



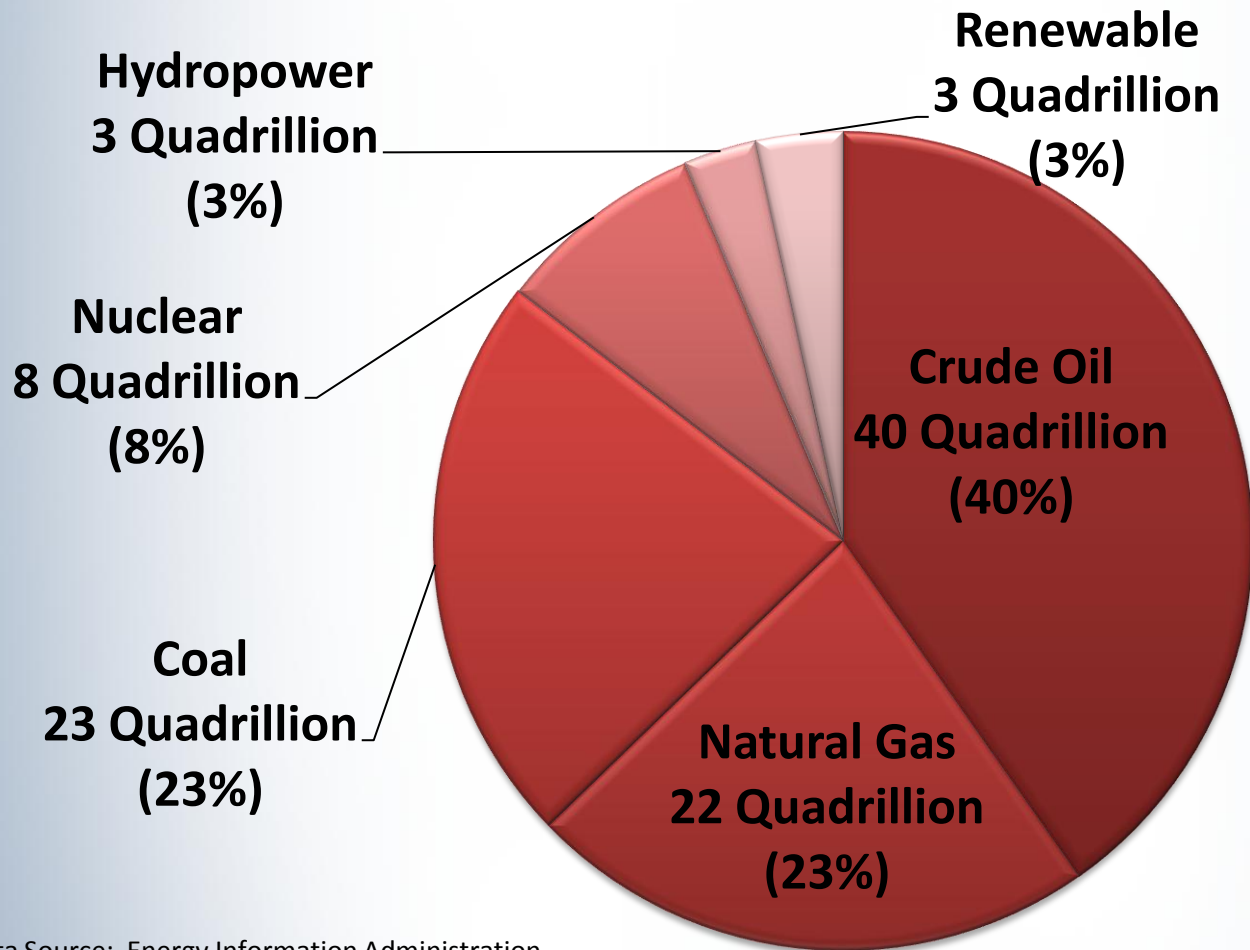
Welcome

Ohio Oil & Gas Energy Education Program



**CTE Educators Need to Know:
Opportunities in the Shale Gas-Oil Industry
December 5, 2011**

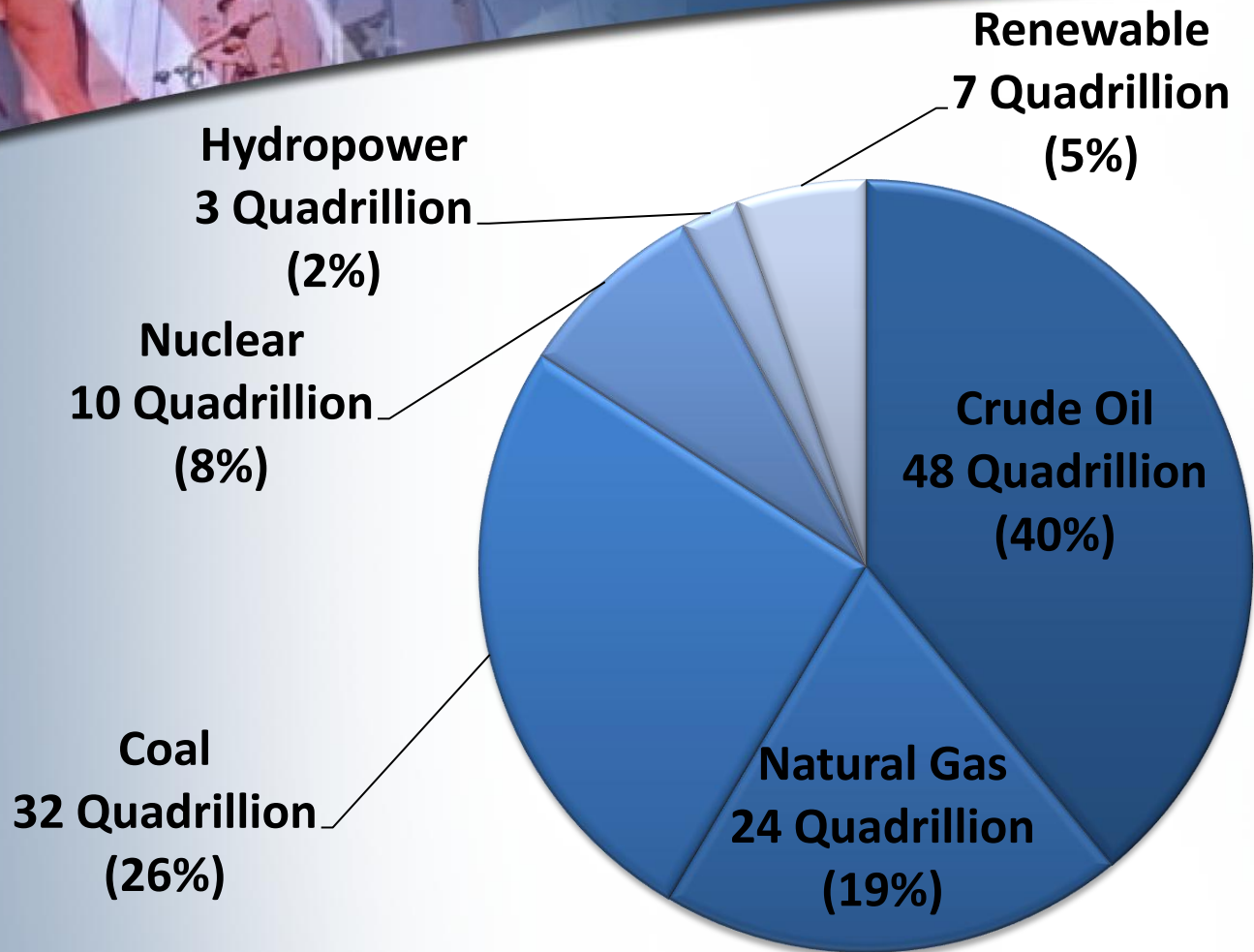
Current Energy Demands



**2008 Worldwide
Energy
Consumption
100 Quadrillion BTU**

Data Source: Energy Information Administration

Future Energy Demands



**2030 Worldwide Energy Consumption
Estimated at 124 Quadrillion BTUs
Quantity/ Percentage by Energy Source**

Additional Facts:

- ✓ The U.S. consumes 20 million barrels of crude oil per day (followed by Japan (5.4 million) and China (5.6 million)).
- ✓ **85% of our energy needs comes from fossil fuels (natural gas, crude oil and coal).**
- ✓ During the energy crisis of 70's, the U.S. was 23% reliant on foreign crude. Today, we are over 60%. "Self-Help Natural Gas."
- ✓ **The average person consumes 3 gallons per day in refined products.**
- ✓ We have not built a crude oil refinery in the U.S. for over 40 years.
- ✓ **Most wells produce both crude oil and natural gas (80% natural gas/ 20% crude oil).**
- ✓ 100% of crude oil is refined.
- ✓ **Our demand for natural gas is expected to increase by 50% in the next 25 years even with the addition of many alternative fuels.**
- ✓ More natural gas is being used to generate electricity (20% of our electric usage is for computers).

