infrastructure, energy, environmental, and natural resources projects*’

STATE POLICY BARRIERS

Challenges to Shale Development

- Permit delays
  - Inconsistent and ever-changing criteria
  - PA DEP Regional Office inconsistency
- Regulatory uncertainty
  - Death by a thousand cuts
  - Regulations exceeding statutory authority or intent
- Detrimental policies being promoted and advanced
  - Increased setback distances (de facto ban on production)
  - Governor’s proposed PACER and PRESS initiatives

Expanded Setbacks = De Facto Ban

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Act 13 of 2012 Established PA's Setbacks

- 300 feet from stream, wetland or other waterway
- 500 feet from building or water well
- 1,000 feet from public drinking water source
- **Strictest setbacks among the top natural gas producing states**

Legislation to Ban Drilling

- Expand Setbacks to 2,500 feet for streams, wells, buildings
- Expand Setbacks to 5,000 feet for schools and hospitals
- **Sterilizes up to 99% of land in top-producing counties**

Regulatory Petition to Ban Drilling

- End-run around General Assembly
- PA DEP historically stated they have no authority to change by regulation
- **PA DEP has signaled they may reverse this long-held position**

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Setbacks

What is meant by a 'Setback'?

A setback refers to the distance which must be maintained between a facet of natural gas development, such as a well bore or a well pad, and a public or private resource, such as a stream, building or water well.

What is the purpose of a setback?

While a comprehensive and robust permitting and inspection regiment, along with industry best practices and standards, are the primary means of protecting public health, safety and the environment, setbacks can serve as a reasonable buffer between well development activity and a public or private resource. These distances ensure that equipment and vehicles necessary during the well drilling and completion process – a relatively short duration during the overall life of a well – are able to operate safely and there is not any impact on public health or the environment as a result of being in proximity to the development, while at the same time not being so excessive that they effectively prohibit individuals from being able to develop their natural gas rights.

When were Pennsylvania's setbacks modernized?

In 2012, Pennsylvania enacted a comprehensive law known as Act 13, which modernized its regulation of unconventional natural gas development. Among many other new criteria, Act 13 significantly expanded setback distances applicable specifically to unconventional natural gas wells. These setbacks are part of an overall environmental regiment designed to facilitate the optimal development of natural gas resources consistent with the protection of public health, safety, the environment, and property.

What are the applicable setbacks in Pennsylvania?

Act 13 established new setback distances between unconventional natural gas wells and the following resources:

- *Water wells*: Increased from 200 feet to **500 feet**.
- *Existing buildings*: Increased from 200 feet to **500 feet**.
- *Streams, springs, wetlands, bodies of water*: Increased from 100 feet to **300 feet**.
- *Public water supplies*: **1,000 feet** (new).

Additionally, unconventional well pads must maintain a setback distance of **100 feet** between the edge of disturbance and any stream, spring, wetland or body of water. Certain setback distances may be modified if consented to in writing by the owner of the resource (building, water well) and the operator abides by additional terms and conditions of the permit to ensure the safety and protection of people and property.

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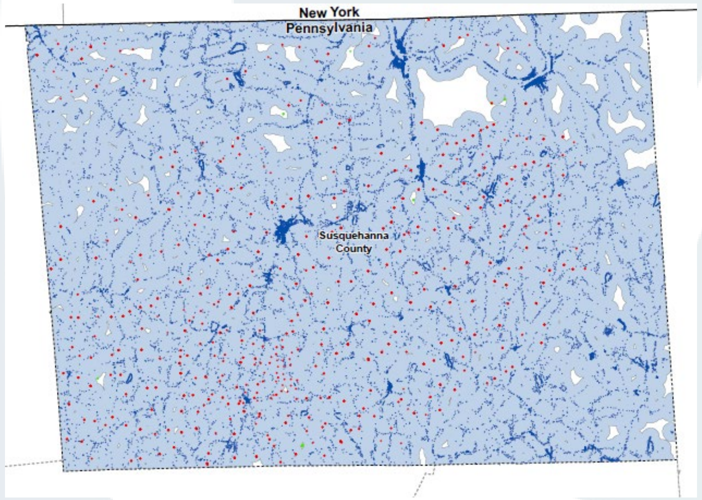
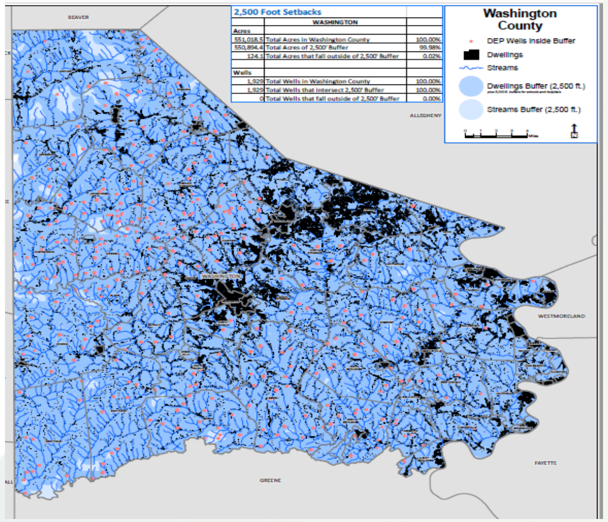
Expanded Setbacks = De Facto Ban

