Levin College of Public Affairs and Education

SHALE INVESTMENT DASHBOARD IN OHIO Q3 AND Q4 2025

Prepared for:
JOBSOHIO

Prepared by:
Tessa E. Rosenberger
Jacob R. Forester
Andrew R. Thomas

October 2026

Energy Policy Center

1717 Euclid Avenue Cleveland, Ohio 44115
http://urban.csuohio.edu

Table of Contents

Executive Summary 3
1. INTRODUCTION 10
2. SHALE INVESTMENT UPDATES 11
A. UPSTREAM DEVELOPMENT 11
1. Overview 11
2. Production Analysis 13
B. UPSTREAM INVESTMENT ESTIMATES 17
1. Investments in Drilling 17
2. Lease Operating Expenses 19
3. Royalties 20
4. Lease Renewals and New Leases 21
C. ESTIMATED MIDSTREAM INVESTMENTS 25
D. DOWNSTREAM DEVELOPMENT 29
1. Natural Gas Power Plants 29
2. Other Downstream Investment 36
3. CONCLUSION 36
About the Study Team 37
About the Energy Policy Center 37
4. APPENDICES 37
APPENDIX A. CUMULATIVE OHIO SHALE INVESTMENT 37
APPENDIX B. METHODOLOGY 45

List of Figures

Figure 1: Cumulative Shale Investment in Ohio Over Time 4
Figure 2: Oil's Share of Quarterly Gas-Equivalent Utica Production, Q1 2021 - Q4 2025 6
Figure 3: High-Productivity Utica Oil Wells for the Second Half of 2025 7
Figure 4: Ohio Utica Spark Spread ($/MWh), Q1 2021 - Q4 2025 9
Figure 5: Production by County for First Half 2025 and Second Half 2025 12
Figure 6: Production by Operator for Q3 and Q4 of 2025 12
Figure 7: Distribution of Gas Equivalent Production for July - December 2025 15
Figure 8: Ohio's Projected Natural Gas Consumption with Proposed New Generation 34
Figure 9: Existing and Projected Natural Gas Power Plants 35
Figure 10: Total Utica Production in Bcfe (Gas Equivalent) by County through December 2025 . 38
Figure 11: Cumulative Number of Wells by County through December 2025 38

List of Tables

Table 1: Counts of Utica Wells by Daily Oil Production 8
Table 2: Ohio's Shale Production by Reporting Period 13
Table 3: Production by County for July - December 2025 14
Table 4: Ohio Utica Well Status as of December 2025 16
Table 5: Well Status by County as of December 2025 16
Table 6: Estimated Upstream Shale Investment by County, July - December 2025 18
Table 7: Estimated Upstream Shale Investment in Ohio by Company, July – December 2025 19
Table 8: Estimated Lease Operating Expenses for July - December 2025 by County 19
Table 9: Estimated Lease Operating Expenses for July - December 2025 by Operator 20
Table 10: Total Royalties from Oil, July - December 2025 (in millions) 21
Table 11: Total Royalties from Residue Gas, July - December 2025 (in millions) 21
Table 12: Total Royalties from Natural Gas Liquids, July - December 2025 (in millions) 21
Table 13: Total Estimated Investments into New Leases and Lease Renewals July - December 2025 (in millions) 24
Table 14: Midstream Investment, July - December 2025 25
Table 15: Future Ohio Midstream Projects 28
Table 16: Downstream Investments July 2025 - December 2025 30
Table 17: Planned Future Downstream Investments 32
Table 18: Utica Upstream Companies Drilling in Ohio as of June 30, 2025 42
Table 19: Total Lease Operating Expenses through December 2025 (in millions) 43
Table 20: Cumulative Utica-Related Upstream Investments in Ohio through June 2025 44
Table 21: Cumulative Utica-Related Midstream Investments in Ohio through December 2025 .. 44
Table 22: Cumulative Utica-Related Downstream Investments in Ohio through December 2025 44
Table 23: End User Natural Gas Consumption in Ohio 51

Executive Summary

This report presents findings from an investigation into shale-related investment in Ohio. The investment estimates are cumulative from July through December 2025. Prior investments have been included in previous reports that are available from Cleveland State University. [1] Subsequent reports will estimate additional investment from the date of this report. Investment in Ohio into the Utica during the second half of 2025 can be summarized as follows:

Total Estimated Upstream Utica Investment: July – December 2025

Lease Renewals and New Leases	$104,000,000
Drilling	$1,365,287,000
Roads	$18,611,600
Lease Operating Expenses	$203,226,023
Royalties	$890,970,000
Total Estimated Upstream Investment	$2,582,094,623

Total Estimated Midstream Investment: July – December 2025

Gathering Lines	$72,000,000
Compression and Dehydration	$184,000,000
Behind the Meter Distribution Lines	$152,490,000
Total Estimated Midstream Investment	$408,720,000

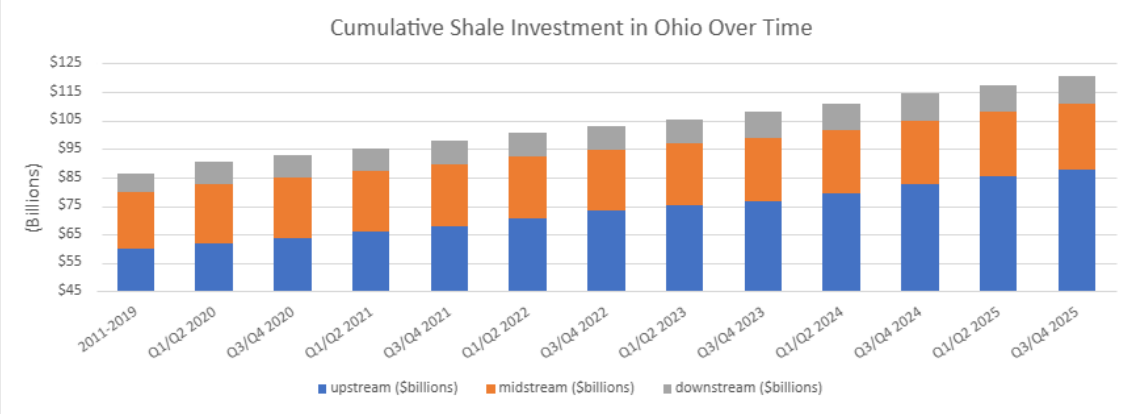
Total Estimated Downstream Investment: July – December 2025

Natural Gas Power Plants	$618,800,000
Total Estimated Downstream Investment	**$618,800,000**

[1] The nineteen previous reports on shale investment in Ohio up to June 2025 can be found at https://levin.csuohio.edu/epc

Total investment from July through December 2025 was approximately $3.6 billion, including upstream, midstream, and downstream. Indirect downstream investment, such as development of new manufacturing because of lower energy costs, was not included as part of this Study. Together with previous investments to date, cumulative shale-related oil and gas investment in Ohio through December of 2025 is estimated to be around $121.2 billion. Of this, $87.83 billion has been in upstream, $22.82 billion in midstream, and $10.1 billion in downstream industries.[2] Figure 1 shows the growth in cumulative shale-related investment for Ohio since the release of the first Shale Dashboard.

Figure 1: Cumulative Shale Investment in Ohio Over Time



Upstream Investment Is Up Slightly from First Half of 2025. Overall upstream investments in the second half of 2025 were essentially unchanged compared to the first half of 2025, notwithstanding an increase in drilling activity and production. Data from the Ohio Department of Natural Resources Division of Oil and Gas (ODNR) shows that 119 new wells were drilled during the third and fourth quarters of 2025. ODNR production data also indicates that total gas-equivalent shale production in the second half of 2025 was 10.17% higher than the first half of 2025. However, the increased investments in drilling and production were offset by lower oil and gas prices, which resulted in 9% lower royalty payments.

For the second half of 2025, Harrison County had the highest number of new wells with 34, followed by Guernsey County with 20, Carroll County with 18, Noble County with 16, Belmont County with 11, Jefferson County with 8, Monroe County with 6, Columbiana County with 5, and Tuscarawas County with 1. No other new shale wells were drilled during the second half of 2025.

Ascent, EOG Ohio, and Gulfport Appalachia were the top producers for Q3 and Q4 of 2025, having produced 481, 259, and 204 billion cubic feet equivalent (Bcfe), respectively.[3] Expand Operating

[2] Numbers may not add up precisely due to rounding.

[3] The acquisition of Encino Acquisition Partners, EAP Ohio's parent company, by EOG Resources was completed in

and Rice Drilling produced 76 Bcfe and 56 Bcfe, respectively. EOG Resources (related company to EOG Ohio) had the sixth highest production during the Study period at 50 Bcfe. These six companies represented approximately 92% of total shale production in Ohio for the second half of 2025. Altogether, 1,089 billion cubic feet of natural gas and 25.1 million barrels of oil were produced in the second half of 2025.

Despite pre-Iran-war low oil prices (below $50/bbl in the final quarter of 2025), production efficiencies sustained oil-related development, accounting for more than 10% of Ohio's total gas-equivalent shale production in the second half of 2025 (see Figure 2). Infinity Natural Resources (INR), for example, reported in May 2025 a breakeven realized oil price of about $28 per barrel for its Ohio Utica oil inventory, suggesting that new oil development will be economically attractive in 2026, especially as wartime oil prices have risen to nearly $100/bbl.[4] In a separate filing, INR stated that the Utica's *volatile* oil window—the portion of the play producing very light crude that vaporizes easily— "maintains one of the lowest breakeven costs amongst all oil resource plays in the United States."[5] In December 2025, INR further committed itself to the Utica play with a $1.2 billion purchase of Utica assets from Antero Resources.[6] EOG Resources similarly noted on its Q4 2025 earnings call that its "foundational Utica asset is positioned for continued improvement."[7]

August 2025. *See* EOG Resources. (2025, August 8). *Q2 2025 Earnings Presentation*. https://filecache.investorroom.com/mr5ir_eogresources2/425/EOG-0825.pdf. EOG Ohio is a subsidiary of EOG Resources.

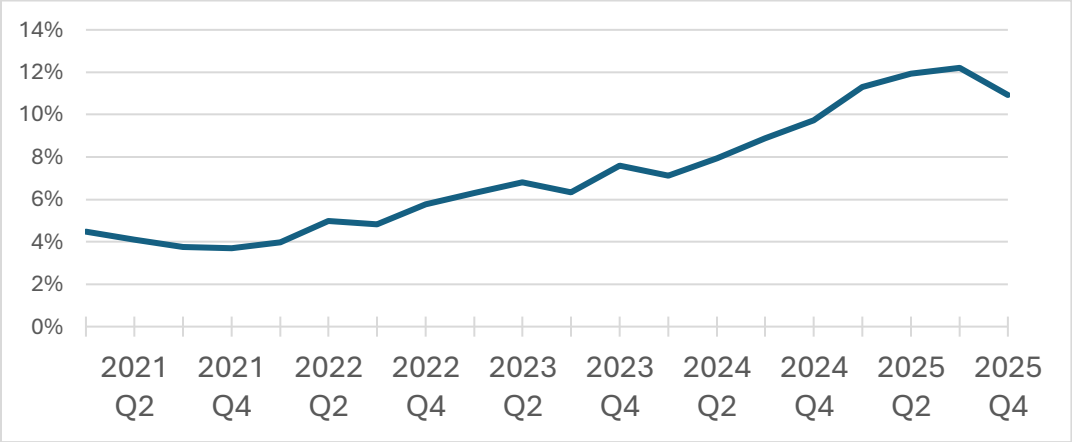
[4] Infinity Natural Resources. (2025, May 12). *Q1 2025 Earnings Presentation*. https://s204.q4cdn.com/940357400/files/doc_financials/2025/q1/INR-1Q25-Earnings-Presentation.pdf. September 28, 2026 oil prices are $99.37 per barrel. *See* https://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm.

[5] Infinity Natural Resources. (2024, October 4). Registration Statement on Form S-1 filed with the U.S. Securities and Exchange Commission. https://www.sec.gov/Archives/edgar/data/2029118/000119312524232829/d826795ds1.htm

[6] Infinity Natural Resources, Inc., "Infinity Natural Resources Announces Transformational Acquisition in the Ohio Utica Shale for $1.2 Billion," December 8, 2025, https://ir.infinitynaturalresources.com/news/news-details/2025/Infinity-Natural-Resources-Announces-Transformational-Acquisition-in-the-Ohio-Utica-Shale-for-1-2-Billion/default.aspx

[7] EOG Resources, Inc., "Q4 2025 Earnings Call," February 25, 2026, transcript, https://stockanalysis.com/stocks/eog/transcripts/404806-q4-2025/

Figure 2: Oil's Share of Quarterly Gas-Equivalent Utica Production, Q1 2021 - Q4 2025



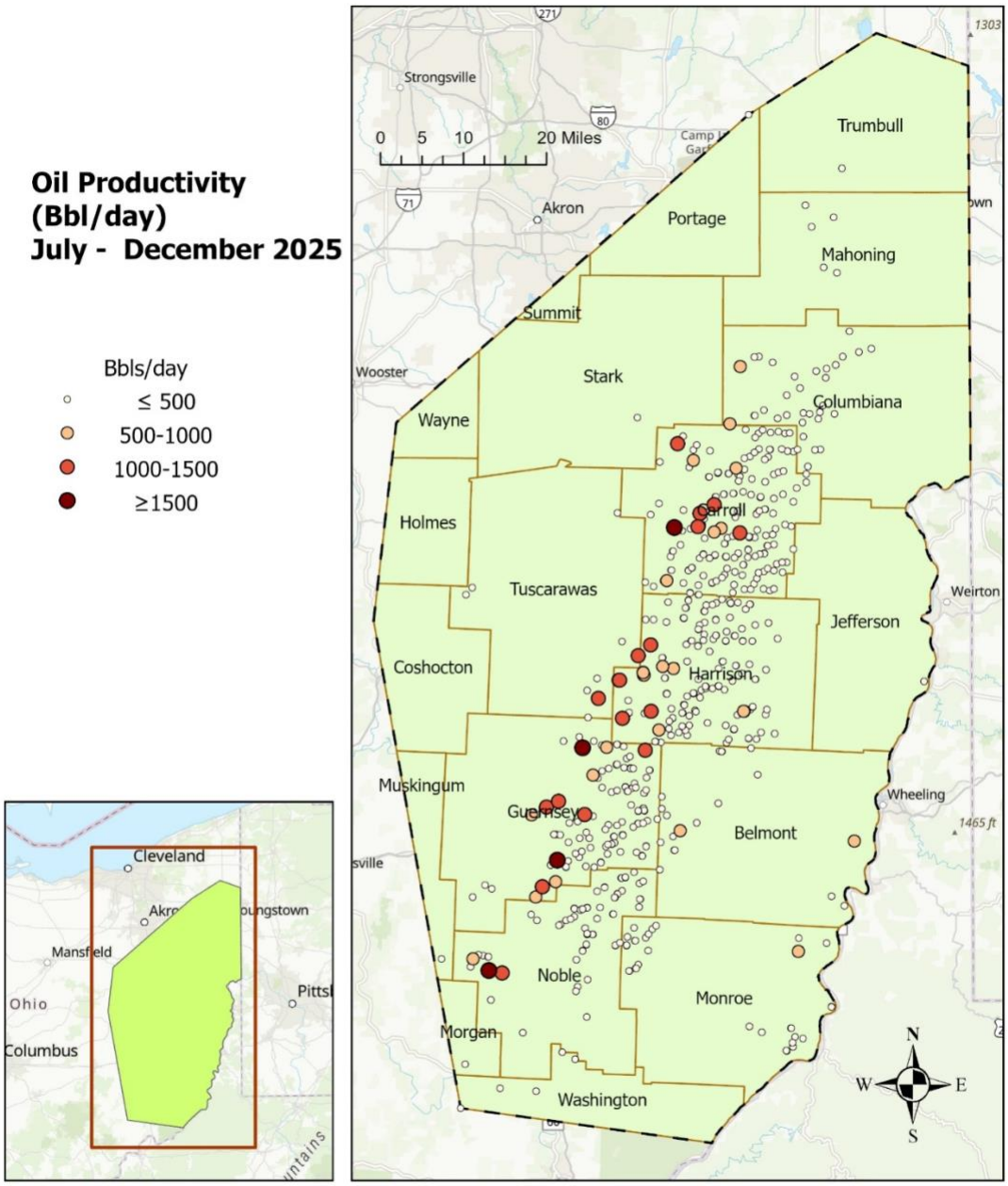
Data source: ODNR (2025).

Figure 3 shows the geographic distribution of high-productivity oil wells for the first half of 2025 (greater than 1000 bbl per day).[8] These wells fall within a narrow band extending diagonally through western Carroll, Columbiana, and Harrison Counties in the north, down into the central and eastern portions of Guernsey County and the western part of Noble County in the south.

In the second half of 2025, 8 Utica wells had oil productivity of greater than 1,500 bbl/day during the 6-month period, while 65 had oil productivity of 1,000-1,500 bbl/day. In the first half of 2025, by comparison, there were 16 Utica wells with oil productivity of greater than 1,500 bbl/day and 24 wells with oil productivity of 1,000-1,500 bbl/day (see Table 1).

