Unconventional Oil & Gas Development

IN THE APPALACHIAN BASIN

November 12, 2026

Presented by: Kimberly Ayers

AYERS PETROLEUM CONSULTING

ABOUT ME

- Third Generation Appalachian O&G
- Master of Science in Petroleum & Natural Gas Engineering from West Virginia University
- 15 years of experience
  - in-house for small operators
  - conventional & unconventional development
- Specialized in reserves, reservoir, and development planning
- Certified Mineral Appraiser

OUR TEAM

- Small consulting firm of Production & Reservoir Engineers focused on the Appalachian Basin
- Remote engineers scattered across OH, PA, WV
- Serve Small to Mid-Sized, Conventional & Unconventional Operators, Financial Institutions, Mineral Buyers/Owners
- Appalachian Basin Horizontal Well Database



WHAT DATA IS AVAILABLE PUBLICLY?

OH Dept. of Natural Resources (ODNR)
PA Dept. of Environmental Protection (PA DEP)
WV Dept. of Environmental Protection (WV DEP)

Operator are required to submit the following item to the state agencies

- **permit application**
- **post-drilling “well record”**
- **post-completions “well record”**
- **production data**

Deadlines vary between each state.
Most significant variance in production reporting:

- **OH - Quarterly data reported quarterly**
- **PA - Monthly data reported monthly**
- **WV - Monthly data reported monthly**
  - **pre-2016 (6A permits): monthly reported annually**

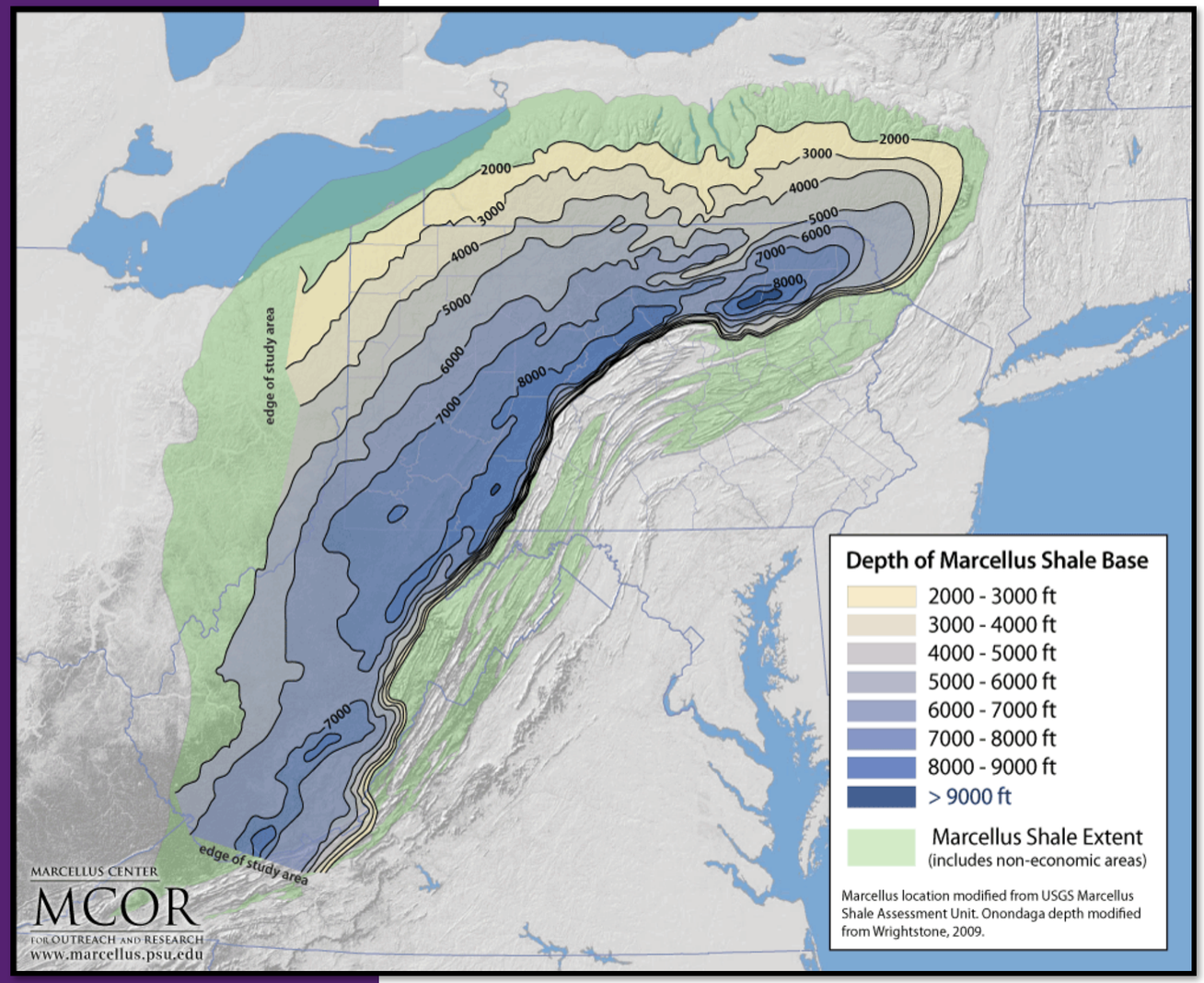
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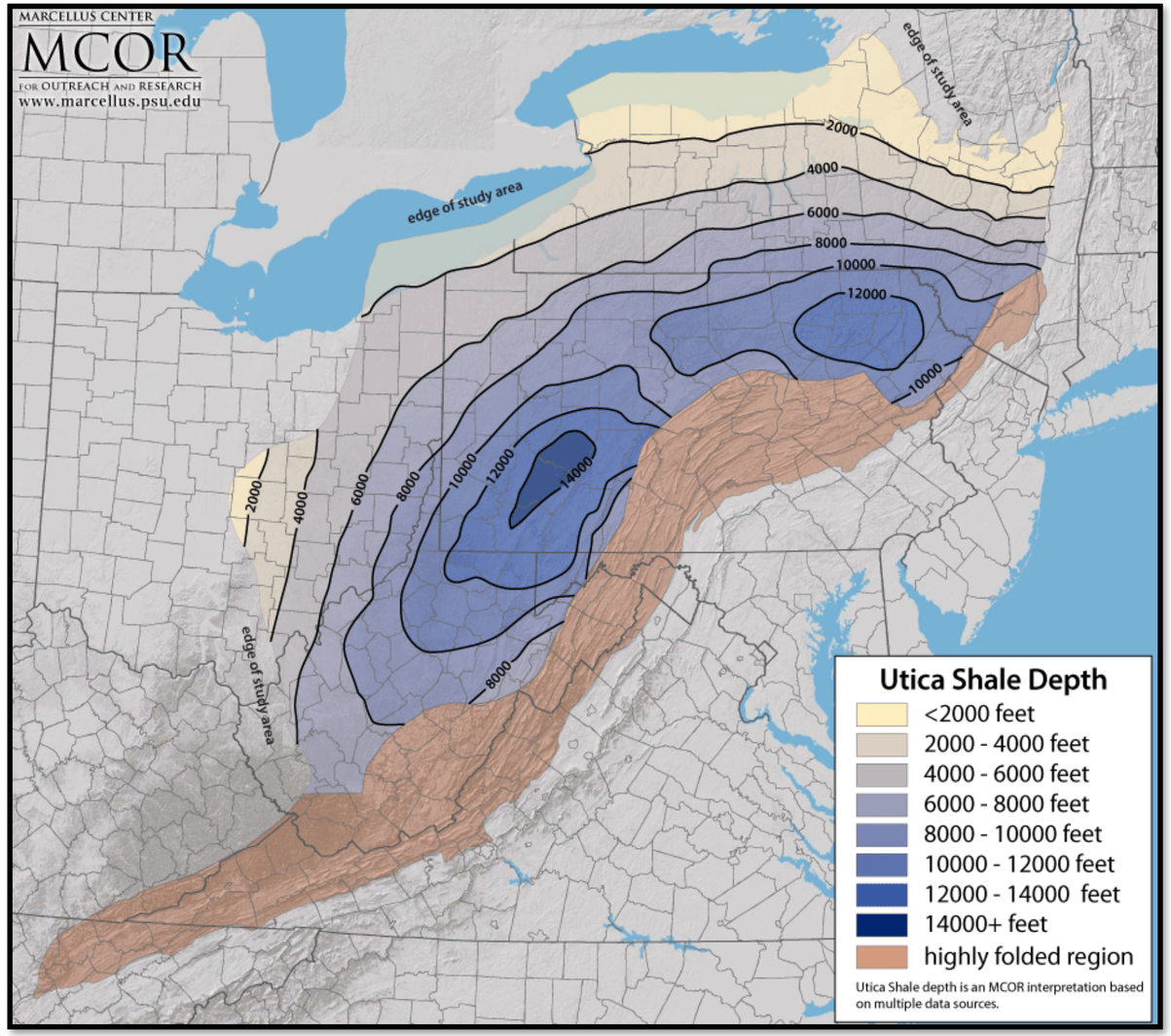