County	Percent of Land Banned Under Current Setbacks	Percent of Land Banned Under Setback Proposals
Allegheny	75%	99%
Beaver	66%	99%
Butler	69%	99%
Lycoming	21%	87%
Susquehanna	30%	96%
Tioga	26%	81%
Washington	43%	99%

Susquehanna County



Washington County



PA Climate Emissions Reduction Act

PACER Summary

- Requires power plants of 25 MW and greater to purchase allowances for each ton of carbon emitted
- Funds collected used for energy bill rebates, grants in environmental justice areas, and retraining of legacy workforce
- If in place in 2024 at the average RGGI per allowance price of $21/ton, **would cost $1.533 Billion**

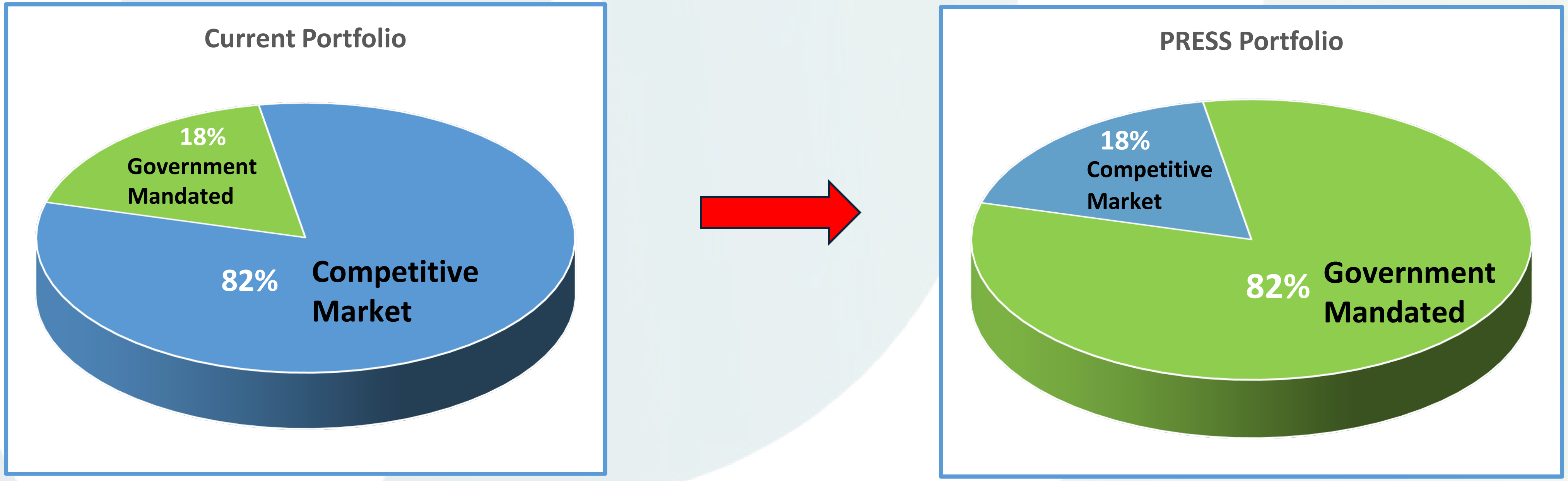
PACER <u>is</u> RGGI 2.0

- Program can be administered by 3rd party (presumably RGGI, Inc.)
- Number of allowances available and schedule of allowances going forward is identical to RGGI
- Any out-of-state entity with an obligation to purchase allowances to comply with RGGI may also purchase PA allowances; the market value of a RGGI allowance and a PA allowance would be the same

