

The Ohio Oil & Gas Association
Overview of Ohio Oil & Natural Gas

American Association of Energy Engineers
April 5, 2013 - Cleveland, Oh



Overview



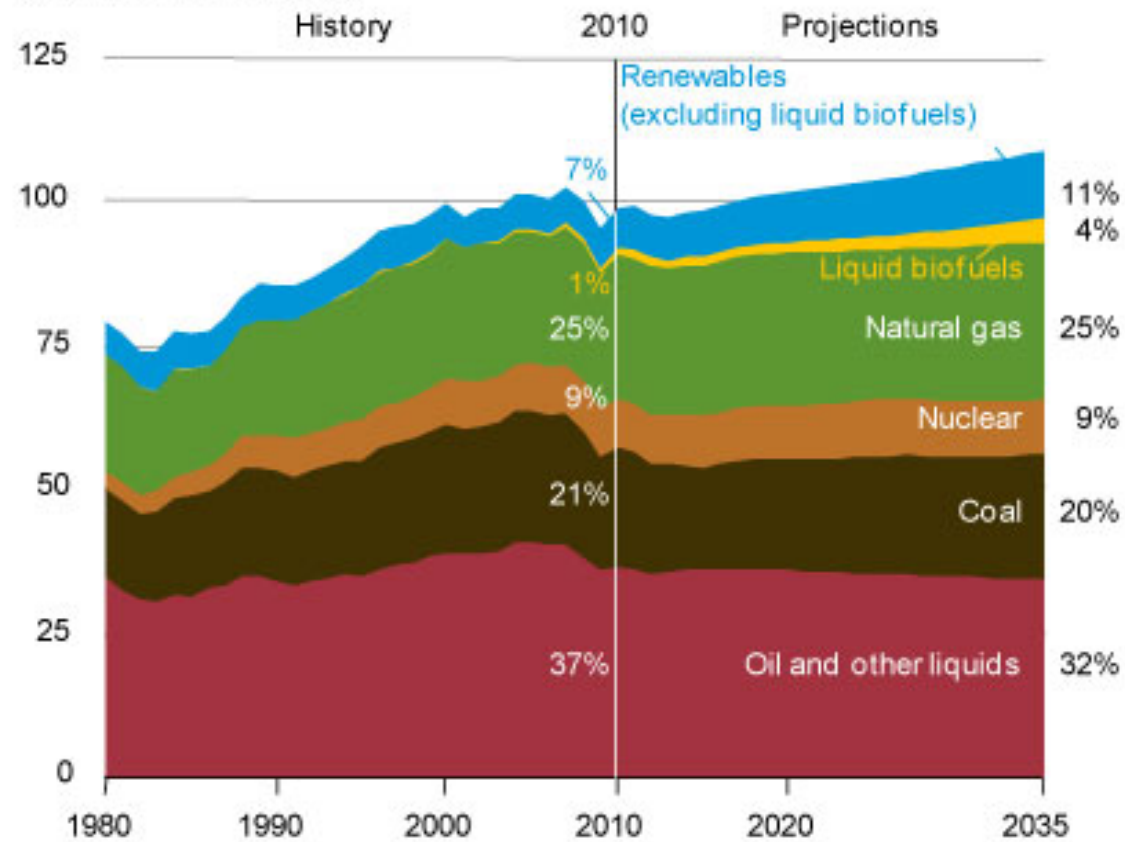
1. OOGA
2. Ohio Oil & Gas history
3. Utica
4. Well Pad and Well Construction
5. Hydraulic Fracturing, wait, what?
 1. FUD
 2. What - Brief technologic overview
 3. Why
 4. How
6. Regulatory
7. Resources for more information

EIA Energy Consumption by Fuel, US



Figure 8. U.S. primary energy consumption by fuel, 1980-2035

(quadrillion Btu per year)

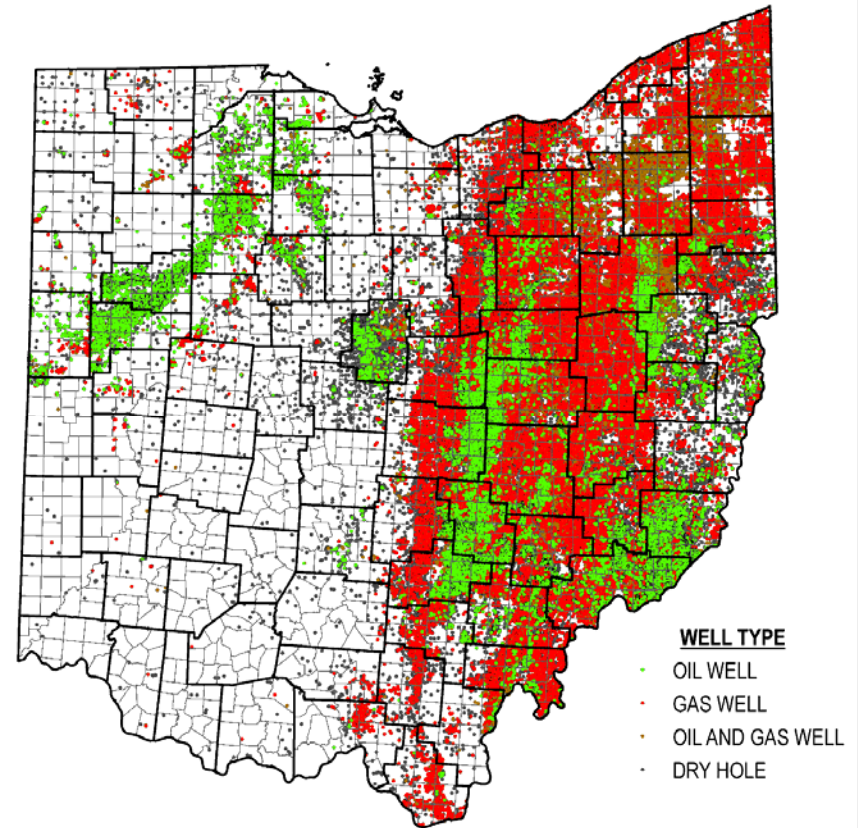


Oil & Gas, in Ohio?



Founded in 1947, the Ohio Oil & Gas Association strives to serve the broad range of entities involved in the Ohio oil and natural gas extractive industry.

- 275,774 wells drilled for oil and gas
- Wells have been productive in 79/88 counties
- Ohio has 64,378 active wells
- In 2010 Ohio produced 70 BCFG, 4 MMBO (~100 BCFE) ~ \$1 Billion
- Oil & gas reservoirs have been tested at depths from less than 100 feet to over 13,700 feet
- Ohio ranks 4th nationwide in number of wells drilled



Historic Ohio Oil & Gas Facts



- 1814 oil discovered in Noble County, Thorla-McKee Well
- 1860 first commercial oil production
- 1861 first off shore production, Mercer Reservoir
- 1884 first commercial gas production, Findlay
- 1887 Clinton phase 1, Fairfield Co. and Canton
- 1897 Lima-Indiana field “Middle East” of world
- **1908 Technologic Advance: Rotary drill bit**
- **1947 Technologic Advance: Hydraulic Fracturing**
- 1953 Clinton revitalized by new HF technique
- 1963 Morrow County Oil Boom, **Multi-Channel Seismic**

Historic Ohio Oil & Gas Facts

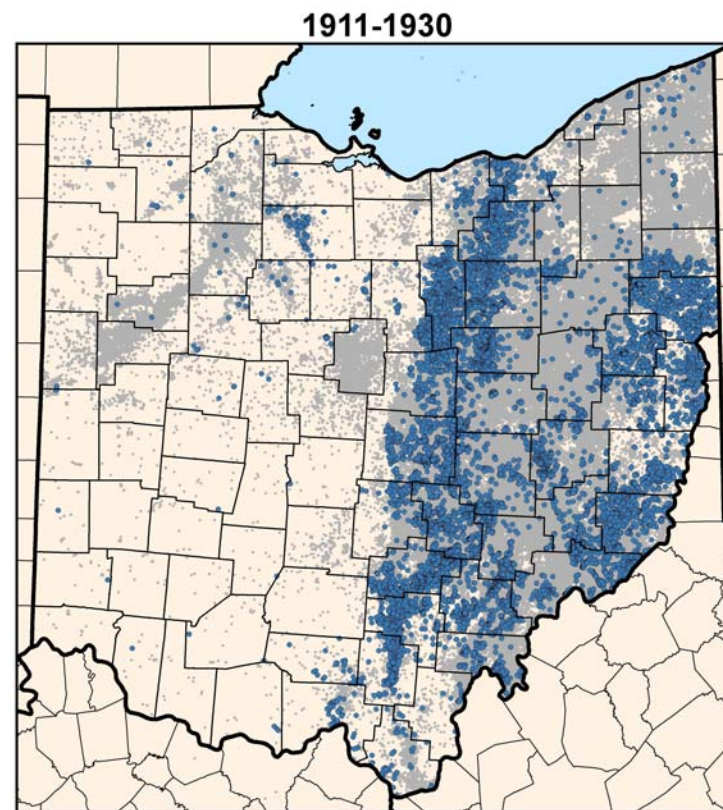
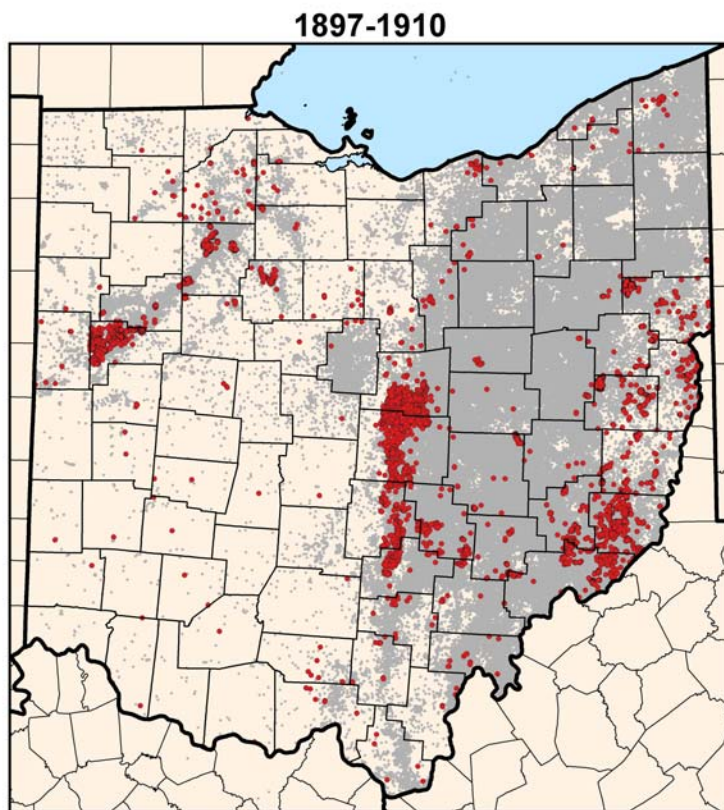


- 1970 Clinton phase 2: Rising oil and natural gas prices and increased local demand, and 1978 NGPA S.107 “Tight Sands” incentive pricing and S.29 tax credit incentives created boom. – 1981 6,085 wells drilled (and frac’d).
- 1985 Knox Rose Run, **Multi-Fold Seismic**
- 1986 Oil price collapse, stagnant natural gas prices slowed activity significantly.
- 1990’s Deeper Knox drilling, **Digital and 3D Seismic**
- 2010 **Technologic Advance: Horizontal Drilling** opens the door to hydrocarbon molecules in the Shales that had previously been impossible to release.