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Overview of the Appalachian Basin

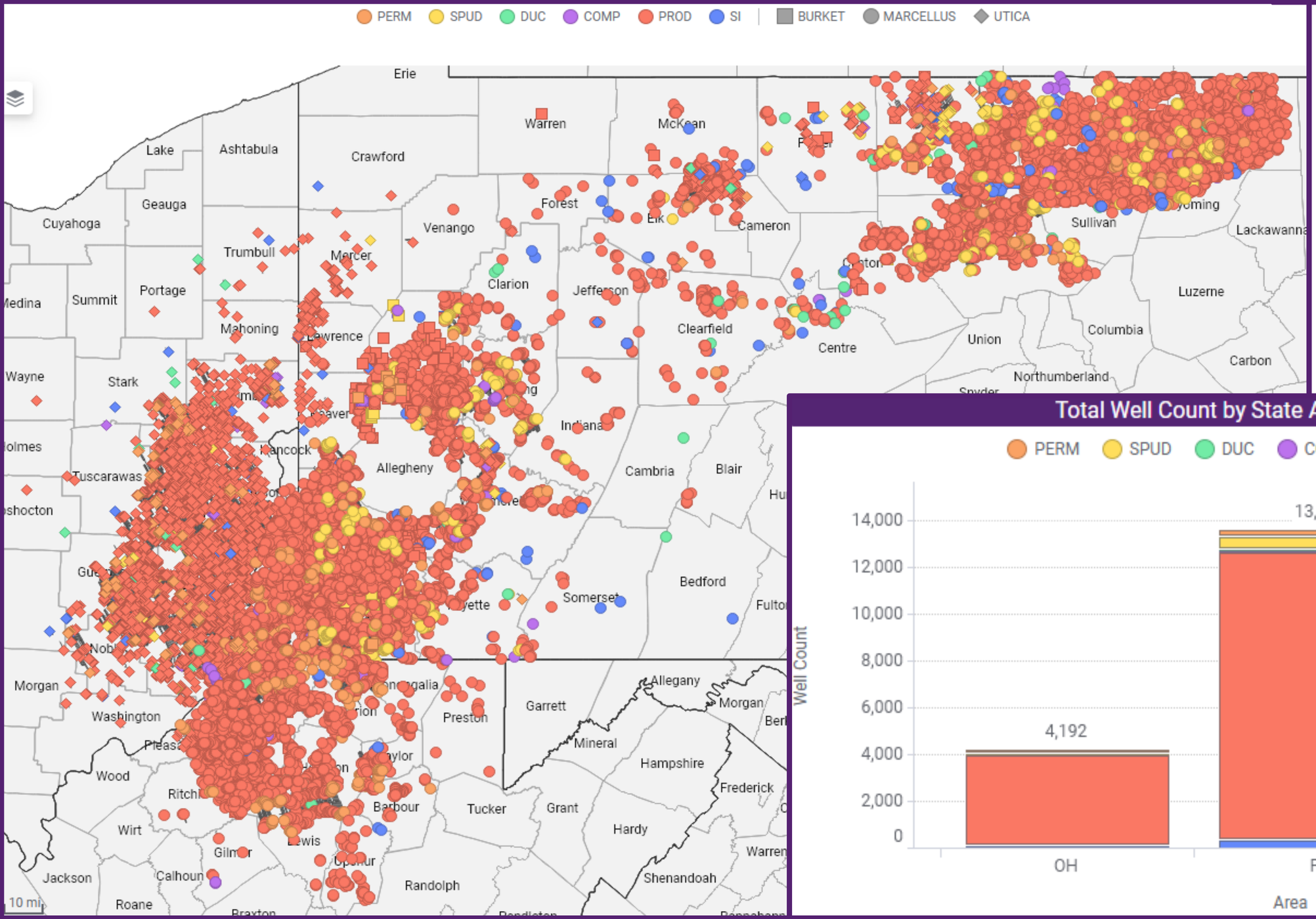




Source: http://www.marcellus.psu.edu/resources/maps.php

Source: https://doi.org/10.1038/s41598-024-56058-6

Appalachian Basin Map



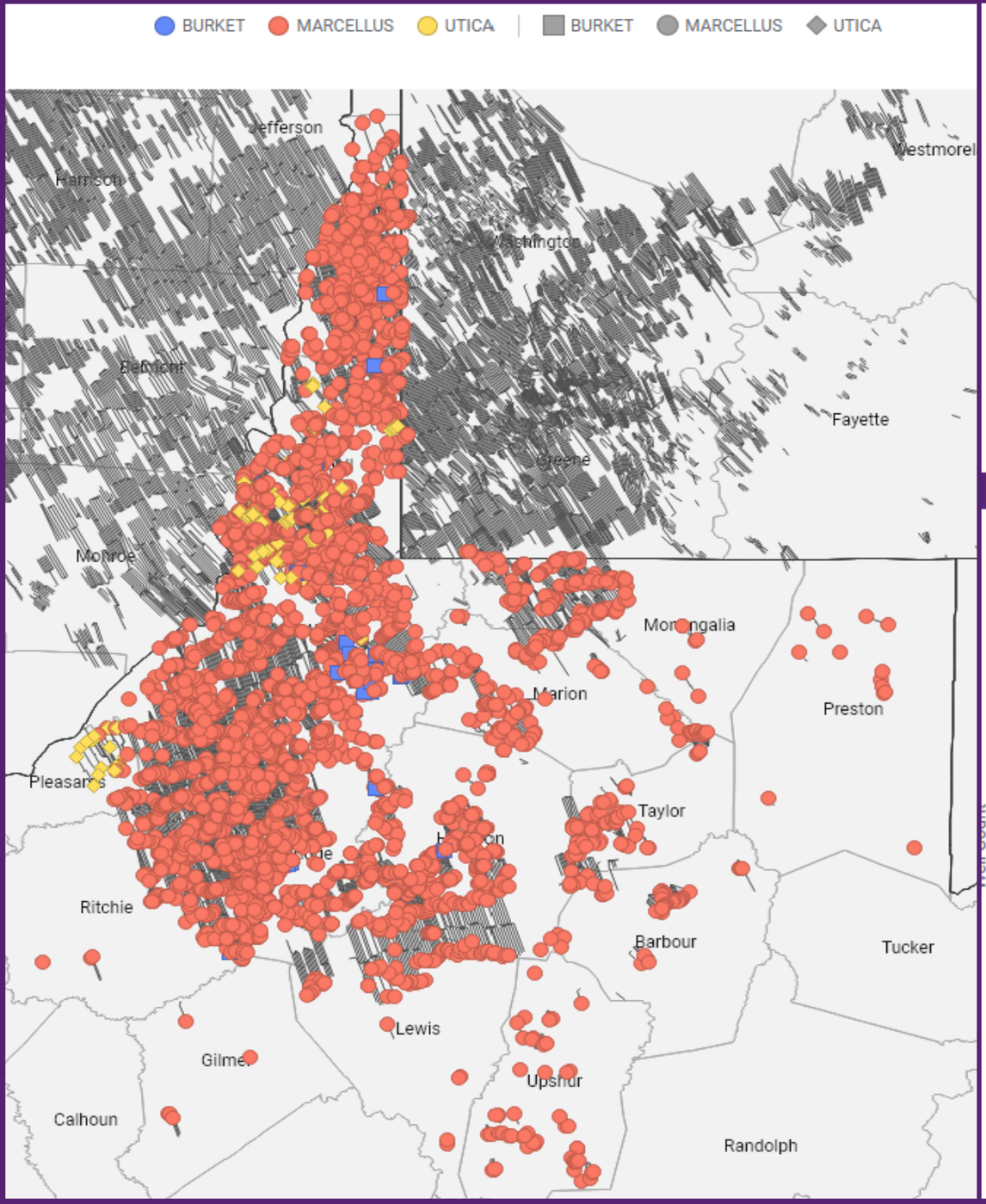
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22,550 wells