PA Reliable Energy Sustainability Standards Act

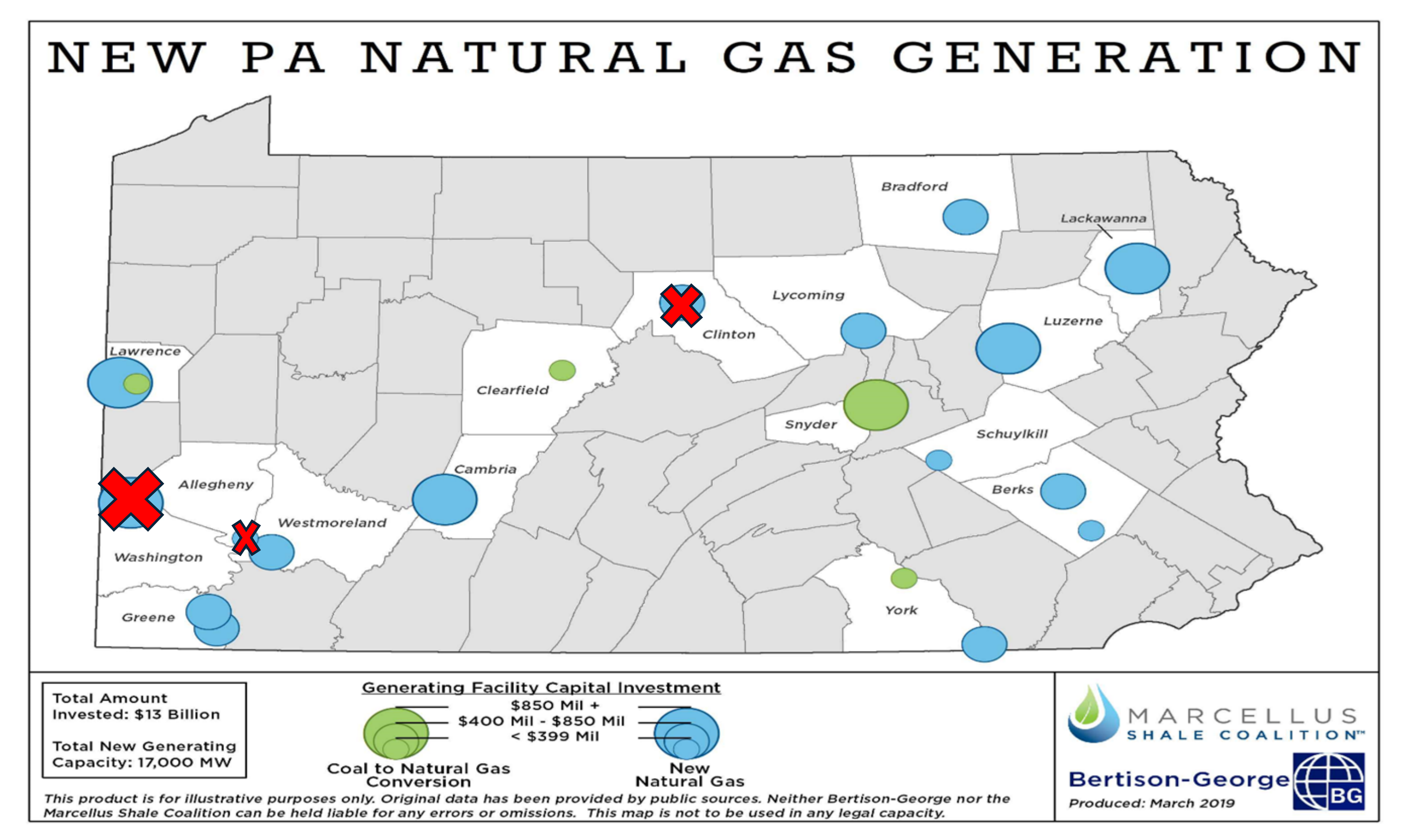
PRESS Summary

- Amends the state's Alternative Energy Portfolio Standards Act
- Mandates 50% of generation sold to PA customers come from non-gas, non-coal, non-nuclear sources
- Nuclear (32% of PA generation) presumably remains whole due to federal subsidies effective in 2024 and the ZEC tax incentives built into the proposal
- Natural gas (60%) and coal (5%) are left to compete for only 18% of a utilities' electric supply

