

INDEPENDENT FISCAL OFFICE
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Chairmen Yaw and Yudichak, Chairmen Eichelberger and Blake, and members of the committees, thank you for the opportunity to testify before you today. For my testimony, I would like to focus on the four tables that have been submitted for your review.

The attached **Table 1** provides an interstate comparison of effective severance tax rates for Pennsylvania (both the current impact fee and proposed severance tax) and six large natural gas producing states. The effective tax rates (ETRs) represent rates for new wells that begin operation in 2018, once temporary market conditions that depress current prices have been alleviated and the minimum price floor under the proposed severance tax is no longer applicable. The comparison uses the same well (an estimated ultimate recovery of 10 or 15 billion cubic feet over 30 years) and same prices across states for the purpose of the interstate comparison. The analysis uses the same methodology as that used in the more extensive report published by the IFO in March 2014.

This simulation finds that the current impact fee yields the lowest ETR (state taxes only) across comparison states, because the impact fee is largely independent of the market value of production. By contrast, the proposed severance tax yields the highest ETR because it (1) disallows deductions for post-production costs, (2) levies a value-based tax and (3) levies a volume-based tax. The West Virginia severance tax also contains value and volume-based components. However, analysts expect that the current 4.7 cent tax per mcf of production will expire in 2018. Therefore, the projected ETR of the Pennsylvania severance tax exceeds West Virginia by 2.3 percentage points due to the tax on volume and the disallowance of deductions for post-production costs.

Table 2 examines historical and projected average tax rates for all production in Pennsylvania. Historically, the impact fee has translated into an average tax rate of roughly 2.0 to 4.0 percent on the market value of annual production. For 2015, the analysis projects an average tax rate of 4.7 percent, due to very low regional prices. For 2016, the analysis projects an average tax rate of 17.3 percent under the proposed severance tax. As shown by **Table 2**, that average tax rate can be decomposed into four parts:

- a 5.0 percent value-based tax;

- a 4.0 percent volume-based tax;
- a 3.5 percent tax due to the disallowance of deductions for post-production costs; and
- a 4.8 percent tax due to the \$2.97 statutory price floor.

As regional prices recover, the average tax rate of the proposed severance tax falls and should approach a long-run average tax rate of 7.3 percent, as shown by the interstate comparison from **Table 1**.

In a recent analysis of the Administration's revenue proposals, the analysis found that most of the proposed severance tax would likely be exported to final consumers who reside in other states. This adjustment will take several years to occur, and the tax incidence could be quite different in the near-term. Data from the U.S. Energy Information Administration and Pennsylvania Department of Environmental Protection suggest that three-quarters of production for calendar year 2014 may have been exported. Because total production grows more quickly than internal consumption, the analysis projects that roughly 80 percent of future production could be exported. (See **Table 3**.) Natural gas spot prices in the northeastern U.S. are considerably higher than the Henry Hub or Dominion South spot prices. This large differential suggests that producers could pass a tax increase forward to end users, once new pipeline capacity becomes operational. However, it should be noted that although the analysis assumes that taxes are ultimately passed forward to final consumers, it also assumes lower output due to a reduction in demand from higher after-tax prices. Output must fall by some amount if the after-tax price of a product increases.

Recent price forecasts assume a recovery in regional prices, partly due to significant new pipeline capacity that is scheduled to become operational during the next several years. **Table 4** lists various approved and planned pipeline projects that will become operational by 2018. The pipelines will add significant capacity and will deliver gas to new markets in the northeast, mid-atlantic and mid-western regions of the U.S.

In summary, the proposed severance tax will likely move Pennsylvania from one of the lowest severance tax states to the highest tax state, relative to other major gas producing states. Over several years, economic theory suggests that most of the tax will be pushed forward to final prices, and output will fall by some amount. The magnitude of the output reduction is difficult to quantify because it will partly depend on demand from markets that currently have limited access to natural gas, as well as new markets. The analysis is also sensitive to price forecasts, which are volatile and subject to significant uncertainty. If regional prices remain depressed due to capacity constraints, then it is likely that less of the tax could be pushed forward to final consumers.