98.6% producing

Total Well Count by State Area by Status

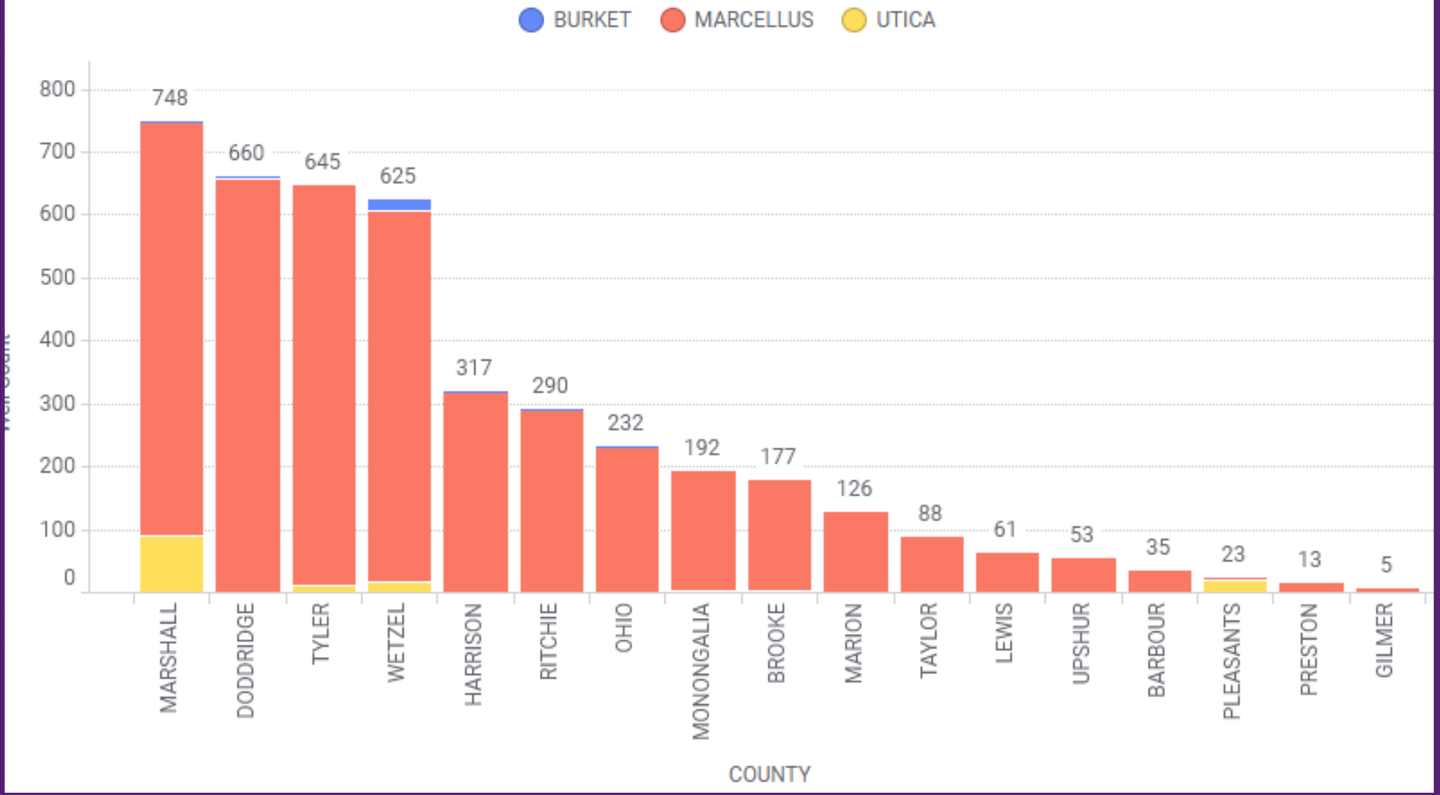
Appalachian Basin Map



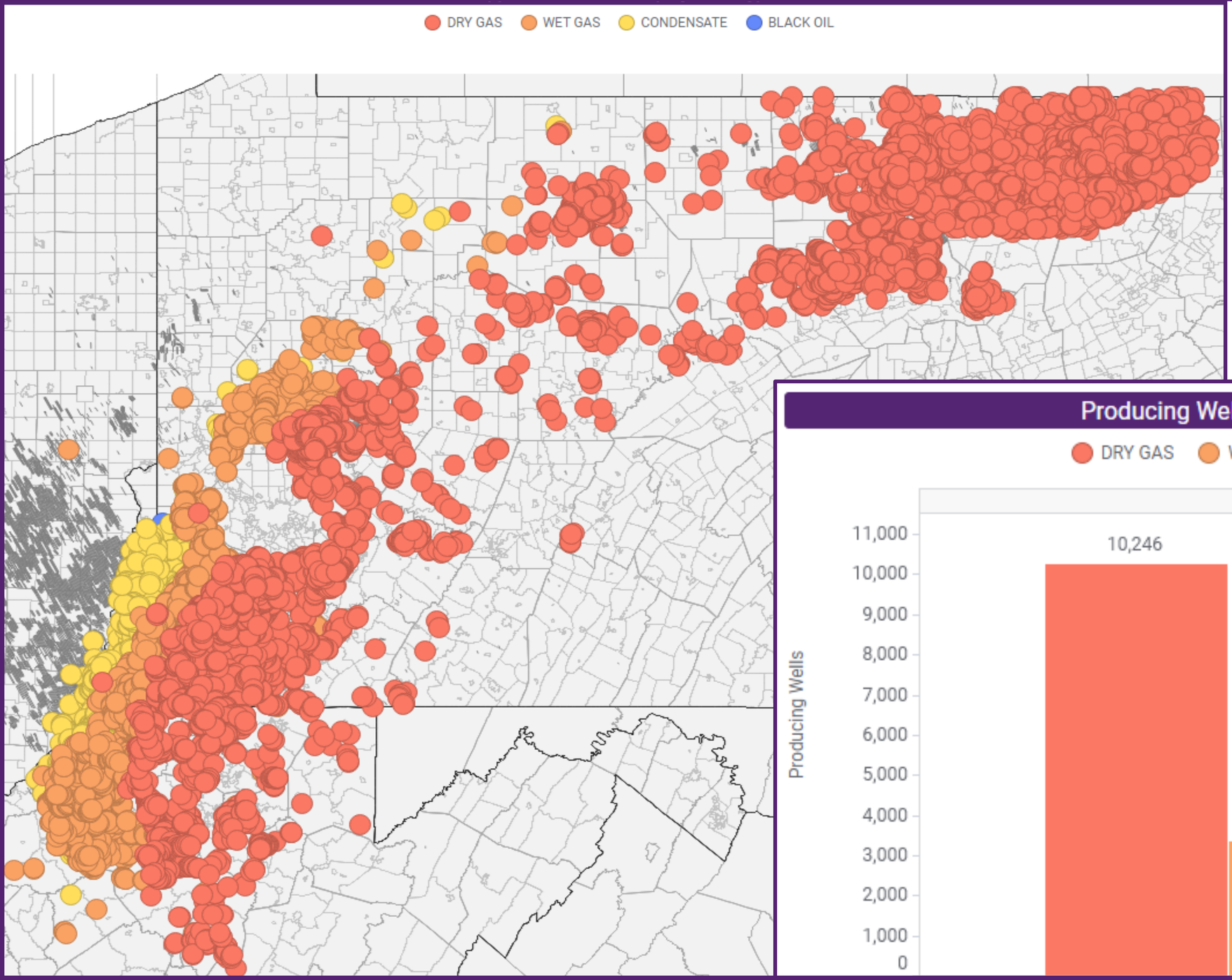
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PRODUCING WELLS BY COUNTY IN WEST VIRGINIA