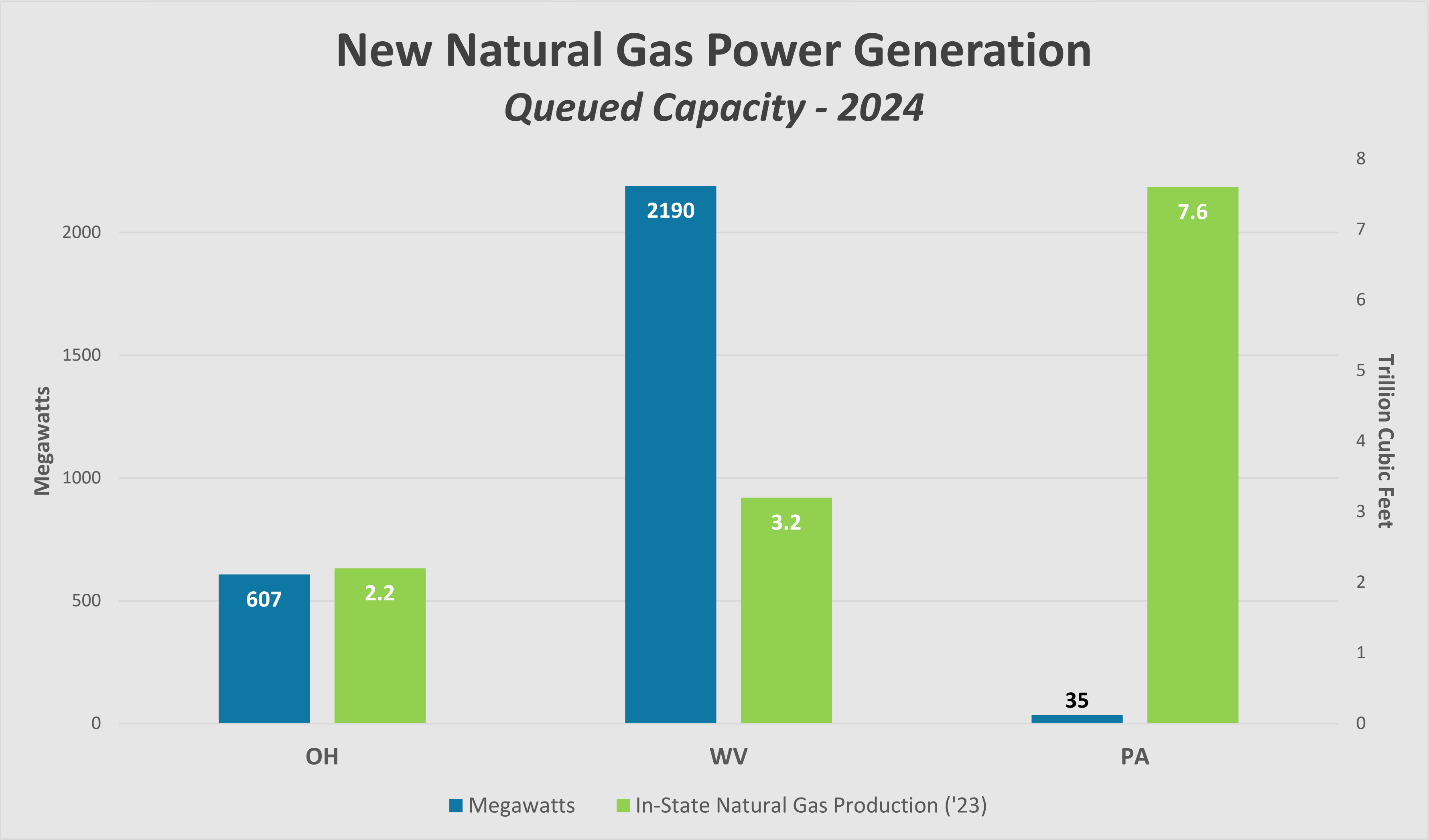


POLICIES HAVE CONSEQUENCES

By the Numbers

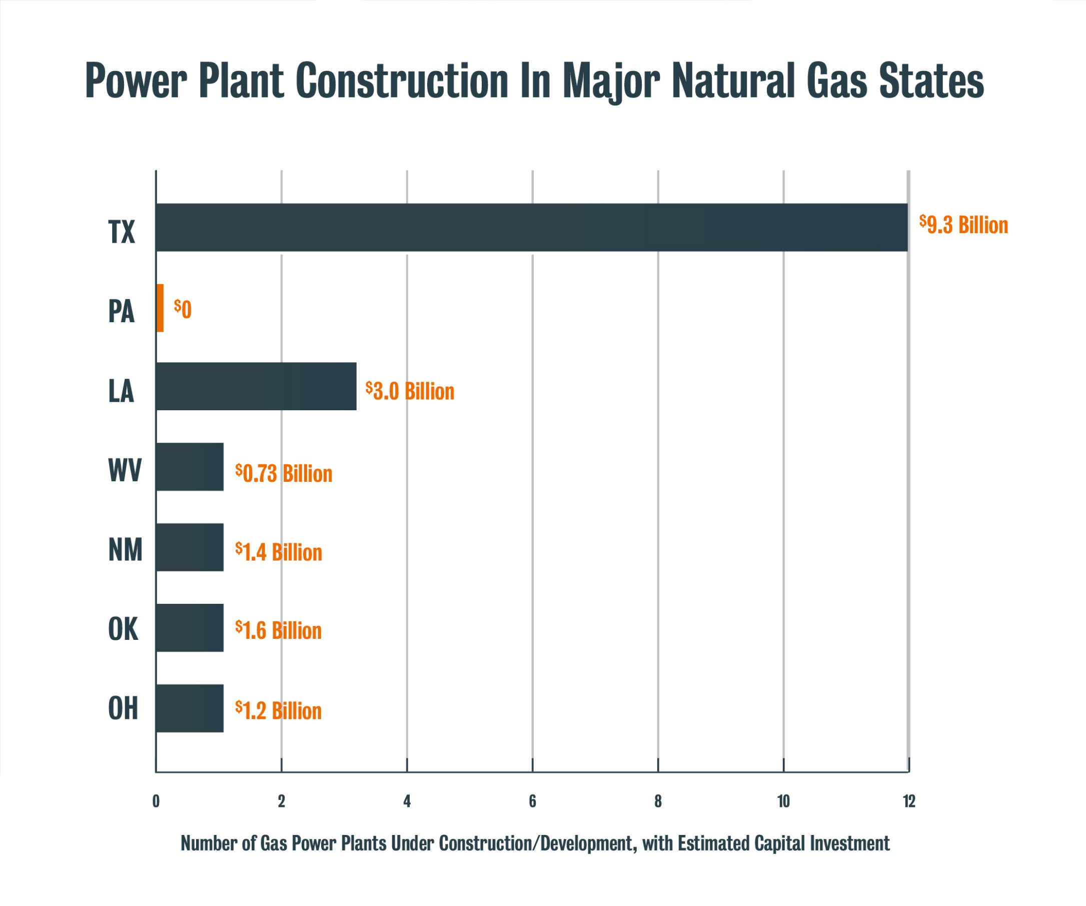


Who’s Getting Gas Done?



Source: PJM – January 2025 MSC Membership Meeting;
2023 Natural Gas Production U.S. EIA

By the Numbers



JOIN THE CAUSE!

Grassroots Engagement

MARCELLUS SHALE COALITION®

USA

UNITED SHALE ADVOCATES™

Industry Resources

MARCELLUS SHALE COALITION®

- MSC Website (www.marcelluscoalition.org)
  - Fact Sheets
  - News Releases and Blogs
  - Letters and Testimony
  - Shale 101 Tutorials
- Sign Up for Updates
  - Click (“News” then “Sign Up Now”)

Thank you!

Jim Welty, President

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