Ohio Oil & Gas Well History 1897-1910 & 1911-1930



OHIO OIL & GAS WELL HISTORY 1897-1930



ALL OHIO OIL & GAS WELLS SHOWN AS GRAY DOTS
WHICH INCLUDE WELLS WITHOUT COMPLETION DATES

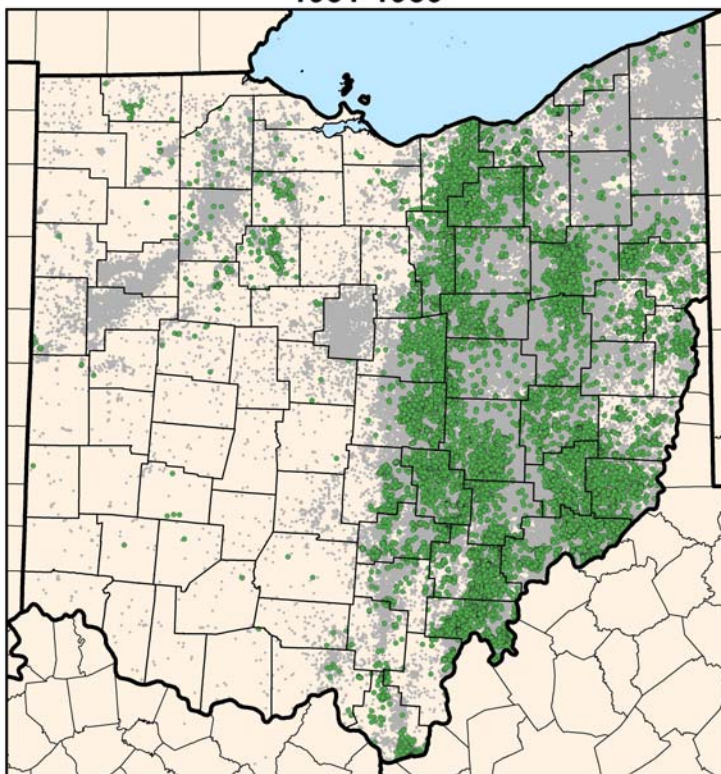


Ohio Oil & Gas Well History 1931-1950 & 1951-1970

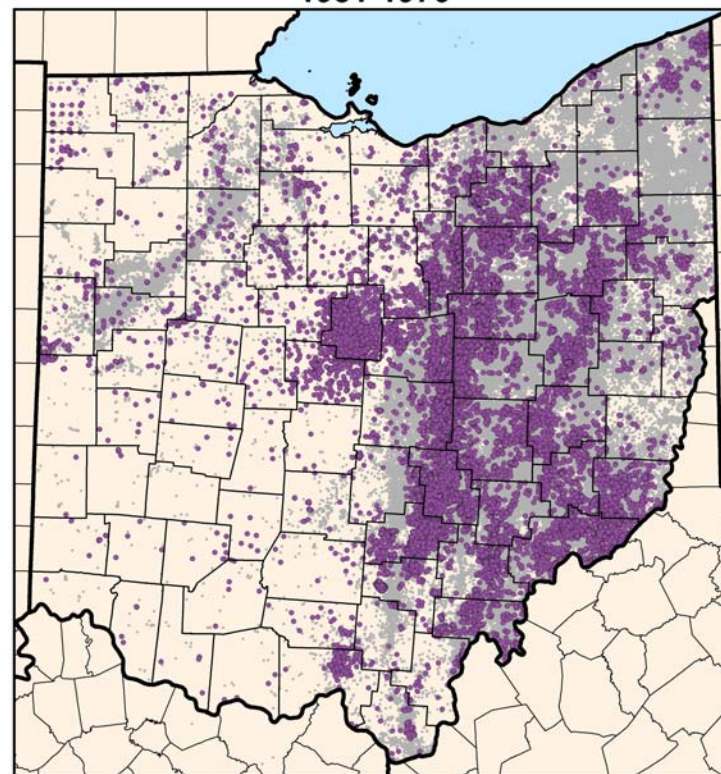


OHIO OIL & GAS WELL HISTORY 1931-1970

1931-1950



1951-1970



ALL OHIO OIL & GAS WELLS SHOWN AS GRAY DOTS
WHICH INCLUDE WELLS WITHOUT COMPLETION DATES

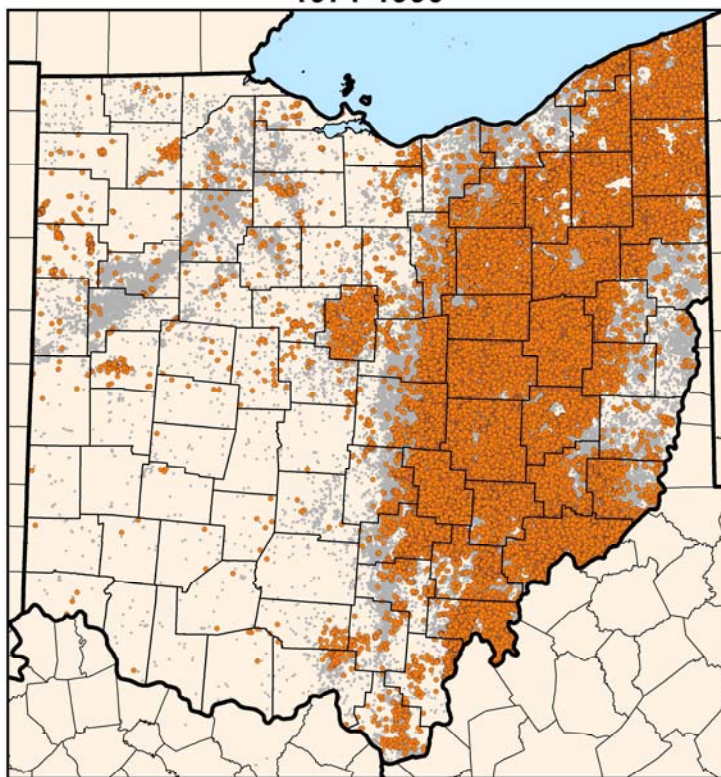


Ohio Oil & Gas Well History 1971-1990 & 1991-2012

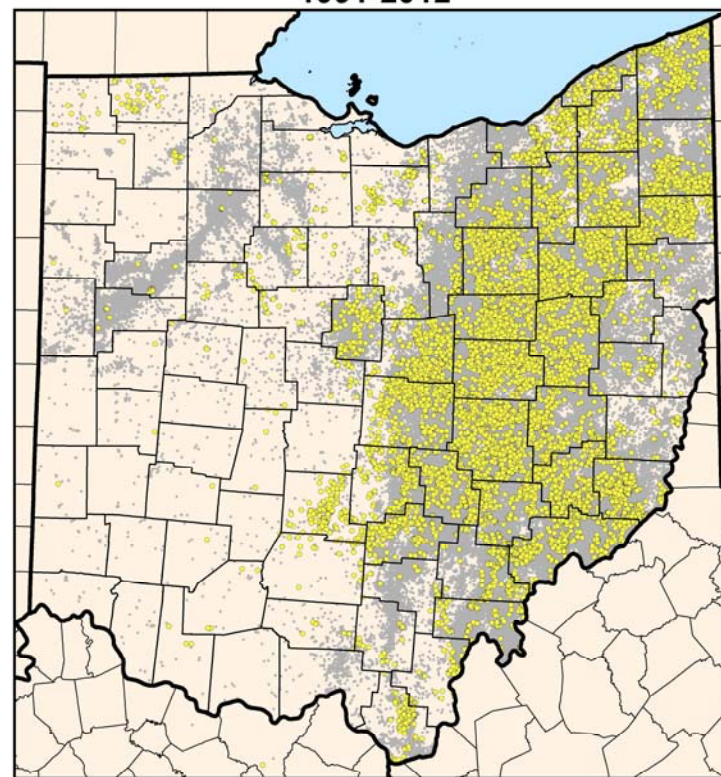


OHIO OIL & GAS WELL HISTORY 1971-2012

1971-1990



1991-2012



ALL OHIO OIL & GAS WELLS SHOWN AS GRAY DOTS
WHICH INCLUDE WELLS WITHOUT COMPLETION DATES



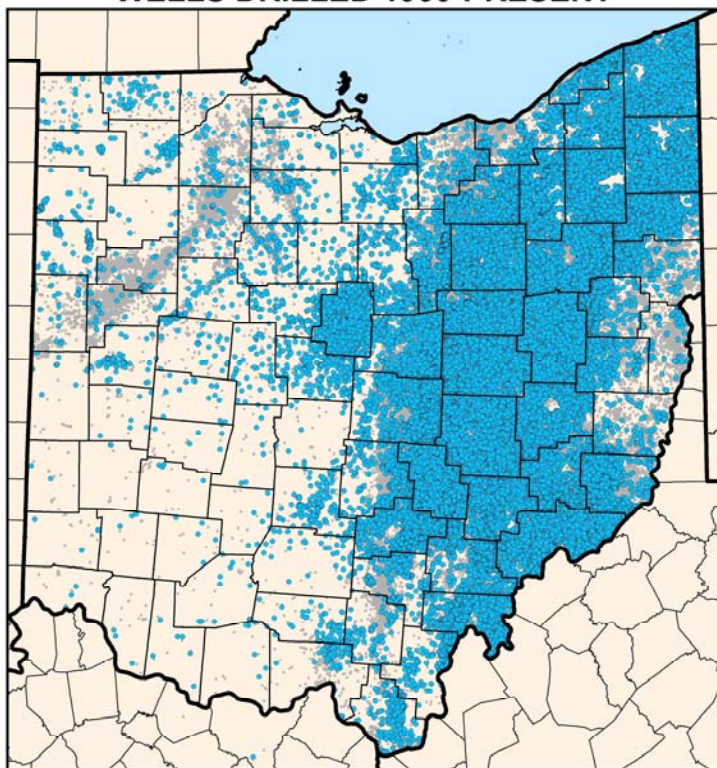
MacKenzie
Land & Exploration Ltd.
www.mackex.com

Ohio Oil & Gas Well History 1960-2012 & 1897-2012

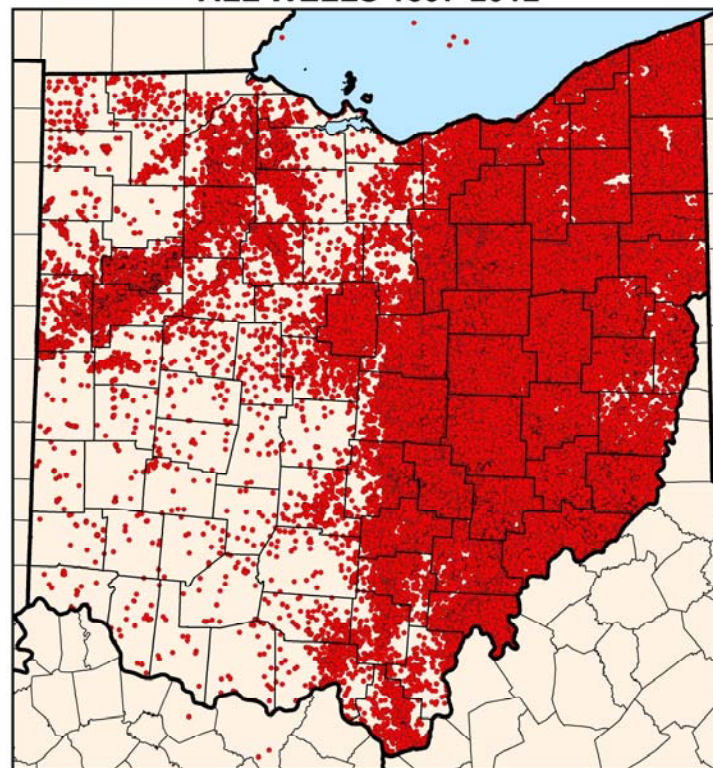


OHIO OIL & GAS WELL HISTORY

WELLS DRILLED 1960-PRESENT



ALL WELLS 1897-2012

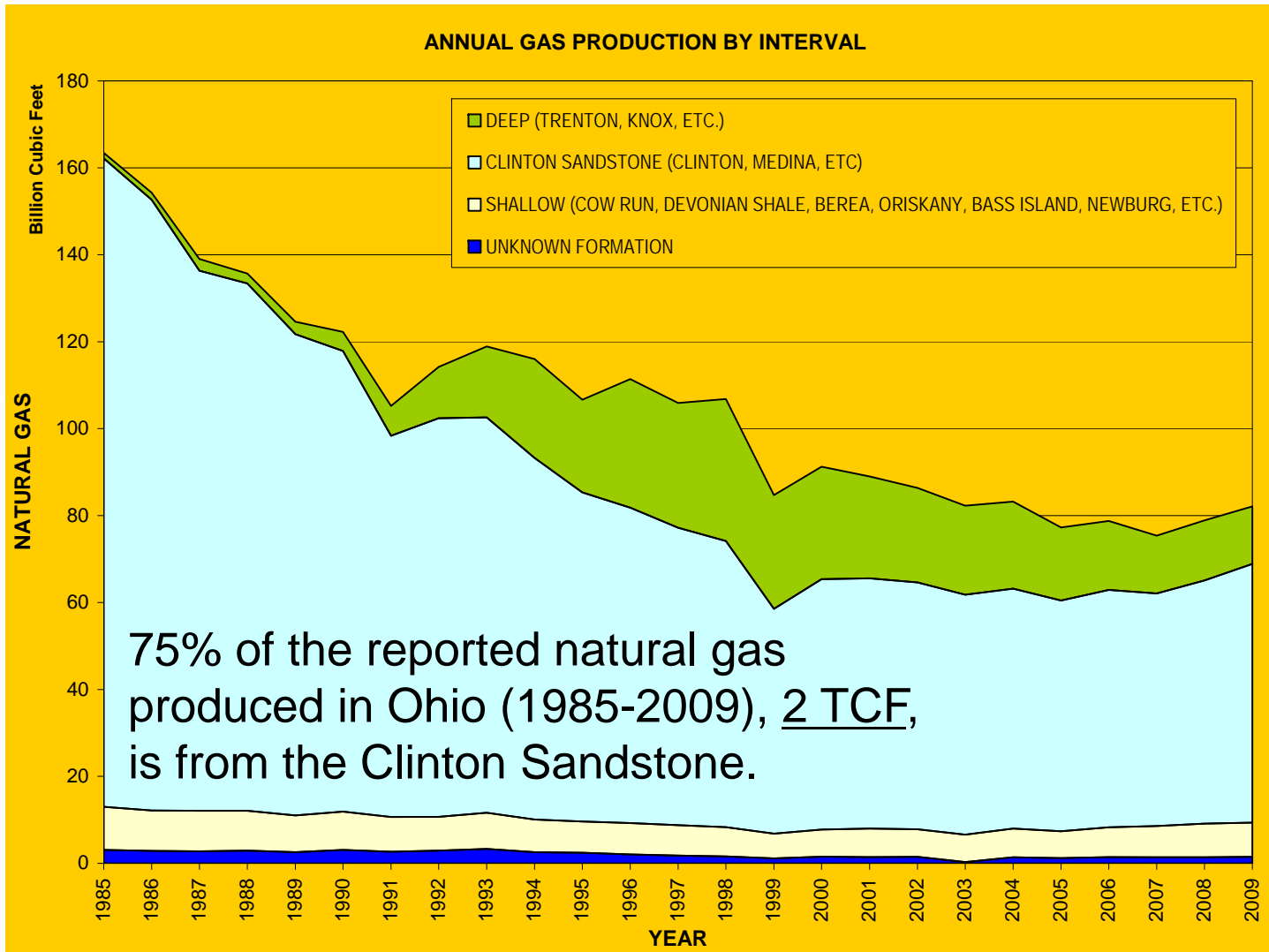


OIL & GAS WELLS DRILLED IN OHIO AFTER 1960 WERE LIKELY COMPLETED USING HYDRAULIC FRACTURING. MORE THAN 75,000 WELLS WERE DRILLED AND COMPLETED IN OHIO DURING THIS PERIOD.



