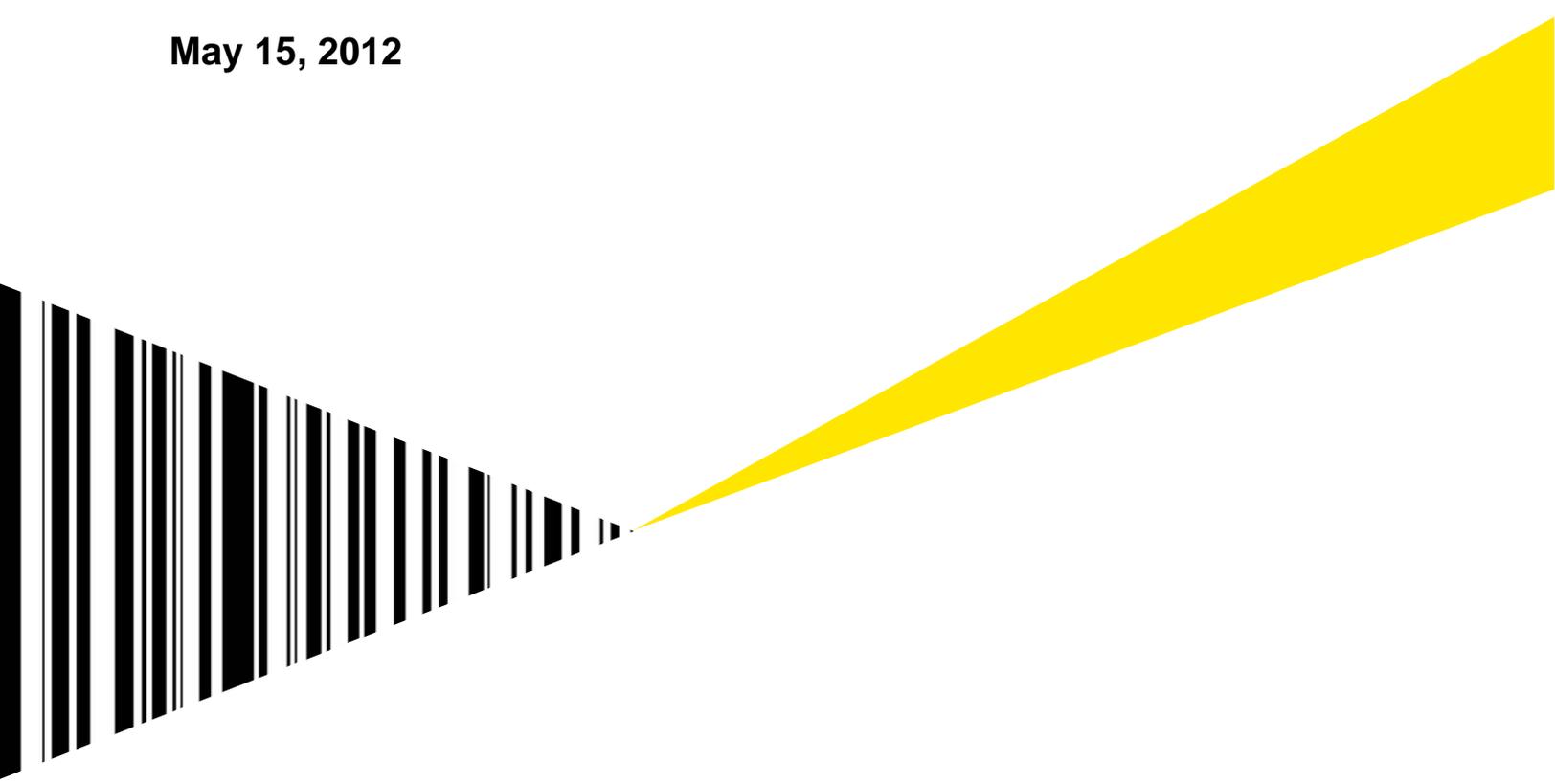


Analysis of Ohio Severance Tax Provisions of H.B. 487

Prepared for the Ohio Business Roundtable

May 15, 2012



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May 15, 2012

Richard A. Stoff
President and CEO
Ohio Business Roundtable, Inc.
41 South High Street
Columbus, Ohio 43215