Table 1
Prospective Effective Tax Rates¹

A prospective effective tax rate facilitates a comparison of tax regimes across states. It is the effective tax rate on production from a single new well. It excludes production from historical wells. The comparison applies to new wells drilled in 2018, once prices revert to long-run levels.

State		Estimated Ultimate Recovery	
		10 bcf	15 bcf
PA ²	Impact Fee	0.8%	0.5%
PA ³	Severance Tax	7.3%	7.3%
AR ⁴		3.7%	3.7%
LA ⁵		3.3%	3.4%
OH		0.8%	0.8%
OK		5.0%	5.0%
TX ⁶		3.1%	3.5%
WV ⁷		5.0%	5.0%

Notes

- 1 Computations use the Dominion South hub price and same well production levels. (See below.) Effective tax rate is equal to net present value of all fees or tax revenues divided by net present value of gas at the wellhead (which allows deduction of post-production costs). Computations use a 4.5% discount rate and exclude local taxes which could add roughly 1.0 percentage point to AR, OH and TX and 1.5 percentage points to WV.

Calendar Year	Dominion South	Annual Output (mmcf)	
		10 bcf	15 bcf
2018	\$3.51	2,242	3,363
2019	\$4.10	1,269	1,904
2020	\$4.34	956	1,434
2021	\$4.64	790	1,185
2022	\$4.63	678	1,017

- 2 Annual impact fee: 2018 (\$50,300), 2019 (\$40,200), 2020 (\$30,200), 2021-27 (\$20,100) and 2028-32 (\$10,100).
- 3 The proposed severance tax disallows the deduction of post-production costs to determine tax base.
- 4 Assumes well pays out in 3 years and qualifies for reduced tax rate (1.5%) during that time; 5% for later years.
- 5 Uses Henry Hub price due to statutory requirements that adjust tax rate applied to production levels.
- 6 Assumes new well produces "high cost gas" and qualifies for reduced tax rate of 2.0% for the first 8-10 years of operation and 7.5% for later years. Data based on "High-Cost Natural Gas Rate Incentive Study," Texas Comptroller of Public Accounts (Nov. 2014).
- 7 Assumes that the 4.7 cent volume tax per mcf expires in 2018.

Table 2
Pennsylvania Average Effective Tax Rates on Annual Production

	Calendar Year Totals or Average Levels								
	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Production (bcf) ¹	2,261	3,320	4,249	4,755	5,368	5,761	6,149	6,462	6,784
Dominion South Price (\$ per mmbtu)	2.77	3.51	3.27	1.66	1.89	2.59	3.51	4.10	4.34
Annual Fee or Tax Revenues (\$ millions)									
Current Impact Fee ²	203	226	222	210					
Proposed Severance Tax ³					1,087	1,166	1,419	1,691	1,860
Average Effective Tax Rate on Annual Production ⁴									
Current Impact Fee	4.2%	2.4%	2.0%	4.7%					
Proposed Severance Tax					17.3%	10.8%	8.2%	7.6%	7.5%
a Value-Based Component					5.0%	5.0%	5.0%	5.0%	5.0%
b Volume-Based Component					4.0%	2.5%	1.7%	1.4%	1.3%
c Deduction Disallowance					3.5%	2.2%	1.5%	1.3%	1.2%
d Statutory Price Floor					4.8%	1.1%	0.0%	0.0%	0.0%

Notes

- 1 Production forecast from Bentek Energy, modified by IFO. Historical values from PA Department of Environmental Protection.
- 2 Impact fee revenues from Public Utility Commission. Forecast for 2015 by IFO.
Through May 2015, number of wells spud down roughly 30% from prior year.
- 3 Proposed severance tax includes a 5% levy on market value plus a 4.7 cent levy per mcf.
Proposal sets a minimum price floor of \$2.97 per mcf and disallows deductions for post-production costs.
Excludes tax on natural gas liquids, which may add roughly \$10 million per annum in tax revenues.
- 4 Based on value at wellhead; denominator allows deduction for post-production costs.
Post-production costs include gathering and transportation costs only; excludes processing costs.
Cost data are from Range Resources (March 2015). Costs assumed to increase with inflation.