MacKenzie
Land & Exploration Ltd.
www.mackex.com

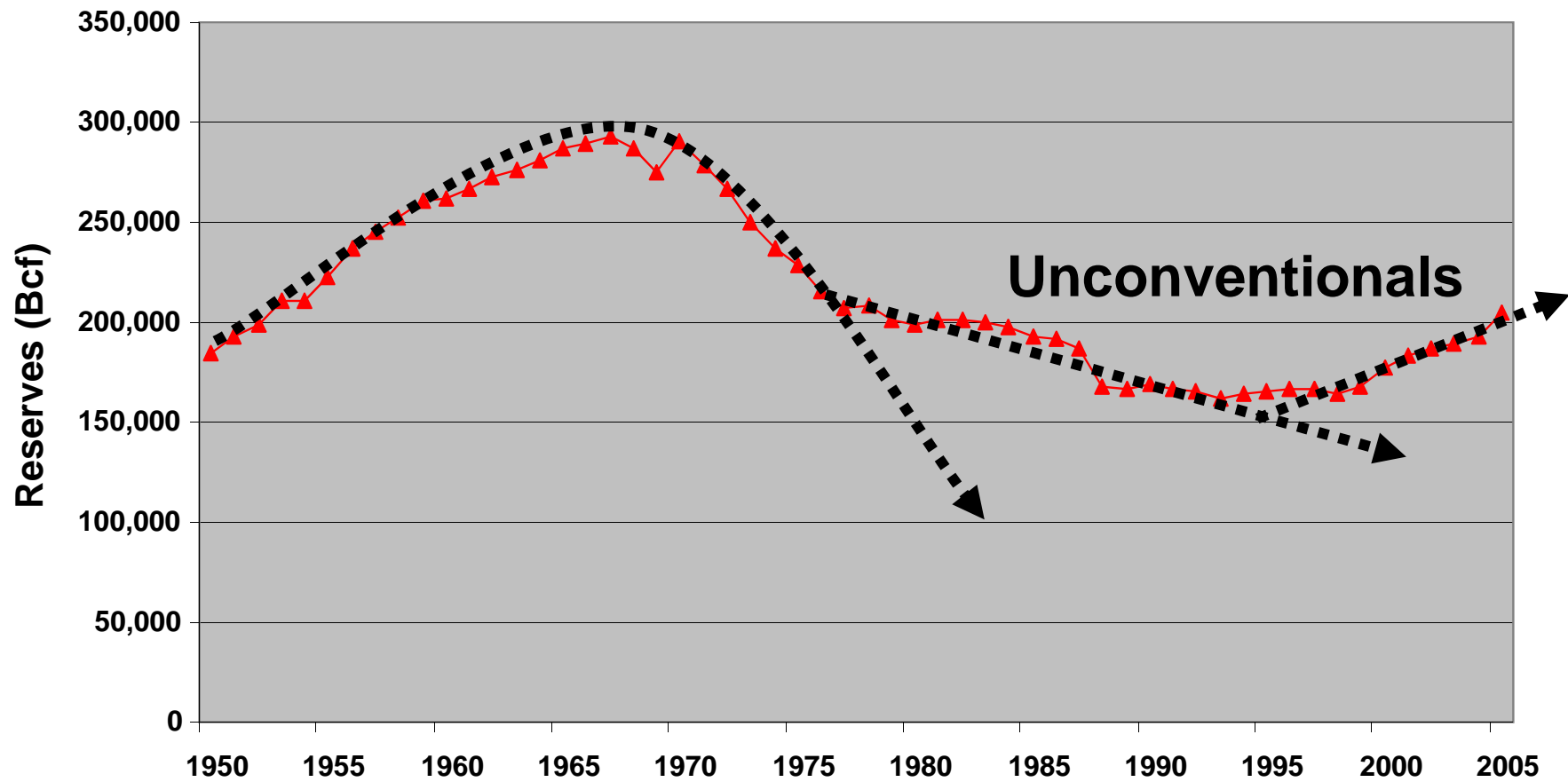
Production in Ohio 1985-2009



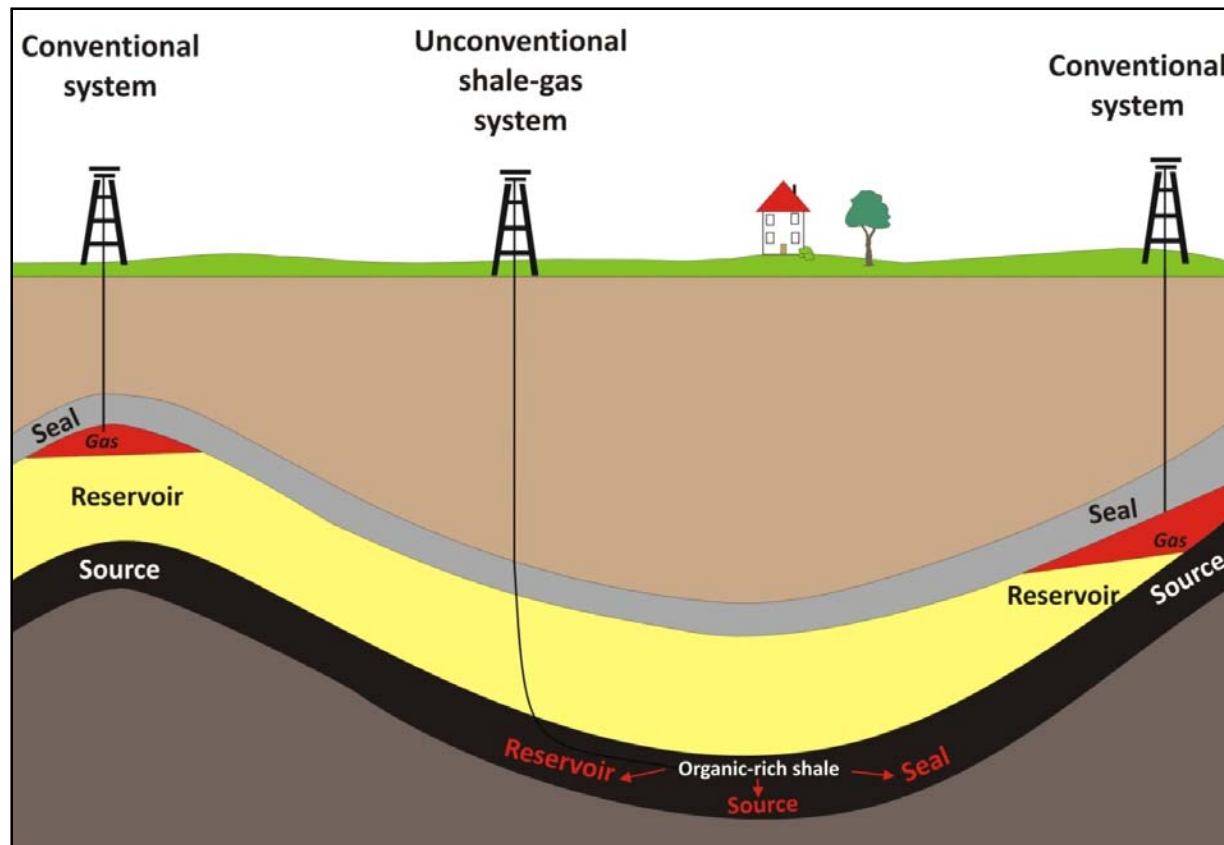
Dry Natural Gas Reserves, US



Technology *and* Ideas

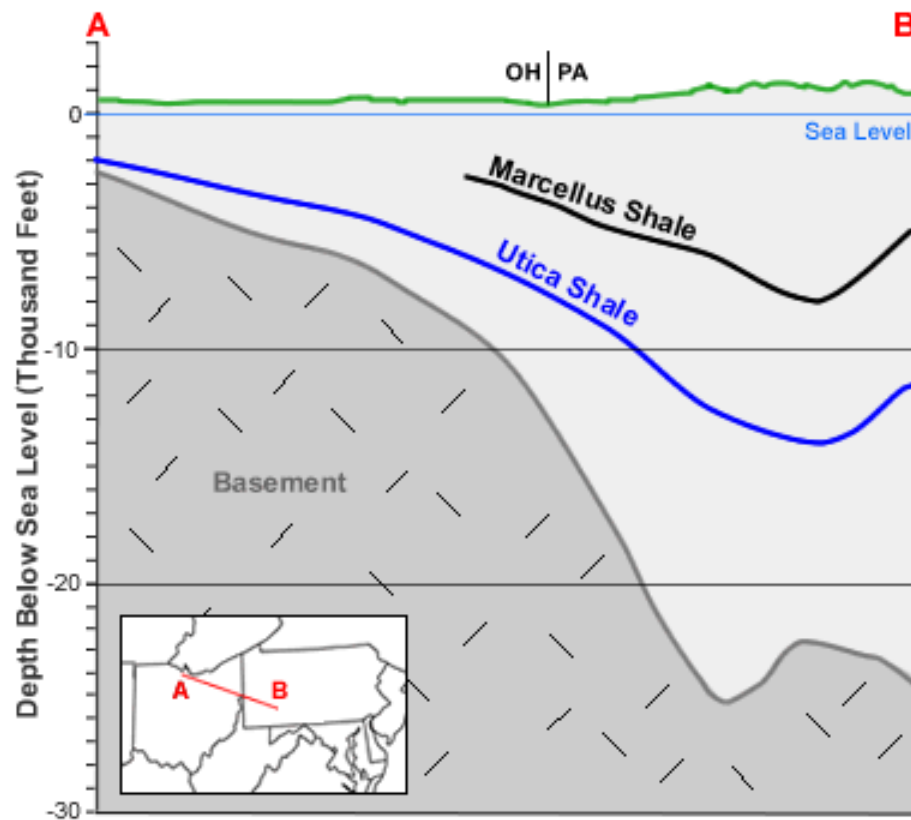


Why today? Technology & Source Rocks

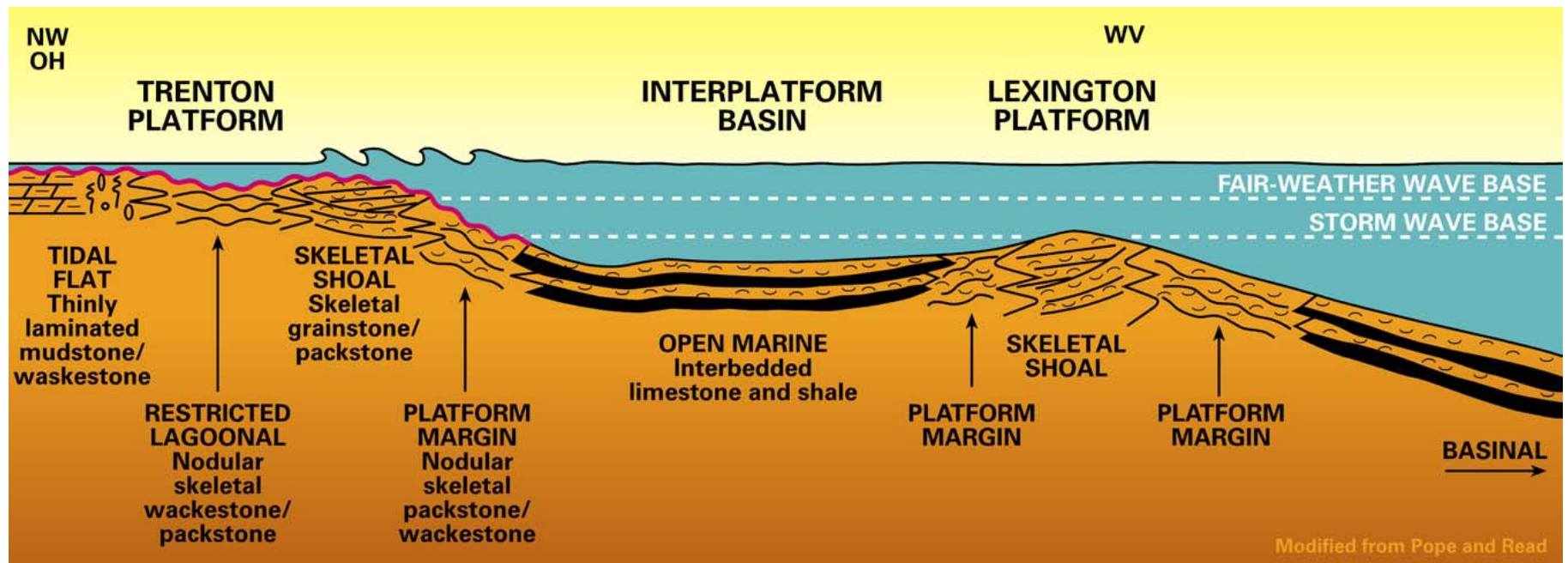


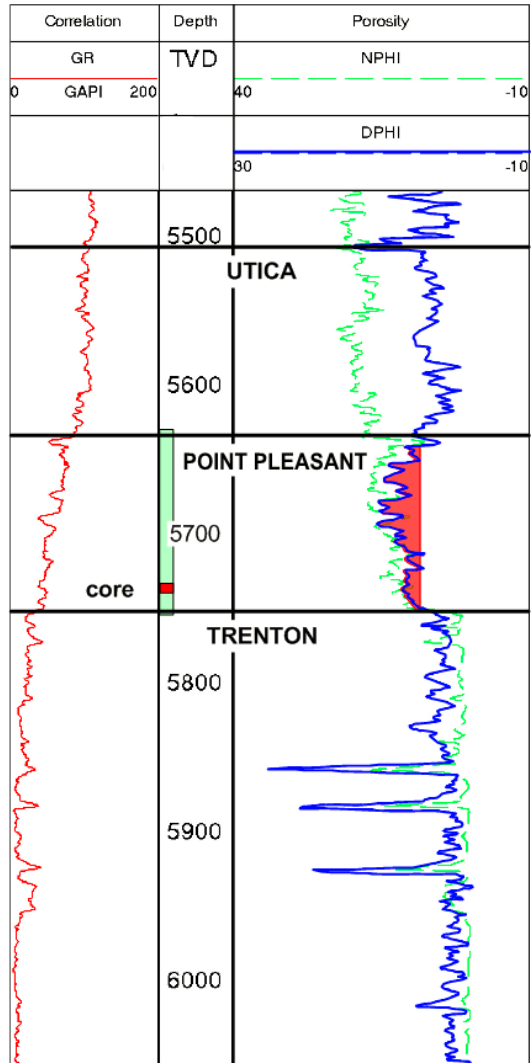
Prior to the late 1990s these shales were thought of principally as the source of oil and gas that would then migrate slowly over time into “conventional” reservoirs.

Generalized Cross Section Utica and Marcellus Shale Ohio to Pennsylvania



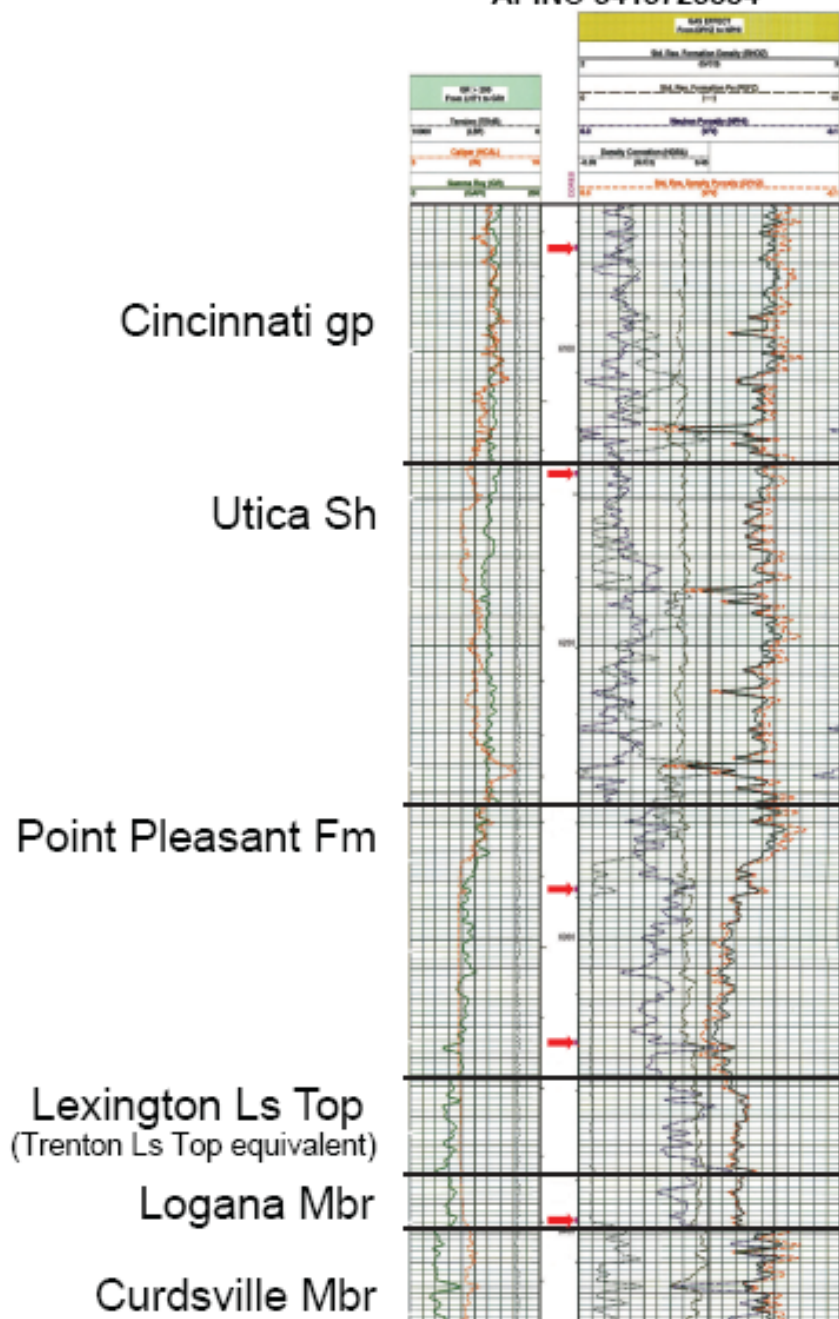
Depositional Model NW-Ohio to WV





APINO 3415725334

A Utica-Point Pleasant Type Log for Eastern Ohio



