



STATE OF WEST VIRGINIA

Department of Revenue
State Tax Department

Earl Ray Tomblin
Governor

Mark W. Matkovich
State Tax Commissioner

September 1, 2016

The Honorable Natalie Tennant
Secretary of State
Building 1, Suite 157-K
State Capitol
Charleston, West Virginia 25305

FILED
2016 SEP -1 A 9:29
OFFICE OF THE STATE TAX COMMISSIONER
STATE OF WEST VIRGINIA
CHARLESTON, WV

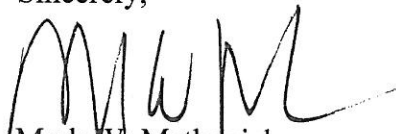
Dear Secretary Tennant:

Attached are final natural resource property valuation variables for the 2017 Tax Year that have been developed by the State Tax Department for use in appraising oil and gas, managed timberland, coal and other natural resource properties for ad valorem tax purposes.

In accordance with requirements of §§ 110 CSR 1-I, 1-J, and 1-K, tentative variables were made available for public comments on June 30, 2016. The Department received nine comments on the tentative variables. One comment related to the valuation of coal and three comments related to reserve oil and gas values and 5 related to the expenses allowed in the valuation of producing oil and gas wells. The information supplied for coal and reserve oil and gas did not result in any change to the tentative variables. The oil and gas comments resulted in adjustments to the operating expenses allowed in the valuation of producing oil and gas wells. Additionally, the prices for Metallurgical and Steam coal were updated based upon information that was unavailable on June 30.

The final valuation variables are being filed for inclusion in the State Register.

Sincerely,


Mark W. Matkovich
State Tax Commissioner

MWM/jaj

Attachment

cc: All County Assessors

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2016 SEP -1 A 9:29

OFFICE OF THE SECRETARY OF STATE

OIL AND GAS PROPERTIES ANALYSIS

Tax Year 2017

September 1, 2016
Mark W. Matkovich
State Tax Commissioner
Department of Revenue

OIL AND GAS

TY 2017

Capitalization Rate Analysis and Results:

In developing a capitalization rate for use in valuing specific income-producing properties consideration is given to the three approaches generally employed in estimating a discount rate. As a matter of practicality, the Bands-of-Investment and Summation Technique approaches are utilized in establishing discount rates for producing oil and gas properties. Data for analysis has been derived in accordance with current Legislative Rule Title 110, Series 1J.

Safe Rate	(3-Month Constant Maturity Interest Rates)			
	January	December	2015	0.053%

Risk Rate	(Interest differential between Loan Rate and 3-Month Constant Maturity Interest Rates)			
	<u>Loan Rate*</u>		<u>Risk Rate</u>	
	2015	5.260%	5.207%	
		*Prime plus 2%		

Equity	(Differential between Equity Rates and 3-Month Constant Maturity Interest Rates)			
	<u>Equity Rate**</u>		<u>Risk Rate</u>	
	2015	[12.25%/(1-.37)]-0.053%	19.391%	
		** Value Line Investment Survey Analysis		

Composite Risk Rate	Loan and Equity Rates weighted by industry estimated capital structure.				
		<u>Equity Rate</u>	<u>Debt Rate</u>	<u>Composite Risk</u>	
	2015	12.6042%	1.822%	15.186%	***
	Note: Debt equity Ratio		Debt	35%	Equity
	*** Effective severance tax adjustment			0.95	65%

Non Liquidity Rate	Interest differential between 3-month Constant Maturity Interest Rates and a 1 year Constant Maturity Interest Rates which reflects a reasonable time necessary to sell active property.					
				<u>1yr T Bill</u>	<u>90 day T Bill</u>	<u>Non Liquidity Rate</u>
	January	December	2015	0.322%	0.053%	0.269%

Management Rate	Charges for the management of investment portfolios.	
	Fixed Rate (by Rule)	0.500%

Property Tax Rate	Sixty percent (60%) of State average Class III property tax rate.		
	2015	60% of 2.19	1.314%

Inflation Rate				
	January	December	2015	0.730%

Capitalization Rate

Since the valuation of oil and gas property is predicated on a three year production , the capitalization rate will be considered in a similar manner.

	<u>2015</u>	<u>2014</u>	<u>2013</u>
Inflation Rate	-0.730%	-0.760%	-1.500%
Safe Rate	0.053%	0.033%	0.058%
Composite Risk Rate	15.186%	14.389%	14.634%
Non Liquidity Rate	0.269%	0.088%	0.074%
Management Rate	0.500%	0.500%	0.500%
Property Tax Rate	1.314%	1.314%	1.314%
Total	16.592%	15.564%	15.080%
	50.000%	33.333%	16.667%
	8.296%	5.188%	2.513%
			15.997%