Table 3
Natural Gas Prices, Production and Consumption

	Calendar Year Totals (bcf)								
	2012	2013	2014	2015	2016	2017	2018	2019	2020
PA Production ¹	2,261	3,320	4,249	4,755	5,368	5,761	6,149	6,462	6,784
PA Consumption ¹	<u>918</u>	<u>932</u>	<u>1,013</u>	<u>1,054</u>	<u>1,096</u>	<u>1,140</u>	<u>1,185</u>	<u>1,233</u>	<u>1,282</u>
Difference	1,343	2,388	3,236	3,701	4,272	4,621	4,964	5,229	5,502
Share Exported	59%	72%	76%	78%	80%	80%	81%	81%	81%

	Average Calendar Year Hub Prices (\$ per mmbtu)								
	2012	2013	2014	2015	2016	2017	2018	2019	2020
Henry Hub ²	2.75	3.73	4.39	2.72	2.72	3.34	4.16	4.71	4.95
Dominion South Hub ²	<u>2.77</u>	<u>3.51</u>	<u>3.27</u>	<u>1.66</u>	<u>1.89</u>	<u>2.59</u>	<u>3.51</u>	<u>4.10</u>	<u>4.34</u>
Difference	-0.02	0.22	1.12	1.06	0.83	0.75	0.65	0.61	0.61
New York Hub ³	3.25	5.12	6.25	6.35					
Massachusetts Hub ³	3.94	6.97	7.99	7.95					
Connecticut Hub ³	3.92	6.79	8.10	7.62					
New Jersey Hub ³	2.99	4.04	6.81	4.46					

Notes

- 1 Production forecast from Bentek Energy. Includes modest output reduction by IFO due to imposition of proposed severance tax. Consumption data from U.S. Energy Information Administration. Consumption forecast by IFO assumes 4% increase per annum.
- 2 Henry Hub and Dominion South historical prices and forecasts from Bentek Energy.
- 3 State regional hubs are as follows: NY (Transco z6 NY); MA (Algonquin Citygates); CT (TGP z6) and NJ (Transco z6 non-NY). Data are from Bentek Energy. Data for 2015 are through May 26, 2015.

Table 4
New Pipeline Capacity

Approved Projects	Operational Year	Volume Capacity ¹	Projected Markets
Constitution Pipeline	2015	650	New York, New England
Leidy Southeast Expansion	2015	525	Maryland to Alabama
Niagara Expansion	2015	150	New York
REX East-to-West Reversal	2015	1,200	Ohio, Indiana, Illinois
TCO East Side Expansion	2015	300	New Jersey, Maryland, Virginia
Tuscarora Lateral	2015	50	New York
Uniontown to Gas City Expansion	2015	425	Ohio, Indiana
Northern Access 2015 and 2016	2015-16	600	New York
Rock Springs Lateral	2016	<u>200</u>	Maryland
Total		4,100	

Planned Projects	Operational Year	Volume Capacity ¹	Projected Markets
Access South Project	2017	300	West Virginia to Mississippi
Adair Southwest Project	2017	200	West Virginia to Kentucky
Atlantic Sunrise	2017	1,700	Maryland to Alabama
Gulf Markets Expansion	2017	350	West Virginia to Texas
Leidy South Project	2017	150	Maryland, Virginia
PennEast Project	2017	1,000	New Jersey
Appalachia to Market Project	2018	1,000	New Jersey
Diamond East Project	2018	1,000	New Jersey
Northeast Energy Direct	2018	<u>1,200</u>	New York, New England
Total		6,900	

Notes

1 Millions of cubic feet. Data are from Bentek Energy and U.S. Energy Information Administration.