WELL COUNT BY COUNTY BY RESERVOIR



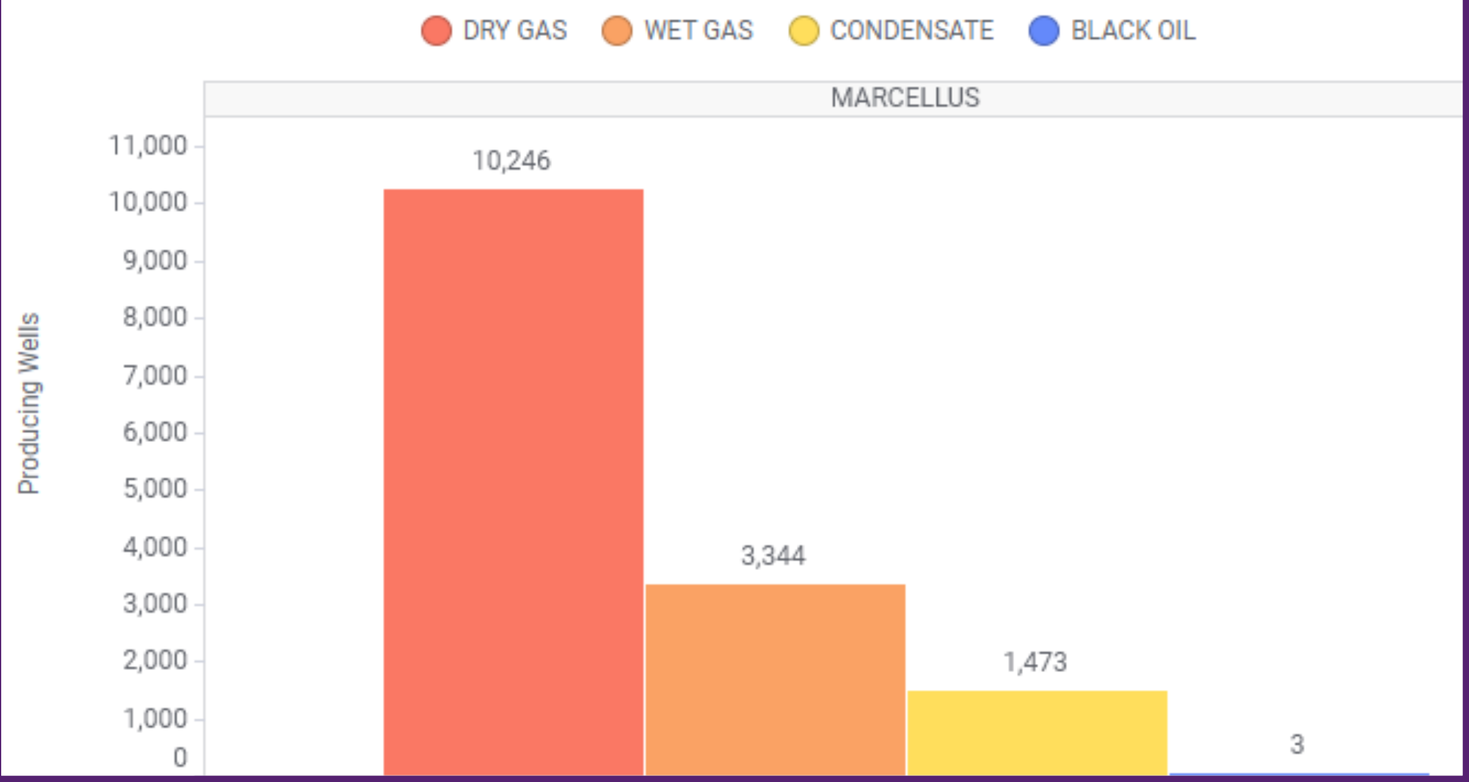
Appalachian Basin Map by Fluid Type



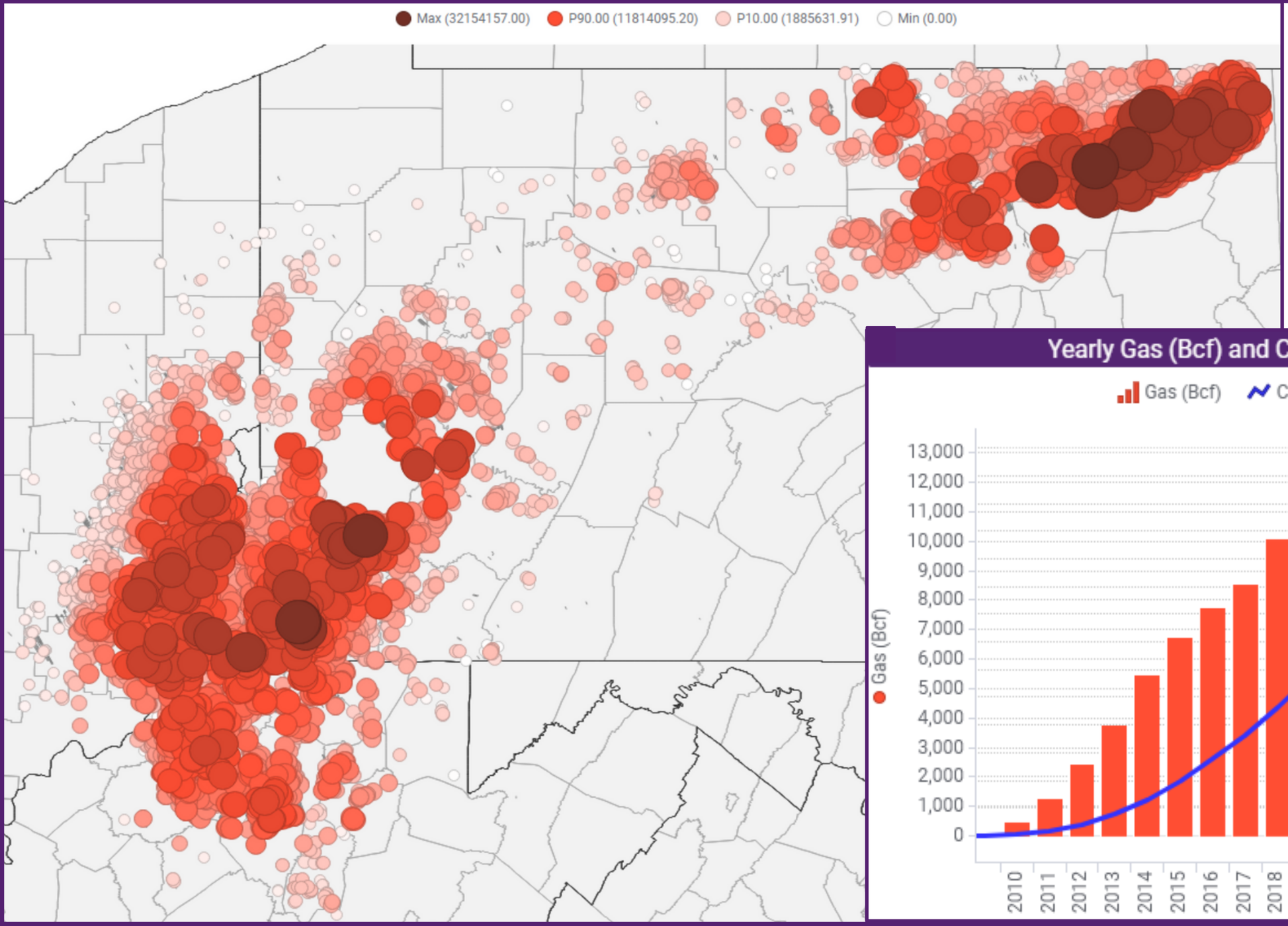
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MARCELLUS SHALE MATURITY