RE: Analysis of Ohio Severance Tax Provisions of H.B. 487

Dear Mr. Stoff:

We are pleased to transmit the Ernst & Young LLP analysis, requested by the Ohio Business Roundtable, of the proposed changes in Ohio's oil and gas severance taxes included in H.B. 487. The analysis includes a description of current law and proposed law Ohio severance tax features, as well as a comparison of major state and local taxes imposed on wells producing oil and gas in Ohio and seven other production states.

The state and local taxes, measured over a thirty-year period of operation of a hypothetical well, include corporate income and franchise taxes, gross receipts taxes, sales taxes on input purchases, property taxes and severance taxes. The level of taxes in each state are summarized as effective tax rates measured as total taxes divided by sales from the well.

The comparison of Ohio's effective tax rates on oil and gas production under current law and proposed law will help address the question of the impact of the proposed severance tax changes on Ohio's competitiveness for new investment in this industry.

Very truly yours,

Ernst & Young LLP
Ernst & Young LP

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Analysis of Ohio Severance Tax Provisions of H.B. 487

May 15, 2012

**Prepared by Ernst & Young LLP
for the Ohio Business Roundtable**

Summary

The Ohio Business Roundtable engaged Ernst & Young (E&Y) to analyze and evaluate Governor Kasich's proposed changes to the state and local tax treatment of oil and gas activities. In addition, E&Y was asked to compare the proposed severance tax system in Ohio with severance tax treatment in selected states. On March 14, 2012, Ohio House Bill 487, including Governor Kasich's severance tax proposals, was introduced and is currently under consideration by the Ohio General Assembly.

Key conclusions from Ernst & Young's analysis of the proposed Ohio severance tax changes on gas and oil well production are as follows:

- For non-horizontal drilling, severance taxes would be reduced or remain unchanged under the proposed law. Further, the proposal eliminates severance taxes on nearly 90% of existing natural gas wells that produce no more than 10,000 cubic feet of natural gas per day.
- The proposal would impose higher severance taxes, compared to current law, on horizontal wells that involve hydraulic fracturing. These wells are those producing blends of dry natural gas, liquid natural gas and oil. At today's price of natural gas (\$2.00 per thousand cubic feet), the proposal would actually lower taxes on the dry gas output from the well. However, this would be more than offset by proposed increases in severance taxes on natural gas liquids and oil produced from the horizontal well.
- The proposal earmarks incremental (compared to current law) severance taxes on the output of horizontal wells for Ohio personal income tax relief. A formula is included in the proposal which would automatically provide across-the-board reductions in personal income tax rates based on the level of incremental severance taxes.
- Based on the history of natural gas and oil prices over the last two decades, these prices vary substantially from year to year. Swings in natural gas and oil prices will affect the amount of dedicated tax revenue available to fund personal income tax reductions.
- It is important to look at the combined state and local taxes imposed on the representative well, not just the severance tax, in evaluating Ohio's competitiveness under both current law and the proposed severance tax changes.
- An eight-state comparison of state and local taxes imposed on a representative well shows that Ohio currently imposes the lowest combined state and local taxes of the states included in the analysis. The comparison includes wells with two different blends of well

output: 1) wells producing dry gas and natural gas liquids, and 2) wells producing dry gas and oil.