[8] In more established shale oil basins, initial production rates above 1,500 barrels per day are often cited as representing the highest-productivity wells, while rates of 1,000 barrels per day or higher are viewed as indicating strong performance. *See, generally,* RBN Energy. (2025, June 9). *Might as Well Jump! - EOG Resources, Upbeat on Utica Condensate, Doubles Down with Encino Deal*. https://rbnenergy.com/daily-posts/blog/eog-resources-upbeat-utica-condensate-doubles-downencino-deal. *See also* Hart Energy. (2021, June 23). *Marketed: Eddy County ORRI, New Mexico, Permian Basin*. https://www.hartenergy.com/exclusives/marketed-eddy-county-orri-new-mexico-permian-basin-194778/. Oil productivity (bbl/day) was calculated as the volume of oil produced divided by the number of days in operation for the combined third and fourth quarters as gathered from Ohio Department of Natural Resources (ODNR) data for horizontal well production, available at https://ohiodnr.gov/discover-and-learn/safety-conservation/aboutodnr/oil-gas/oil-gas-resources/production.

Figure 3: High-Productivity Utica Oil Wells for the Second Half of 2025



Data source: ODNR (2025).

Table 1: Counts of Utica Wells by Daily Oil Production

Period	Moderate Productivity (500 - 999 bbl/day)	High Productivity (1,000 - 1,500 bbl/day)	Very High Productivity (>1,500 bbl/day)
Q3/Q4 2025	128	65	8
Q1/Q2 2025	54	24	16

Midstream and Downstream Investment Increases Significantly. Shale investment in Ohio was up due to significant expansion in the mid and downstream sectors. Midstream investment reached $408.59 million in the second half of 2025, up from $161.2 million in the first half of 2025. Midstream investment during the Study period went toward gathering system buildout and transportation, together with behind-the-meter distribution lines for natural gas power generating plants serving data centers. Midstream investment included $72 million spent on gathering lines, $184 million spent on compression, and $152 million spent on distribution lines.[9]

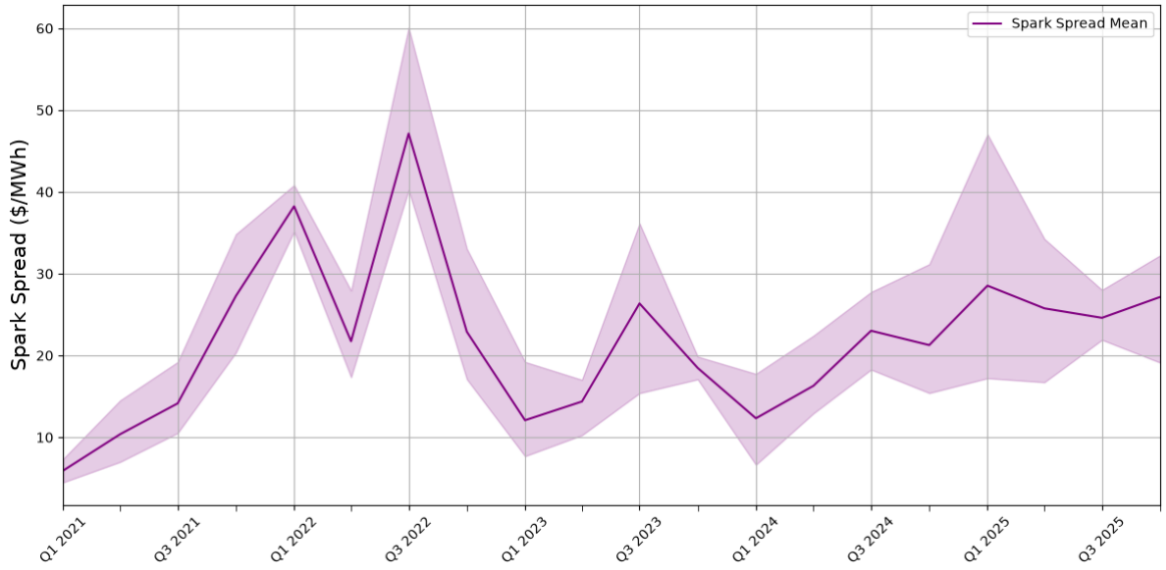
Downstream investment included four natural gas-fueled electricity generation plants which began construction in the second half of 2025. All are being developed to supply power to data centers. Will-Power Ohio, a subsidiary of the Williams Company, invested in two generation facilities in Licking County: Socrates North Generation and Socrates South Generation. Each facility will host 200 MW of generating capacity to provide behind the meter electricity to a nearby data center being built by Sidecat, a subsidiary of Meta Platforms. EdgeConneX is building two facilities, PowerConneX I and PowerConneX II, both also in Licking County. These will, respectively host 120 MW and 216 MW generating capacity, and will also serve data centers behind the meter. The Study Team estimated the downstream investment to be $618.8 million for these four plants.

Growth in demand for electricity—particular from data centers—is poised to drive gigawatt-scale deployment of gas-fired power generation in the coming years. Although natural gas prices have gradually risen over the past year and are projected to continue rising into 2026, the difference between the cost of natural gas as a fuel to generate power and the wholesale price of that power continues to be significant. As the dollar-per-megawatt-hour ($/MWh) price of electricity increases relative to the cost of the natural gas needed to produce that MWh, gas-fired generation becomes more economically attractive – this difference is known as the spark spread and can be seen in Figure 4. The dark purple line represents the spark spread as a quarterly average, and the

[9] Distribution lines that are in front of the meter, as with previous reports, are not included herein as shale-related investments. It is assumed that such lines would have been built without investment in shale.

shaded purple region represents variance; the higher the spark spread, the greater the gross margin of natural gas fueled plants. [10]

Figure 4: Ohio Utica Spark Spread ($/MWh), Q1 2021 - Q4 2025



In recent periods, the regional spark spread has exhibited a consistent floor approaching $20/MWh. This level is broadly supportive of continued gas-fired generation development in the region, as sustained spark spreads in the mid-to-high teens have been sufficient to meet capital recovery requirements for the combined-cycle units already operating in Ohio.[11] The new gas-fired generation built in the second half of 2025 are all behind-the-meter, which means that the developers likely have long term electricity "take or pay" sales agreements with the data centers they are serving. Such agreements usually require the end user to take and pay for all generation outputs, with the electricity price tied to the commodity price of natural gas. Generation facilities supported by such take or pay contracts will be less sensitive to the spark spread.

[10] Regional natural gas prices were calculated as the average of the daily cash market prices for the Columbia Gas Transmission and Eastern Gas South hubs for January, April, July, and October of 2021–2025. These prices were derived from Intercontinental Exchange (ICE) trade data as published in weekly natural gas market reports by Snyder Brothers Gas Marketing, available at https://www.snyderbrothersinc.com. Columbia Gas Transmission's current rate schedule for firm transportation service (FTS) is available at https://www.hostedtariffs.com/tco/. Regional wholesale power prices were estimated using the 24-hour average of the real-time hourly locational marginal price (LMP) for the AEP transmission zone within PJM, available at https://dataminer2.pjm.com/feed/rt_hrl_lmps/definition. For consistency with the natural gas price selection, the same calendar days used in the Snyder Brothers daily spot-price reports were used to calculate the corresponding daily average LMP. The average heat rate for the seven Ohio gas-fired power plants from January 2023 through December 2025 has been 6.6 MMBtu/MWh according to U.S. Energy Information Administration power plant data, available at https://www.eia.gov/electricity/data/eia923/).

[11] *See* S&P Global. (2024, June 11). *Carroll County Energy LLC's Senior Secured Term Loan B Assigned Preliminary 'BB' Rating, Outlook Stable*. https://www.spglobal.com/ratings/pt/regulatory/article/-/view/type/HTML/id /3195637

1. INTRODUCTION

This is the twentieth CSU study reporting investment resulting from oil and gas development in Ohio related to the Utica, Point Pleasant, and Marcellus formations (hereinafter, the "Utica").[12] This analysis looks at investments made in Ohio between July 1st and December 28th, 2025, separately considering the upstream, midstream, and downstream portions of the industry. For the upstream part, the Study Team estimated spending primarily based upon the likely costs of drilling new and operating existing wells, together with royalties and lease bonuses. The Study Team has not to date included the costs of decommissioning shale wells but may do so in the future.

For midstream estimates, the Study Team looked at new infrastructure built during the relevant time period downstream of production, from gathering to the point of hydrocarbon distribution. This included pipelines, processing, natural gas liquid storage, and intermodal transloading facilities.

For the downstream analysis, the Study Team considered those industries that directly consume large amounts of oil, natural gas or natural gas liquids. Since hydrocarbon consumption may or may not be related to shale development, the examination of downstream investment has been limited to those projects that have been deemed by the Study Team to be dependent on, or directly the result of, the large amount of oil and gas being developed in the region as a result of the Marcellus and Utica shale formations. New distribution lines, accordingly, are not included in the report as downstream development unless they are directly a result of shale development, such as behind-the-meter distribution to new natural gas generation facilities.

This twentieth Study includes as Appendix A the cumulative investment made in Ohio resulting from shale development, based upon all previous reports that tracked total investment from early 2011 through December 2025.[12] The methodology for determining the investments is set forth in Appendix B, and has been updated since the last report. Subsequent reports will include incremental spending on a six-month basis.

[12] This and other Investment Dashboard reports include drilling in the Marcellus and other shale units, but these comprise a very small portion of shale development in Ohio to date. This will be revisited as necessary in future iterations of the Investment Dashboard reports. It does not, however, include conventional wells.

2. SHALE INVESTMENT UPDATES

A. UPSTREAM DEVELOPMENT

1. Overview

A total of 119 new wells were classified by the Ohio Department of Natural Resources as "drilled," "drilling," or "producing" between July 1st and December 28th, 2025.[13] This represents a 5% increase in new well development compared to the first half of 2025 (113 new wells), and a 38% decrease compared to the second half of 2024 (191 new wells). The total number of producing shale wells in Ohio was 3,935 as of December 28, 2025, representing a 12% increase compared to June 2025. The Marcellus shale formation accounted for 71 of these producing wells (1.8%) in the second half of 2025. Total shale-related oil and gas production in billion cubic feet equivalent (Bcfe) for this period was 1,231, led by Belmont County with 262 Bcfe. Harrison County was second with 242 Bcfe, followed by Jefferson and Monroe Counties with 232 and 168 Bcfe, respectively.[14]

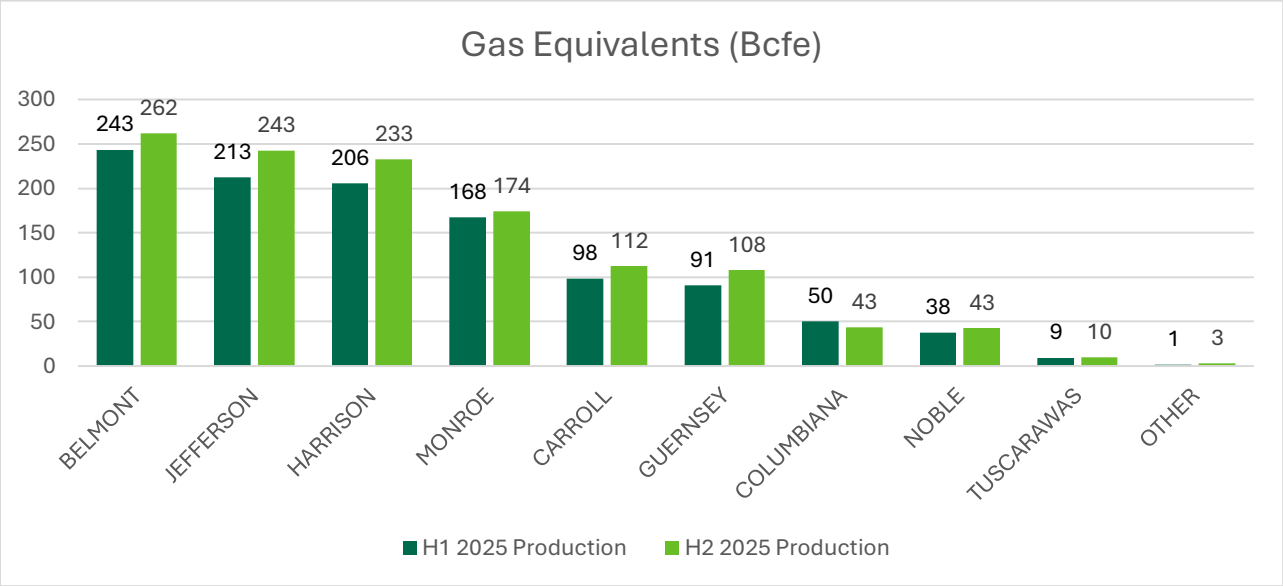
The Ohio Department of Natural Resources (ODNR), Division of Oil and Gas Resources Management, issues weekly reports on well status and quarterly reports on production. The ODNR production reports for the third and fourth quarters of 2025 provide the foundation for the upstream analyses presented in this Study.

The Utica is currently identified by the ODNR as producing in eighteen eastern Ohio counties with the vast majority (more than 98%) of producing wells located in eight counties, stretching from Columbiana in the north, to Monroe and Noble at the southern end of the play. Total production in quarters 3 and 4 for 2025 is set forth by county and operator in Figures 5 and 6 below. (Figure 5 includes a comparison of total production by county for the second half of 2025 and the preceding 6-month period.) Total cumulative production in Bcfe by county through December 2025 can be found in Appendix A as Figure 12.

[13] The number of new wells was determined using ODNR's report of cumulative permitting and drilling activity for the beginning and end of the 6-month period. (The most recent report of cumulative permitting and drilling activity is available at https://ohiodnr.gov/business-and-industry/energy-resources/oil-and-gas-wells/horizontal-wells.) Wells are assigned an American Petroleum Institute API number, which is included in the ODNR reports. Wells were considered new if they had a status of Drilled, Drilling, or Producing at the end of the 6-month period but did not have any one of these status designations at the beginning of it.

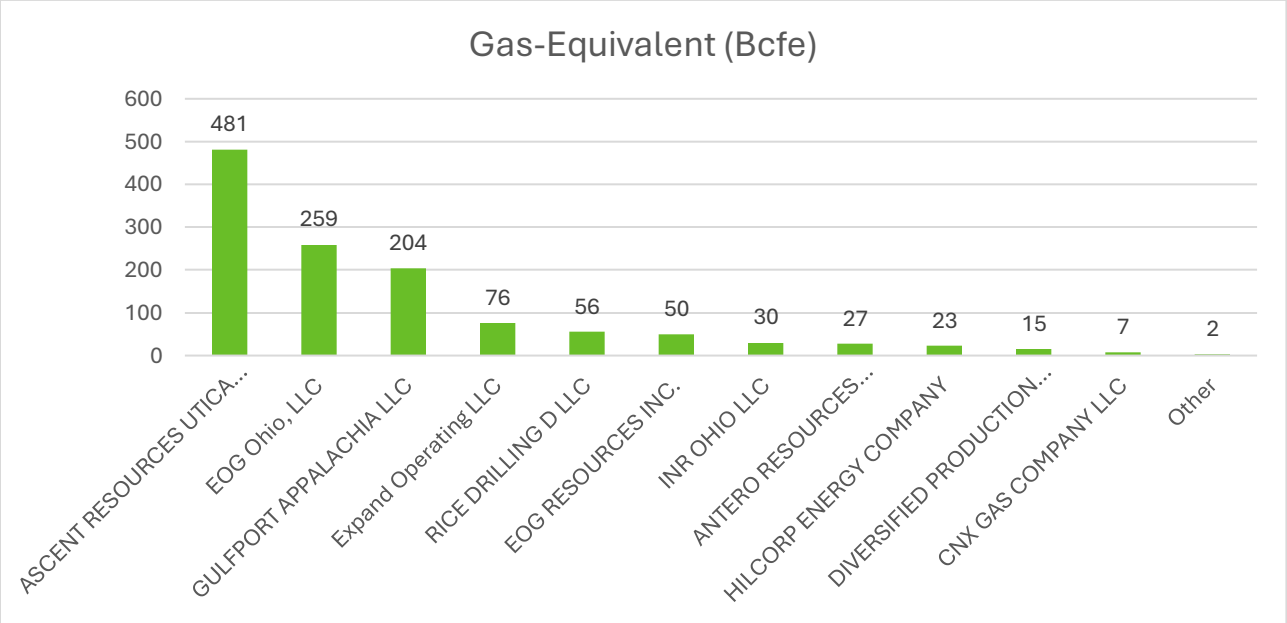
[14] Production is reported to the ODNR at the wellhead as gas measured in thousands of cubic feet (Mcf) and as oil measured in barrels (bbl). The Utica also produces significant volumes of natural gas liquids (NGLs) such as ethane, propane, butane and natural gasoline. These NGLs are separated from the natural gas stream at midstream cryogenic and fractionation plants and not included in the ODNR production reports. For the purposes of this Study, oil and gas production is combined as gas equivalents (Mcfe) based on the energy content of oil and gas, measured as British thermal units (Btu). Gas equivalents were calculated using the following formula: Gas Equivalents (Mcfe) = Oil (bbl) x 5.659 Mcf/bbl + Gas (Mcf).