Producing Well Count by Fluid Type by Reservoir



Appalachian Basin Map by Total Gas Produced

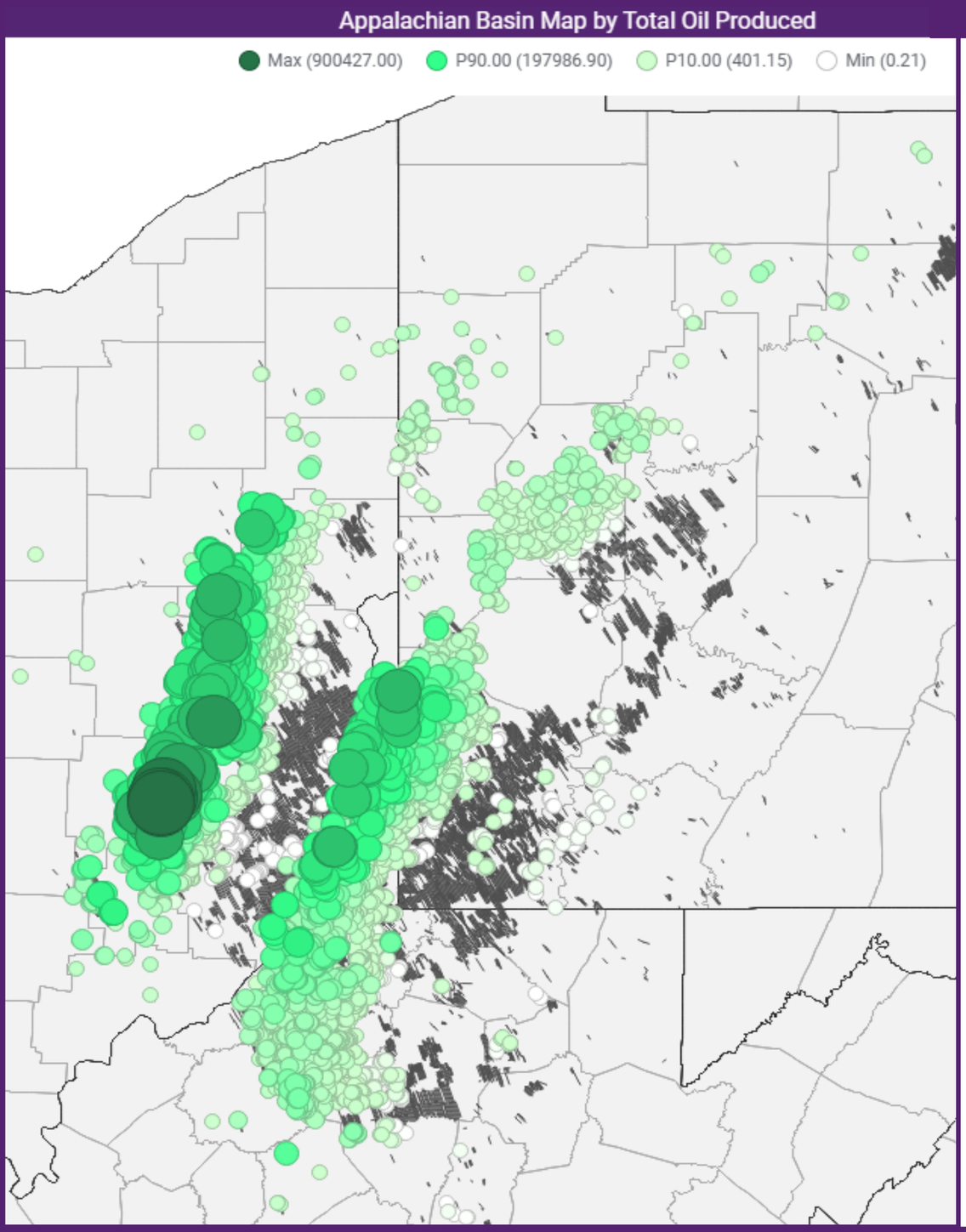


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GAS PRODUCTION

~13 BCF in 2025
~20% from WV

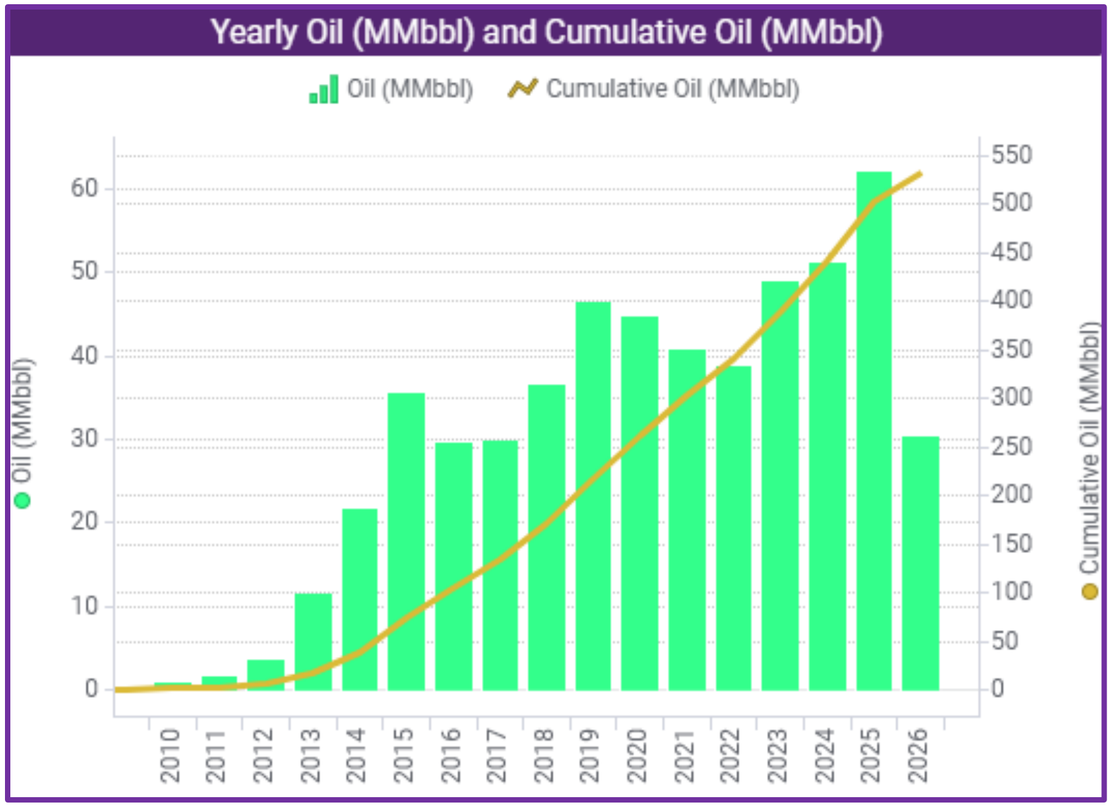
Yearly Gas (Bcf) and Cumulative Gas (Bcf)



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OIL PRODUCTION

~ 60 MMBBL in 2025
10 MMBBL from WV (declining)