- Ohio's overall effective tax rate (measured as total taxes divided by sales) is 80% below the average rate for the other 7 states for a well producing dry natural gas and natural gas liquids. For a well producing dry natural gas and oil, Ohio's effective tax rate is 65% below the other-state average.
- The proposed law would increase the effective severance tax rate in Ohio from 0.5% or 0.8% (depending upon the type of well) to 2.7%. With the increase, Ohio's effective severance tax rate (ETR) would be 16% lower than the other states' average for the well producing dry natural gas and natural gas liquids and 40% lower than the other states' average for the well producing dry natural gas and oil.
- If the proposed severance tax change is adopted, Ohio would still rank lowest among the eight states in terms of overall effective tax rates, including all major state and local taxes, for both types of wells. Ohio's overall ETR would be 40% or 48% below the average ETR in the other states, depending upon the blend of well output.
- Although the proposal increases the effective severance tax rate relative to the other states, the overall Ohio tax burden on the well operation benefits from the substantial tax reductions provided to all Ohio business taxpayers in 2005, particularly from the substitution of the commercial activity tax (CAT) for the corporate income tax.

Proposed change in Ohio severance taxes

Severance taxes

Ohio H.B. 487, as recently introduced in the General Assembly, includes significant changes in the Ohio severance tax system that applies to oil and natural gas wells. The proposed changes are outlined in Table 1.

The proposed law creates two separate categories of oil and gas severance taxes: taxes on horizontal wells (wells that involve hydraulic fracturing, or "fracking") and taxes on other wells ("vertical" or conventional wells). The proposal would significantly increase severance taxes on horizontal wells and provide a tax reduction or no change in taxes on production from other wells. Vertical natural gas wells in Ohio produce "dry" gas with minimal liquids. The new horizontal wells produce a combination of dry natural gas (methane), natural gas liquids (including butane, propane, and ethane) and oil and condensates.

Under current law, oil is taxed at 20 cents per barrel and natural gas is taxed at 3 cents per mcf (thousand cubic feet), whether recovered from horizontal or vertical wells. These tax rates include the severance tax and a cost recovery assessment.

Under the proposal, wells are categorized as "horizontal" or "other" (non-horizontal) wells. Oil from the other well category would still be taxed at 20 cents per barrel. However, gas from other

wells would be taxed at the lesser of 3 cents per mcf (current law rate) or 1% of the market value of the gas. At the current gas price of \$2.00 per mcf, the proposed law would lower the tax on natural gas from other wells from 3 cents to 2 cents (\$2.00 times 1%) per mcf. If natural gas prices increase to beyond \$3.00 per mcf, the gas tax rate would be capped at 3 cents per mcf, the current law level of tax. As a result, gas produced from non-horizontal wells would not, under the proposal, be subject to a severance tax higher than the current law tax.

Table 1. Proposed changes in Ohio severance taxes

Type of Product	Current Law ¹	Proposed Law
Horizontal Wells		
Dry gas ²	3 cents per mcf ³	1% of market value
Natural gas liquids	3 cents per mcf	4% of market value; 1.5% initially for up to 2 years
Oil and condensates	20 cents per barrel	4% of market value; 1.5% initially for up to 2 years
Other Wells		
Gas	3 cents per mcf	Lesser of 3 cents per mcf or 1% of market value with small well exemption ⁴
Oil	20 cents per barrel	20 cents per barrel

Notes:

1. Current law taxes Include severance taxes plus cost recovery assessments
2. Defined in the proposed law as "pipeline quality gas"
3. mcf is 1,000 cubic feet of natural gas
4. Gas from wells producing less than 10 mcf per day is exempt

A second important feature of the proposed tax on other wells is that gas from any other well that produces less than 10 mcf per day would be completely exempt from the Ohio severance tax. It is estimated that 44,000 of Ohio's current 49,000 wells would be exempted by this change.

In contrast to other wells, the proposal would subject horizontal wells to higher taxes compared to current law. For dry natural gas, the tax rate would be 1% of market value. If the market price exceeds \$3.00 per mcf, the proposal would result in higher taxes versus current law. Under the proposal, oil and condensates and liquid natural gas from horizontal wells would be taxed at 4% of market value. However, a lower rate of 1.5% would be provided for up to two initial years of production until certain well costs are recovered.

Property Taxes

H.B. 487 also makes changes to the property taxation of oil and gas wells to extend current law real property valuation methods to gas and other hydrocarbon reserves for horizontal wells. The proposal provides detailed language describing how the reserves will be valued for property tax purposes. This analysis assumes that the property tax language clarifies that current law valuation methods will apply to the reserves from horizontal wells. In other words, it is assumed that this language does not increase assessments for real property taxes compared to current law assessment procedures.

