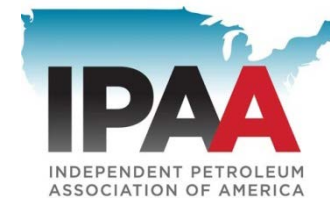


ENERGY IN DEPTH

March 2018



About Energy In Depth



Launched by Independent Petroleum Assn. of America (IPAA) in 2009



Research, education and rapid-response platform specifically focused on issues in the shale/HF space



Coalition of more than 20 separate IPAA members (and non-members) contribute funding, expertise to the program



Lead research and media affairs team based in Washington, D.C.; EID field teams now in place in Pennsylvania, Ohio, California, Texas, Colorado and Illinois; additional programs in Florida and New Mexico



Widely regarded as the industry's lead research and education initiative on all issues relating to onshore oil and gas development

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Ohio's Oil and Gas Infrastructure Investments

Report: Ohio Counties Have Received More Than \$300 Million For Road Improvements From Shale Operators

Key Findings for Ohio Shale Counties

Total Investment Made in Ohio Infrastructure:	More than \$300 Million
Total Number of Road Miles Improved:	More than 630 Miles
Amount of Investment Directly to Local Communities:	100 Percent

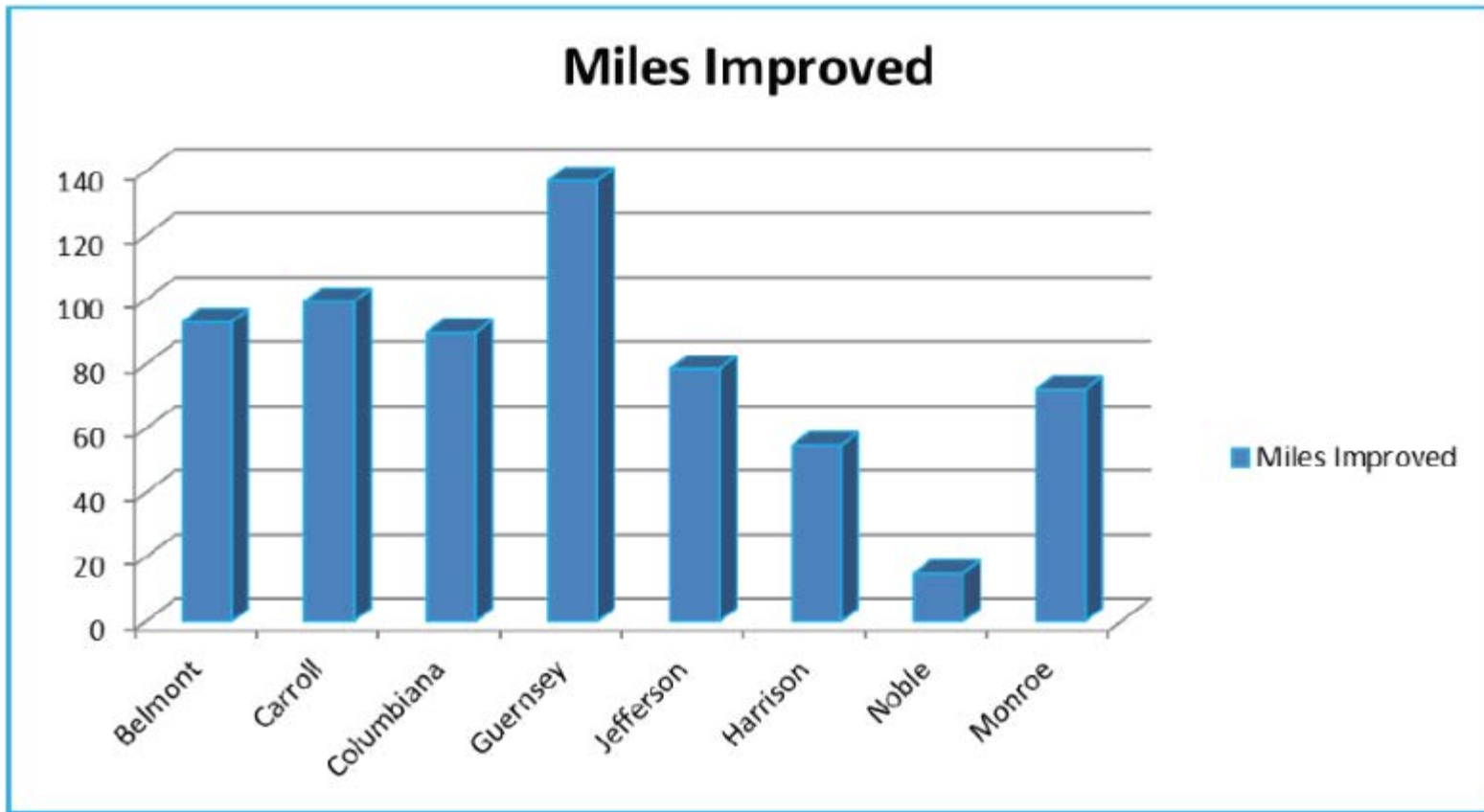
By the County

County	Road Improvement Costs	Miles Improved
Belmont	\$ 62,355,737.70	93
Carroll	\$ 44,715,692.48	99.33
Columbiana	\$ 32,634,228.51	89.77
Guernsey	\$ 53,146,414.20	137
Jefferson	\$ 24,056,901.00	78.52
Harrison	\$ 31,409,026.56	54.75
Noble	\$ 12,587,467.00	14.92
Monroe	\$ 41,757,761.45	72
Totals	\$ 302,663,228.92	639.29

Road Improvement Costs-Belmont Leads the Pack



Miles Improved



■ What was the timeline for the data?
2011-2017

■ Where did you get your numbers?

Our research for this report is based off of information derived from Freedom of Information Act (FOIA) requests from county engineers, data directly provided by Ohio's oil and natural gas shale well operators, and assistance from the Ohio Department of Transportation (ODOT). Our research focuses primarily around road improvements related to well pad construction and other upstream activities.

Ohio Benefits from Belmont County (and yes, we already knew that)

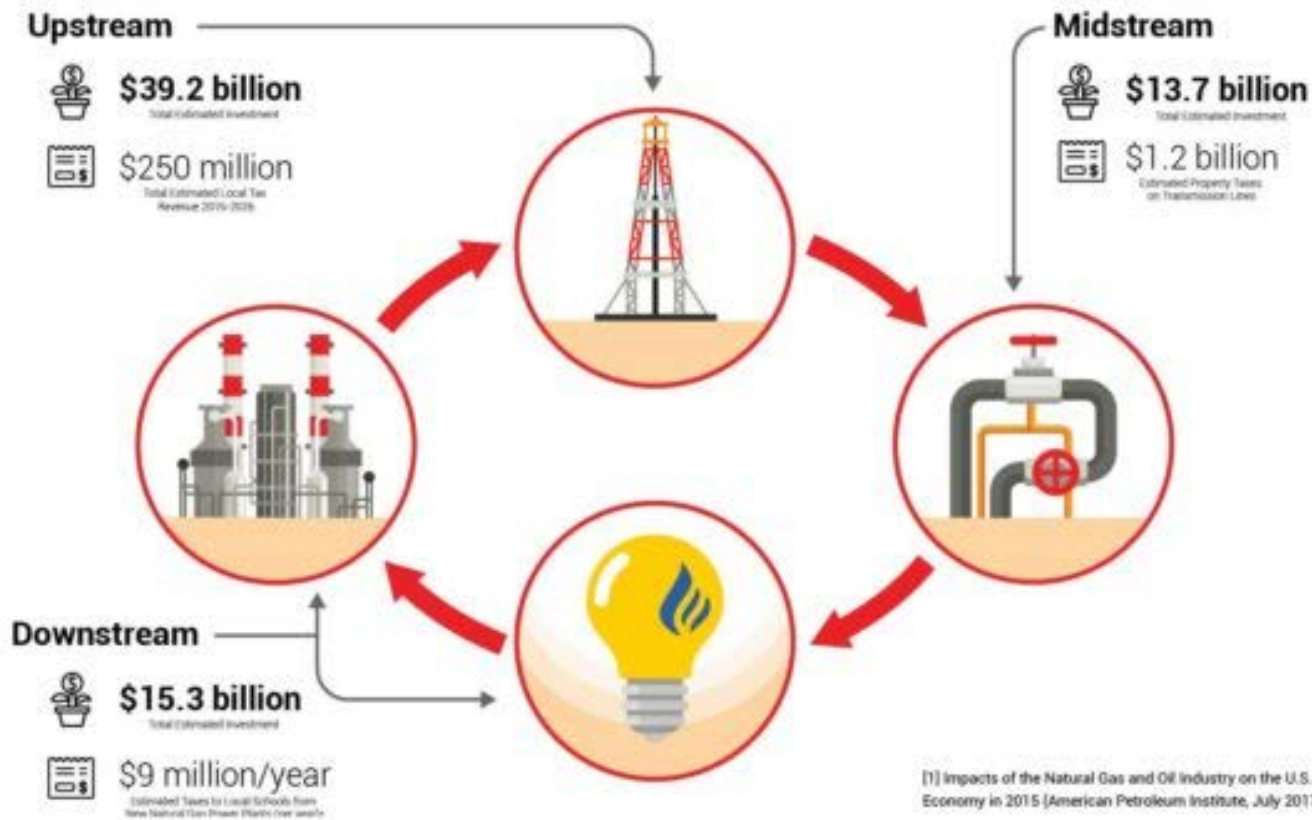
Belmont County is impacting the entire state!