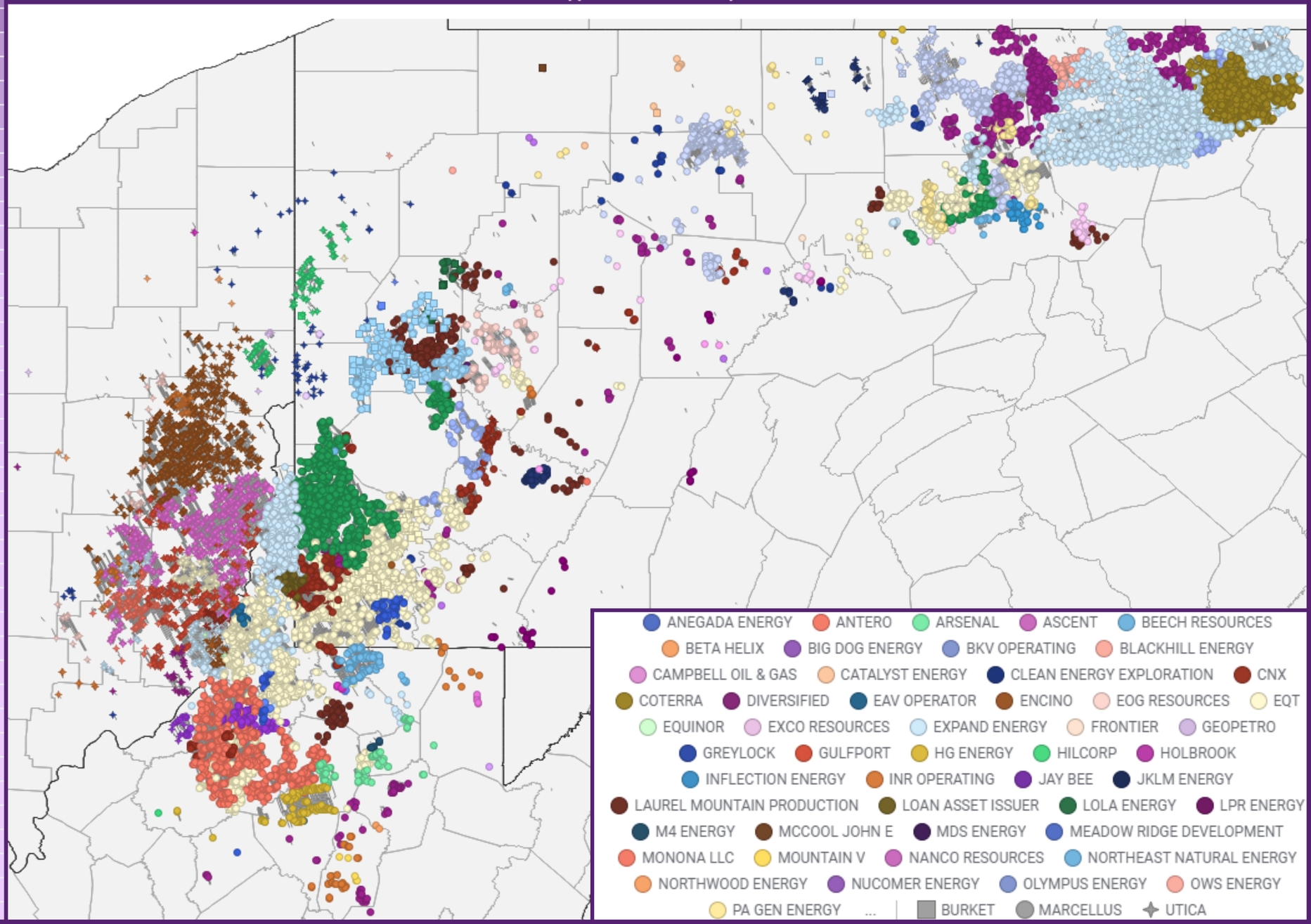


OPERATOR POSITIONS

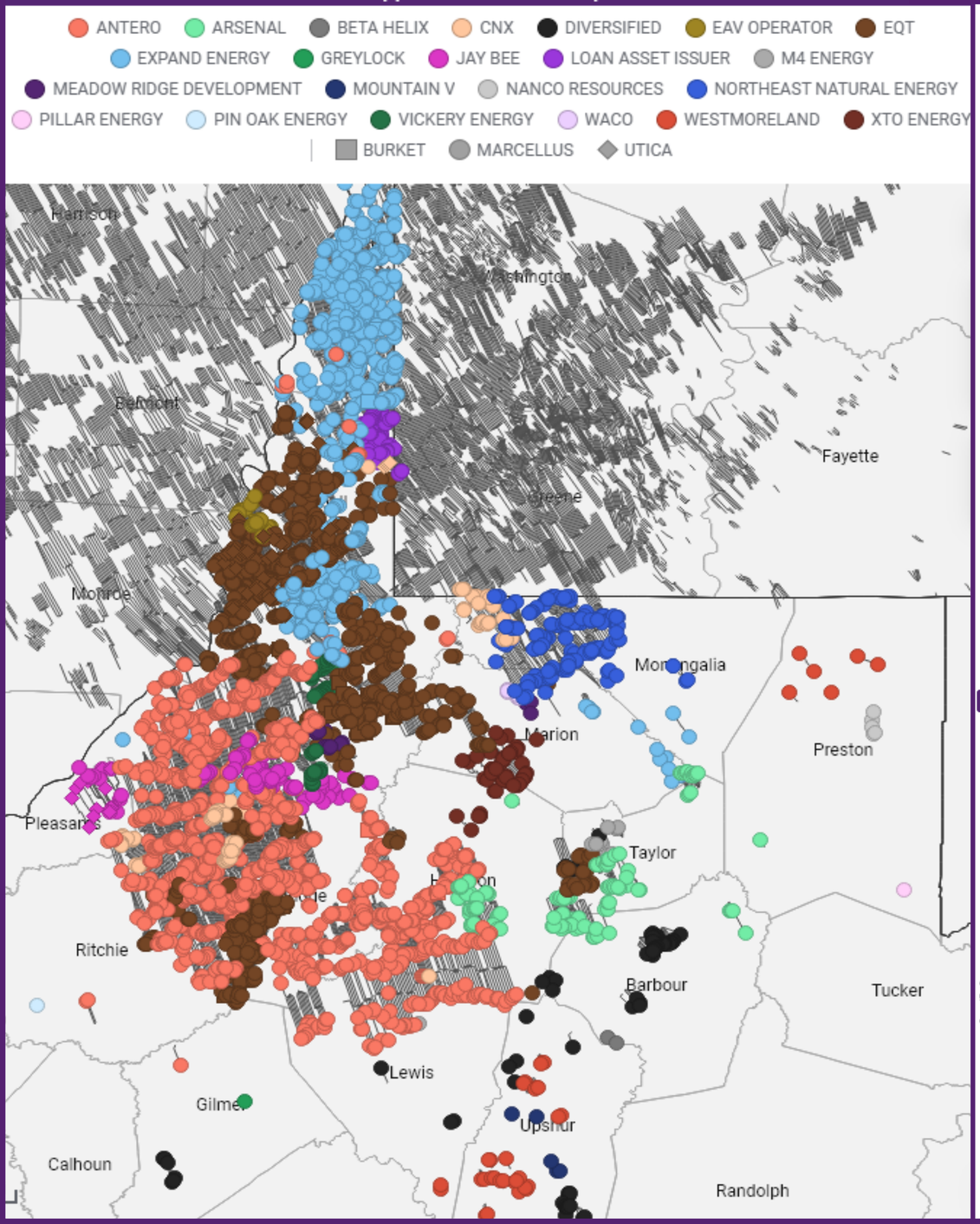
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Operator	Well Count
EQT	3,427
EXPAND ENERGY	3,289
RANGE RESOURCES	1,574
ANTERO	1,518
COTERRA	1,085
ENCINO	1,060
SENECA	1,012
ASCENT	923
REPSOL	767
CNX	644
GULFPORT	462
PENNENERGY	429
XTO ENERGY	329
DIVERSIFIED	267
PA GEN ENERGY	196
HILCORP	186
NORTHEAST NATURAL ENERGY	162
BKV OPERATING	145
GREYLOCK	138
SNYDER BROS	136
LOAN ASSET ISSUER	133
JAY BEE	132
INR OPERATING	129
EXCO RESOURCES	115
ARSENAL	104
HG ENERGY	102
OLYMPUS ENERGY	90
PIN OAK ENERGY	87
LOLA ENERGY	60
XPR RESOURCES	60
TRIBUNE	59
RICE	53
EOG RESOURCES	52
STL RESOURCES	51
BLACKHILL ENERGY	50
INFLECTION ENERGY	50
EAV OPERATOR	44
JKLM ENERGY	43
LPR ENERGY	37
WESTMORELAND	37
LAUREL MOUNTAIN PRODUCTI...	21

Appalachian Basin Map

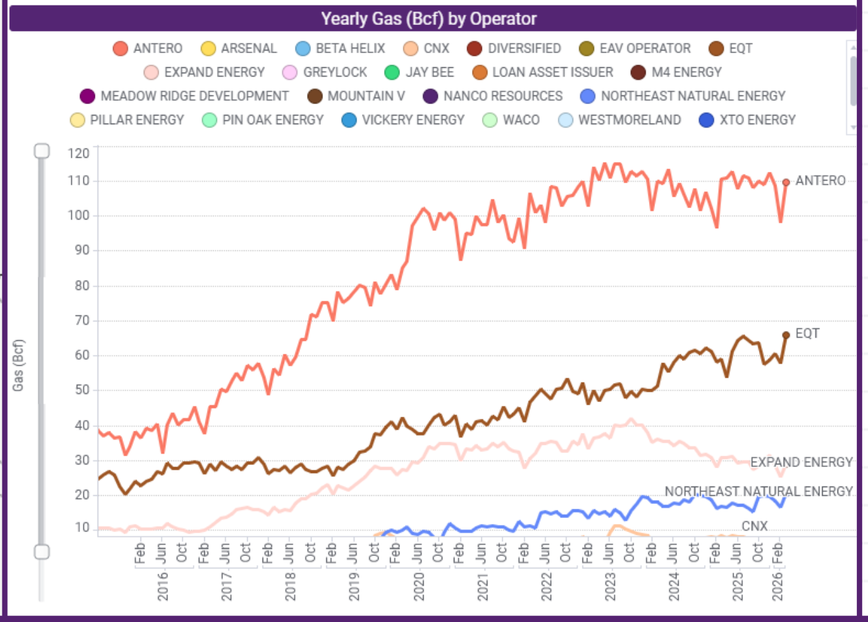


Appalachian Basin Map



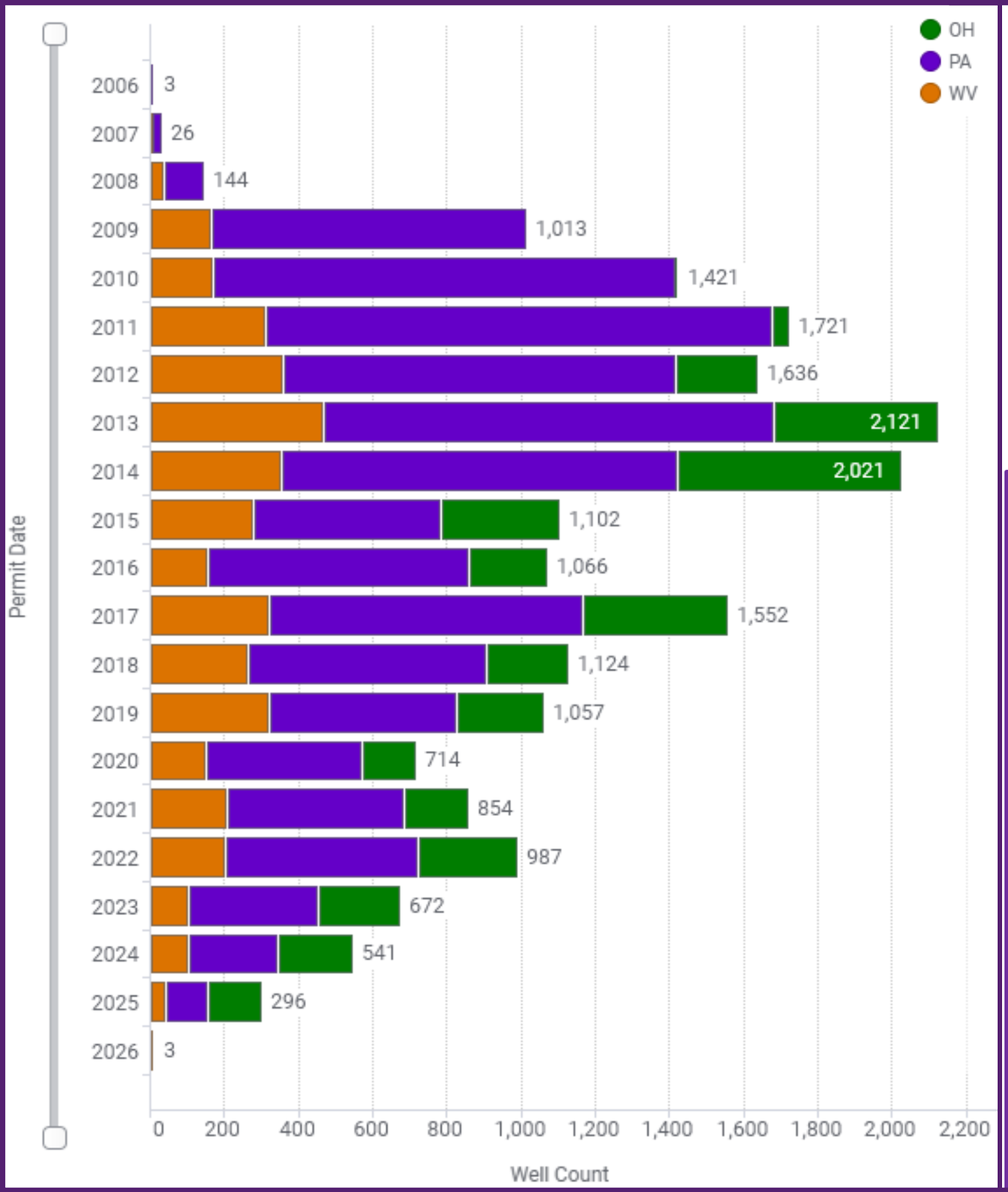
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CURRENT OPERATORS IN WV



Operator	Well Count
ANTERO	1,587
EQT	1,284
EXPAND ENERGY	743
NORTHEAST NATURAL ENERGY	193
JAY BEE	150
ARSENAL	142
CNX	124
LOAN ASSET ISSUER	97
DIVERSIFIED	68
VICKERY ENERGY	68
XTO ENERGY	54
EAV OPERATOR	44
WESTMORELAND	37
MEADOW RIDGE DEVELOPMENT	15
M4 ENERGY	12
WACO	6
MOUNTAIN V	5
NANCO RESOURCES	5
BETA HELIX	2
GREYLOCK	1
PILLAR ENERGY	1
PIN OAK ENERGY	1
Grand total	4,639