2010 Ohio Highlights (report released by ODNR March 2011)



Total Number of Wells Drilled in 2010:

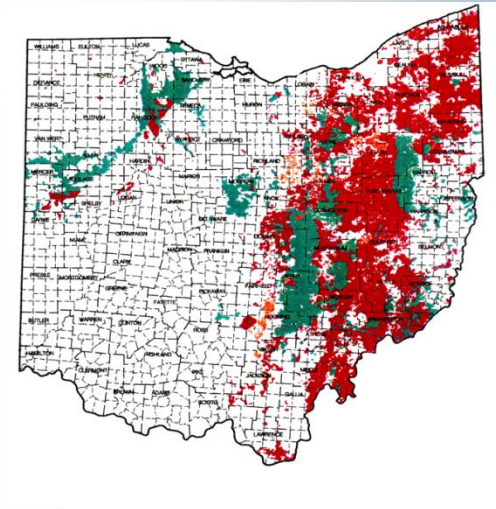
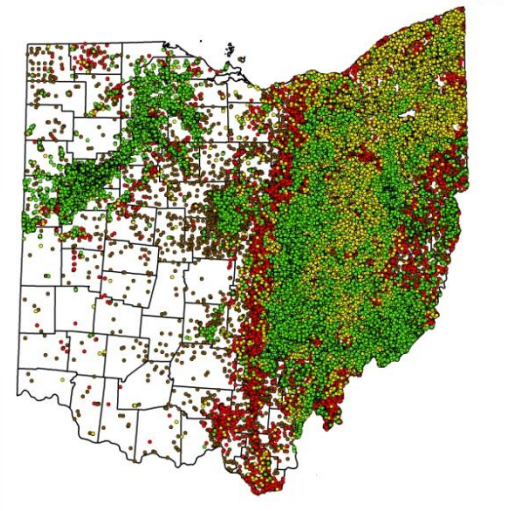
431

Total Number of Wells Drilled 30 years ago:

6,085

Annual Production in 2010:

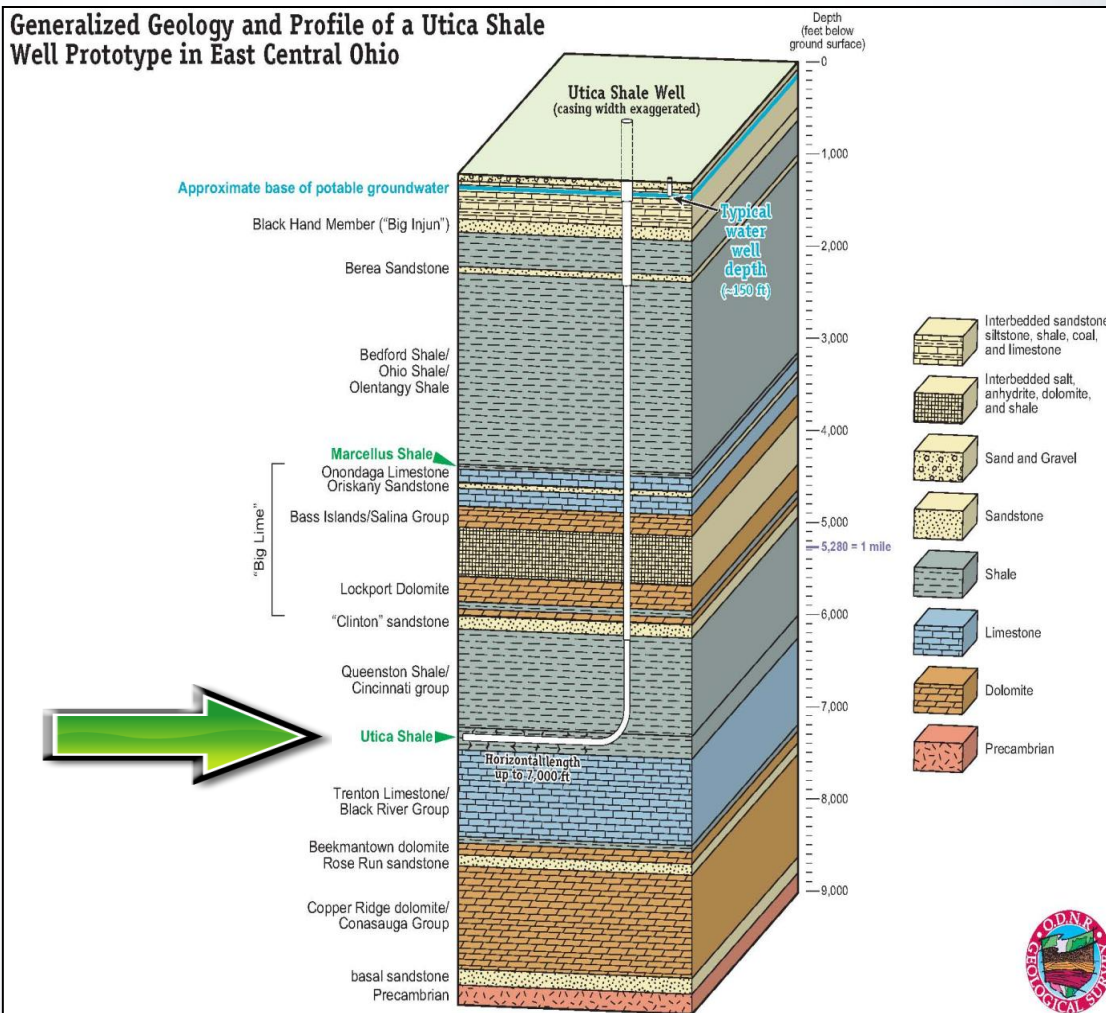
- 78 billion cubic feet of natural gas
- 4.78 million barrels of crude oil



Don't call your training programs "Shale"



Generalized Geology and Profile of a Utica Shale Well Prototype in East Central Ohio



Industry Study History

- **Update to the 2008 Economic Impact Study**
 - **Ohio's Natural Gas and Crude Oil Exploration and Production Industry**
January 2008
- **Conducted by Kleinhenz & Associates**
 - **Release Date: September 20, 2011**

Industry Study History

Data Source:

- **Surveys, Interviews, Data Received Under Confidential Agreements from various sectors of the Ohio Oil and Gas Industry**
- **Project Committee**
- **Critiqued by Educational Institutions including Marietta College, The Ohio State University, Zane State College and COTC**