Figure 5: Production by County for First Half 2025 and Second Half 2025



Data Source: ODNR (2025)

Figure 6: Production by Operator for Q3 and Q4 of 2025



Data Source: ODNR (2025)

2. Production Analysis

Production can be summarized using tables that show gas equivalent production measured in billions of cubic feet equivalent as a function of time. This summary, for both production in all quarters of 2025, and also for cumulative production since 2011, is set forth in Table 2. Table 3 sets forth production by county for the second half of 2025. Figure 7 sets forth the geographic distribution of production for the same period.

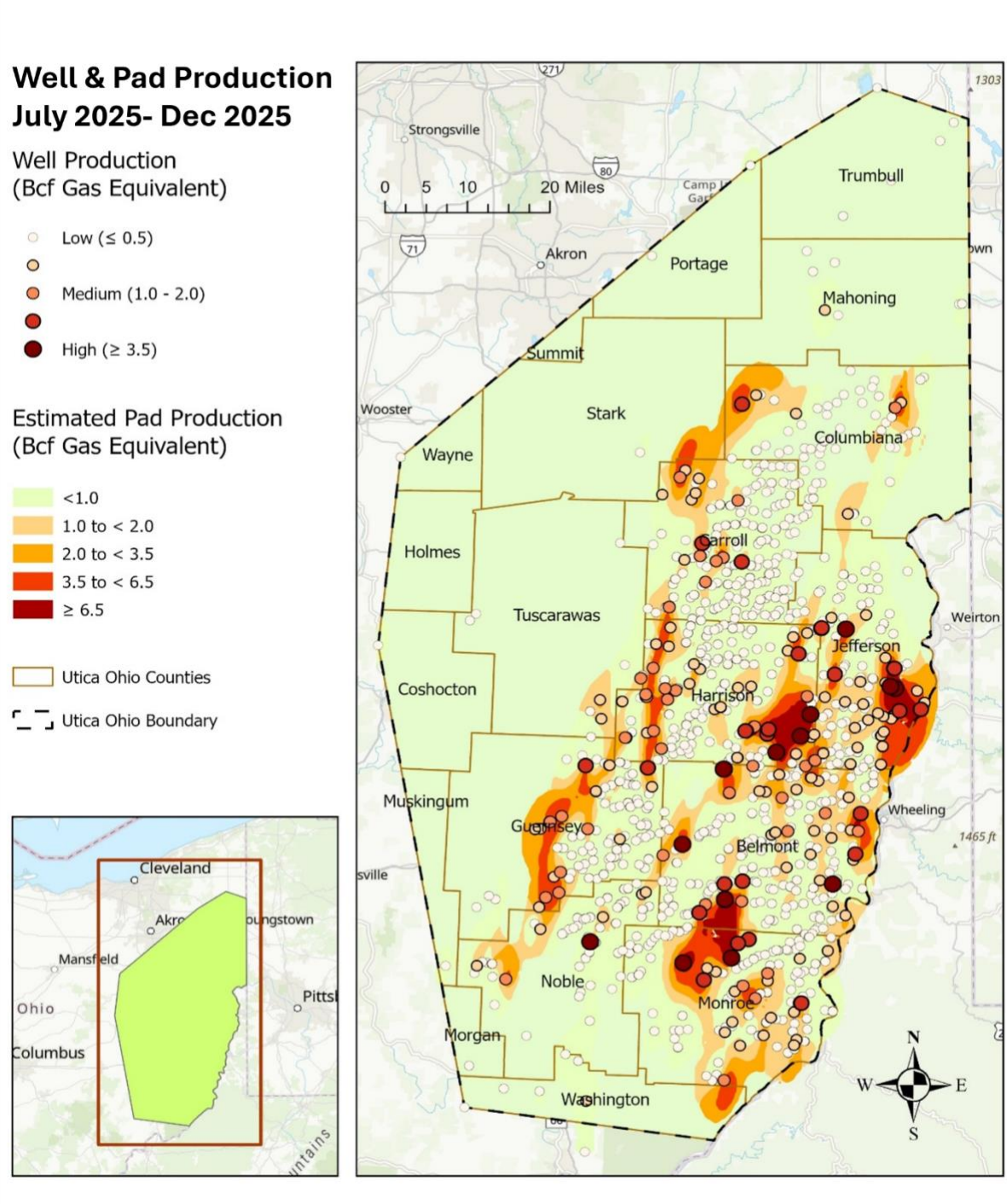
Table 2: Ohio's Shale Production by Reporting Period

Year	Quarter	Production Wells	Gas (Mcf)	Oil (bbl)	Gas Equivalents (Mcfe)	Gas Equivalents % Change from Previous Quarter
2025	**4**	3,679	551134133	11928398	618,636,937	1.1
2025	**3**	3,605	537378449	13204793	612,104,373	8.4
2025	2	3,535	497,315,148	11,925,304	564,800,443	2.3
2025	1	3,504	489,888,720	11,029,485	552,304,576	-7.0
2024	4	3,554	535,908,661	10,195,461	593,604,775	2.2
2024	3	3,501	529,170,757	9,124,020	580,803,586	1.5
2024	2	3,489	526,591,624	8,013,287	571,938,815	-0.5
2024	1	3,390	534,029,105	7,227,503	574,929,544	-1.0
2023	4	3,355	536,767,896	7,789,411	580,848,173	-0.5
2023	3	3,281	547,039,311	6,527,247	583,977,002	1.6
2023	2	3,135	535,540,115	6,921,158	574,706,949	-2.4
2023	1	3,074	551,830,848	6,549,638	588,895,250	2.8
2022	4	3,033	539,681,875	5,855,323	572,817,148	-0.6
2022	3	3,014	548,326,581	4,908,109	576,101,570	0.8
2022	2	2,921	543,019,311	5,018,523	571,419,133	1.3
2022	1	2,850	541,815,020	3,957,294	564,209,347	-5.8
2021	4	2,817	576,496,677	3,912,593	598,638,041	5.2
2021	3	2,764	547,540,443	3,781,319	568,938,927	-0.6
2021	2	2,805	549,211,398	4,154,041	572,332,375	-0.2
2021	1	2,752	548,129,151	4,543,462	573,417,606	-6.4
2020	4	2722	586,878,969	4,625,639	612,624,813	-1.3
2020	3	2688	588,630,465	5,713,477	620,431,107	3.6
2020	2	2643	569,396,136	5,182,481	598,723,796	-2.6
2020	1	2573	581,634,083	5,887,032	614,948,797	-14.1
2019	4	2524	677,685,505	6,818,682	716,272,426	0.2
2019	3	2470	673,962,146	7,200,304	714,708,666	10.4
2019	2	2365	614,218,362	5,813,755	647,118,402	1.4
2019	1	2277	609,452,391	5,073,536	638,163,531	-8.4
2018	ANNUAL	2201	2,354,848,381	19,786,375	2,466,819,477	--
2017	ANNUAL	1866	1,721,550,621	16,298,234	1,813,857,486	--
2016	ANNUAL	1492	1,386,584,598	17,847,818	1,487,651,097	--
2015	ANNUAL	1248	923,908,838	20,698,159	1,041,039,721	--
2014	ANNUAL	810	449,966,930	10,893,625	511,613,948	--
2013	ANNUAL	371	99,050,302	3,635,419	119,623,141	--
2012	ANNUAL	82	12,831,292	635,874	16,429,703	--
2011	ANNUAL	9	2,561,524	46,326	2,823,683	--
Total			**20,544,259,316**	**234,635,125**	**21,870,428,035**	--

Table 3: Production by County for July - December 2025

July - December 2025				
County	**Gas (Mcf)**	**Oil (Bbls)**	**Gas-equivalent (Mcfe)**	**Production Wells**
BELMONT	258,661,769	611,085	262,119,899	709
CARROLL	75,462,260	6,520,604	112,362,358	604
COLUMBIANA	39,160,825	625,691	42,701,610	182
COSHOCTON	249,538	0	249,538	1
GUERNSEY	58,919,636	8,683,364	108,058,793	367
HARRISON	206,711,449	6,355,919	242,679,595	615
JEFFERSON	232,741,532	28,374	232,902,100	406
MAHONING	730,132	67,544	1,112,363	12
MONROE	173,166,514	173,958	174,150,942	492
MORGAN	59,589	1,640	68,870	3
MUSKINGUM	133,034	758	137,324	1
NOBLE	36,333,510	1,224,868	43,265,038	207
PORTAGE	83,783	409	86,098	3
STARK	23,087	201	24,224	1
TRUMBULL	143,068	356	145,083	6
TUSCARAWAS	4,873,985	835,724	9,603,347	24
WASHINGTON	1,044,421	2,696	1,059,678	10
WAYNE	14,450	0	14,450	1
Total	**1,088,512,582**	**25,133,191**	**1,230,741,310**	**3,642**

Figure 7: Distribution of Gas Equivalent Production for July - December 2025



Note: *Estimated Production* reflects the expected average production for a new well located within each of the color-coded contour zones. Estimates are based on a spatial interpolation of ODNR production records.

Of the 3,935 total wells identified from the ODNR records for cumulative drilling activity as of December 2025, 115 were in the process of drilling, 103 wells had been drilled and were awaiting markets, and 3,717 were in the production phase.[15] (*See* Table 4, Ohio Utica Well Status.) Belmont County continued to lead in total wells, notwithstanding its recent decline in new wells drilled compared to Harrison and other counties. (*See* Table 5.)

Table 4: Ohio Utica Well Status as of December 2025

Well Status	No. of Wells
Drilled	103
Drilling	115
Producing	3717
Grand Total	**3935**

Source: ODNR (2025).

Table 5: Well Status by County as of December 2025

Counties	Drilled	Drilling	Producing	Grand Total
ASHLAND	1	0	0	1
BELMONT	27	9	725	761
CARROLL	2	21	622	645
COLUMBIANA	1	12	187	200
COSHOCTON	1	0	1	2
GUERNSEY	5	25	369	399
HARRISON	12	18	624	654
JEFFERSON	4	1	424	429
KNOX	1	0	0	1
MAHONING	1	0	13	14
MEDINA	1	0	0	1
MONROE	27	9	494	530
MORGAN	0	0	2	2
MUSKINGUM	0	0	2	2
NOBLE	6	15	206	227
PORTAGE	6	0	3	9
STARK	3	0	3	6

[15] The difference between the 3,717 wells reported as "Producing" in Table 4 and the 3,642 wells reported as having "Production" in Table 3 reflects differences in how wells are recorded across two ODNR datasets. One dataset reports permitting and status information for horizontal wells (e.g., Drilling, Drilled, Producing), while the other reports oil and gas production volumes. At a given point in time, a well may appear as producing oil and/or gas in the production dataset even if its status in the permitting dataset has not yet been updated to "Producing" (for example, if it is still listed as Drilling or Drilled). In addition, the Study Team did not attempt to identify and remove wells classified as "Producing" in the permitting dataset that may no longer be actively producing.

TRUMBULL	4	0	7	11
TUSCARAWAS	1	5	23	29
WASHINGTON	0	0	11	11
WAYNE	0	0	1	1
Grand Total	**103**	**115**	**3717**	**3935**

B. UPSTREAM INVESTMENT ESTIMATES

Upstream investments have been broken down into four areas: investments into drilling, including road construction associated with well development; lease operating (post-production) expenses; new lease and lease renewal bonuses; and royalties on hydrocarbon production. The methodology used for each calculation is set forth in Appendix B.

Average drilling costs were re-evaluated for this study and remain unchanged on a per-well basis. Although drilling costs per lateral foot continue to decline, lateral lengths have continued to increase, often exceeding three miles. A recent review of ODNR drilling surveys indicated that wells in northern counties—while around one thousand feet shallower on average than wells in southern counties—also tend to have longer laterals (by roughly 1,500 feet on average). These opposing differences in well geometry effectively offset each other, resulting in no material difference in spending on drilling per well between northern and southern parts of the play.

Based on an average lateral length of approximately 14,900 feet for the eight most active shale producing counties in Ohio during the first half of 2025, and average drilling and completion costs of $770 per lateral foot reported by Utica operators in 2025, we continue to assume an average drilling cost of $11.4 million per well. [16]

This section covers upstream investments between – July - December 2025. Cumulative upstream investments to date in Ohio, including 2011 through the second half of 2025, are set forth in Table 18 of Appendix A.

1. Investments in Drilling

The following tables set forth estimated investments for the Study period made into drilling shale wells in Ohio. Harrison, Guernsey, and Carroll Counties were the leaders in new upstream investment, with 34, 20, and 18 new wells and an investment of around $395.4 million, $232.6 million, and $209.4 million, respectivel` y, between July - December 2025. Noble and Belmont were fourth and fifth with upstream investment of $186 million and $127.9 million for 16 and 11 new wells (See Table 6.) Jefferson, Monroe, Columbiana, and Tuscarawas Counties had 8, 6, 5, and 1 new wells in the second half of 2025, respectively. Road-related investments for this

[16] See Upstream Methodology in Appendix B.

version of the Shale Investment Dashboard reflect average road costs per well determined from the Ohio Oil and Gas Association's (OOGA) 2017 report *Ohio's Oil & Gas Industry Road Improvement Payments*, in conjunction with OOGA's 2022 report *Community Impact & Sustainability Report*.[17] Based on information from these reports, and after adjusting for inflation specific to road construction, road costs related to drilling were assumed to be $156,400 per well.[18]

EAP Ohio was the leading operator during the six-month Study period, with 35 new wells and an estimated $407.0 million invested. EOG Resources had the second highest investment, with 32 new wells and an estimated $372.1 million invested. Ascent Resources invested $360.5 million in 31 wells. Gulfport Appalachia invested $104.6 million in 9 new wells. Antero Resources, Expand Operating, INR Ohio, and Rice Drilling each invested approximately $34.4 million into 3 new wells per company. (See Table 7.)

Table 6: Estimated Upstream Shale Investment by County, July - December 2025

County	New Wells	Drilling ($)	Roads ($)	Total ($)
BELMONT	11	126,203,000	1,720,400	127,923,400
CARROLL	18	206,514,000	2,815,200	209,329,200
COLUMBIANA	5	57,365,000	782,000	58,147,000
GUERNSEY	20	229,460,000	3,128,000	232,588,000
HARRISON	34	390,082,000	5,317,600	395,399,600
JEFFERSON	8	91,784,000	1,251,200	93,035,200
MONROE	6	68,838,000	938,400	69,776,400
NOBLE	16	183,568,000	2,502,400	186,070,400
TUSCARAWAS	1	11,473,000	156,400	11,629,400
Grand Total	**119**	1,365,287,000	18,611,600	1,383,898,600

[17] OOGA's 2017 report indicated that oil and gas companies in Ohio had spent $300 million on roads from 2011 through 2017. OOGA's 2022 report indicated that cumulative spending by the industry on roads had reached $400 million by the end of 2021. This suggests that $100 million was spent on roads from 2018 through 2021, a period during which the Study Team tracked 846 new wells, indicating an average investment of $118,200 per well. *See* The Ohio Oil & Gas Association and Energy In Depth. (2017). *Ohio's Oil & Gas Industry Road Improvement Payments. See also* The Ohio Oil & Gas Association. (2022). *Community Impact & Sustainability Report*. https://members.ooga.org/blog/Details/ohio-oil-gas-association-releases-community-impact-sustainability-report-190894

[18] Road-related spending per well in prior reports was indexed using the Federal Highway Administration's National Highway Construction Cost Index (NHCCI). See Ohio Department of Transportation. (2025, October 31). *2025 Q3 ODOT Chained-Fisher Construction Cost Index (CCI) Summary.* https://www.dot.state.oh.us/Divisions/ConstructionMgt/Estimating/TrendsAndForecasts/2025%20Q3%20ODOT%20Chained-Fisher%20CCI%20Summary.pdf

Table 7: Estimated Upstream Shale Investment in Ohio by Company, July – December 2025

Operator	New Wells	Drilling ($)	Roads ($)	Total ($)
ANTERO RESOURCES CORPORATION	3	34,419,000	469,200	34,888,200
ASCENT RESOURCES UTICA LLC	31	355,663,000	4,848,400	360,511,400
EAP OHIO LLC	35	401,555,000	5,474,000	407,029,000
EOG RESOURCES INC.	32	367,136,000	5,004,800	372,140,800
Expand Operating LLC	3	34,419,000	469,200	34,888,200
GULFPORT APPALACHIA LLC	9	103,257,000	1,407,600	104,664,600
INR OHIO LLC	3	34,419,000	469,200	34,888,200
RICE DRILLING D LLC	3	34,419,000	469,200	34,888,200
Grand Total	**119**	1,365,287,000	18611600	1,383,898,600

2. Lease Operating Expenses

Post-production investments have been estimated on a half-year basis, assuming an average cost of $0.17/Mcf-equivalent.[19] This estimate is based upon recent operator reports.[20] These investments are set forth below. Belmont, Harrison, and Jefferson led the lease operating expense investment, with $43.2 million, $40.0 million, and $38.4 million invested, respectively.