Permitting History by State



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DEVELOPMENT PACE

Original Operator in WV since 2020

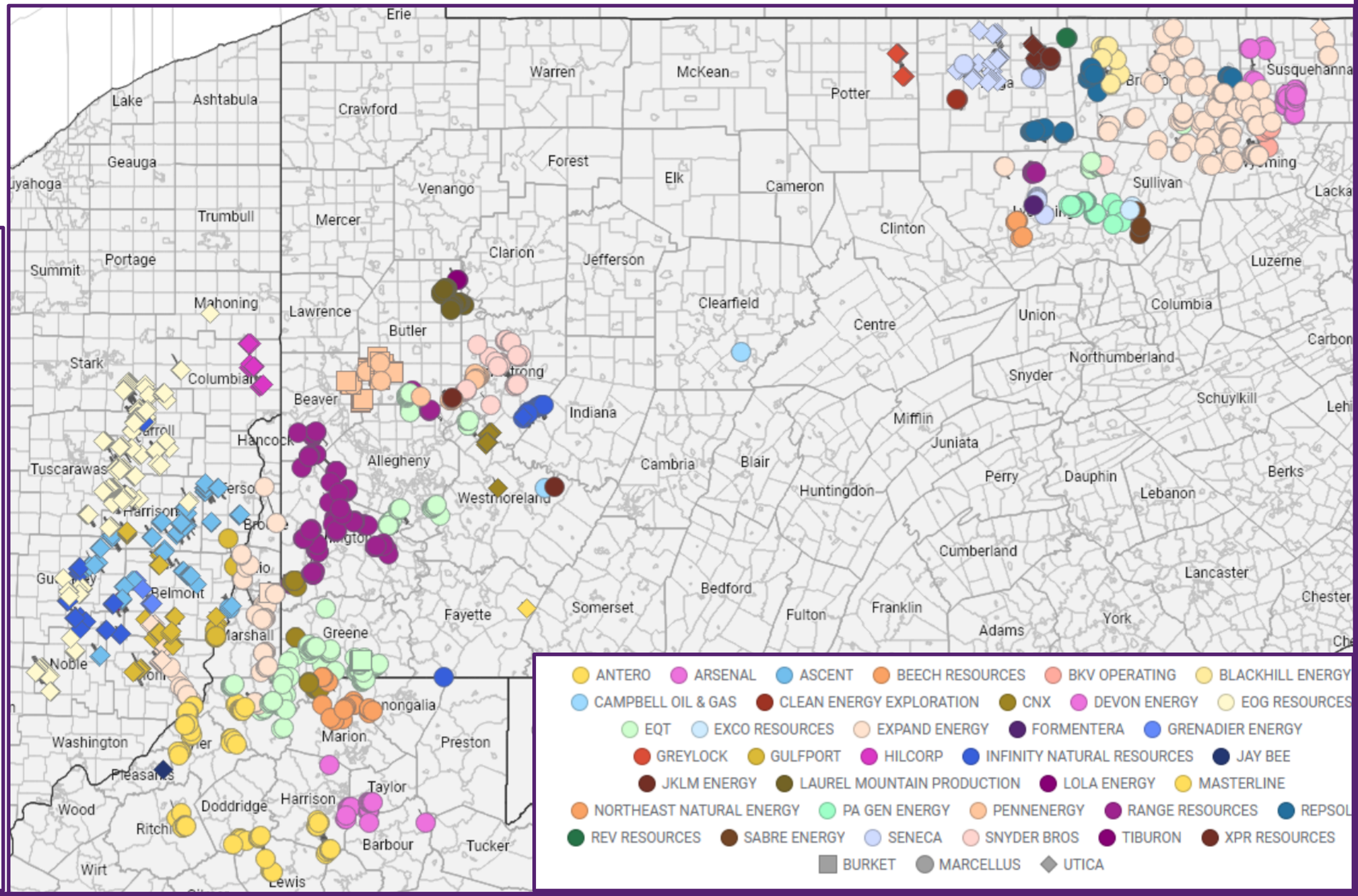
Operator Drilling Statistics

ANTERO 432 Total Well Count 370 Producing Wells	**EQT** 199 Total Well Count 126 Producing Wells	**SWN** 157 Total Well Count 154 Producing Wells	**TUG HILL** 117 Total Well Count 72 Producing Wells	**HG ENERGY** 104 Total Well Count 93 Producing Wells
NORTHEAST N... 86 Total Well Count 65 Producing Wells	**CNX** 56 Total Well Count 33 Producing Wells	**ARSENAL** 45 Total Well Count 20 Producing Wells	**EXPAND ENER...** 42 Total Well Count 26 Producing Wells	**JAY BEE** 35 Total Well Count 26 Producing Wells
TRIBUNE 13 Total Well Count 12 Producing Wells	**AMERICAN EN...** 7 Total Well Count 7 Producing Wells	**DIVERSIFIED** 5 Total Well Count 5 Producing Wells	**EAV OPERATOR** 2 Total Well Count 2 Producing Wells	**MEADOW RID...** 1 Total Well Count 0 Producing Wells

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DEVELOPMENT in 2025-2026

Operator	OH	PA	WV	Grand total
EOG RESOURCES	177			177
EXPAND ENERGY	21	116	37	174
EQT		129	26	155
RANGE RESOURCES		95		95
ASCENT	89			89
ANTERO			76	76
INFINITY NATURAL RESOURCES	33	18		51
PENNENERGY		49		49
SENECA		47		47
GULFPORT	46			46
DEVON ENERGY		38		38
SNYDER BROS		31		31
CNX		22	8	30
REPSOL		30		30
PA GEN ENERGY		29		29
ARSENAL			20	20
LAUREL MOUNTAIN PRODUCTION		20		20
NORTHEAST NATURAL ENERGY			20	20
BLACKHILL ENERGY		14		14
HILCORP	13			13
JKLM ENERGY		13		13
GRENADIER ENERGY	8			8
BEECH RESOURCES		7		7
BKV OPERATING		6		6
GREYLOCK		6		6
SABRE ENERGY		6		6
TIBURON	3			3
CAMPBELL OIL & GAS		2		2
CLEAN ENERGY EXPLORATION		2		2
EXCO RESOURCES		2		2
LOLA ENERGY		2		2
REV RESOURCES		2		2
FORMENTERA		1		1
JAY BEE			1	1
MASTERLINE		1		1
XPR RESOURCES		1		1
Grand total	390	689	188	1,267



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Top Service Providers (by well count) Since 2021



<u>Drilling Contractors</u>
Patterson UTI
Precision Drilling
Helmerich & Payne
Nabors Drilling
Pioneer Drilling

<u>Cementing Contractors</u>
Halliburton
Schlumberger/SLB
Nextier

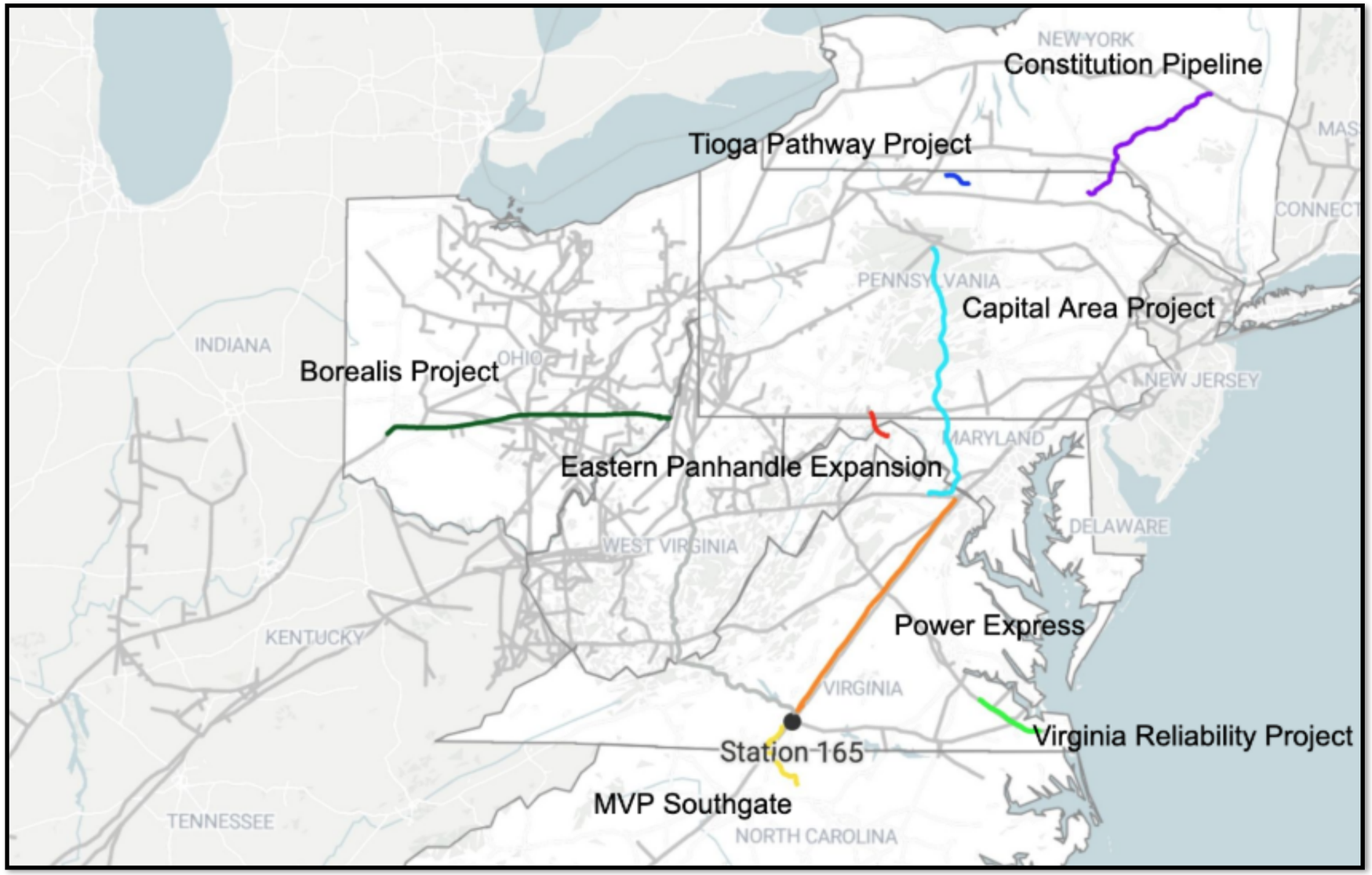
<u>Pressure Pumping Contractors</u>
Halliburton
Nextier
ProFrac
Evolution
US Well Services