Personal Income Tax Relief

The proposal earmarks a portion of the additional severance taxes collected from *horizontal* wells to pay for reductions in personal income tax rates. Severance tax collections on horizontal well production in excess of taxes that would have been collected under current law are to be deposited in the Shale Resource Income Tax Relief Fund. The money in the fund is dedicated to be used for across-the-board state personal income tax rate cuts. The actual rate reduction is specified in a formula included in the proposed law.

The amount of incremental severance tax revenue available for tax rate reduction will depend upon both changes in total well production and variations in natural gas and oil prices. Total production will depend upon how rapidly drilling expands in Ohio. The severance tax base will also depend on the level of natural gas and oil prices. As shown in Figure 1, these prices have been quite volatile over the last two decades. The prices in Figure 1 are based on quarterly average prices per thousand cubic feet of natural gas and quarterly average prices per barrel of oil. Figure 1 shows that oil prices have experienced smaller percentage changes than natural gas prices. As a result of this price volatility, there may be substantial year-to-year swings in the incremental amount of severance taxes earmarked for personal income tax rate reductions.

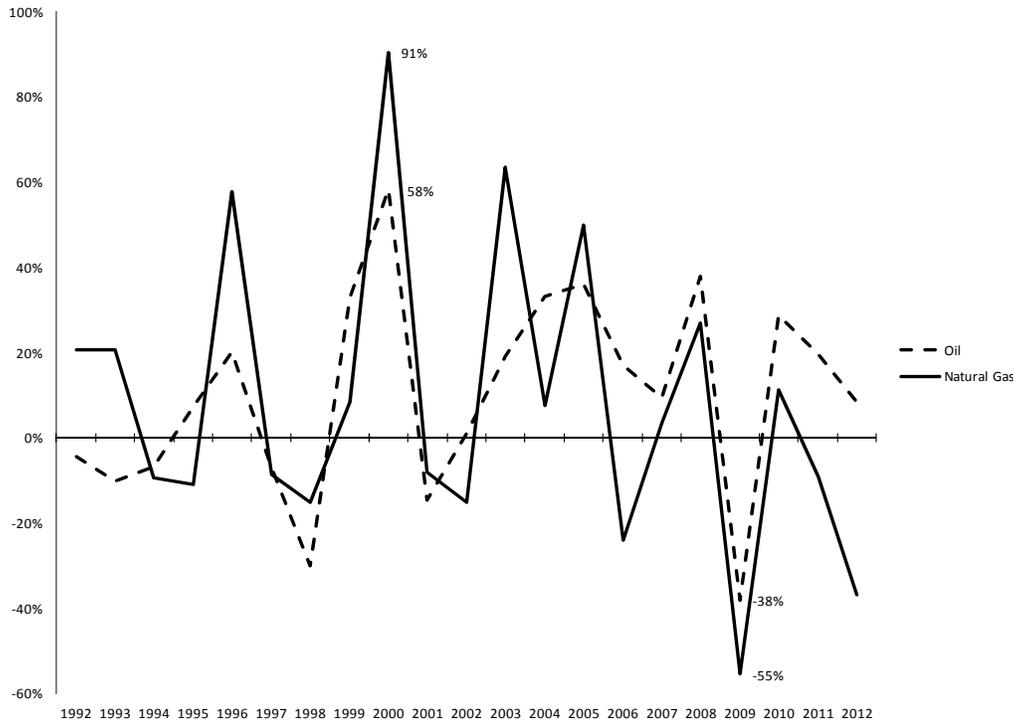
Comparison of State and Local Tax Burdens on the Representative Well

Overview

E&Y was asked to compare state and local tax burdens on shale natural gas wells in different states. The analysis includes the following states: Arkansas, Michigan, North Dakota, Ohio, Oklahoma, Pennsylvania, Texas and West Virginia. The states chosen are states that currently have (or are expected to have) significant horizontal well drilling activities in the near future.