Table 8: Estimated Lease Operating Expenses for July - December 2025 by County

County	Gas equivalent (Mcfe)	Lease Operating Expenses ($)
BELMONT	262,119,899	43,249,783
HARRISON	242,679,595	40,042,133
JEFFERSON	232,902,100	38,428,847
MONROE	174,150,942	28,734,905
CARROLL	112,362,358	18,539,789
GUERNSEY	108,058,793	17,829,701
NOBLE	43,265,038	7,138,731
COLUMBIANA	42,701,610	7,045,766
TUSCARAWAS	9,603,347	1,584,552
OTHER	2,897,627	478,108
TOTAL	**1,230,741,310**	**203,072,316**

[19] Previous reports relied on a per-well rule-of-thumb to calculate lease operating expenses, which attributed an equal amount to both low- and high-producing wells. A production-based rule of thumb more accurately captures the expenses that companies are likely to incur while operating wells.

[20] The per-Mcfe rule-of-thumb for lease operating expenses is based on average production costs for Ascent's and Gulfport's Utica operations in the second half of 2025 as reported in quarterly financial statements for both companies. *See* Appendix B.

Table 9: Estimated Lease Operating Expenses for July - December 2025 by Operator

Operator	Gas Equivalent (Mcfe)	Lease Operating Expense ($)
ASCENT RESOURCES UTICA LLC	481,340,276	79,421,145
EOG Ohio, LLC	259,057,673	42,744,516
GULFPORT APPALACHIA LLC	203,999,949	33,659,992
Expand Operating LLC	76,444,542	12,613,349
RICE DRILLING D LLC	55,725,145	9,194,649
EOG RESOURCES INC.	49,646,688	8,191,703
INR OHIO LLC	30,120,852	4,969,941
ANTERO RESOURCES CORPORATION	27,091,896	4,470,163
HILCORP ENERGY COMPANY	22,924,097	3,782,476
DIVERSIFIED PRODUCTION LLC	15,180,921	2,504,852
CNX GAS COMPANY LLC	6,944,843	1,145,899
Tiburon Oil & Gas Ohio, LLC	912,319	150,533
GEOPETRO LLC	613,062	101,155
PIN OAK ENERGY PARTNERS LLC	465,248	76,766
NORTHWOOD ENERGY CORP	128,688	21,233
SOUND ENERGY CO INC	82,159	13,556
Holbrook LLC	602,954	10,387
Total	**1,230,741,310**	**203,072,316**

3. Royalties

Royalty investments have been estimated on a per quarter basis, assuming the formulas set forth in Appendix B. Total estimated royalties spent on Ohio properties between July – December 2025 were $891 million, or about 9% less than the amount dispersed in the first of half of 2025, and about 14% higher than the second half of 2024. The reason for the decrease, despite greater overall production in the second half of 2025, is that both oil and gas values decreased.

The breakdown by quarter for oil, residue gas (i.e., gas left after extracting liquids), and natural gas liquids is set forth in Tables 10, 11, and 12 below. The average price for natural gas was $2.58/MMBtu during the second half of 2025, down from $3.34 in the first half of 2025.[21] Regional oil prices decreased from $59.50 in the second quarter of 2025 to an average of $50.01

[21] Reflects average natural gas prices over the respective periods across the Columbia Gas and Eastern Gas South (formerly Dominion South) trading hubs as derived from Intercontinental Exchange (ICE) trade data published in regular weekly market reports by Snyder Brothers Gas Marketing, available at https://www.snyderbrothersinc.com. [23] Reflects average prices reported by Ergon for Marcellus-Utica light crude, available at https://ergon.com. *See* Appendix B.

over the third and fourth quarters of 2025.[23] For comparison, regional oil prices averaged $55.73 per barrel during the first half of 2025, and $60.80 in the second half of 2024.

Table 10: Total Royalties from Oil, July - December 2025 (in millions)

Year	Quarter	Oil Price $/bbl	Oil Royalty (20%) $/bbl	Royalty ($mm)
2025	3	52.92	10.58	139.76
2025	4	47.09	9.42	112.35
			Subtotal	252.11

Table 11: Total Royalties from Residue Gas, July - December 2025 (in millions)

Year	Quarter	Residue Gas Price $/bbl	Residue Gas Royalty (20%) $/bbl	Royalty ($mm)
2025	3	2.21	0.44	209.11
2025	4	2.95	0.59	286.15
			Subtotal	495.26

Table 12: Total Royalties from Natural Gas Liquids, July - December 2025 (in millions)

Year	Quarter	NGL Price $/bbl	NGL Royalty (20%) $/bbl	Royalty ($mm)
2025	3	15.88	3.18	75.08
2025	4	14.13	2.83	68.52
			Subtotal	143.60

4. Lease Renewals and New Leases

New leases and lease renewal investments have been estimated for the Utica region based upon the drilling activity of the top seven drilling companies in the region. These seven companies have together drilled over 90% of the Utica wells to date, and it is assumed that they likewise control over 90% of the leases. The estimated investments in new leases and lease renewals are set forth below in Table 13.

There are several potential sources of error in these estimates. Because operators do not report lease bonus information, the Study Team was required to estimate investments into lease bonuses based upon some industry rules of thumb, together with information found in public leases. One important rule of thumb we deployed in estimating lease bonus investment is that "primary" lease terms average about 5 years. The primary term is that period during which the operator may conduct drilling operations but hold the lease without producing. Once a lease is drilled and production begins, the lease moves into its "secondary term," and may be thereafter "held by production" (HBP) for the life of that production. Using this rule of thumb, we determined that each operator will, on average, every year replace about 20% of its undeveloped acreage that is not HBP.

However, it is possible to hold undeveloped acreage without producing it. This can be done through the process of unitization. An operator may, for instance, have a 750-acre unit that is designed to drain a reservoir by 3 wells draining 250 acres each. The operator may drill the first well and begin to pay royalties therefrom to all the unit leases, thereby moving all the unit leases into HBP status, even though only one third of the reservoir is actually producing. Under this scenario, 500 acres would be classified as "undeveloped acreage," while 250 acres would be "developed acreage."

Most operators report undeveloped acreage.[22] However, they generally do not distinguish what portions of their undeveloped acreage are HBP or under primary term. Some do, however, report what percentage of their overall acreage is HBP, and this number can be used to estimate the likely acreage of leases that required bonuses. Based on the most recent annual financial reports for Antero, Ascent, and Gulfport, the Study Team found that on average 13% of a Utica operator's net Utica acreage was not classified as "Held-By-Production." Accordingly, for purposes of this Study, and using the 5-year primary term assumption, we assumed that operators, on average, paid lease bonuses on 20% of such non-HBP acreage for the year (i.e. ~3% of the total net acreage), and 10% over the half-year Study period.

Another important assumption is the lease bonus rate. For this Study, we have assumed bonuses to average $5000/acre lease for renewals and new leases. From 2013-2019, this was a pretty conservative number in the Utica, and therefore likely to still be conservative for renewals of older leases. In 2020, sustained low natural gas prices slowed new well development, putting downward pressure on lease bonus rates. More recent publicly reported information on lease bonuses suggests, however, that $5000/acre continues to be a reasonable Utica-wide estimate. Ohio's Oil & Gas Land Management Commission, for example, approved multiple leases in the second half of 2024 with bonus payments of $5,500 and $6,000 per acre for state acreage in Belmont County.[23] In October 2024, the Jefferson County Commissioners agreed to mineral rights lease terms of $5,000/acre; that same month, the Muskingum Watershed Conservancy District leased mineral rights on acreage in Carroll County for $5,500/acre.[24]

[22] *Undeveloped acreage* is defined by operators as acreage on which wells have not been drilled or completed to a point that would permit the production of economic quantities of oil and natural gas regardless of whether the acreage contains proved reserves. Accordingly, undeveloped acreage can have a wide range of meaning, ranging from highly speculative to proven. Operators use a different, more rigorous classification system to account for proven or potential reserves.

[23] Ohio Oil & Gas Land Management Commission. (2024, August 12). *Selected Bids – August 12, 2024, Meeting*. https://dam.assets.ohio.gov/image/upload/odnr/oil-gas/lmc/meetings/24-0812-Selected-Bids.pdf

[24] *See* Riley, J. (2024, October 3). *Jefferson County Secures New Oil and Gas Leases.* https://wtov9.com/news/local/jefferson-county-secures-new-oil-and-gas-leases. *See also* Springer, G. (2024, October 25). *MWCD Approves New Oil and Gas Lease at Leesville Lake in Carroll County*. https://www.cantonrep.com/story/news/local/2024/10/25/mwcd-approves-oil-and-gas-lease-with-encino-at-leesville-lake/75839522007

There is reason, however, to believe that average lease bonuses are on the rise. The ODNR received $10,250/acre for a lease awarded in early 2024 to drill under Salt Fork State Park in Guernsey County.[25] Likewise, state leases granted in Egypt Valley and Jockey Hollow (both Harrison County) were awarded bonuses of $16,000/acre.[26] On the other hand, leases granted in Wayne National Forest received $4000/acre, with a 12.5% royalty.[27] These leases, however, appear to be west of the higher producing Utica acreage.

One additional factor that may make the lease bonus estimate inaccurate is the use of only "net" non-HBP lease acreage data to avoid possible double counting of leases. Operating companies often collaborate on development with non-operators but report only their own portion of the lease. However, bonuses must be paid on the "gross" lease acreage. So long as the nonoperators are among the top six operators (which is commonly the case), their own net acreage reports will capture all the acreage. But if they are not, the acreage will not be captured, and the bonuses estimated herein will be under reported.

[25] *See* Ohio Department of Natural Resources. (2024, February 27). *State Commission Awards Leasing Rights Following Competitive Bidding Process*. https://ohiodnr.gov/discover-andlearn/safety-conservation/about-ODNR/news/leasing-rights

[26] *See* Jake Zuckerman, Columbus Dispatch, July 8, 2026. https://www.dispatch.com/story/news/state/2026/07/08/fracking-leases-on-state-land-generate-millions-for-state-of-ohio/90845697007/

[27] *See* BLM Oil and Gas Lease Sale in Ohio Generates Over $11 Million in Revenue, Dept of Interior, September 16, 2026. https://www.blm.gov/press-release/blm-oil-and-gas-lease-sale-ohio-generates-over-11-million-revenue

Table 13: Total Estimated Investments into New Leases and Lease Renewals July - December 2025 (in millions)

Operator	Estimated Acreage Not Held for Production[28]	Bonus Investment ($mm)
Antero Resources[29]	3,002	1.5
Ascent Resources[30]	50,577	25.3
EAP Ohio (EOG Ohio) [31]	33,190	16.6
Gulfport Energy[32]	64,993	32.5
INR Ohio[33]	17,715	8.9
Rice Drilling (EQT) [34]	26,865	13.4
Southwestern Energy (Expand Energy) [35]	12,202	6.1
Total	208,545	104

[28] Fourteen percent of Antero's total net Ohio acreage was assumed to not be held by production as this was the percentage of the company's overall net Appalachian acreage not held by production in FY2025 based on its most recently filed 10-K, available at https://www.anteroresources.com/investors/sec-filings/annual-reports##document-1960-0001558370-25-000864-1

[29] Antero (which has been acquired by INR) and Southwestern (which has been acquired by Expand Energy) did not distinguish between Ohio, Pennsylvania, and West Virginia acreage for their Appalachian operations in their FY2025 10-K reports. EAP Ohio (which has been acquired by EOG Ohio) was privately held during the second half of 2025 and did not release this sort of annual financial report. EAP was purchased by EOG in August 2025. Gross developed acreage in Ohio for these companies was assumed to be equivalent to the total acreage for their horizontal drilling units in the state, data for which is available through the ODNR's Oil & Gas Well Viewer at https://gis.ohiodnr.gov/mapviewer/?config=oilgaswells. For operators who file 10-K reports in which Appalachian acreage is differentiated by state, this estimate for gross developed acreage has been within ±10% of the actual amount. Total net acreage for Antero, Southwestern Energy, and EAP Ohio was estimated based on the average ratio of total-net-acres-to-gross-developed-acres in Ohio for Ascent, Gulfport, INR, and Rice Drilling.

[30] Thirteen percent of Ascent's net Ohio acreage was not held by production based on the company's FY2025 Consolidated Financial Statements. https://www.ascentresources.com/financials

[31] *See* fn. 31*, supra.* Approximately 5% of EAP's acreage in Ohio was not held by production. See Encino Energy, *Utica Oil* (archived May 27, 2025), https://web.archive.org/web/20250527190131/https://encinoenergy.com/utica-oil/.

[32] Sixteen percent of Gulfport's net Ohio acreage was not held by production based on its FY2025 10-K, available at https://www.gulfportenergy.com/investors/sec-filings/all-sec-filings/content/0001628280-26-011487/0001628280-26-011487.pdf

[33] Eighteen percent of INR Ohio's net Ohio acreage was not held by production based on its FY2025 10-K, available at https://www.sec.gov/Archives/edgar/data/2029118/000202911826000014/inr-20251231.htm

[34] Acreage not held by production was not identified in FY2025 10-K for Rice Drilling. This percentage was assumed to be 16%, which was the average for Ascent, EAP, Gulfport, and INR.

[35] Fifteen percent of Southwestern Energy's, which is now Expand Energy, acreage was not held by production based on its FY2025 10-K, which can be found at https://investors.expandenergy.com/static-files/a77fef5f-3889-413c-9af8-614a9ce1810b

C. ESTIMATED MIDSTREAM INVESTMENTS

Midstream investment relates to putting money into assets that handle the transportation, storage, processing, and gathering of natural gas and oil. This includes natural gas processing and fractionation facilities, including rail and transloading facilities for storing and handling natural gas liquids, transmission and gathering pipelines, storage facilities, compressor stations (including compressor engines), dehydration units, and generators installed as part of these stations. In the Study, pipeline investments were estimated using mileage and size information from the Public Utilities Commission of Ohio, and cost information from the Interstate Natural Gas Association of America (INGAA). Similarly, compressor station investments were based on estimated cost per unit of power output for the region as obtained from the INGAA.[36] A full description of the methodology can be found in Appendix B.

Additional investment information was collected from midstream company investor presentations, news reports, and other sources including Ohio EPA and Ohio Power Siting Board (OPSB) permits. Table 14 summarizes midstream investments identified by the Study Team for the second half of 2025. Some costs related to these projects may have occurred outside the six-month window for this study. However, because the investments cannot easily be separated and tracked while construction is ongoing, the investments are treated as though made entirely during the Study period if construction on the project was begun then.

Table 14: Midstream Investment, July - December 2025

Company	Additions to Infrastructure	Total Amount ($mm)
Cardinal Gas Services (Williams)	▪ 1.07 miles of 8.63" gathering pipeline ▪ 1.85 miles of 10.75" gathering pipeline ▪ 1.81 miles of 10.75" gathering pipeline ▪ 2.35 miles of 20" gathering pipeline	$23.84
Blue Racer Midstream LLC (Williams)	▪ 0.15 miles of 10.75" gathering pipeline ▪ 2.12 miles of 12.75" gathering pipeline	$8.95
EOG Resources[37]	▪ 0.46 miles of 3.5" gathering pipeline ▪ 7.10 miles of 16" gathering pipeline ▪ 0.46 miles of 20" gathering pipeline ▪19,900 hp at Blackbird Compressor Station in Carroll County	$87.23

[36] The INGAA Foundation, Inc., North America Midstream Infrastructure through2035 app. F (2018), https://ingaa.org/foundation/resources/north-america-midstream-infrastructure-through-2035-significant-development-continues

[37] EOG Resources Ohio EPA Air Pollution Permit ID: P0138528 https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3837399

Eastern Gas Transmission & Storage[38]	▪ 33,053 hp at Mullett Compressor Station in Monroe County	$80.32
Expand Operating, LLC[39]	▪1,775 hp at Pyles Pad Compressor Station in Monroe County	$4.31
Hilcorp Energy [40]	▪1,340 hp at Fairfield-Unkefer Production Facility in Columbiana County	$3.26
Novak [41]	▪10,000 hp at Novak Compressor Station in Carroll County	$23.66
MarkWest Larew [42]	▪ 10,000 at MarkWest Larew Compressor Station in Monroe County	$24.30
Williams[43]	▪17.9-mile, 24 inch, MAOP 1,015 psig pipeline, named the Aristotle South Project, that will provide BTM natural gas to the Socrates South Power Generation Facility by connecting to the Eastern Gas Transmission pipeline. In Fairfield and Licking Counties.	$134.24
National Gas & Oil Cooperative[44]	▪ 4.92-mile, 12-inch diameter pipeline that will provide service to future expansion and serve proposed PowerConneX New Albany power plant.	$18.48
	Total	**$408.59**

Source For Gathering Line Mileage and Sizes: PUCO Gathering Construction Reports (2026)

[38] Eastern Gas Transmission & Storage, Inc Ohio EPA Air Pollution Permit ID: P0138320 (https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3878948)
[39] Expand Operating LLC Ohio EPA Air Pollution Permit ID: P0138465 (https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3831354)
[40] Hilcorp Energy Ohio EPA Air Pollution Permit ID: P0138311 (https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3756283)
[41] Novak Ohio EPA Air Pollution Permit ID: P0138431 (https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3903485)
[42] MarkWest Larew Ohio EPA Air Pollution Permit ID: P0138369 (https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3835615)
[43] Ohio Power Siting Board "Staff Report of Investigation" for Williams' Aristotle South Pipeline (dis.puc.state.oh.us/DocumentRecord.aspx?DocID=1db657ba-22b9-4392-9670-c3c8d765cf67)
[44] Ohio Power Siting Board "Staff Report of Investigation" for National Gas and Oil Cooperative's Pipeline to serve a PowerConneX plant (dis.puc.state.oh.us/DocumentRecord.aspx?DocID=bac5b1b3-d5de-4efc-8bef-d4e8590c5570)

New pipeline projects planned for construction in 2026 are focused on providing energy to data centers. Adding to the 17.9-miles being constructed during the Study period, Williams Companies' subsidiary Will-Power OH is planning to construct another 11.76-miles of 24-inch diameter pipeline in 2026, accompanied by two 7,600 hp compressor stations, contributing to its Socrates North and Socrates power plants that will serve Meta data centers in New Albany. Furthermore, contributing to its soon-to-be-constructed, behind the meter Apollo generation facilities (see later section on downstream investments), Williams plans to begin construction on approximately 24-miles of 20-inch diameter pipeline in the third quarter of 2026. Williams is not alone in its data center interest: The Energy Cooperative plans to begin construction in the third quarter of 2026 on 12.1 miles of 24-inch diameter pipeline to provide behind the meter service to a customer in New Albany. These installations are taking place primarily in Licking County, northeast of Columbus.