Source Rock Analyses

Depth (ft)	Sample Type	TOC	Rock Unit
6064	core	0.48	Cincinnati gp
6141	core	2.72	Utica Sh
6282	core	2.41	Point Pleasant Fm
6336	core	3.73	Point Pleasant Fm
6396	core	1.61	Logana Mbr
7192	core	0.11	Wells Creek Fm
7579	core	0.14	Copper Ridge dol
8274	core	0.23	Conasauga gp

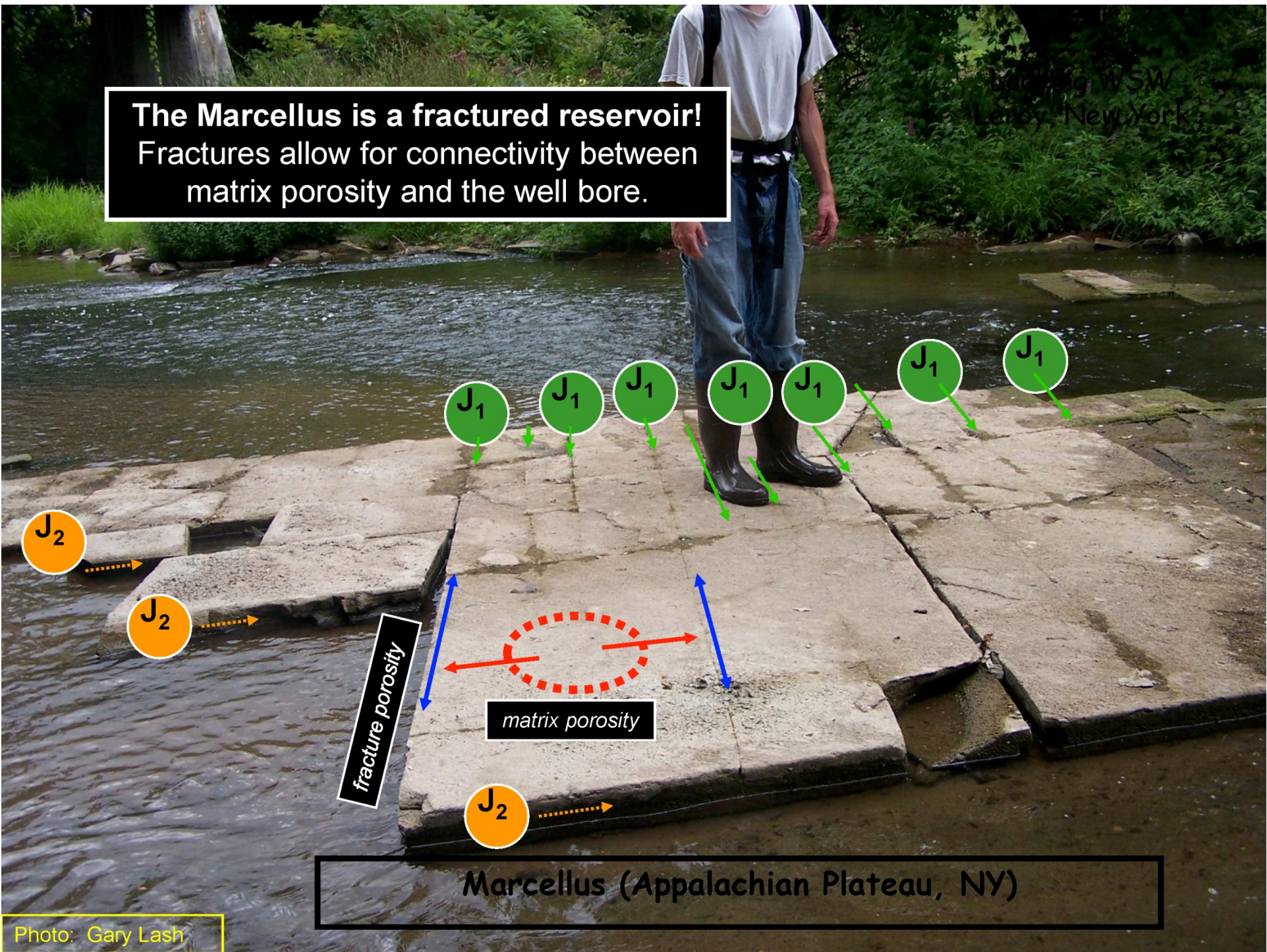
Recommended citation for page 1: Riley, R.A., 2010, A Utica-Point Pleasant type log for eastern Ohio: Ohio Department of Natural Resources, Division of Geological Survey, one sheet (PDF), available at <http://www.dnr.state.oh.us/Portals/10/Energy/Utica/TuscarawasWellRockAnalyses.pdf>.

Utica Shale – Natural Resources



The Marcellus is a fractured reservoir!
Fractures allow for connectivity between
matrix porosity and the well bore.