Natural Gas Lifecycle: By The Numbers



Shale is Powering Ohio's Economy

The natural gas and oil industry supported **262,800 jobs** and contributed \$37.94 billion to Ohio's economy in 2015 alone!^[1] In fact, the Ohio Laborers' District Council is working more hours than any other state, and the estimated economic investment from upstream, midstream and downstream is staggering.



The Columbus Dispatch

- Columbia Gas customers can thank lower gas prices, tax reform for lower bills, 2/28/18
- Columbia Gas ready to tap regional gas supplies, possibly saving customers money, 2/12/18
- State must protect reliable energy: Kevin Schmidt, Ohio Cast Metals Association, Letter to the Editor, 12/1/17
- Enjoying the necessities of modern life: Rhonda Reda, Ohio Oil and Gas Energy Education Program & Ohio Energy Proud, Letter to the Editor, 10/11/17

What about other areas of the state?

No more special 'summer gas' prices for Southwest Ohio

Carrie Blackmore Smith, csmith@enquirer.com Published 6:28 p.m. ET April 20, 2017

Natural Gas Lifecycle in Ohio



Shale is Powering Toledo's Economy

The natural gas and oil industry is supporting thousands of construction jobs and bringing hundreds of manufacturing jobs to northwest Ohio. In fact, the Ohio Laborer' District Council is working more hours than any other state.

Upstream

Record natural gas production in eastern and southeastern Ohio is fueling northwest Ohio's economy.

Pipelines:

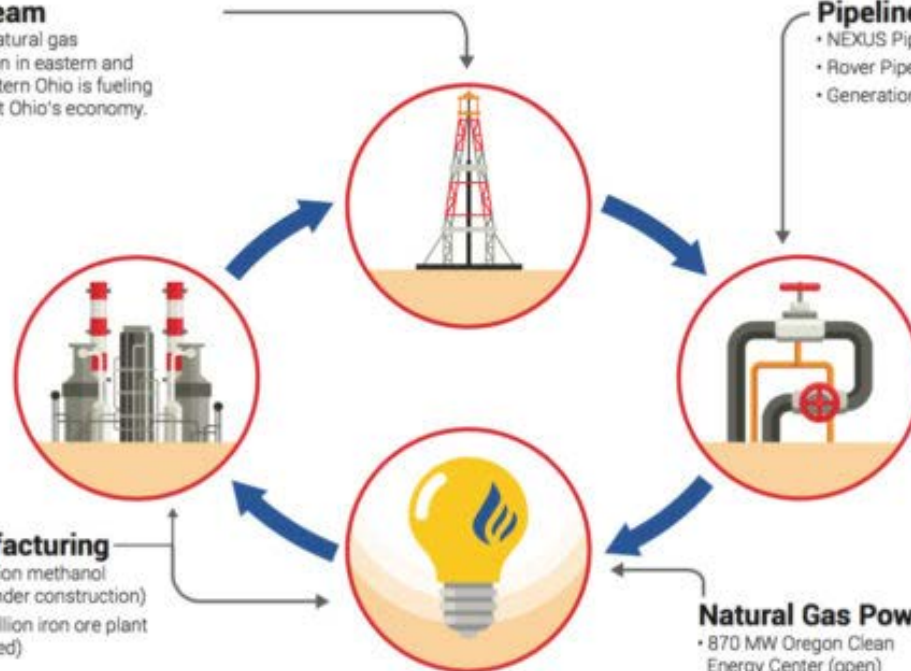
- NEXUS Pipeline
- Rover Pipeline
- Generation Pipeline