Other projects in the midstream future include Aspire Energy Express planned construction of a gas pipeline to serve a fuel-cell facility that will provide electric power to a data center campus; the Eastern Gas Transmission and Storage's Appalachian Reliability Project, which has received its Federal Energy Regulatory Commission (FERC) certificate and is awaiting FERC notice to begin construction; and the prospective Borealis Project, a proposed pipeline extension of 450-mile, 36-42 inch diameter pipeline from Clarington, OH to Slaughters, KY – a project estimated by the company to begin construction in the Fourth Quarter of 2028.[45] Also of note is JobsOhio's Opportunity Initiative, a $100 million economic development initiative to support natural gas and nuclear development in Ohio over the next five years, potentially contributing to midstream investments.[46] For a list of projected construction, see Table 15.

Investments in Midstream infrastructure reached $409 million during the Study period of the second half of 2025. This amount is an increase from the $161 million from the first half of 2025, and an increase from the $290 million in the second half of 2024. The investments can be categorized as $72 million in gathering pipelines, $184 million in compressor stations, and $153 million in pipelines distributing natural gas. The compressor stations were installed in Carroll, Columbiana, and Monroe counties; and the distribution pipeline was installed in Licking, Fairfield, and Franklin counties.

Midstream projects to be included in future shale reports are listed below in Table 15. Cumulative midstream investments through the end of December 2025 are set forth in Table 19 in Appendix A.

[45] *See* Eastern Gas Transmission and Storage. (n.d.) *Appalachian Reliability Project.* https://aboutarp.com/downloads/EGTS%20Appalachian%20Reliability%20Project%20Fact%20Sheet.pdf

[46] State of Ohio, Office of the Governor. (2025, October 29). *Governor DeWine, JobsOhio Announce $100 Million Energy Opportunity Initiative*. https://governor.ohio.gov/media/news-and-media/governor-dewine-jobsohioannounce-$100-million-energy-opportunity-initiative

Table 15: Future Ohio Midstream Projects

Project	Description	Estimated Construction Start
Aristotle Central Pipeline (Williams)[47]	9.6-miles of 24-inch, MAOP 1,105 psg pipeline in Licking County to provide natural gas to the proposed Socrates North facility.	26-Jan-26
Aristotle North Pipeline (Williams)[48]	2.16-mile of 24-inch diameter, MAOP 1,015 psg pipeline in Delaware and Licking counties to provide the proposed Socrates North facility natural-gas by connecting to Columbia Gas Transmission.	12-Mar-26
Aristotle North Booster (Williams)[49]	7,600 hp compressor station to maintain flow in Aristotle North, connected to the Columbia Gas Transmission Pipeline.	1-Jun-26
Aristotle South Booster (Williams)[50]	7,600 hp compressor station adjacent to Eastern Gas Transmission and Aristotle South Pipeline interconnection.	1-Apr-26
Appollo South Pipeline (Williams)[51]	23.72-mile of 20-inch diameter pipeline connected to Apollo Generation facility.	Third Quarter 2026
Appollo North Pipeline (Williams)[52]	0.31-mile of 20-inch diameter to connect Nexus Gas Transmission line to Apollo Power Generation facility.	Third Quarter, 2026
Licking County Pipeline Project (TEC Pipeline, LLC)[53]	12.1-miles of 24-inch diameter pipeline in Licking County to provide a BTM customer serving a customer in New Albany. TEC Pipeline estimates a $83.5 million cost.	Fourth Quarter, 2026

[47] *See* OPSB "Staff Report of Investigation" (2025, December 08)
dis.puc.state.oh.us/DocumentRecord.aspx?DocID=89e1c342-088b-4fbb-8a58-9d3dbca9d402
[48] *See* OPSB "Staff Report of Investigation" (2026, March 12)
dis.puc.state.oh.us/DocumentRecord.aspx?DocID=334a58e1-73ac-4374-b0ea-29bdf6c7e5d1
[49] *See* OPSB "Staff Report of Investigation" (2026, June 5)
dis.puc.state.oh.us/DocumentRecord.aspx?DocID=55f8b73c-dd57-410b-a5e1-87800691ef58
[50] *See* OPSB "Staff Report of Investigation" (2026, April 3)
dis.puc.state.oh.us/DocumentRecord.aspx?DocID=18f1ae07-1f55-4278-a027-32eb1260128b
[51] *See* OPSB "Staff Report of Investigation" (2026, August 18)
https://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=28f86143-62c9-42b3-89b2-6299a715db0e
[52] *See* OPSB "Staff Report of Investigation" (2026, June 17)
https://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=1c8c624e-cb3d-4b46-8e97-8c7e6a040c4d
[53] *See* OPSB "Letter of Notification Application" (2026, July 7)
dis.puc.state.oh.us/DocumentRecord.aspx?DocID=e176bc8d-b330-45a8-8450-81e150172fa1

Aspire Energy Express[54]	Construction of intrastate natural gas pipeline in central Ohio to serve a new fuel-cell facility that will provide electric power to a datacenter campus.	Second Half of 2026
Borealis Project (Texas Gas Transmission, LLC)[55]	Approximately 450-miles of 36–42-inch diameter pipeline from Clarington, OH to Slaughters, KY.	Fourth Quarter, 2028

D. DOWNSTREAM DEVELOPMENT

1. Natural Gas Power Plants

In prior reports, we have noted 8 new natural gas-fired power plants in Ohio that have been in the construction or operational stages since 2015. According to the EIA, between these and other preexisting power plants, Ohio consumed 564.6 BCF of natural gas to generate electricity in 2025.[56] That volume is equivalent to roughly 26.7% of the natural gas produced from the Utica in 2025. These plants generated 32,175 gigawatt hours of electricity in 2025, which is equal to about 27.5% of the electricity consumed in Ohio across all sectors.[57]

Four new natural gas fueled power plants began construction during the second half of 2025. The Williams Companies began construction on the Socrates North and Socrates South natural gas fueled electric generation plants – each providing 200 MW of behind-the-meter electrical output for Meta Platforms subsidiary Sidecat data centers in Licking County. Additionally, EdgeConneX built two natural gas fueled generation plants named PowerConneX New Albany 1 and PowerConneX New Albany 2. The two facilities will provide behind the meter electrical power (216 MW and 120 MW, respectively) to co-located data centers. The Study Team estimates the total downstream investment from these four power generation facilities, consisting of aeroderivative, heavy-duty and reciprocating engines, to be $618,800,000. (Related natural gas pipeline distribution investment is reported separately in the midstream section of this Study.)

A summary of the four new plants built in the second half of 2025 are set forth in Table 16 below.

[54] *See Pipeline & Gas Journal* "Chesapeake. AEP to Build $10 Million Ohio Gas Pipeline for Data-Center Power" (2025, July 9) https://www.pgjonline.com/news/2025/july/chesapeake-aep-to-build-10-million-ohio-gas-pipeline-for-data-center-power

[55] *See* Boardwalk *Borealis Project* https://bwpipelines.com/project/borealis

[56] *See* Energy Information Administration. (2025, May 22). *From EIA-923 Detailed Data with Previous Form Data (EIA906/920)*. https://www.eia.gov/electricity/data/eia923. From EIA-923 data include monthly and annual fuel consumption and electricity generation at the power plant level.

[57] *Id. See also* Public Utilities Commission of Ohio. (2026, May 1). *Electric Choice Activity Dashboard*. https://app.powerbigov.us/view?r=eyJrIjoiZTliZDEzNGEtZjlhYi00YWEzLThjZjktMGZmNDg4OWE4ZDFkIiwidCI6IjUwZjhmY2M0LTk0ZDgtNGYwNy04NGViLTM2ZWQ1N2M3YzhhMiJ9

Table 16: Downstream Investments July 2025 - December 2025

Project	Additions to Infrastructure	Total Amount ($mm)
Socrates South (Williams)	200 MW behind the meter output, directly for Meta subsidiary Sidecat. Plans to be in service by end of 2026.	175
Socrates North (Williams)	200 MW behind the meter output, directly for Meta subsidiary Sidecat. Plans to be in service by the end of 2026.	175
PowerConneX New Albany 2, LLC	216 MW behind the meter output	173
PowerConneX New Albany, LLC	120 MW behind the meter output	96
	Total	619

However, construction of new natural gas generation facilities appears to be just getting started in Ohio. Two traditional, grid-connected natural-gas-fired generation plants are being planned. In Carroll County, with an anticipated construction start date in the fourth quarter of 2026, Chestnut Run Energy plans to build a 1,300 MW generation plant to sell electricity to the regional transmission grid.[58] In Fayette County, in the second quarter of 2028, Competitive Ventures plans to build the CVP Walker Energy Center, a 1,450 MW plant that will also connect to the PJM regional grid.[59]

Near-term plans to build natural gas generating plants tied to data center development could materially change the energy landscape in Ohio. In addition to the two recent Socrates facilities, the Williams Companies plan to build three more plants in Ohio:

- Apollo, Wood County. This proposed facility will begin construction in 2026 and will be a 350 MW behind-the-meter electric generation plant. It is part of a $3.1 billion investment planned by the company.[60]

[58] *See* OPSB "Staff Report of Investigation" (2026, May 15) dis.puc.state.oh.us/DocumentRecord.aspx?DocID=fbd7882b-988a-458e-9746-871de5cba44a
[59] *See* OPSB "In the Matter of the Pre-Application Notification Letter" (2026, April 7) dis.puc.state.oh.us/DocumentRecord.aspx?DocID=989a9f5c-9043-47cd-83fe-9b9ba4843bdb
[60] *See* OPSB "Letter of Notification" (2025, October 16) https://dis.puc.state.oh.us/CaseRecord.aspx?CaseNo=25-0973-EL-BLN&x=0&y=0. A portion of the investment is shared with the Aquila plant planned in Utah.

- Socrates the Young, Licking County. This proposed facility will begin construction in 2026 and includes a proposed 250 MW behind the meter plant that will be part of a $1.3 billion investment.[61]
- NEO, Licking County. This facility is a proposed 500 MW behind-the-meter plant with 260 MW battery storage. Williams estimates this will be a $2.3 Billion dollar investment in 2026.[62]

Including the $2 billion projected for the 2025 Socrates facilities, if these three proposed facilities are built, the Williams Companies could invest $10 billion on natural gas generating plants and related distribution lines in Ohio.

The Williams Companies are not alone: several other companies are seeking to build behind-the-meter natural gas generation for data centers. In Fayette County, Bluegrass Power Generation LLC plans to begin construction in 2026 on a 800 MW electricity plant that it estimates will cost $2.5 Billion.[63] EdgeConneX plans to build PowerConneX New Albany 3 in Licking County, a 430 MW behind the meter plant serving a data center on site,[64] plus a 800 MW gas generation facility (PowerConneX Ashville Energy Center) in Montgomery County.[65] In Fairfield County, Competitive Ventures has applied to the OPSB for permission to construct a 1,350 MW generation plant with a 1,040 MW battery energy storage facility.

Notably, natural gas generation that operates as fully islanded systems (i.e. not grid connected) does not require PJM's load-interconnection approval process. Only state-level approval in the form of a certificate from the Ohio Power Siting Board is required. Following enactment of House Bill 15 in 2025, OPSB's standard certificate process now includes an explicit statutory timeline requiring a completeness determination within 45 days and a final decision within 150 days thereafter, for a maximum of 195 days from application to decision.[66]

One other project proposed in 2026 will, however, require PJM approval: the PORTS Energy Center (SB Energy) hopes to build a 10.2 GW natural gas generation facility at the Department of Energy's former gaseous diffusion plant site in Pike County, Ohio. This proposed facility would both support a SoftBank data center and connect to the grid. Such a project could have significant

[61] *See* OPSB "Staff Report of Investigation" (2026, June 18) https://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=45afcd0d-5742-477d-8d04-fb74ab6c3327
[62] *See* OPSB "Staff Report of Investigation" (2026, October 1) https://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=b7a851b1-2ea1-4dab-9f57-dc123d5e8176
[63] *See* OPSB "Staff Report of Investigation" (2026, October 31) https://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=fdd4c08c-2d35-459a-b87a-efd369dfd5be
[64] *See* OPSB "Staff Report of Investigation" (2026, October 16)
[65] *See* OPSB "Staff Report of Investigation" (2026, August 14) https://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=efcac2b1-bb4a-42c1-87d1-617daf0e6c0b
[66] Ohio Legislative Service Commission. (2025). *Final analysis of Amended Substitute House Bill 15, 136th General Assembly (as enrolled).* https://www.legislature.ohio.gov/download?key=25768

implications for the natural gas and electricity markets in Ohio. In October 2026, PJM announced plans to study the proposed AEP Ohio data center tariff structure that will support the project.[67] For this reason, the PORTS Energy Center is more speculative than the other proposed natural gas power plants set forth herein.

Table 17: Planned Future Downstream Investments

Project	Description	Estimated Construction Start
Apollo Plant (Williams)	350 MW of Behind the Meter natural gas fueled generation to be built in Wood County	First Quarter, 2026
NEO Plant (Williams)	500 MW Behind the Meter natural gas fueled generation and 260 MW of battery energy storage to be built in Licking County	First Quarter, 2027
Socrates the Young (Williams)	250 MW Behind the Meter natural gas fueled generation in Licking County	Third Quarter, 2026
Bluegrass Power Generation LLC	800 MW Behind the Meter natural gas fueled generation in Fayette County	Second Quarter, 2026
Chestnut Run Energy LLC	1300 MW natural gas fueled generation to be sold to the grid	Fourth Quarter, 2026
PowerConneX New Albany 3 Energy Center	430 MW Behind the Meter natural gas fueled generation in Licking County	Anticipated 2026

[67] E. Howland, "PJM plans to study SoftBank's Ohio AI project under state agreement approach," Utility Dive, October 14, 2026. https://www.utilitydive.com/news/pjm-softbank-ohio-ai-flagship-state-agreement-approach/832962/?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202026-10-14%20Utility%20Dive%20Newsletter%20%5Bissue:90257%5D&utm_term=Utility%20Dive. PJM is still developing its expedited pathway for large load additions. *See* PJM. (2025, November 11). *Executive Summary: PJM Large Load Additions CIFP (Critical Issue Fast Path) Stage 4 Package.* https://www.pjm.com/-/media/DotCom/committees-groups/cifp-lla/2025/20251119/20251119-item02a---pjm-lla-cifp-stage-4-package---executive-summary.pdf. See also: *See* PJM. (2025, November 11). *Executive Summary: PJM Large Load Additions CIFP (Critical Issue Fast Path) Stage 4 Package.* https://www.pjm.com/-/media/DotCom/committees-groups/cifp-lla/2025/20251119/20251119-item02a---pjm-lla-cifp-stage-4-package---executive-summary.pdf. *Id*. *See also* PJM. (2025, November 18). *Critical Issue Fast Path – Large Load Additions – Options and Packages Matrix.* https://www.pjm.com/-/media/DotCom/committees-groups/committees/mc/2025/20251119/20251119item-03---critical-issue-fast-path---large-load-additions---options-and-packages-matrix.xlsx

PowerConneX Ashville Energy Center	800 MW Behind the Meter natural gas fueled generation in Montgomery County	Anticipated 2026
Fairfield Energy Center	1350 MW Behind the Meter natural gas fueled generation in Fairfield County	Fourth Quarter, 2026
CVP Walker Energy Center	1450 MW natural gas fueled generation to be sold to the PJM gird	Second Quarter, 2028
Ports Energy Center	1.77 GW of natural gas fueled generation in Pike County	Second Quarter, 2028

If all these natural gas facilities were built, it would materially impact both electricity and natural gas markets in Ohio. Figure 8 shows natural gas consumption in Ohio as of 2025 with the projected natural gas needed to support the proposed natural gas facilities. Figure 8 includes:

- The amount consumed by end users in 2025 (dark blue).
- The amount that will be consumed with the addition of new natural gas plants built in 2025, together with future planned plants (Table 17) (teal).
- The amount that will be consumed if the proposed 10.2 GW (as opposed to the currently approved 1.77 GW) of the Ports Energy Center is built (orange).