Geology WSW
Leroy, New York



Marcellus (Appalachian Plateau, NY)

Photo: Gary Lash

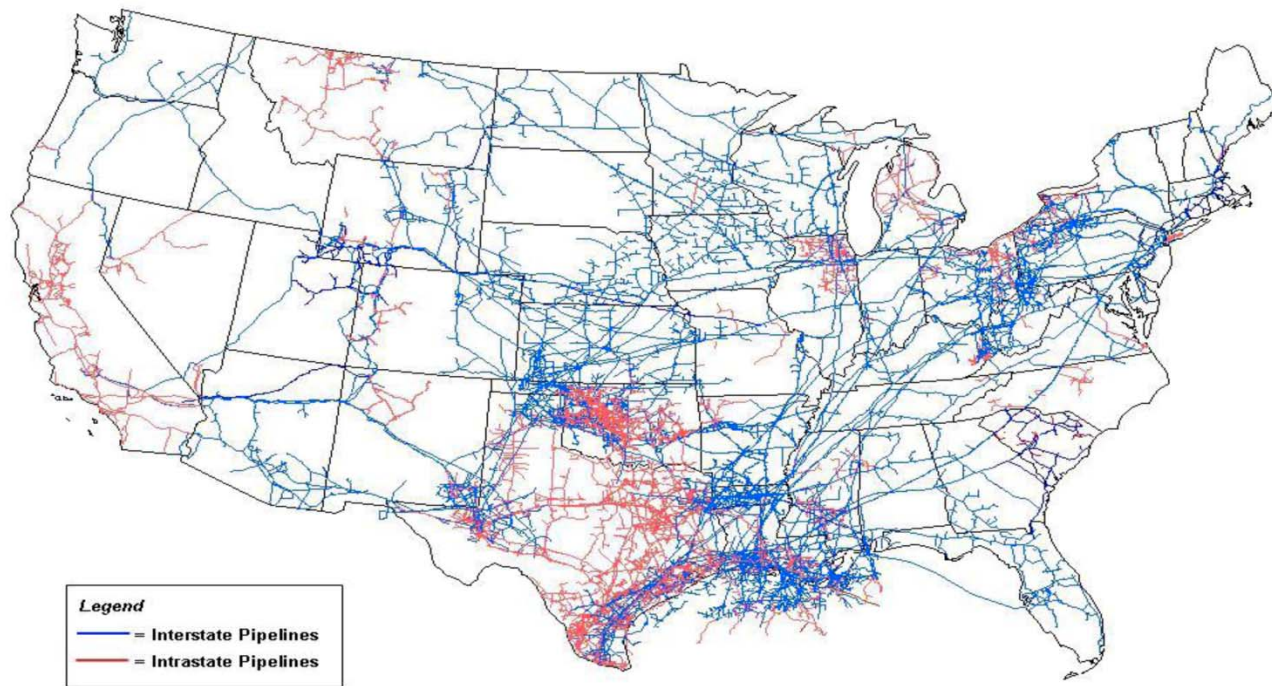
Figure 3. Abundant shale plays, accessed by hydraulic fracturing and horizontal drilling technology, are a key driver behind North America becoming the globe's "energy island" by 2020; EIA map of North American shale plays



Source: EIA

Natural Gas Pipelines, US

U.S. Natural Gas Pipeline Infrastructure 2009



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

Hydraulic Fracturing



- This is not new technology, although it is constantly improving over time, today's HF are more controlled, more engineered, more focused than ever before.
- Fracing has been a standard practice for over 60 years. First well frac'd – Kelper # 1, Kansas - 1947
- 1989 SPE estimates over 1 million frac jobs have been completed
- 600 TCF of natural gas and 7 billion barrels of oil have been captured as a result of hydraulic fracturing – energy that would not have been acquired without it.
- Fracing is responsible for 30 percent of America's recoverable oil and natural gas
- 90 percent of wells currently operating today have been frac'd
- American operators now frac 35,000 wells each year
- Not a single case of drinking water contamination attributable to HF has ever been recorded. Not one.
- Hydraulic fracturing has been aggressively regulated by the states. In that time a staggering record of safety has been amassed.

Why Hydraulic Fracturing?



Conditions needed to complete a economically successful oil an gas well:

- Porosity: Oil and gas trapped in the pore spaces of a reservoir rock
- Permeability: The pore spaces are connected allowing fluid to move through the rock
- Most productive wells have good porosity but poor permeability
- Hydraulic fracturing is a “well stimulation” technique to create drainage pathways within the oil and gas bearing rock
- HF allows us to access and produce oil and gas trapped in the rock that we would not otherwise produce.

- Reservoir Properties
 - Permeability and Porosity
 - Height
 - Borehole Pressure and Borehole Temperature
 - Brittleness and Strength/Hardness
 - Young's Modulus ("stiffness" of a material)
 - Poisson's Ratio (ratio of transverse strain to axial strain)
 - Brinell Hardness (indentation strength of a material)
 - Brittleness Factor

Hydraulic Fracturing – Fluid Considerations

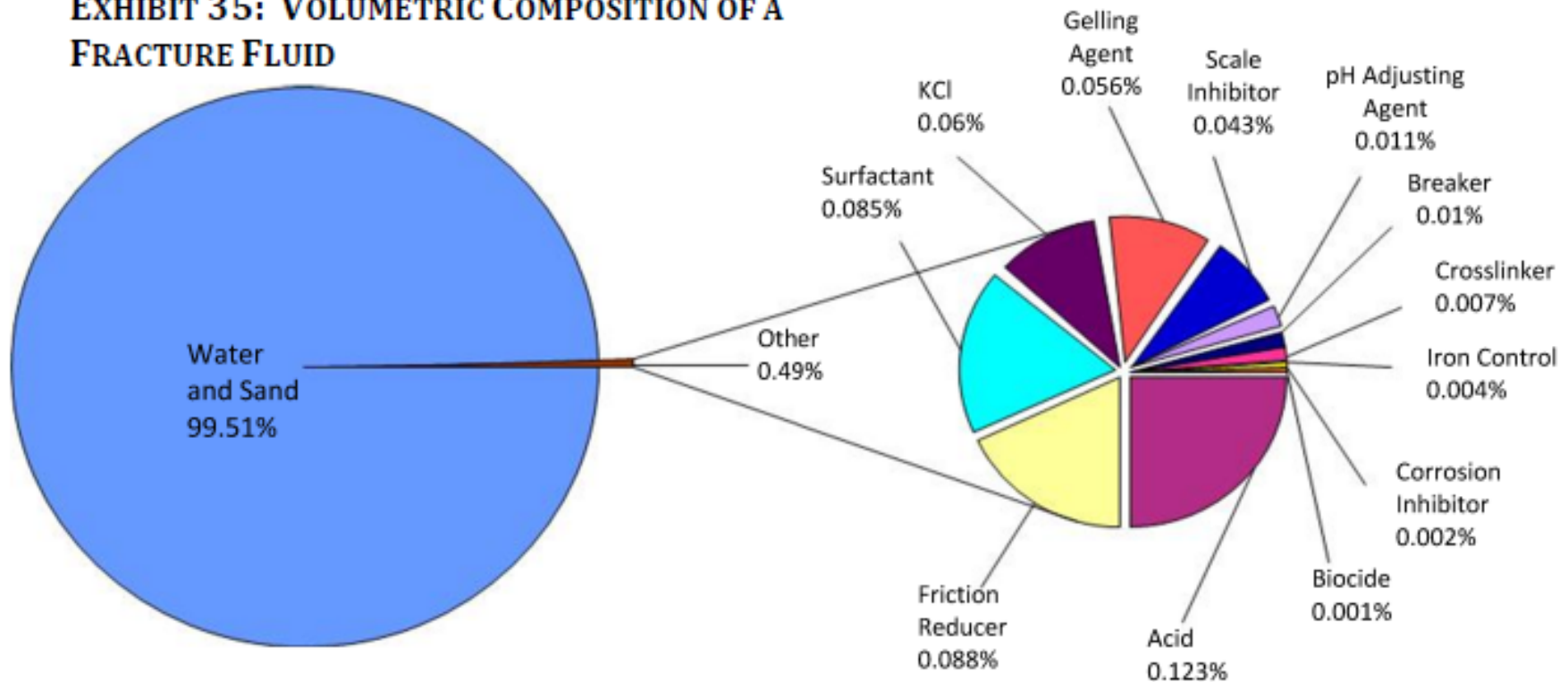


- Fluid Design
 - Compatibility with the reservoir
 - Salt Tolerance
 - Surfactants/flowback Aids
 - Friction Reducers
 - Gels
 - Fines migration chemistry
 - Acid breakdown and scale/salting treatment
 - May be reactive or non-reactive systems base on clay mineralogy
 - Geochem -
 - Functionality: create complexity; carry proppant

Frac Constituents - (www.fracfocus.org)



EXHIBIT 35: VOLUMETRIC COMPOSITION OF A FRACTURE FLUID



Hydraulic Fracturing



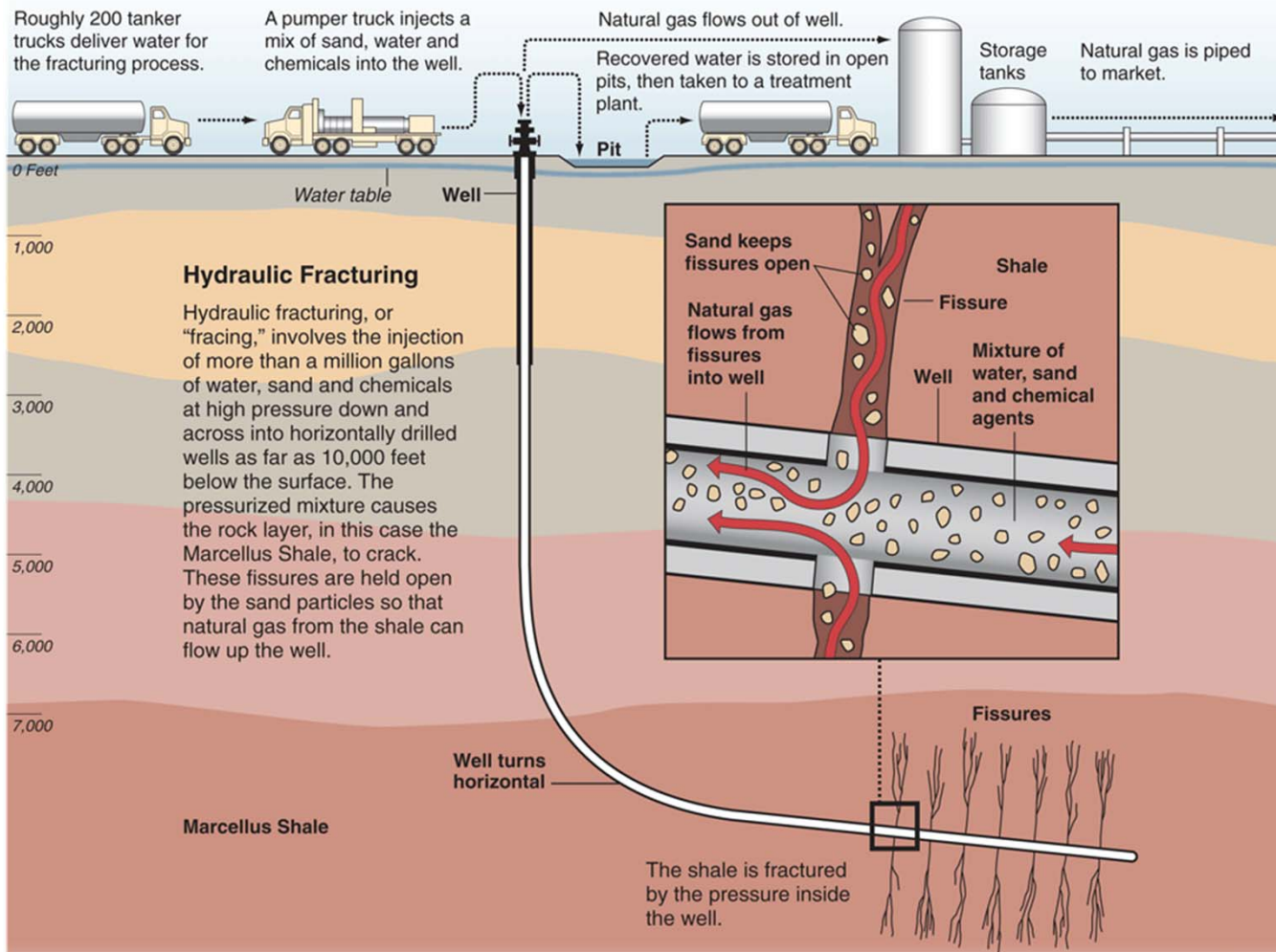
- Hydraulic Fracturing consists of blending a carrying fluid, water and special chemicals and proppants to make an appropriate fracturing fluid, this is a highly engineered liquid, custom designed to do a very specific job.
- This engineered fluid (99% sand and water) is then pumped down the wellbore, into the target reservoir at carefully specified and monitored rates, based upon the petrophysics of the reservoir in order to induce the intended fracture networks within the reservoir.
- HF allows us to access and produce oil and gas trapped in the rock that we would not otherwise produce.