The comparison takes a comprehensive look at the combined burden of the major state and local taxes imposed on the representative shale natural gas well in each of the included states. From a competitiveness perspective, it is the combined impact of all state and local taxes, not just

Figure 1. Annual percentage change in U.S. natural gas and oil prices, 1992-2012



severance taxes, that determines Ohio’s relative tax burden and Ohio’s competitiveness for new capital investment in the natural gas drilling industry. For example, a state may impose a high severance tax rate on the well in lieu of the local property tax. The state may impose relatively low combined state and local tax burdens on the well, even though it has a high severance tax burden.

The analysis developed financial statements, both balance sheet and income statements, for a single well. The same financial profile was used to determine the state and local tax bases for the major taxes imposed on the well operation in each state. The analysis includes severance taxes, corporate income taxes, alternative entity-level business taxes such as the commercial activity tax in Ohio, net worth taxes, sales taxes on input purchases by the well operators, and real and personal property taxes imposed on the assets related to the well.¹ For each state, the state and local tax burdens on the well are expressed as effective tax rates (total taxes divided by the sales from the well.)

¹ The tax burdens are estimated annually over a 30-year period. Tax liabilities can vary significantly over time given differences in state tax provisions, such as reductions in tax rates in early years of production in Ohio, and the timing of sales taxes on asset purchases in many states. The present discounted value of the annual tax stream is divided by the present discounted value of the gross revenue from the well to determine a state’s state and local effective tax rate on the well.

The horizontal wells in Ohio produce dry gas, natural gas liquids and oil and condensates. In Ohio, the proposal would tax natural gas liquids and oil and condensates from horizontal wells at the same tax rate. However, two of the comparison states, North Dakota and Texas, tax natural gas liquids and oil at different tax rates. To recognize this difference, two sets of effective tax rates are presented in this report for two different blends of output from the well. The first set assumes that the non-dry gas production of the well consists of natural gas liquids; the second set assumes that the non-dry gas production is oil. In actual operation the blend of the well output will vary substantially across and within states.

The following are key assumptions used in modeling the financials and tax bases for the representative well:

- The up-front cost of developing a producing horizontal well is assumed to be \$4 million.
- In the initial year of operation the well produces 105 million cubic feet of dry natural gas and 90,000 barrels of natural gas liquids.² The production rate drops significantly in the first few years; after five years of production, the well's output is reduced by 75%. The well operates at reduced levels of production over the next 25 years.
- In estimating the tax base for the well, it is assumed that the price of natural gas is \$2.00 per thousand cubic feet (mcf) and the price of natural gas liquids is \$25 dollars per barrel.³
- It is assumed that, under current law, natural gas liquids from horizontal wells are subject to Ohio's severance tax on gas at the rate of 3 cents per mcf.
- It is assumed that under current law, the reserves of natural gas and hydrocarbons associated with horizontal wells are valued for real property tax purposes as gas using a single gas price. Under proposed law, dry natural gas and liquid natural gas reserves from horizontal wells will be valued using separate prices for dry gas and the components of natural gas liquids.⁴

Results

Table 2 presents estimates of the current-law state and local tax burdens imposed on the natural gas well example in each of the eight states, assuming that the well produces dry natural gas and natural gas liquids. Table 3 presents the ETR estimates for the second type of well that produces dry natural gas and oil. The comparison tables include the combined state and local effective tax rate, the effective tax rate by tax type and each state's overall ranking. Each of the effective tax

² The first year production volumes are based on the data reported in Table 2 (p. 15) of *An Analysis of The Economic Potential for Shale Formations in Ohio*, report prepared by a study team from Cleveland State University, The Ohio State University and Marietta College (2011).

³ In the calculation of ETRs for a well producing dry natural gas and oil, it is assumed that the total dollar sales (market value) of oil produced equals the total dollar sales of natural gas liquids produced from the well. The total dollar sales of dry natural gas are assumed to be the same for both types of wells.