If all these facilities are built, and assuming a 90% up time rate for them, electricity generation will require over 1.5 TCF/year of natural gas. Current production levels from the Utica are about 2.07 TCF/year. After shrinkage, the total natural gas production is around 1.83 TCF/year (non-shale natural gas is less than 1% of total production in Ohio). From Figure 8 it can be readily seen that, without a significant upgrade in natural gas production, Ohio would become a natural gas net importer should all these facilities be built.

Figure 8: Ohio's Projected Natural Gas Consumption with Proposed New Generation[68]

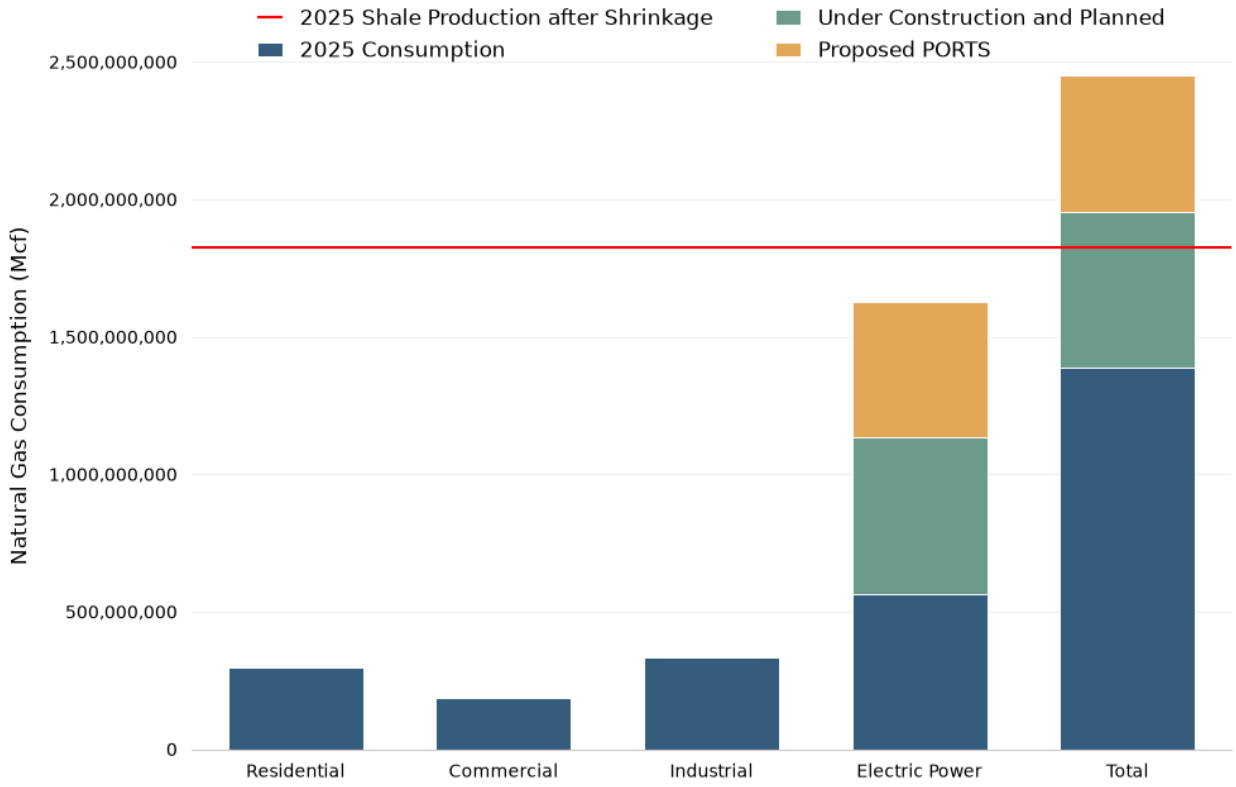
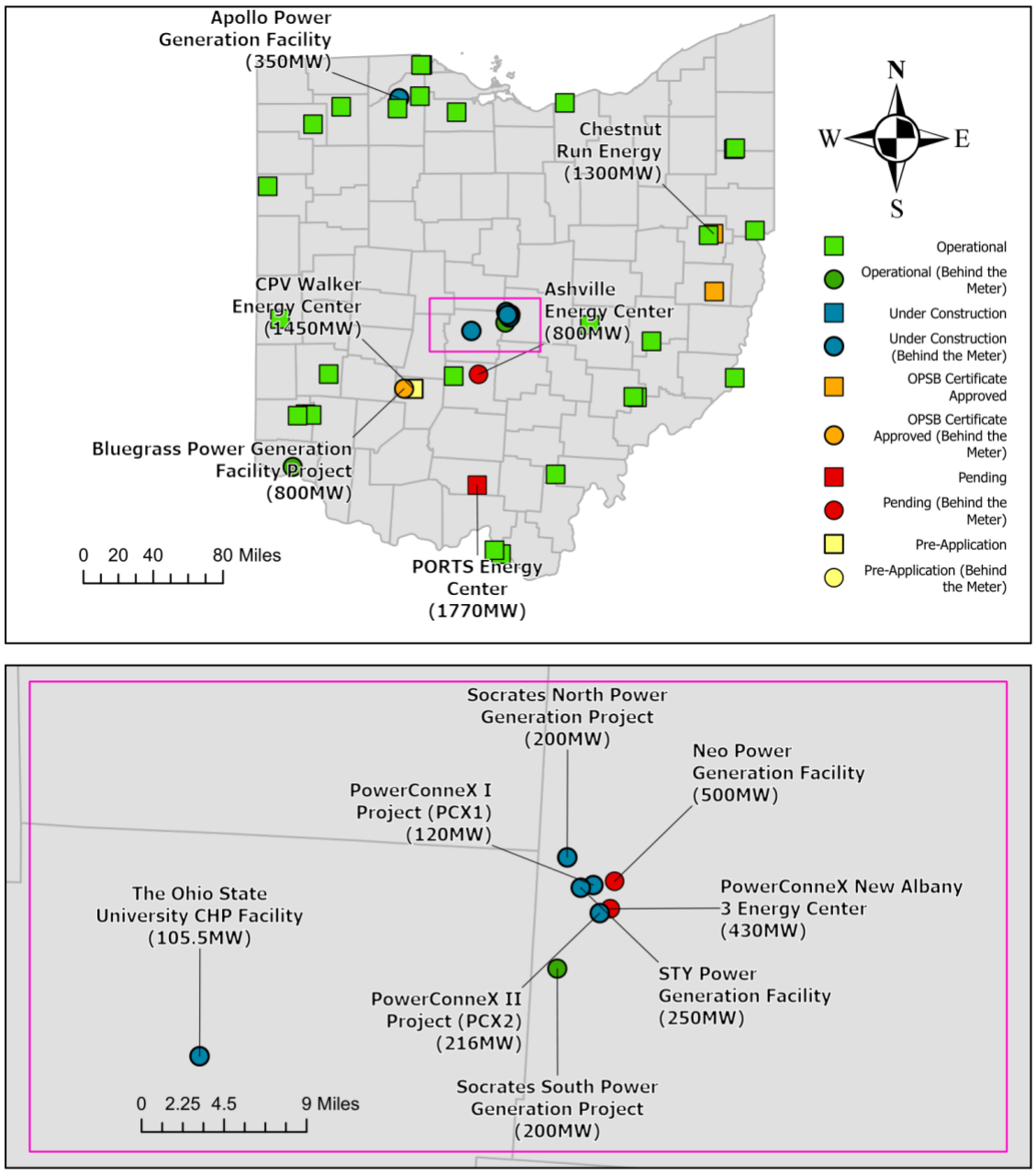


Figure 9 summarizes existing and planned natural gas-fired generation facilities developed in Ohio since the emergence of shale gas.

[68] The EIA reports state aggregated natural gas consumption by end use, *See U.S. Energy Information Administration. (n.d.). Ohio natural gas consumption by end use.* https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_soh_a.htm. The exact numbers can be found in Appendix to calculate the Mcf of proposed generation, we assumed 90% uptime and used the EIA's reported rate of 7.42 cf/kWh to calculate, *see* U.S. Energy Information Administration. (n.d.). How much natural gas is consumed in the United States? https://www.eia.gov/tools/faqs/faq.php?id=667&t=6.

Figure 9: Existing and Projected Natural Gas Power Plants



Source: Ohio Power Siting Board (2026).
Note: Projects marked "Approved for Construction" or "Pending Regulatory Approval" represent future development and are therefore not included in current investment totals, which cover activity only through December 2025.

2. Other Downstream Investment

There were no other significant downstream investments during the Study period. Cumulative downstream investments reported to date in Ohio, including 2011 through the first half of 2025, are set forth in Table 20 in Appendix A. An outline of the key products and processes for this sector within the shale gas value chain is set forth in Appendix B.

3. CONCLUSION

Total upstream shale investment in Ohio decreased by 4.30% in the second half of 2025 compared to the first half of 2025. This decline was driven primarily by a decrease in lease renewals and new leases.

Belmont County led all counties in total production. Harrison County had the highest number of new wells developed, with continued activity in the Ohio Utica's volatile oil window, which has seen consistently increasing activity since the first half of 2023. Altogether, upstream shale investment totaled $2.6 billion for the second half of 2025, up from the first half of 2025.

Midstream investment increased from the first half of 2025. Operators continued to expand gathering and transportation capacity in the first half of 2025, with an estimated $71.67 million invested in gathering lines, $184 million in compression, and $152.72 invested in behind the meter pipelines during the second six months of 2025. The motivation for the behind the meter pipelines can be attributed to the expected increase in demand for energy that will accompany the many data centers being proposed in Ohio. Looking ahead, a final investment decision on roughly 180 miles of east-west interstate pipeline in southern Ohio is expected in early 2026.[76] These and other projects aimed at expanding takeaway capacity will continue to be tracked in subsequent shale reports.

The second half of 2025 saw 716 MW of natural gas fueled generation enter the construction phase. The growing demand for electricity—largely by data centers—is accelerating development of gas fired generation in Ohio. Williams Companies began construction on two facilities, Socrates North and Socrates South, each hosting 200 MW of capacity; and EdgeConneX also began construction on two facilities, PowerConneX I and PowerConneX II, hosting 216 MW and 100 MW of capacity, respectively. These facilities are being built in Licking County and are intended to serve behind the power electricity to nearby data centers. We estimate this investment to be $618.8 million.

Altogether, shale-related investment in Ohio for the second half of 2025, including upstream, midstream, and downstream, was a little over $3.6 Billion. Cumulative total shale related investment since 2012 is around 121 billion.

About the Study Team

Tessa E. Rosenberger, Ph.D.
Tessa Rosenberger is a Research Assistant Professor with the Energy Policy Center at Cleveland State University. She holds a Doctor of Philosophy in Mechanical Engineering, with a focus in atmospheric dynamics modeling, from Cleveland State University. Her research spans industrial decarbonization, microgrids, district energy, distributed energy deployment, oil and gas development and markets, and hydrogen. t.e.rosenberger@csuohio.edu, 216-687-5465.

Andrew R. Thomas, J.D.
Andrew Thomas directs the Energy Policy Center in the Maxine Goodman Levin School of Urban Affairs of Cleveland State University, where he conducts research on oil and gas, electricity markets, microgrids, energy storage, fuel cells and transportation policy. He teaches Energy Law and Policy at Cleveland State, and oil and gas contracting courses internationally. He was an Ohio oil and gas commissioner from 2016-2023 and served for two years as the Commission's Chairman. a.r.thomas99@csuohio.edu, 216-687-9304.

Jacob R. Forester, M.S.
Jacob Forester is a Research Assistant with the Energy Policy Center at Cleveland State University. He holds a Master's in Physics from Cleveland State University. His work has focused on computational geospatial analysis and visualization. j.r.forester@csuohio.edu

About the Energy Policy Center

The Energy Policy Center is housed within the Levin College of Public Affairs and Education at Cleveland State University. The mission of the EPC is to help overcome social and institutional barriers to the implementation of solutions to energy challenges by providing an objective channel for the free exchange of ideas, the dissemination of knowledge, and the support of energy related research in the areas of public policy, economics, law, business and social science. For more information, go to https://levin.csuohio.edu/epc.

4. APPENDICES

APPENDIX A. CUMULATIVE OHIO SHALE INVESTMENT

Figure 10: Total Utica Production in Bcfe (Gas Equivalent) by County through December 2025

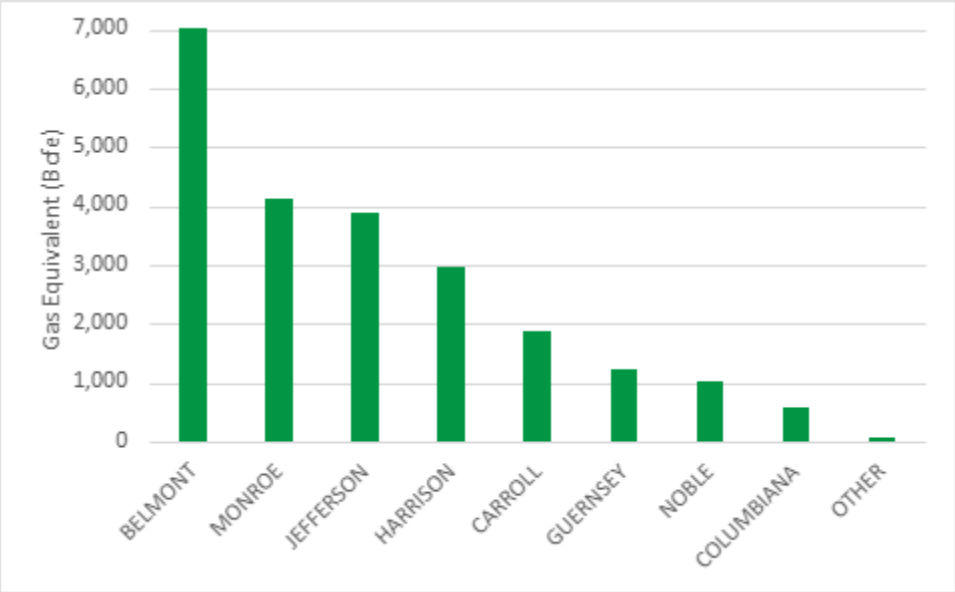
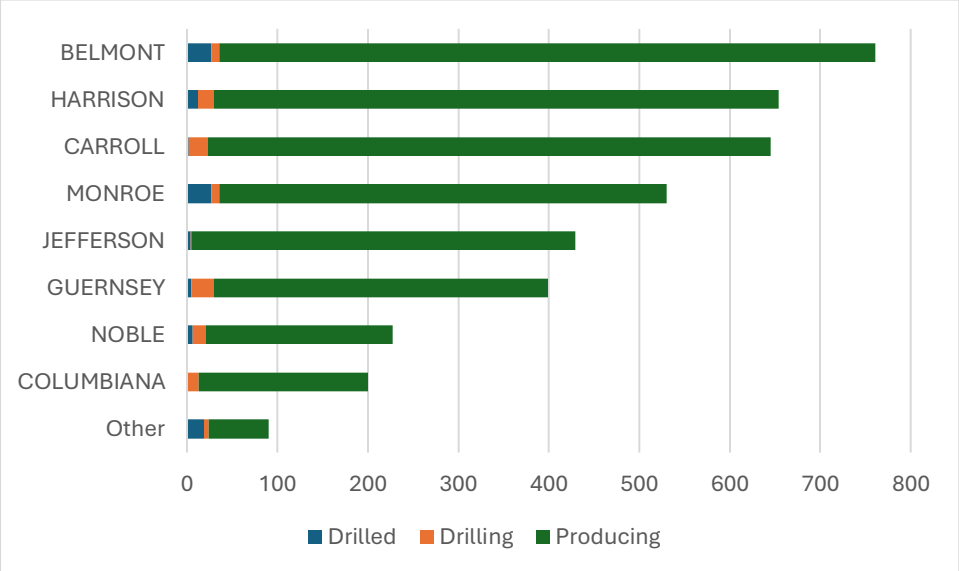


Figure 11: Cumulative Number of Wells by County through December 2025



Source: Ohio Department of Natural Resources (2025).