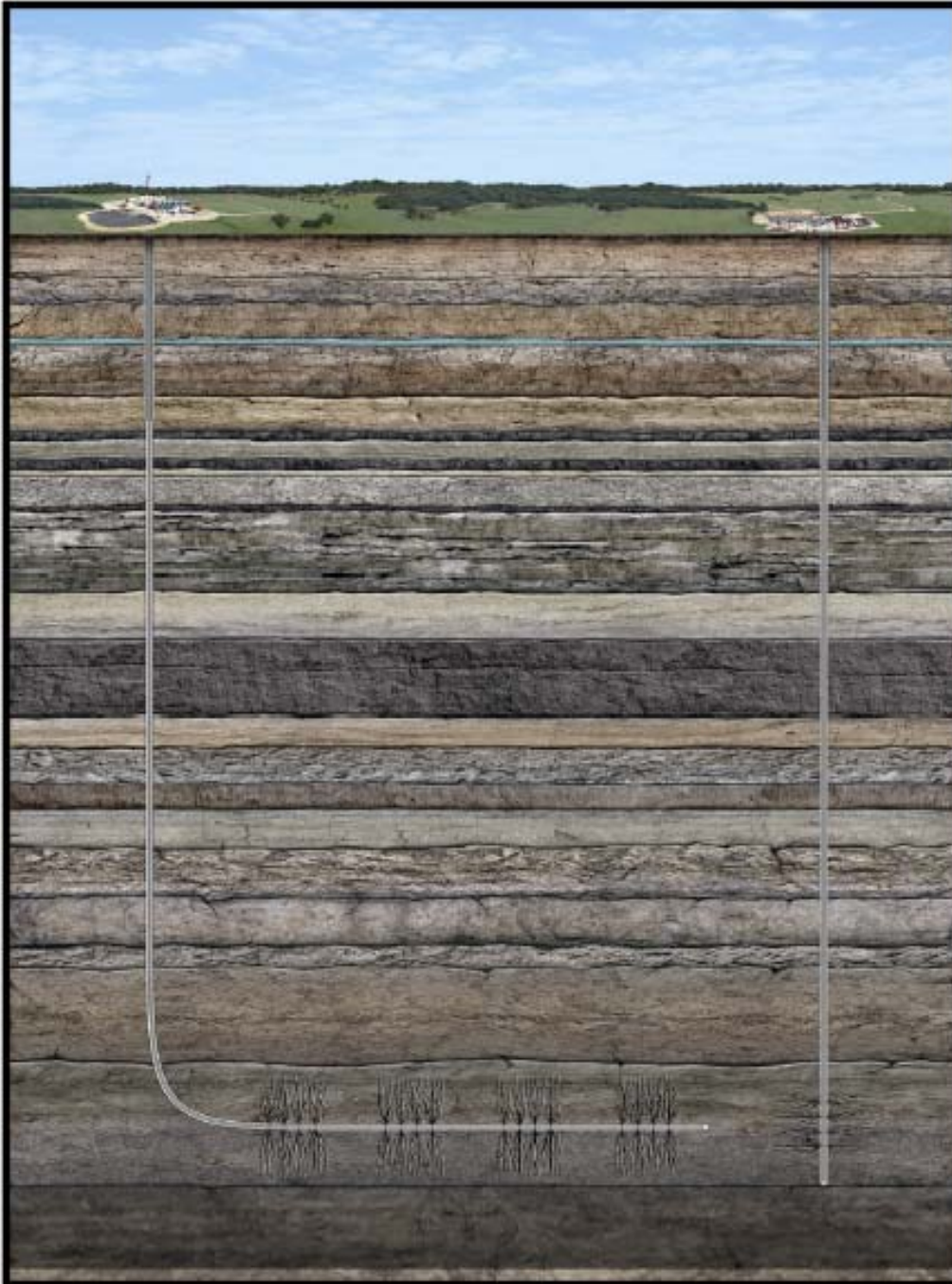
Hydraulic Fracturing in Ohio



- First Ohio frac job - 1953
 - 1958 Study - as a result of fracturing, the Clinton dry hole rate of 42% in 1951 decreased to 15% by 1957 and that, “as a result of the success of hydraulic fracturing, many sub-marginal areas which would have been economically undesirable, are now being produced profitably.”
- Since then, over 80,000 wells have been frac'd in oil and gas formations, in Ohio, ranging from 1,000' to 10,000'.
- First horizontal well - 1941

Elements of a Frac





Footprint Advantage – Horizontal Wells

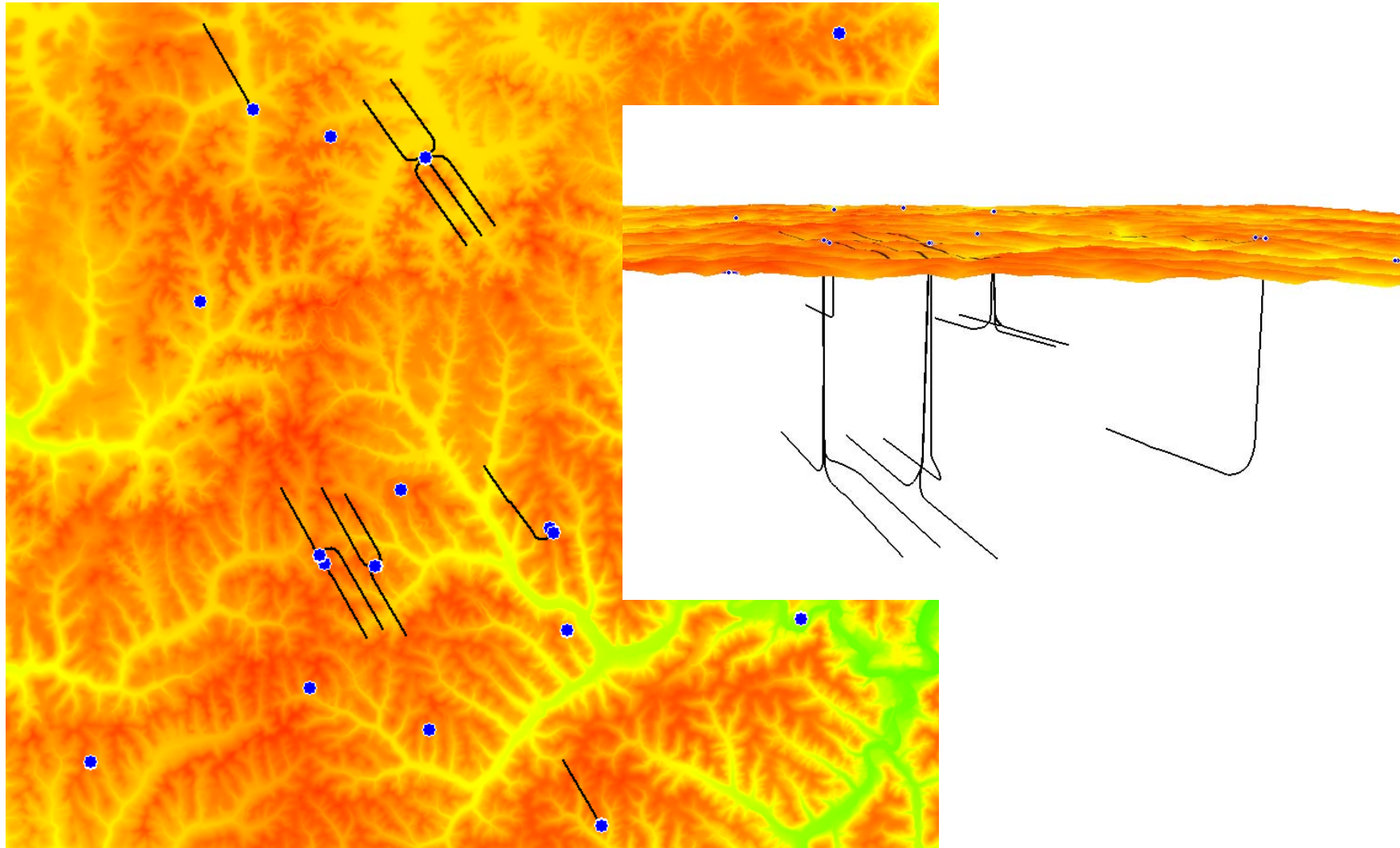


**Traditional Vertical Well Spacing:
32 Separate Padsites Needed For 32 Wells.**

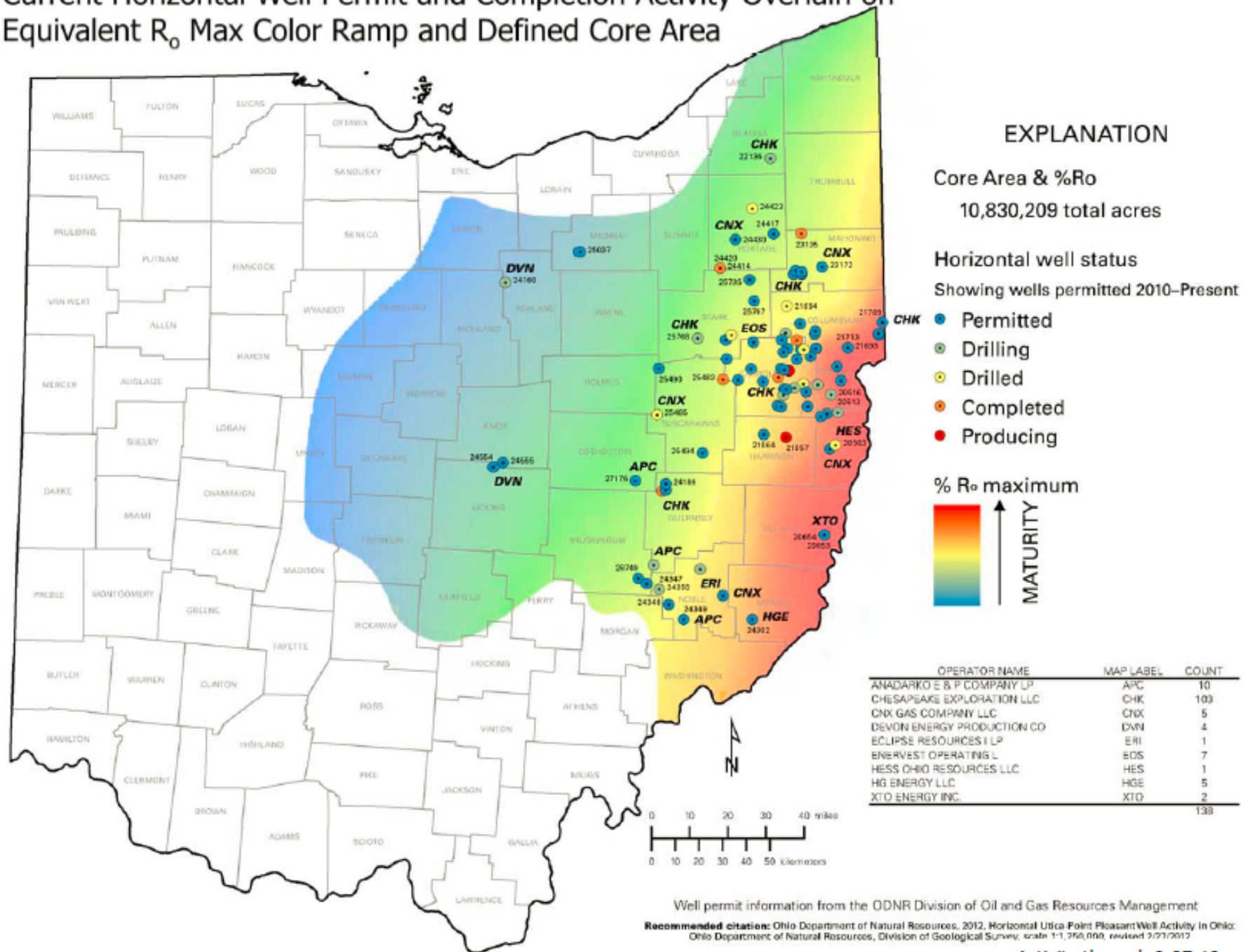


**Idealized Horizontal Well Spacing:
1 Padsite Yields Up To 32 Wells.**

Horizontal Well Development

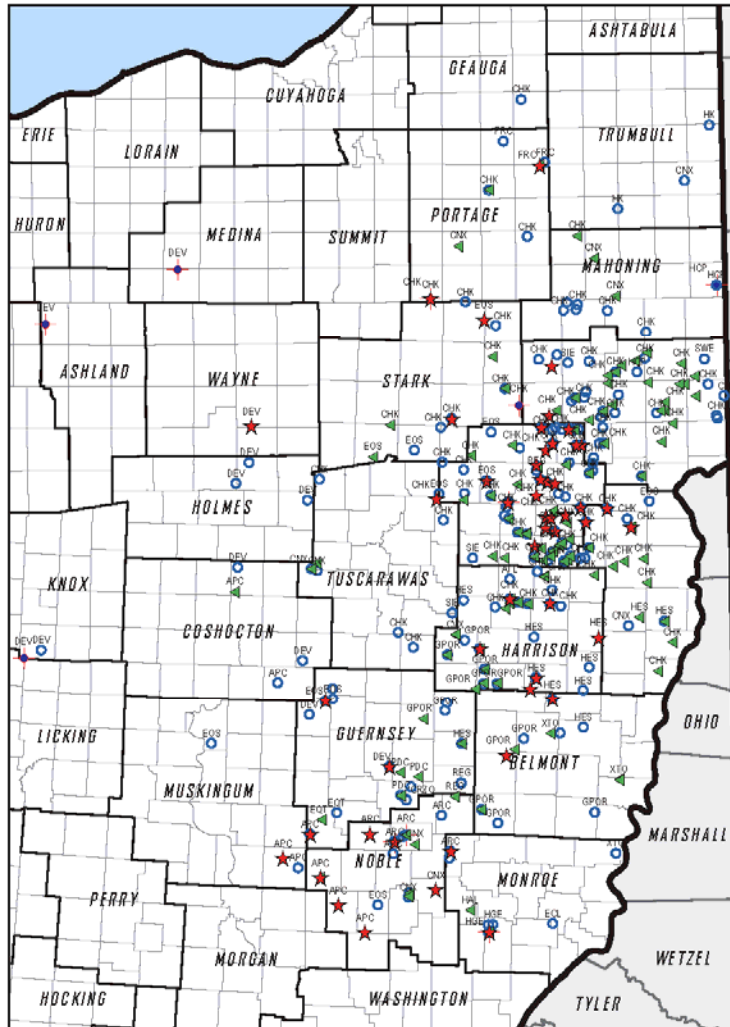


Current Horizontal Well Permit and Completion Activity Overlain on Equivalent R_0 Max Color Ramp and Defined Core Area