⁴ In estimating the property taxes imposed on the well, E&Y used property tax information for industrial property located in rural areas in each included state reported in the 2011 Minnesota Taxpayers Association's *50-State Property Tax Comparison Study* published by the Lincoln Institute of Land Policy (April 2011).

rates equals the ratio of state and local taxes to the sales of the well's output (both discounted over the 30-year life of the well).

As shown in Table 2, Ohio's combined state and local tax burden on the well producing dry gas and natural gas liquids (1.8% of sales) is the lowest among the eight states included in the comparison. Ohio's overall effective tax rate under current law is 80% below the average rate for the other 7 states. As shown in Table 3, Ohio continues to have the lowest current-law ETR for the well that produces both dry natural gas and oil. For this well, Ohio's ETR (3.7%) is 65% lower than the average in the other states.

Ohio's ETR for the well producing oil is higher than the ETR for the well producing natural gas liquids because the oil is taxed at a higher effective tax rate (per dollar of sales) than natural gas liquids under current law. The 7-state average for this type of well is higher because both Texas and North Dakota impose significantly higher severance tax rates on oil compared to natural gas liquids. For example, in North Dakota, oil is taxed at a combined statutory rate of 11.5% of market value, while natural gas (at current market prices) is taxed at a statutory rate of 5.6%.

Table 4 provides a comparison of Ohio's overall effective tax rates and ranking under current law and the proposed law. The first current-law column is for the well producing dry natural gas and natural gas liquids; the second current-law column is for the well producing dry natural gas and oil. The last column of Table 4 presents the ETRs under proposed law.⁵

The proposed law would increase the effective severance tax rate in Ohio by 1.9 or 2.2 percentage points depending upon the type of well. The proposed Ohio severance tax rate would be 2.7% for both types of wells. The Ohio effective severance tax rate would be 16% lower than the 7-state average (3.2%) for the well producing a blend of dry natural gas and natural gas liquids; for the well producing a blend of dry natural gas and oil, Ohio's effective severance tax rate would be 40% below the average (4.5%) of the other states.

⁵ Although there is a slight difference in the property tax ETR under proposed law, depending upon the well type, Table 4 assumes that the overall ETRs are the same for the two well types.

Table 2
Current Law
Effective Tax Rates on Representative Well
Producing Dry Gas and Natural Gas Liquids,
(state and local taxes as percent of sales)

State and Local Taxes	Ohio	Michigan	Texas	North Dakota	Arkansas	Pennsylvania	West Virginia	Oklahoma	Other States Average³
State Taxes									
State Sales Tax	0.2%	0.8%	0.8%	0.6%	0.8%	0.7%	0.8%	0.6%	0.7%
State Corporate/Business Tax ¹	0.1%	1.9%	0.3%	2.7%	3.0%	3.4%	3.3%	3.1%	2.5%
State Franchise Tax	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%	0.1%	0.3%	0.3%
Severance Tax	0.5%	4.8%	3.6%	2.0%	2.7%	1.8% ²	4.7%	2.9%	3.2%
Total State Taxes	0.8%	7.4%	4.7%	5.2%	7.4%	6.7%	8.9%	6.8%	6.7%
Local Taxes									
Property Tax	1.0%	0.1%	3.3%	3.0%	1.4%	3.0%	1.9%	3.8%	2.3%
Local Sales Tax	0.0%	0.0%	0.2%	0.1%	0.2%	0.0%	0.0%	0.4%	0.1%
Total Local Taxes	1.0%	0.1%	3.5%	3.1%	1.6%	3.0%	1.9%	4.2%	2.5%
Total State and Local Taxes	1.8%	7.5%	8.2%	8.3%	9.0%	9.7%	10.9%	11.0%	9.2%
Rank by Total Taxes	8	7	6	5	4	3	2	1	

1. Includes Ohio commercial activity tax and Texas margin tax. It is assumed that the net income of the well is subject to the corporate income tax.
2. The severance tax in Pennsylvania is described as an “impact fee.”
3. The ranking and Other States Average is based on analysis of eight states only. These states were chosen because they have (or are expected to have) significant horizontal well drilling activities in the near future.