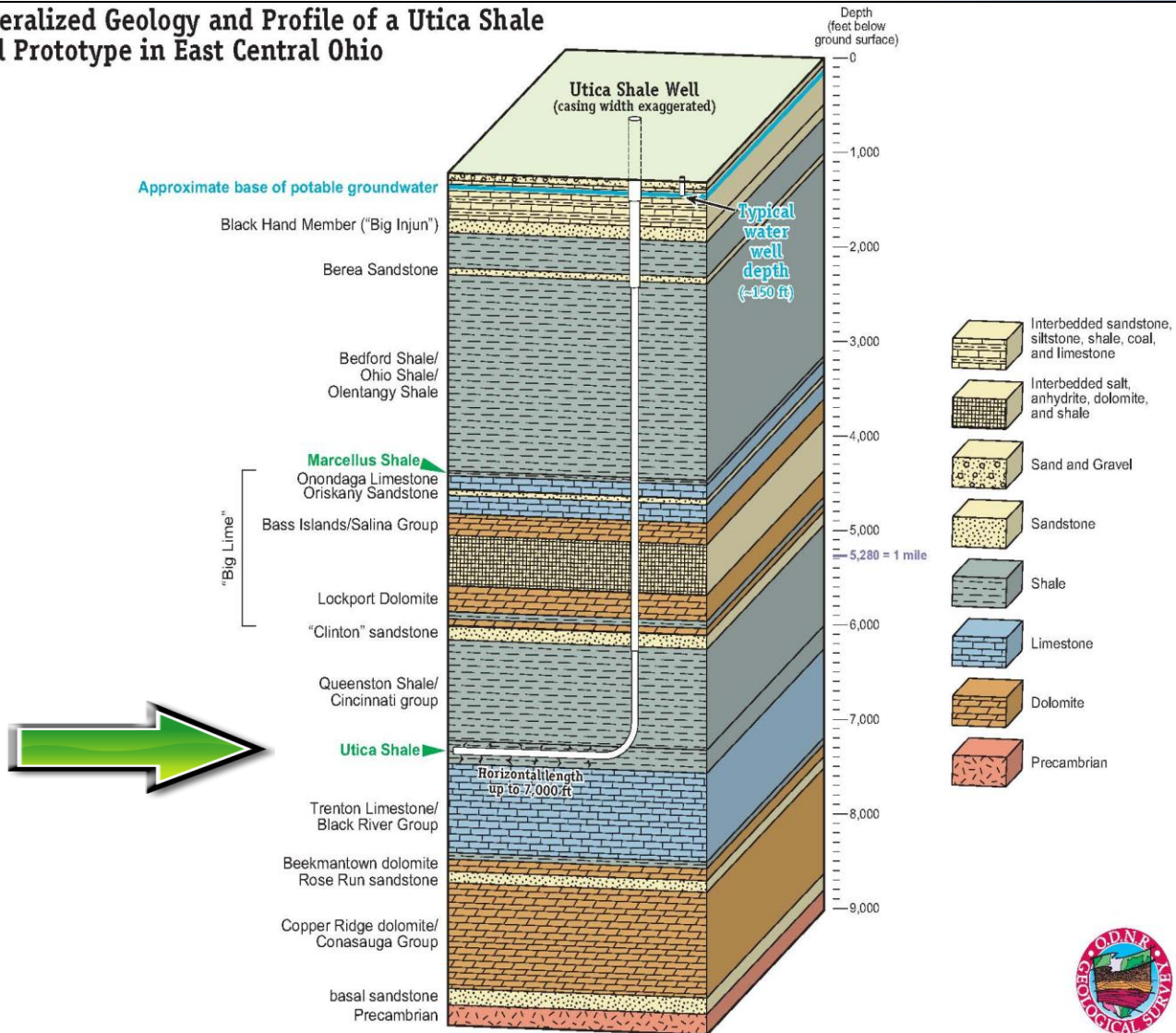
Overview of Study

- **Study Includes:**
 - **Current State of the Industry**
(Upstream and Midstream Only)
 - **Projections on the Utica Shale Potential**

- **Primary Highlights include:**
 - 1. Reinvestment of Revenues**
 - 2. Gross State Product**
 - 3. Royalties**
 - 4. Tax Revenues**
 - 5. Jobs and Personal Income**

Projected Economic Impact Utica Shale

Generalized Geology and Profile of a Utica Shale Well Prototype in East Central Ohio



Economic Impact Study



Ohio Natural Gas and Crude Oil Estimated Economic Impact from the Utica Shale Geological Formation Only

OHIO OIL & GAS ENERGY EDUCATION PROGRAM



As the exploration, drilling and production of various geological formations continues to provide substantial economic opportunities to the state's economy, significant focus is being placed on the geological potential of the Utica Shale. If the Utica play is proven successful, a great deal of activity would then occur over the next decade. In September 2011, Kleinhenz & Associates completed an Independent Economic Impact Study on the potential economic impact of this geological formation. A summary of that portion of the Study is shown below.

REINVESTMENT OF REVENUES

Ohio's natural gas and crude oil industry's could reinvest approximately \$246 million on new exploration and development in 2011, and is estimated to ramp up to \$14 billion by 2015. Over the next five years, oil and gas producers are projected to spend over \$34 billion in exploration and development, midstream, royalty and lease expenditures.

- 2011 \$ 246 million
- 2012 \$ 1.4 billion
- 2013 \$ 6.8 billion
- 2014 \$12.4 billion
- 2015 \$14 billion

GROSS STATE PRODUCT

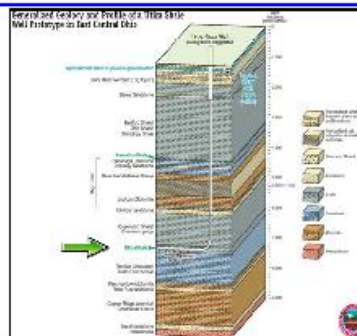
Ohio's natural gas and crude oil industry, via its expenditures, could generate approximately \$12.3 billion to the gross state product and have a statewide output or sales of \$23 billion.