Figure 12: Distribution of Utica Wells by Status as of December 2025

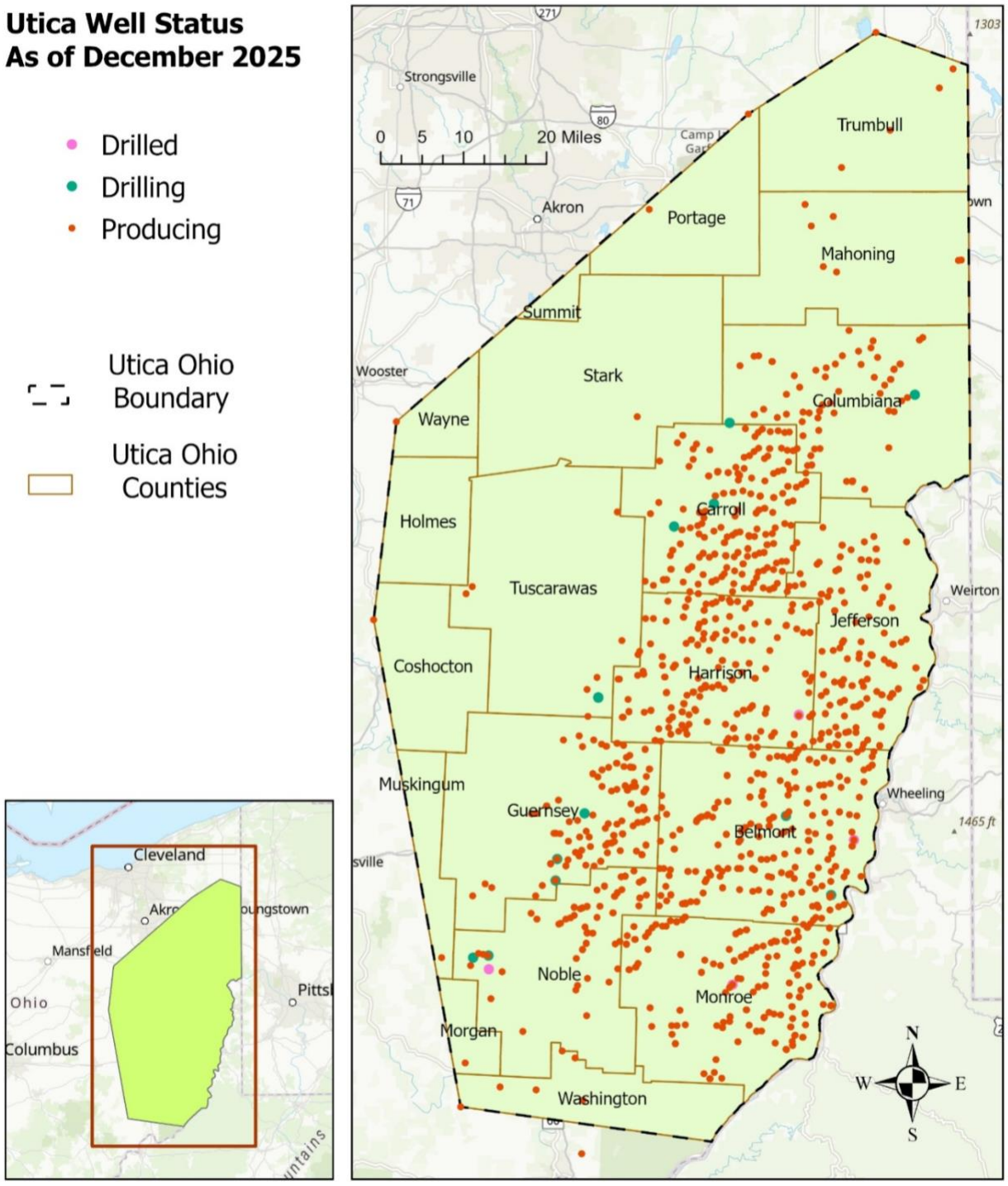


Figure 13: Cumulative Well Production as of December 2025

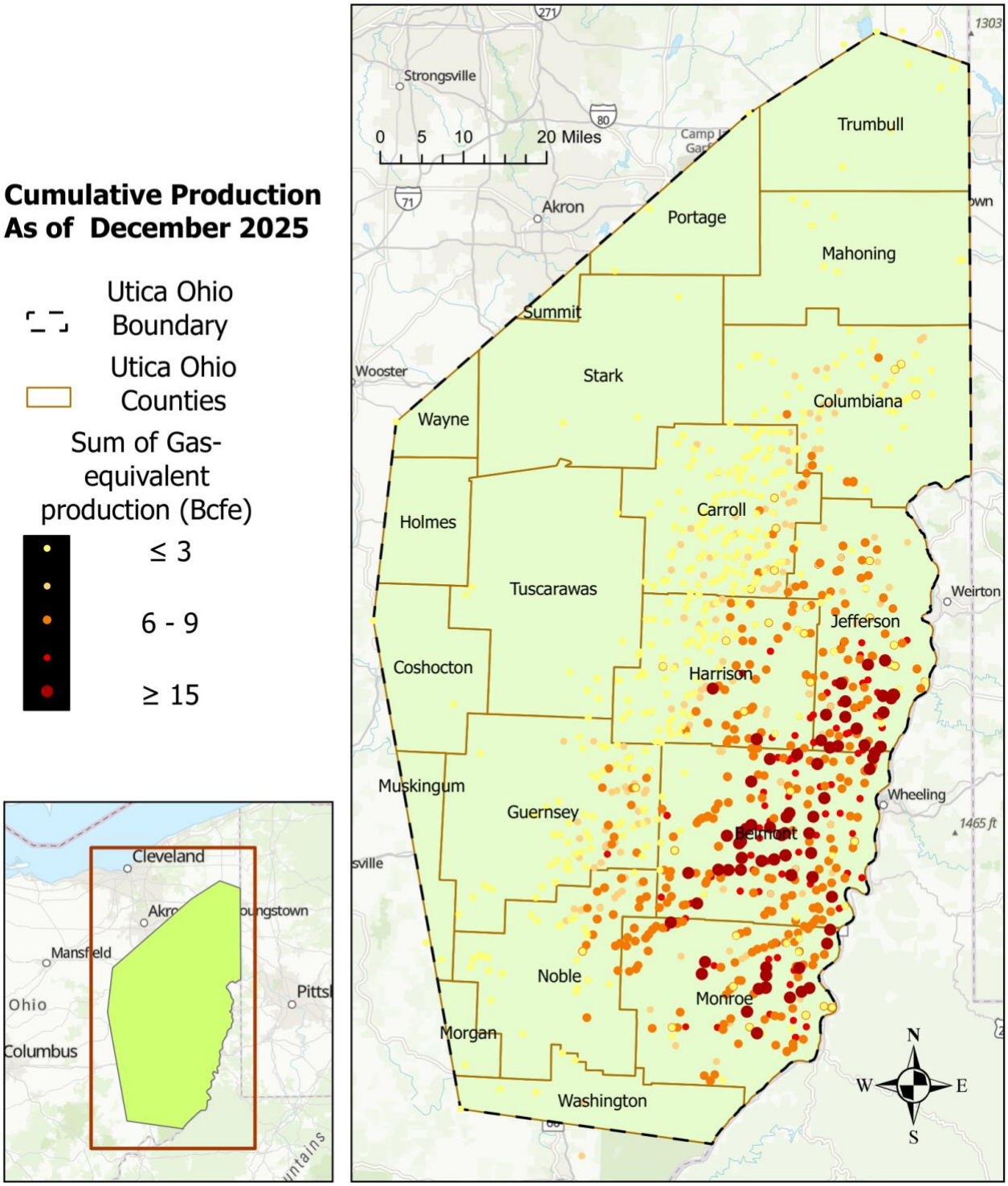
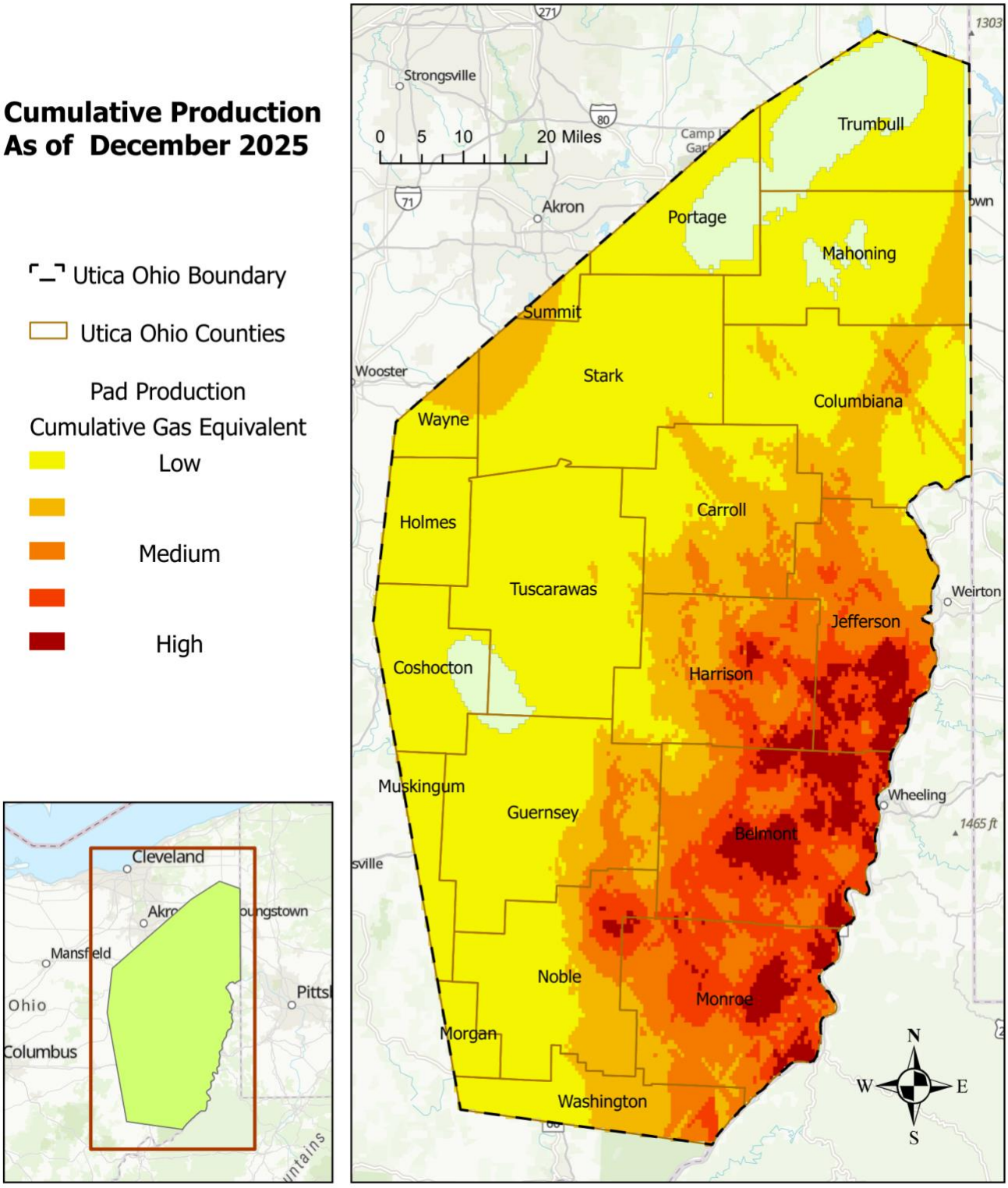


Figure 14: Estimated Cumulative Pad Production as of December 2025



Source: ODNR (2025).

Table 18: Utica Upstream Companies Drilling in Ohio as of June 30, 2025

Operator	Cumulative no. of Wells
EAP OHIO LLC	1177
ASCENT RESOURCES UTICA LLC	1032
GULFPORT APPALACHIA LLC	500
ANTERO RESOURCES CORPORATION	246
SWN Production Company, LLC	224
RICE DRILLING D LLC	215
INR OHIO LLC	128
EOG RESOURCES INC.	110
HILCORP ENERGY COMPANY	96
CNX GAS COMPANY LLC	47
DIVERSIFIED PRODUCTION LLC	38
SWN Production (Ohio) LLC	35
PIN OAK ENERGY PARTNERS LLC	25
GEOPETRO LLC	17
GULFPORT ENERGY CORPORATION	14
NORTHWOOD ENERGY CORP	6
Expand Operating LLC	5
Holbrook LLC	4
CHESAPEAKE EXPLORATION LLC	3
DEVON ENERGY PRODUCTION CO LP	3
BRAMMER ENGINEERING INC	2
EQT PRODUCTION COMPANY	2
SUMMIT PETROLEUM INC	2
AMERICAN ENERGY UTICA LLC	1
BP AMERICA PRODUCTION COMPANY	1
Energex Power, Inc.	1
UTICA RESOURCE OPERATING LLC	1
Total	3935

Note: Cumulative Number of Wells are calculated based upon the total number drilled, drilling, or Producing. Source: ODNR (December 27, 2025).

Table 19: Total Lease Operating Expenses through December 2025 (in millions)

Year	Period	Production Wells	Lease Operating Expenses ($mm)
2025	Q3 and Q4	3,642	209.2
2025	Q1 and Q2	3,520	158.1
2024	Q3 and Q4	3,438	174
2024	Q1 and Q2	3,341	173.2
2023	Q3 and Q4	3,230	186.4
2023	Q1 and Q2	3,103	194.3
2022	Q3 and Q4	3,024	150.2
2022	Q1 and Q2	2,886	178.6
2021	Q3 and Q4	2,792	151.8
2021	Q1 and Q2	2,704	205.7
2020	Q3 and Q4	2,705	206.1
2020	Q1 and Q2	2,608	266.2
2019	Annual	2,385	490.2
2018	Annual	2,077	422.2
2017	Annual	1,703	263.1
2016	Annual	1,406	198.8
2015	Annual	1,034	148.9
2014	Annual	612	88.1
2013	Annual	236	34.1
2012	Annual	82	30
2011	Annual	9	3
		Total	**3,723.00**

Table 20: Cumulative Utica-Related Upstream Investments in Ohio through June 2025

Estimated Investments	Total Amount
Mineral Rights	$26,270,272,000
Drilling	$38,482,473,243
Roads	$1,232,345,930
Lease Operating Expenses[69]	$3,781,434,838
Royalties	$17,838,264,402
Total	**$87,725,890,413**

Table 21: Cumulative Utica-Related Midstream Investments in Ohio through December 2025

Estimated Investments	Total Amount
Midstream Gathering	$8,996,500,800
Processing Plants	$1,259,300,000
Fractionation Plants	$1,697,360,000
NGL Storage	$261,000,000
Rail Loading Terminals	$150,270,000
Transmission Pipelines	$10,704,466,000
Behind the Meter Distribution	$152,490,000
Total	**$23,221,386,800**

Table 22: Cumulative Utica-Related Downstream Investments in Ohio through December 2025

Estimated Investments	Total Amount
Petrochemical Plants and Refineries	$679,443,000
Other Industrial Plants	$760,000,000
Natural Gas Refueling Stations	$84,075,000
Natural Gas Power Plants	$8,261,300,000
Combined Heat and Power (CHP) Plants	$383,159,910
Total	**$10,167,977,910**

[69] This number reflects a correction in the error in the previous report.