Table 3
Current Law
Effective Tax Rates on Representative Well
Producing Dry Gas and Oil,
(state and local taxes as percent of sales)

State and Local Taxes	Ohio	Michigan	Texas	Arkansas	Pennsyl- vania	West Virginia	Oklahoma	North Dakota	Other States Average³
State Taxes									
State Sales Tax	0.2%	0.8%	0.8%	0.8%	0.7%	0.8%	0.6%	0.6%	0.7%
State Corporate/Business Tax ¹	0.1%	1.9%	0.3%	3.0%	3.4%	3.3%	3.1%	2.7%	2.5%
State Franchise Tax	0.0%	0.0%	0.0%	0.9%	0.9%	0.1%	0.3%	0.0%	0.3%
Severance Tax	0.8%	4.8%	4.3%	2.7%	1.8% ²	4.7%	2.9%	10.5%	4.5%
Total State Taxes	1.1%	7.4%	5.4%	7.4%	6.7%	8.9%	6.8%	13.7%	8.1%
Local Taxes									
Property Tax	2.6%	0.1%	3.3%	1.4%	3.0%	1.9%	3.8%	3.0%	2.3%
Local Sales Tax	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.4%	0.1%	0.1%
Total Local Taxes	2.6%	0.1%	3.5%	1.6%	3.0%	1.9%	4.2%	3.1%	2.5%
Total State and Local Taxes	3.7%	7.5%	8.9%	9.0%	9.7%	10.9%	11.0%	16.8%	10.6%
Rank by Total Taxes	8	7	6	5	4	3	2	1	

1. Includes Ohio commercial activity tax and Texas margin tax. It is assumed that the net income of the well is subject to the corporate income tax.

2. The severance tax in Pennsylvania is described as an “impact fee.”

3. The ranking and Other States Average is based on analysis of eight states only. These states were chosen because they have (or are expected to have) significant horizontal well drilling activities in the near future.

Table 4
Current vs. Proposed Law
Ohio Effective Tax Rates on Representative Well,
(State and Local Taxes as Percent of Sales)

State and Local Taxes	Current Law Producing NG Liquids	Current Law Producing Oil	Proposed Law
State Taxes			
Sales Tax	0.2%	0.2%	0.2%
Corporate/Business Tax	0.1%	0.1%	0.1%
Severance Tax	0.5%	0.8%	2.7%
Total State Taxes	0.8%	1.1%	3.0%
Local Taxes			
Property Tax	1.0%	2.6%	2.5%
Local Sales Tax	0.0%	0.0%	0.0%
Total Local Taxes	1.0%	2.6%	2.5%
Total State and Local Taxes	1.8%	3.7%	5.5%
Rank by Total State and Local Taxes	8	8	8

Although the proposed severance tax increase would increase Ohio's overall effective tax rate (including all taxes) by 1.9 or 2.2 percentage points, depending upon the type of well, Ohio would still have the lowest overall effective tax rate for both of the representative wells. For the well producing a blend of dry natural gas and natural gas liquids, Ohio's total ETR under the proposal would be 40% below the average in the other states; Ohio's overall ETR would be 48% below the other states' average for the well producing a blend of dry natural gas and oil. Ohio remains the lowest tax state for the well primarily because of the relatively low ETRs for the commercial activities tax, sales taxes on inputs and the property tax. The low property tax ETR reflects the fact that there is no tangible personal property tax in Ohio.

The relatively low non-severance taxes in Ohio reflect the legislated reduction in taxes on all business taxpayers in the 2005 tax reform act. The well operation, along with general taxpayers, benefits from the elimination of the tangible personal property tax, and more importantly, from the substitution of the commercial activity tax at a relatively low rate (0.26%) on gross receipts for a business income tax on profits. The overriding objective of the 2005 business tax reform was to decrease effective business tax rates for most taxpayers to substantially improve Ohio's tax competitiveness and to increase jobs, capital investment and incomes of Ohio's households.