ROYALTIES

Ohio's natural gas and crude oil operators (producers) could distribute more than \$1.6 billion in royalty payments to local landowners, schools, businesses and communities based on an estimate of 2,837 new Utica wells drilled and completed between 2011 and 2015. This could exceed the total amount of royalties paid for all geological formations between 2000 and 2010.

TAX REVENUES

TYPE OF TAX	2011—2015
Severance	\$50.9 million
Commercial Activity	\$27.9 million
Ad Valorem (Property)	\$125.4 million
Income (Federal)	\$219.7 million
Income (State & Local)	\$54.9 million
Total	\$478.8 million



JOBS AND PERSONAL INCOME

Between 2011 and 2015, Ohio's natural gas and crude oil industry will help create and support more than 204,520 jobs due to the leasing, royalties, exploration, drilling, production and pipeline construction activities for the Utica Shale within Ohio.

YEAR	JOB IMPACT
2011	4,614
2012	22,297
2013	102,924
2014	178,088
2015	204,520

The industry wages is projected to grow to more than \$12 billion in annual salaries and personal income to Ohioans by 2015.

Ohio's Natural Gas and Crude Oil Industry
Potential Economic Impact Study Results
Utica Shale Geological Formation

Source: Kleinhenz & Associates - September 2011 Economic Impact Study - Ohio's Natural Gas and Crude Oil Industry

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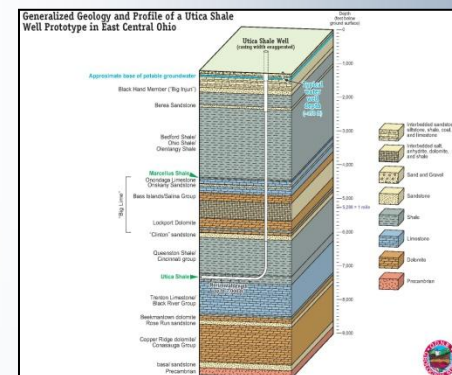
Projected Economic Impact Utica Shale

REINVESTMENT OF REVENUES—PAGE 16, TABLE 2 OF STUDY

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Table 2: Utica Well Growth and Expenditures in Ohio, 2011 – 2015

Wells	2011	2012	2013	2014	2015	5 Year Total
Drilled	27	161	785	1,386	1,644	4,003
Completed	20	123	608	1,171	1,501	3,423
Dry hole Expenditure	\$99	\$565	\$2,651	\$4,561	\$4,909	\$12,785
Completion Expenditure	\$147	\$877	\$4,160	\$7,820	\$9,104	\$22,108
Total Expenditures (\$million)	\$246	\$1,442	\$6,811	\$12,381	\$14,013	\$34,893



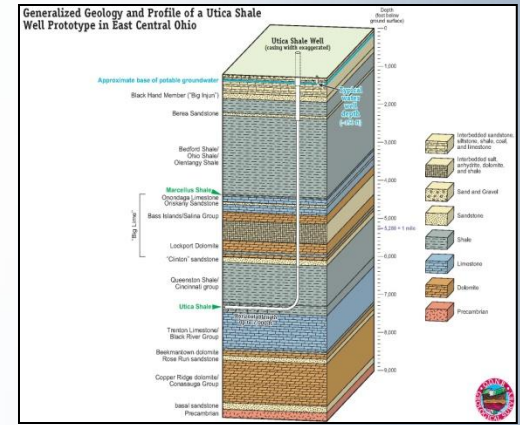
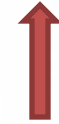
Projected Economic Impact Utica Shale

GROSS STATE PRODUCT—PAGE 23, TABLE 13 OF STUDY

Ohio’s natural gas and crude oil industry, via its expenditures, could generate approximately \$12.3 billion to the gross state product and have a statewide output or sales of \$23 billion.