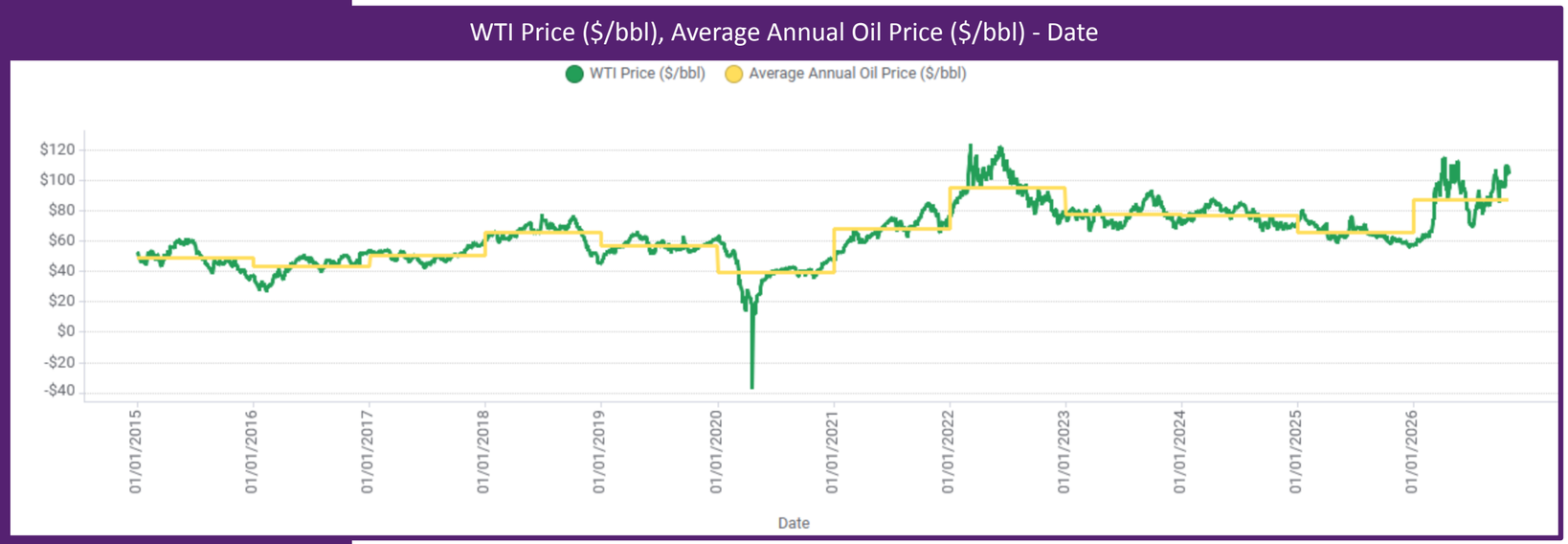
Transmission Lines + Proposed Projects

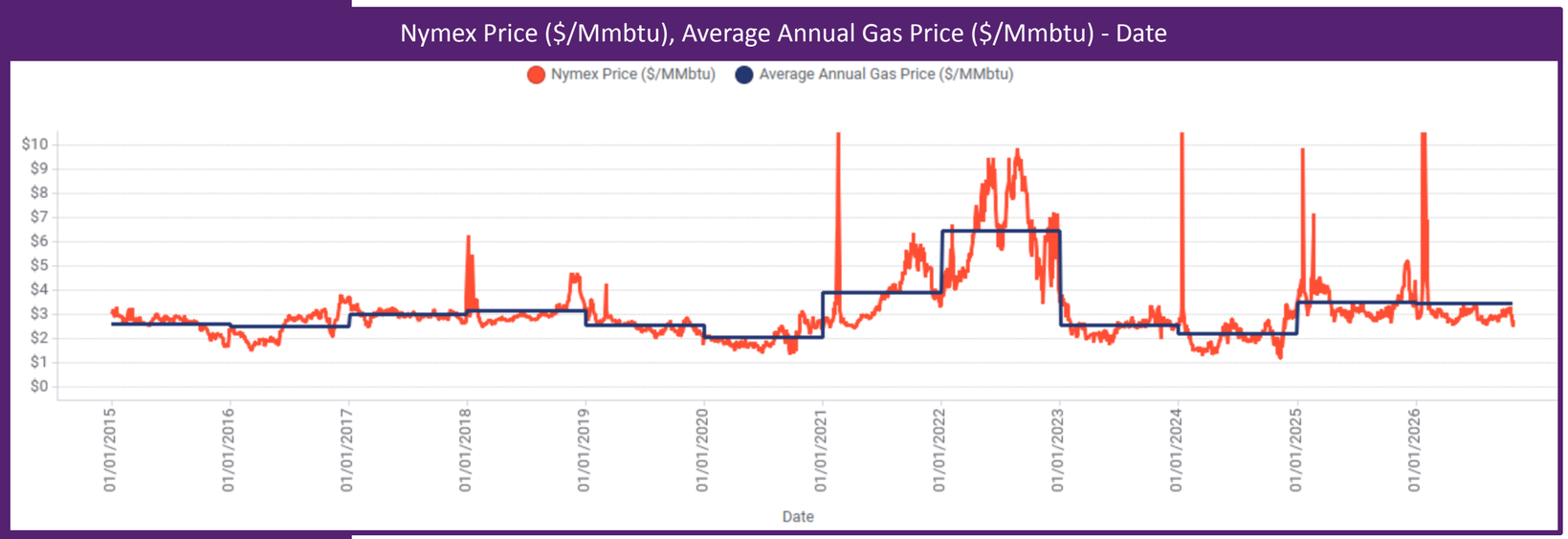
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*source: https://ohiorivervalleyinstitute.org/

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Oil and Gas Pricing:

- Oil price inflated due to international conflicts.
- Gas price sees regular spiking in winter months.
- Oil typically settles between $55 and $75 per bbl.
- Gas typically settles between $2.50 and $3.50 per MMbtu.

Outlook:

- Oil futures drop price to ~$76 per bbl by 2028.
- Gas futures see price rise from ~$2.90 to ~$3.60 per MMbtu.
- App Basin Basis to remain between -$0.75-$1.00

Source: U.S. Energy Information Administration via FRED

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Current 6-Year Strip

Effective Oct. 30, 2026

Year	Avg WTI Price ($/bbl)	Avg Nymex Price ($/MMbtu)
2026	104.120	2.898
2027	90.825	2.913
2028	76.827	3.570
2029	71.268	3.649
2030	66.982	3.647
2031	63.202	3.615

Source: Intercontinental Exchange (ICE) contracts.

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Where Do We Go From Here?



Development by Operators:

- PA – Utica development in Tioga/Potter counties
- OH – Operators pushing further into the oil window
- WV – Proving successful development towards the south

- Cross-over Marcellus/Utica wells along the Ohio River
- Co-development necessary for success in the Burket

Mineral Transactions:

Observations from APCs Appraisals since 2024

- Reviewed 62,000 gross acres
- Wide range of development stages
- Mix of Conventional/Unconventional
- Average value = $4,600 per net mineral acre
- Noted at least 23 unique “buyers” (primarily Ohio)
- Sales in excess of $20k/NMA in Utica Oil Window

THANK YOU!

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