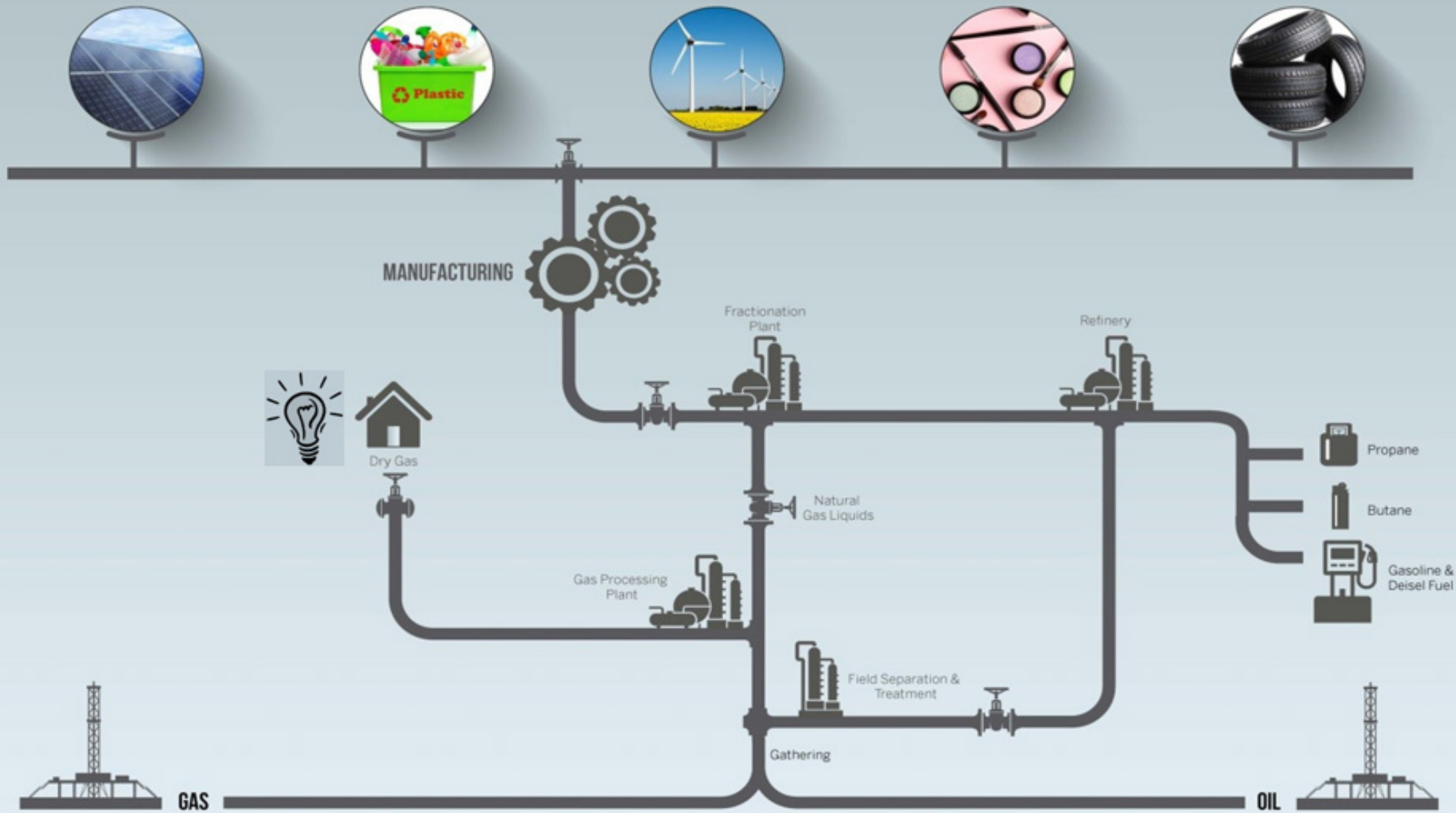
Manufacturing

- \$60 million methanol plant (under construction)
- \$700 million iron ore plant (permitted)

Natural Gas Power Plants

- 870 MW Oregon Clean Energy Center (open)
- 955 MW Oregon Energy Center (permitted)





HOW SHALE SUPPORTS MANUFACTURING

Could Shale Gas Lead To A Manufacturing Boom In Appalachia? **Forbes**

2018 Quick Facts

- \$63 Billion Invested since 2012, according to Cleveland State University
- \$300 Million spent on Road & Infrastructure Improvements
- \$45 Million spent on property taxes paid on production
- \$1.2 Billion slated for taxes coming from pipelines
- 9,947 MW of Clean Natural Gas Power Generation, supporting 14,000 jobs
- Ohio leads the nation in carbon emission reductions
- Ohio produces more natural gas than it consumes
- The Appalachian Basin is producing more natural gas than any OPEC country.