Activity through 2-27-12

Utica Permit Activity



UTICA HORIZONTAL WELL STATUS THROUGH 3/2/2013

- PERMITTED OR NOT DRILLED (286)
- ★ PRODUCING (73)
- ▲ DRILLED, DRILLING OR INACTIVE (173)
- ◆ PLUGGED (11)

OPERATOR	LBL	PROD	PMT	DRLG	DRLD	PLUG	INAC	NRDR	TOT
ANADARKO E & P ONSHORE LLC	APC	6	4	1	1	0	0	0	12
ANTERO RES APPALACHIAN CORP	ARC	3	11	1	1	2	0	0	18
ATLAC NOBLE LLC	ATL	0	5	0	0	0	0	0	5
CHEASPEAKE EXPLORATION LLC	CHK	49	162	2	125	3	1	4	346
CNX GAS COMPANY LLC	CNX	1	9	3	7	0	0	1	21
CARRZO (UTICA) LLC	CRZO	0	2	0	0	0	0	0	2
CHEVRON APPALACHIA LLC	CVX	0	0	0	2	0	0	0	2
DEVON ENERGY PRODUCTION CO	DEV	2	6	0	0	3	0	2	13
ECLIPSE RESOURCES I LP	ECL	0	1	0	0	0	0	0	1
ENERVEST OPERATING LLC	EOS	3	12	0	1	0	0	0	16
EQT PRODUCTION COMPANY	EQT	0	2	0	1	0	0	0	3
MOUNTAINEER KEYSTONE LLC	FRC	1	5	0	1	0	0	0	7
GULFPORT ENERGY CORPORATION	GPOR	3	18	4	5	0	0	1	31
HALL DRILLING LLC (OIL & GAS)	HAL	0	0	1	0	0	0	0	1
HILCORP ENERGY	HCP	0	2	0	0	1	0	0	3
HESS OHIO RESOURCES LLC	HES	3	13	1	2	0	0	0	19
HG ENERGY	HGE	1	10	1	0	2	2	0	16
HALCOM OPERATING COMPANY	HK	0	2	0	0	0	0	0	2
PETROLEUM DEVELOPMENT CORP	PDC	0	1	1	2	0	0	0	4
R E GAS DEVELOPMENT LLC	REG	1	8	0	4	0	0	0	13
SIERRA RESOURCES LLC	SIE	0	3	0	0	0	0	0	3
SWEP LP	SWE	0	1	0	0	0	0	0	1
XTO ENERGY INC.	XTO	0	1	1	2	0	0	0	4
TOTALS		72	278	16	164	11	3	2	542

KEY	DESCRIPTION
DRLD	DRILLED
DRLG	DRILLING
INAC	INACTIVE
NRDR	NOT DRILLED
PMT	PERMITTED
PLUG	PLUGGED
PROD	PRODUCING



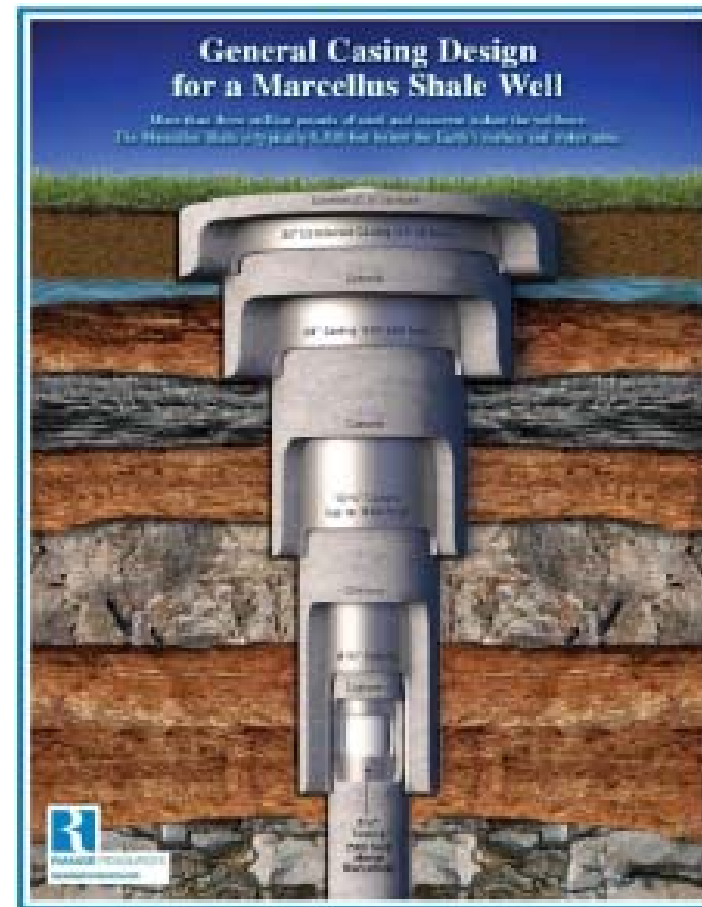
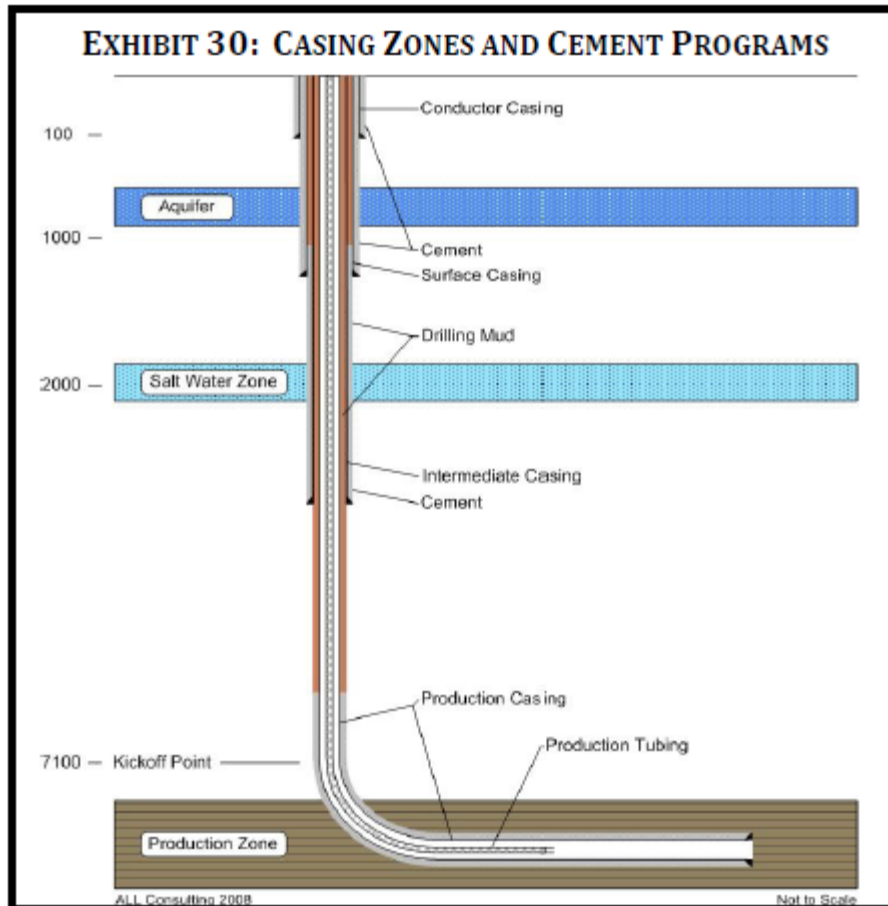
Utica Well Status



OPERATOR	LBL	PROD	PMT	DRLG	DRLD	PLUG	INAC	NDRD	TOT
ANADARKO E & P ONSHORE LLC	APC	6	4	1	1	0	0	0	12
ANTERO RES APPALACHIAN CORP	ARC	3	11	1	1	2	0	0	18
ATLAS NOBLE LLC	ATL	0	5	0	0	0	0	0	5
CHEASPEAKE EXPLORATION LLC	CHK	49	162	2	125	3	1	4	346
CNX GAS COMPANY LLC	CNX	1	9	3	7	0	0	1	21
CARRIZO (UTICA) LLC	CRZO	0	2	0	0	0	0	0	2
CHEVRON APPALACHIA LLC	CVX	0	0	0	2	0	0	0	2
DEVON ENERGY PRODUCTION CO	DEV	2	6	0	0	3	0	2	13
ECLIPSE RESOURCES I LP	ECL	0	1	0	0	0	0	0	1
ENERVEST OPERATING LLC	EOS	3	12	0	1	0	0	0	16
EQT PRODUCTION COMPANY	EQT	0	2	0	1	0	0	0	3
MOUNTAINEER KEYSTONE LLC	FRC	1	5	0	1	0	0	0	7
GULFPORT ENERGY CORPOTATION	GPOR	3	18	4	5	0	0	1	31
HALL DRILLING LLC (OIL & GAS)	HAL	0	0	1	0	0	0	0	1
HILCORP ENERGY	HCP	0	2	0	0	1	0	0	3
HESS OHIO RESOURCES LLC	HES	3	13	1	2	0	0	0	19
HG ENERGY	HGE	1	10	1	0	2	2	0	16
HALCON OPERATING COMPANY	HK	0	2	0	0	0	0	0	2
PETROLEUM DEVELOPMENT CORP	PDC	0	1	1	2	0	0	0	4
R E GAS DEVELOPMENT LLC	REG	1	8	0	4	0	0	0	13
SIERRA RESOURCES LLC	SIE	0	3	0	0	0	0	0	3
SWEPI LP	SWE	0	1	0	0	0	0	0	1
XTO ENERGY INC.	XTO	0	1	1	2	0	0	0	4
TOTALS		73	278	16	154	11	3	8	543

What Really Matters, Well Construction

EXHIBIT 30: CASING ZONES AND CEMENT PROGRAMS



- Anti Oil & Gas groups routinely attack the industry by promoting a corruption of the specific treatment directed to oil and gas as found in the landmark federal environmental laws (ie RCRA, SDWA, CWA, CAA, etc.)
 - These statutes rely upon the long-standing and rational principle that state based regulation, firmly grounded in the evolution of sound regulatory policy applied by experts, is the preferred regulatory model.
 - Why? Because geology varies greatly from region to region.

Critics seek to stop energy resource development by saying that the risks associated with (continuing) to develop Ohio's energy resources outweighs the benefits citizens receive from local energy supplies

- To address present-day health, safety and social issues related to oil and gas development.
- Provide to the regulatory agency the funding resources necessary to administrate an effective enforcement program – particularly in light of concerns some have raised within urban situations.
- Ensure public faith and trust in the state oil and gas regulatory program.

With the recent passage of Senate Bill 165 in 2010 and then Senate Bill 315 last month, you would be hard pressed to find a stronger oil and gas regulatory system than the one in place in Ohio.

What are Regulators Saying?



- “I’m not aware of any proven case where the fracking process itself has affected water, although there are investigations ongoing” – US EPA Administrator Lisa Jackson, May 24, 2011
- “There is no way that the fracking process is going to affect ground water.” *Chief, Ohio Geologic Survey Larry Wickstrom*
- “Though hydraulic fracturing has been used for over 50 years in Texas, our records do not indicate a single documented contamination case associated with hydraulic fracturing.” – *Victor Carrillo, Chairman, Texas Railroad Commission*
- “There have been no instances where the Division of Oil and Gas has verified that harm to groundwater has ever been found to be the result of hydraulic fracturing.” – *Indiana Department of Natural Resources*
- “There is no indication that hydraulic fracturing has ever caused damage to ground water.” – *Michigan Department of Environmental Quality*
- “...we have found no example of contamination of usable water where the cause was claimed to be hydraulic fracturing.” – *Mark Fesmire, Director, New Mexico Oil Conservation Division*

What are Regulators Saying?



- “He said he has been examining the science of hydrofracturing the shale for three years and has found no cases in which the process has led to groundwater contamination.” “As it turns out hydraulic fracturing itself appears to be safe.” – *Taury Smith, New York State’s top geologist*
- “It’s our experience in Pennsylvania that we have not had one case in which the fluids used to break off the gas from 5,000 to 8,000 feet underground have returned to contaminate ground water.” - *Former PA DEP Sec. and Former PennFuture CEO John Hanger*
- “The [2004 EPA] study determined that fracturing posed ‘little or no threat’” to groundwater. – *U.S. EPA*
- “There have been no documented cases of drinking water contamination that have resulted from hydraulic fracturing.” - *Association of American State Geologists President*
- “*No Documented Cases of Hydraulic Fracturing Contamination.*” When asked, “Do any one of you know of one case of ground water contamination that has resulted from hydraulic fracturing?”, Mr. Silva said: “*Not that I’m aware of, no.*” Peter Silva, USEPA (U.S. Senate hearing, [12/8/09](#))

More Regulators, Even the EDF...