Table 13: Combined Economic Impacts of Spending on Utica Gas Formation
 (From Well Exploration and Development, Midstream, Royalty, and Lease Expenditures)

Measure	2011	2012	2013	2014	2015
Employment	4,614	22,297	102,924	178,088	204,520
Gross Regional Product (2010\$)	\$229,770,873	\$1,140,187,970	\$5,434,884,446	\$10,037,403,159	\$12,348,656,034
Wages by Place of Work	\$185,120,071	\$987,630,736	\$4,941,863,716	\$9,454,936,109	\$12,044,578,347
Output (2010\$)	\$406,841,643	\$2,099,356,549	\$10,062,360,372	\$18,522,521,565	\$22,701,928,946



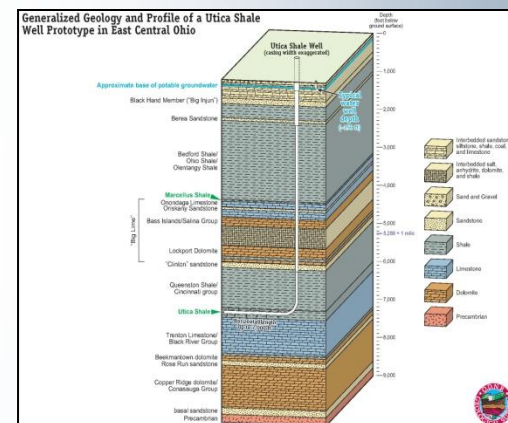
Projected Economic Impact Utica Shale

ROYALTIES—PAGE 19, TABLE 6 OF STUDY

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Table 6: Estimated Royalty Payments, All Ohio Utica Wells 2011 -2015

Year	Wells Drilled	Wells in Production	Gross Gas Production	Royalty Payment
2011	27	0	0	\$0
2012	161	20	17,053,411	\$13,813,263
2013	785	143	116,357,749	\$94,249,776
2014	1386	751	591,406,043	\$479,038,895
2015	1644	1,923	1,269,345,132	\$1,028,169,557
Sum	4003	2,837	1,994,162,335	\$1,615,271,491



Projected Economic Impact Utica Shale

Tax Revenues—Table 19, Page 26 of Study

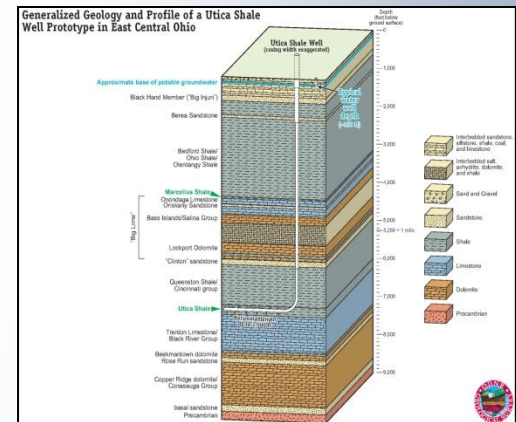
Table 19: Summary of Tax Payments, Ohio Utica Wells 2011 – 2015

Year	Severance Taxes	Commercial Activity Tax	Ad Valorem Tax	Federal Income Tax	State and Local Income Taxes	Total
2011	\$0	\$0	\$0	\$0	\$0	\$0
2012	\$434,862	\$239,430	\$1,072,262	\$1,878,604	\$469,651	\$4,094,809
2013	\$2,967,123	\$1,633,663	\$7,316,193	\$12,817,970	\$3,204,492	\$27,939,440
2014	\$15,080,854	\$8,303,341	\$37,185,668	\$65,149,290	\$16,287,322	\$142,006,475
2015	\$32,368,301	\$17,821,606	\$79,812,249	\$139,831,060	\$34,957,765	\$304,790,980
Sum	\$50,851,140	\$27,998,039	\$125,386,371	\$219,676,923	\$54,919,231	\$478,831,704



Special note:

In Table 19, the tax revenues are based on current annual production. Actual collection time may vary.



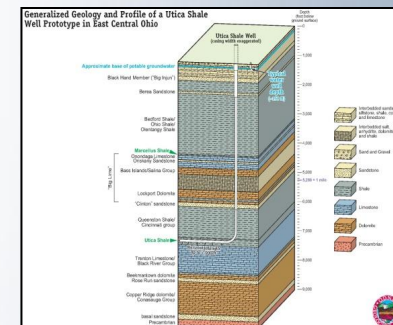
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JOBS AND PERSONAL INCOME—PAGE 23, TABLE 13

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Thank You!

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