APPENDIX B. METHODOLOGY

1. Upstream Methodology.

Investment into the upstream for this fourth report has been broken down into four categories.

a. Wells and Related Roads. The first category is investment into wells and includes one-time investments into drilling and road construction related to well development. They were estimated as:

- Drilling:
  - Drilling and completion costs of $11.4 mm/well. [70]
  - Vertical depth differences across counties have minimal effect on total well cost.
  - Average drilling and completion costs of $770 per lateral foot.[71]
  - Average lateral length of 14,900 ft.[72]
- Roads:
  - Average investments of $156,400 per well based on recent OOGA reports after adjusting for inflation using the Ohio Department of Transportation's Construction Cost Index.[73]

[70] Previous shale reports distinguished between drilling costs in northern counties (e.g., Carroll, Harrison, Jefferson, and Columbiana) and southern counties (e.g., Noble, Guernsey, Belmont, and Monroe) based on the assumption that the Utica is substantially deeper in the south and therefore requires more expensive drilling in higher-pressure formations. The Study Team reviewed ODNR drilling surveys associated with completion reports for wells drilled in the second half of 2024 and found that wells in southern counties had an average true vertical depth (TVD) of approximately 8,700 feet, compared to approximately 7,700 feet in northern counties. However, wells in northern counties had an average lateral length of approximately 15,500 feet, compared to approximately 14,100 feet in southern counties. A review of ODNR unitization applications for these same wells, which include planned capital costs and well geometry, indicates that expected drilling and completion (D&C) cost per completed lateral foot differs only modestly between deeper and shallower wells when lateral length is held roughly constant (approximately $800/ft for wells with TVDs of 10,000-10,500 feet and approximately $740/ft for wells with TVDs of 7,500–8,000 feet, centered around a basin-wide average of ~$770/ft). When these cost-per-foot values are applied to representative lateral lengths from ODNR completion reports, estimated D&C costs converge to approximately $11.3–$11.5 million per well in both northern and southern development areas

[71] Estimated drilling costs per lateral foot in the Appalachian Basin based on drilling and completion costs for Ascent Resources, Encino Acquisition Partners, EOG Resources, and Gulfport Energy as reported in recent investor materials. See the following: Ascent Resources. (2025, August 6). *Investor Presentation*. https://webstorage.ascentresources.com/documents/Ascent_Resources_Investor_Presentation_2Q2025_vFF.pdf; EOG Resources. (2025, May 30). *EOG Resources Encino Acquisition Conference Call – Presentation.* https://filecache.investorroom.com/mr5ir_eogresources2/414/EOG_Encino_Acquisition_Presentation.pdf; Gulfport Energy. (2024, November 6). *Q3 2024 Gulfport Energy Corp Earnings Conference Call – Investor Presentation*. https://d1io3yog0oux5.cloudfront.net/_7a756c009e812adfe6b3a556f1af3f13/gulfportenergy/db/269/2688/presentation/GPOR_3Q24_vFinal.pdf

[72] Calculated using well completion reports obtained from the ODNR's *Ohio Oil & Gas Well Database,* available at https://ohiodnr.gov/discover-and-learn/safety-conservation/about-ODNR/oil-gas/oil-gas-resources/featuredcontent-3

[73] See fns. 19-20, *supra.*

The number of new wells developed in the Study period were accounted for by subtracting the number of wells in the *drilled*, *drilling*, or *producing* categories as of June 30, 2025 from the number existent as of December 28th, 2025. This information was downloaded from the ODNR's weekly *Combined Utica/Point Pleasant Shale Permitting Report*.[74]

b. Lease Operating Expense. The second estimated upstream cost identified by operators is the "lease operating expense." This includes post-production costs such as the storage, processing and disposal of produced water, among other expenses. Lease operating expenses for Utica wells were estimated to be a production-based $0.17/Mcf-equivalent. This average expense was developed by the Study Team based on an analysis of Ascent's and Gulfport's lease operating expenses in the Utica for the second half of 2025 as reported in their quarterly financial statements.[75]

c. Oil and Gas Production Royalties. A third area of upstream investment, royalty calculation, is more complicated. The estimate is based upon the total production over the sixmonth period and the likely price received for sales of the hydrocarbon during that same period. However, because much of the natural gas has been processed, Ohio Department of Natural Resources production records cannot be readily converted to royalty payments. Accordingly, a number of assumptions are required to estimate the royalties paid. These include estimating the local market conditions at the time hydrocarbons were sold. Royalties were estimated on a per quarter basis for Utica production based upon the hydrocarbon content for a typical Utica well.

To estimate the royalties, the following assumptions were made based upon industry interviews, industry investor presentations, and Energy Information Agency reports:

- Production for each well was similar to that found in the wet gas region, and not the dry gas or condensate regions. This represents the average situation.
- The average production shrinkage after processing was 12%, thereby making the residue gas volume 88% of the total natural gas production. [76]
- The residue energy content was around 1.1 MMBtu/Mcf.[77]

[74] Ohio Department of Natural Resources. (2025). *Horizontal Wells.* https://ohiodnr.gov/business-andindustry/energy-resources/oil-and-gas-wells/horizontal-wells

[75] *See* Ascent Resources' financial reports at https://ascentresources.com/financials. *See also* Gulfport Energy's financial reports at https://www.gulfportenergy.com/investors/sec-filings/quarterly-reports.

[76] Based on industry interviews, experts citing API 12.3, Manual of Petroleum Measurements and Standards.

[77] EIA estimates a conversion rate of 1.037 MMBtu/Mcf (*see* https://www.eia.gov/tools/faqs/faq.php?id=45&t=8). However, industry interviews suggest 1.1 is closer to the average conversion for the Utica Shale.

- Residue gas in the Utica was selling at an average price of $2.21/MMBtu for Q3 and $2.95/MMBtu for Q4.[78] These prices were used to estimate royalties.
- Around 44 barrels of liquids were recovered per million cubic feet of gas produced.[79]
- Natural gas liquids were selling for around 30% of the listed price for Marcellus-Utica light crude oil.[80]
- Oil in the Utica region was selling for $52.92 and $47.09per barrel, on average, during the first and second quarters of 2025, respectively.[81]
- Royalty rates are 20% of gross production.

d. New and Renewal Lease Bonuses. Finally, a fourth form of upstream investment was estimated: new and renewal lease bonuses. For this purpose, we assumed that the average new lease or renewal bonus paid was $5000/acre, and that the typical lease has a five-year primary term. In prior studies, based upon the assumption that most undeveloped acreage was in the primary term of the least, we assumed that approximately 20% of the undeveloped acreage identified will need to be renewed each year or is otherwise new.[82] Since this Study covered six months, we assumed that half of this 20% was renewed or new during the Study period. However, as units have developed in the Utica, we have changed this estimate going forward to assume that 25% of the operator's total acreage is in its primary term, and that 20% of this acreage must be renewed or replaced every year (10% for a six-month period). This estimate may be high insofar as companies are not renewing or replacing all their primary term acreage. However, it may also be low insofar as the studies have only identified net acreage for the top six to nine operators in Ohio and may not be capturing all of the non-operator net acreage. (Acreage status is typically reported in company 10-K and other financial statements).

[78] Reflects average price across the Columbia Gas and Eastern Gas South trading hubs as derived from ICE trade data published by Snyder Brothers Gas Marketing, available at https://www.snyderbrothersinc.com. Hub prices reflect the delivered price of natural gas to the respective pipeline systems and so do not require further deductions for transportation costs. See U.S. Energy Information Administration. (2014, October 15). *Some Appalachian Natural Gas Spot Prices Are Well Below the Henry Hub National Benchmark*. https://www.eia.gov/todayinenergy /detail.php?id=18391

[79] Based on industry data.

[80] Based on industry interviews. Ascent recently indicated that it expects NGL prices to range from between 30% and 35% of the WTI price for crude oil. See Ascent Resources. (2025, March 6). *Ascent Resources Reports Fourth Quarter and Full-Year 2024 Operating and Financial Results and Issues Initial 2025 Guidance*. https://www.ascentresources.com/news/ascent-resources-reports-fourth-quarter-and-full-year-2024-operatingand-financial-results-and-issues-initial-2025-guidance.

[81] *See* Marcellus/Utica prices for light crude at http://ergon.com/prices. More than 95% of Ohio oil production is light crude by API gravity. See U.S. Energy Information Administration. (2025, November 28). *Crude Oil and Lease Condensate Production by API Gravity.* https://www.eia.gov/dnav/pet/pet_crd_api_adc_mbblpd_m.htm

[82] This estimate was confirmed through industry interviews. New operator undeveloped acreage reports are likely to be made available over time that may suggest these estimates could be either too high or too low.

2. Midstream Methodology.

Midstream investments include pipeline construction (intrastate, gathering lines and inter-state), processing plants (compression, dehydration, fractionation, and others), natural gas liquid storage facilities, and railroad terminals and transloading facilities. Midstream expenditures were estimated based upon a combination of midstream company investor reports, media reports, and industry "rules of thumb" obtained from industry interviews, government reports, and industry trade journals. Estimated investments were then compared to investor presentations and other information gleaned from public sources to confirm their accuracy. Interviews were also used to confirm ranges of expenditures.

a. Processing plants. Processing plant information was obtained by searching a wide range of resources including Ohio and US EPA permit databases, news agencies, and company web sites and presentations. For purposes of estimating the investments for midstream processing plants, rules of thumb were developed based upon facility throughput capacities. These rules of thumb were applied to the processing plants that have been built in Ohio, using the throughput capacity estimates cited in permit documents, or made available from public literature. Likewise, rules of thumb based upon throughput capacity were used to estimate investments downstream of the processing plants, such as storage facilities and loading terminals. Dehydration processing plants were estimated using average cost per Mcf capacity for similarly designed and recently built plants in the Appalachian region.

Compressor station investments were calculated based on the horsepower rating listed in Ohio EPA air permit data and estimated spending per horsepower of $5,761 for the Midwest Region for a new-build compressor station and $2,366 for expansion at an existing station as projected by the Interstate Natural Gas Association of America (INGAA) for 2024 after adjusting for inflation.[83]

The approximate capital cost for TEG dehydration units based on throughput was obtained from Carroll's *Natural Gas Hydrates: A Guide for Engineers* (2014, 3rd ed.). Facilities receiving a final permit-to-install or permit-to-install-and operate were assumed to be constructed during the same 6-month period in which the permit was issued by the Ohio EPA.

The following assumptions were used to estimate midstream-related investments:

[83] See The INGAA Foundation, Inc. (2018). *North America Midstream Infrastructure through* 2035. https://ingaa.org/wp-content/uploads/2018/06/34703.pdf. See also The INGAA Foundation, Inc. (2024). *Impact of Electrifying Natural Gas Transmission Compression*. https://ingaa.org/wp-content/uploads/2024/01/Impact-ofElectrifying-Natural-Gas-Compression-1.pdf. INGAA's projections for new-build compressor station costs from its 2018 study are reported in 2016 dollars; its 2024 report on compressor station replacement costs did not specify a dollar-year base, so the Study Team assumed the figures were expressed in 2023 dollars (i.e., the most recent full year). These projections were converted to 2025 dollars using the Bureau of Labor Statistics' Producer Price Index for *Other Pipeline Transportation*, available at https://fred.stlouisfed.org/series/PCU48694869.

- Processing Plants.
  - $400,000 per MMcf/d throughput
  - $80 MM per 200 MMcf/d plant (typical skid size)
- Fractionation Plants: $3,542 per bbl/d[84]
- Storage Tankage: $80 MM for 1 Bcf/d throughput
- Rail Loading Terminals: $40 MM for 1 Bcf/d throughput

b. Pipelines. Pipeline investments were estimated by applying "inch-mile" cost estimates to known pipeline diameter and length for both inter- and intrastate projects. Interstate pipeline diameters and mileage can be determined from Federal Energy Regulatory Commission data. These estimates were confirmed from investor presentations, when available. Intrastate mileage and diameter were determined using data for gathering system construction that was obtained from the Public Utilities Commission of Ohio.

For this report, up-to-date cost projections for natural gas transmission and gathering line pipelines, per inch-mile, was obtained from the INGAA. The estimated cost for natural gas pipelines for the Midwest Region as used in this analysis was $312,466per inch-mile, which included labor, raw materials, and permitting costs, as projected by the INGAA for 2025 after adjusting for inflation.[85] This cost estimate was applied to both transmission and gathering pipelines, as modern high-pressure gathering lines in shale basins such as the Utica are constructed, operated, and pressurized in a manner comparable to intrastate transmission lines.[86]

No investments into distribution lines were included in the Study since it is assumed that these have not grown as a direct result of shale development. For pipelines carrying liquids, the investment assumption is that expenditures will be comparable to those seen for gas pipelines. These were also corroborated by industry investor reports.

[84] The Study Team reviewed the published investment costs and throughput capacities of eight different fractionation facilities that have been developed since 2018, all of which are in Texas. The assumed unit cost for fractionation reflects the median investment per barrel of processing capacity per day for these eight facilities. See Natural Gas Intelligence. (2018, November 12). *Targa Building Two New Fractionation Trains at Mont Belvieu.* https://www.naturalgasintel.com/news/targa-building-two-new-fractionation-trains-at-mont-belvieu/. See also Phillip 66. (2019 November 6). *Investor Day – Presentation.* https://s22.q4cdn.com/128149789/files/doc_presentations/2019/11/Investor-Day-Slides-for-Website-11.06.2019-vF.pdf).

[85] See fn. 87, *supra*.

[86] *See* Pipeline and Hazardous Materials Safety Administration. (2021, November 15). *Pipeline Safety: Safety of Gas Gathering Pipelines: Extension of Reporting Requirements, Regulation of Large, High-Pressure Lines, and Other Related Amendments*. Federal Register. https://www.federalregister.gov/documents/2021/11/15/202124240/pipeline-safety-safety-of-gas-gathering-pipelines-extension-of-reporting-requirements-regulation-of

3. Downstream Methodology.

For estimating downstream expenditures, the Study Team relied upon publicly available reports gathered from news media, trade association publications, company websites and investor presentations. The Study Team also used interviews, and Ohio EPA permits and public notices to identify projects and support investment estimates. Search terms included identified company names, and key words associated with specific facility types and industries.

As of this report, downstream investment is categorized into eight categories:

- Natural Gas Power Plants
- Combined Heat and Power Plants
- Ethane Cracker Plants
- Methanol Plants
- Refineries
- Natural Gas refueling stations
- Petrochemical Plants
- Other industrial plants with natural gas inputs

NAICS codes used to generate keywords for searches included the following:
3251 – Basic Chemical Manufacturing
3252 – Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments Manufacturing
3253 – Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing
3255 – Paint, Coating, and Adhesive Manufacturing
3259 – Other Chemical Product and Preparation Manufacturing
3261 – Plastics Product Manufacturing

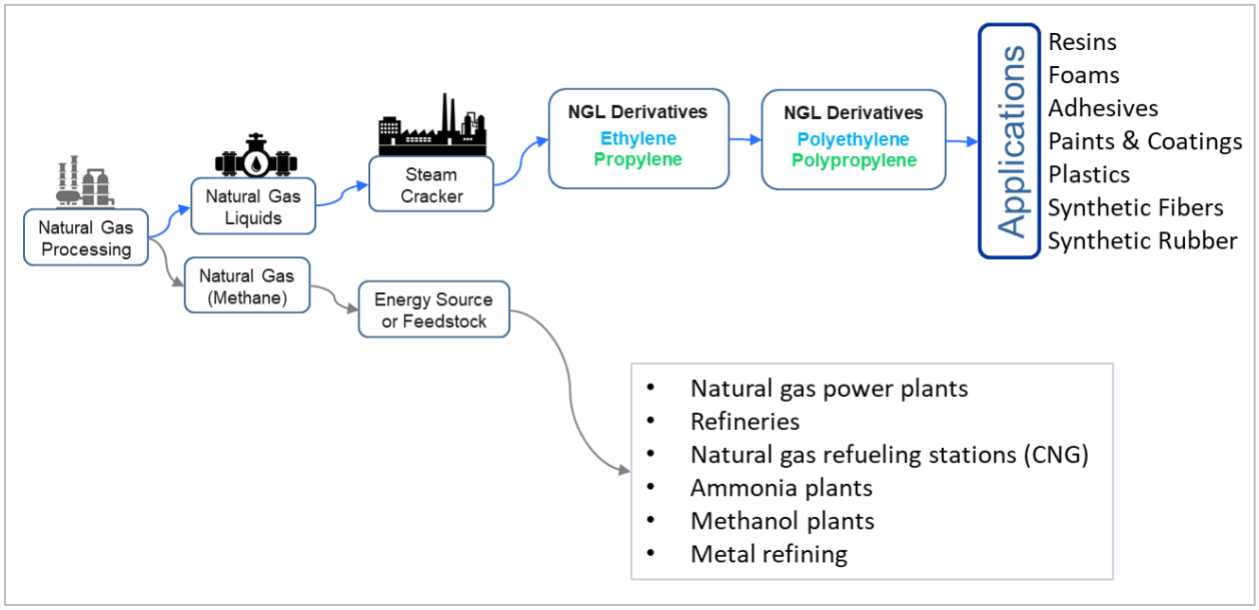
Downstream activities include the deployment of processes that turn hydrocarbons— natural gas (methane) and natural gas liquids (ethane, propane, butanes)—into higher-valued fuels and petrochemicals. Shale gas may be monetized into numerous resulting value-added products. Figure 14 shows the primary intermediates and products that can be manufactured from the main hydrocarbon components in shale gas as part of downstream production.[87]

[87] See U.S. Department of Energy. (June 2020). *The Appalachian Energy and Petrochemical Renaissance: An Examination of Economic Progress and Opportunities*. https://www.energy.gov/sites/prod/files/2020/06/f76/Appalachian%20Energy%20and%20Petrochemical%20Report_063020_v3.pdf

Table 23: End User Natural Gas Consumption in Ohio[88]

Natural Gas Consumption	2025 (Mcf)	New + Planned Generation With 1.77 GW of PORTS	New + Planned Generation With 10.2 GW of PORTS
Residential	298,791,000		
Commercial	188,843,000		
Industrial	332,749,000		
Vehicle Fuel	1,316,000		
Electric Power	564,572,000	569,548,990	1,062,697,920
Total	1,386,271,000	1,955,819,990	2,448,968,920

Figure 15: Shale/Natural Gas Value Chain for Petrochemicals



[88] *EIA, supra note 68.*