- *“After 25 years of investigating citizens complaints, DMRM (ODNR) geologists have not documented a single incident involving contamination of ground water attributed to hydraulic fracturing”* Scott Kell, deputy chief, ODNR/DMRM in testimony submitted to the Committee on Natural Resources, Energy and Mineral Resources Subcommittee, U.S. House of Representatives, June 4, 2009.
- *“If wells are constructed right and operated right, hydraulic fracturing will not cause a problem. ... Our natural gas supplies would plummet precipitously without hydraulic fracturing.”* Scott Anderson, Environmental Defense Fund’s Senior Policy Advisor (E&E TV, [10/27/10](#))

US Demand for hydrocarbons is projected to
continue growing

Saudi Arabian demand for it's own
production may reach 50% by 2035

Economic growth in China and India
continues at 7 to 9% per year

So, competition for energy is not going away.

Sources: STRONGER – State Review Process

www.strongerinc.org



A stakeholder driven process based on consensus evaluation to improve state exploration and production environmental programs (started in the 80's and 90's)



State Review of Oil & Natural Gas Environmental Regulations

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A public, private and government partnership

Meeting the Environmental Challenges of U.S. Oil & Gas Development

Collaboration to Improve State Environmental Regulations

What is the State Review Process?

The state review process is a collaborative process by which review teams composed of stakeholders from the oil and gas industry, state environmental regulatory programs, and members of the environmental/public interest communities review state oil and gas waste management programs against a set of [guidelines](#) developed and agreed to by all the participating parties.

[Learn More »](#)



Become a STRONGER Supporter

Your support will help continue to improve state environmental regulations.

[Learn More »](#)



HYDRAULIC FRACTURING
HOW IT WORKS

GROUNDWATER
PROTECTION

CHEMICAL
USE

REGULATIONS
BY STATE

FIND A WELL
BY STATE

FREQUENT
QUESTIONS

WELCOME

Welcome to FracFocus, the hydraulic fracturing chemical registry website. This website is a joint project of the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission.

On this site you can search for information about the chemicals used in the hydraulic fracturing of oil and gas wells. You will also find educational materials designed to help you put this information in perspective.

[LEARN MORE >](#)

Looking for information about a well site near you?

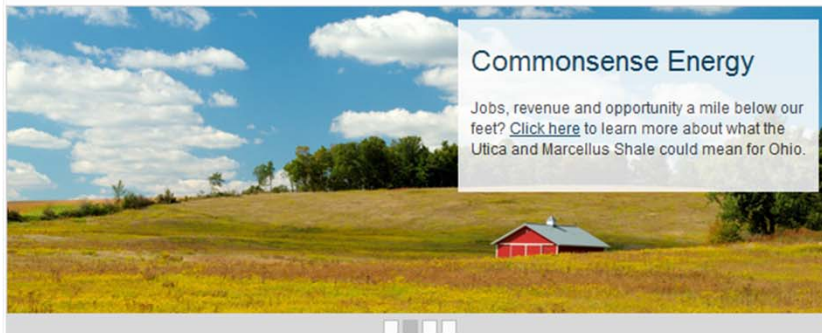


Search for nearby well sites that have been hydraulically fractured to see what chemicals were used in the process.

FAQs

◀ 1/3 ▶

Q. How is water used in hydraulic fracturing?



In The News

- Coshocton Tribune: [Congressman Bob Gibbs says natural gas development opposition using a scare tactic](#)
- Youngstown Vindicator: [Energy Jobs Summit touts Shale Development Benefits](#)
- The Hill: [Numerous industries feel benefits of Ohio's resources](#)
- Crains: [Chesapeake foots bill to digitize county data](#)
- Canton Repository: [Money for mineral rights flowing to Ohio property owners](#)



Shawn - Field Director

Posted May 9, 2012

Energy Jobs Abundant at Congressman Johnson's Job Fair

0 Comments

Over 500 attended Congressman Johnson's job fair Monday, some leaving with jobs and others receiving a prime opportunity to put their best foot forward (along with their resumes) in front of prospective employers. Thankfully, Utica Shale development has helped drive the need for new employment, directly or indirectly, for the job seekers in the area. [Keep Reading >](#)

Tags: [BuTech Bliss](#), [Chesapeake](#), [Columbiana County](#), [Congressman Bill Johnson](#), [East Liverpool](#), [East Liverpool Motor Lodge](#), [International Union of Operating Engineers](#), [Job Fair](#), [Local 18](#), [local 396](#), [Mahoning Valley Manufacturers Coalition](#), [MarkWest](#), [Plumber and Pipefitters](#), [Steel](#), [Utica](#)



Penny Seipel - Vice President of Community Affairs, Ohio Oil & Gas Association

Posted May 7, 2012

Education is Key to Ohio's Energy Future

1 Comment

Too often these days, it seems those with the least education are doing the most educating. This is a

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Building Ohio's Economy

More than 200,000 Ohio-based, oil and gas industry-related jobs projected by 2011 »

Exploring the Ohio Oil and Gas Industry

- How Much Does Ohio Produce?
- The Production Process
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Top Industry Topics

- Understanding Hydraulic Fracturing
- What is Utica Shale?
- Impact on State & Local Economies

Market Report

Wednesday, March 21, 2012

Crude Oil: \$105.66

Natural Gas: \$2.33



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Current Issues

New Study Shows (Again) No Link Between Hydraulic Fracturing and Groundwater Contamination

Feb 23, 2012

A recent study conducted by the University of Texas at Austin again confirmed what other studies have long asserted, finding that hydraulic fracturing does not directly contaminate groundwater resources. [Continue reading →](#)

Events

Oil and Gas Business Development Seminar

April 11, 2012
McKinley Grand Hotel, Canton, OH
Co-Sponsored by OOGA

The Canton Regional Chamber presents an "Oil & Shale Business Development Seminar" featuring **Mark Matusick** of Chesapeake Energy, manager of

Resource: www.eia.gov



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June 26

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Today in Energy

Posted June 26, 2012

Drop in U.S. gasoline prices reflects decline in crude oil costs >

Since reaching a recent peak of \$3.94 per gallon on April 2, the average retail price U.S. drivers paid for gasoline has fallen for 12 weeks in a row to \$3.44 per gallon, according to EIA's weekly motor fuel survey. The drop in gasoline prices largely reflects the decline in crude oil prices, which have historically comprised the biggest part of the pump price. [More](#) >

Weekly retail gasoline and spot crude oil prices, Mar 2012 - Jun 2012



Data Highlights

Crude oil futures price

6/26/2012: **\$79.36/bbl**

↓ \$4.67 from week earlier

↓ \$11.25 from year earlier

Natural gas futures price

6/26/2012: **\$2.767/mmBtu**

↑ \$0.222 from week earlier

↓ \$1.489 from year earlier

Retail gasoline price

6/25/2012: **\$3.437/gal**

↓ \$0.096 from week earlier

↓ \$0.137 from year earlier

Resource: www.switchenergyproject.com



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– Nipal Bellmonde
Leggette, Brashears & Graham



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Switch explores the world of energy to discover our future

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7/10 Barrow, AK
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7/16 Houston, TX
7/17 Lafayette, CA
7/28 Katy, TX

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Resource & Counterpoint

www.truthlandmovie.com



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W.T.A.S.



DISPATCHES FROM THE *Real* GASLAND

CLICK THE MAP, MEET THE EXPERTS



WHAT ARE THE FACTS BEHIND OIL AND NATURAL GAS DEVELOPMENT IN AMERICA TODAY?

One woman from rural Pennsylvania decided to find out — for her family, for her community, for herself. Hear what some of the experts she interviewed along her journey had to say.

VIEW THE TRAILER

In the HBO movie "Gasland," New York City filmmaker Josh Fox tried to scare people into thinking that natural gas development and hydraulic fracturing are new, unregulated and dangerous. It made one Pennsylvania mom living atop the Marcellus Shale wonder what she was getting into. She asked environmentalists, academics and everyday people



Local Production



Local Supply = Less Disruptions = Less Volatility

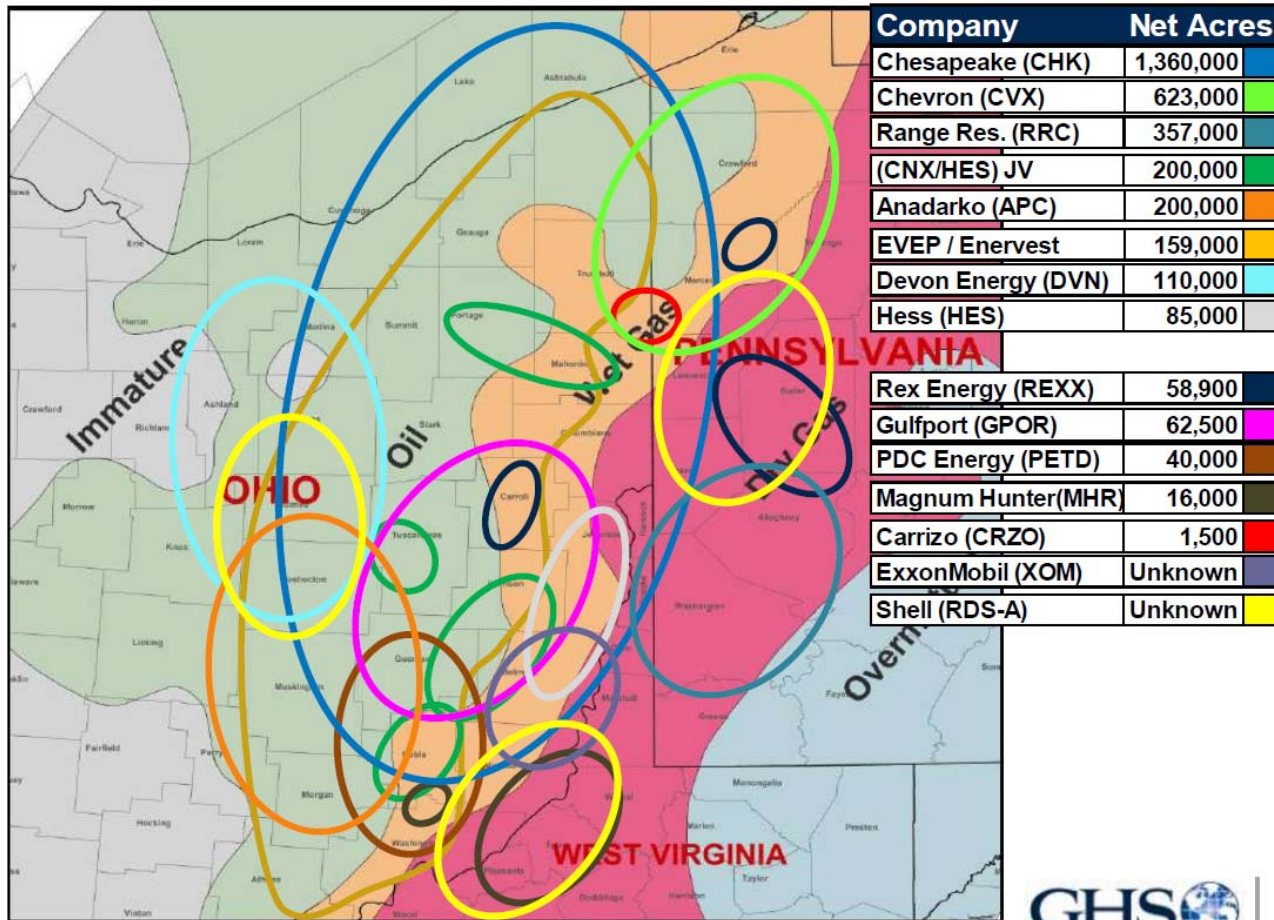
Local production – natural gas produced in our own backyard – is a safeguard that offers market protections against pipeline capacity and delivery constraints, particularly during peak demand periods. This represents a unique value to a state, such as Ohio, that is an industrialized large consumer of natural gas.

Local production feeds into the eastern Ohio distribution system, so Ohio citizens tend not to experience the extreme price swings caused by short-term peak-demand volatility that many other high-population centers suffered during recent years.

What that means?

51

Acreage Positions



Source: Company Data, modified Gulfport map, GHS Research

Energy Footprints



To power a town of 100,000 people, for 1 year:

<u>Footprint</u>	<u>Energy Source</u>
8 acres	20 Onshore Gas Wells
12 acres	1/30 th of a Nuclear Plant
1,615 acres	724 Wind Turbines
2,907 acres	241,000 Solar Panels

Parting Thoughts



All energy consumers have an ethical obligation to educate ourselves and those around us regarding the consequences of our demands for cheap energy and a preserved environment.

Thank YOU!



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