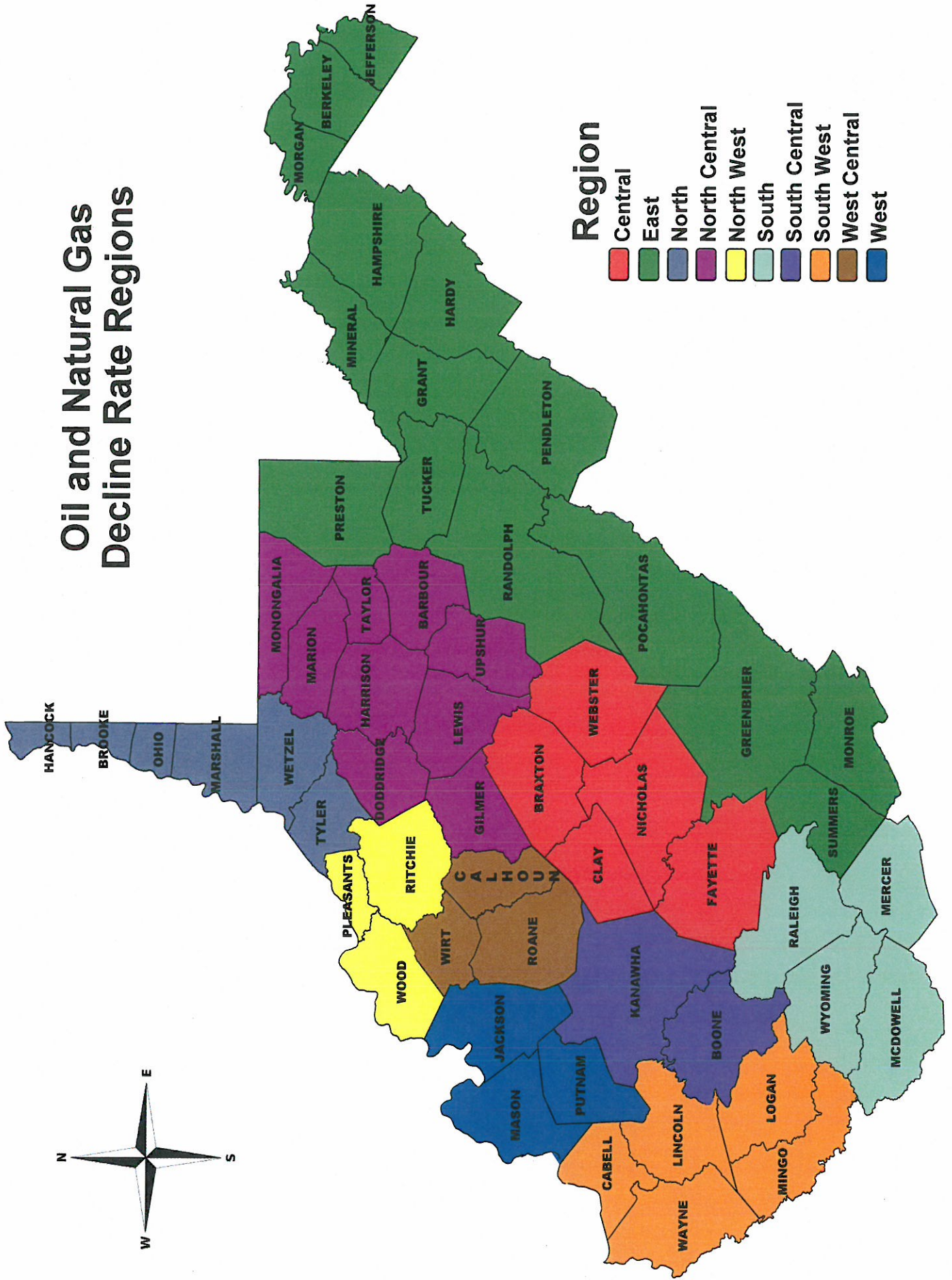
Capitalization Rate Rounded to:

16.00%

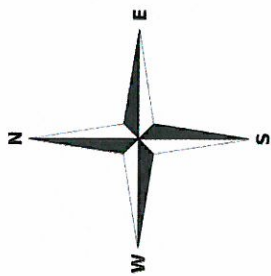
MULTIPLIERS FOR 16.0% MID-YEAR LIFE (ANNUALLY)

<u>YEAR</u>		<u>YEAR</u>	
1	0.928477	21	0.047710
2	0.800411	22	0.041129
3	0.690009	23	0.035456
4	0.594836	24	0.030566
5	0.512789	25	0.026350
6	0.442060	26	0.022715
7	0.381086	27	0.019582
8	0.328522	28	0.016881
9	0.283209	29	0.014553
10	0.244146	30	0.012546
11	0.210470	31	0.010815
12	0.181440	32	0.009323
13	0.156414	33	0.008037
14	0.134840	34	0.006929
15	0.116241	35	0.005973
16	0.100208	36	0.005149
17	0.086386	37	0.004439
18	0.074471	38	0.003827
19	0.064199	39	0.003299
20	0.055344	40	0.002844

Oil and Natural Gas Decline Rate Regions



- Region**
- Central
 - East
 - North
 - North Central
 - North West
 - South
 - South Central
 - South West
 - West Central
 - West



Decline Rates for Natural Gas and Oil Formations: Central

Central: Braxton, Clay, Fayette, Nicholas, Webster

Code	Formation	Year 1	Year 2	Year 3 +
12	Alexander, Benson	-0.31	-0.20	-0.10
14	Benson	-0.48	-0.08	-0.08
16	Benson, Balltown+	-0.45	-0.16	-0.12
17	Gordon +	-0.30	-0.07	-0.07
18	Big Injun	-0.34	-0.13	-0.13
19	Big Injun, Big Lime	-0.36	-0.13	-0.13
22	Big Lime	-0.34	-0.34	-0.13
26	Ravencliff	-0.40	-0.40	-0.25
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
109	Trenton/Deeper *	-0.41	-0.22	-0.09
110	Marcellus *	-0.41	-0.22	-0.09
9	Exception (Median)	-0.41	-0.22	-0.09
10	Non-Filer	-0.30	-0.07	-0.07

* New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: East

East: Berkeley, Grant, Greenbrier, Hampshire, Hardy, Jefferson, Mineral, Monroe, Morgan, Pendleton, Pocahontas, Preston, Randolph, Summers, Tucker

Code	Formation	Year 1	Year 2	Year 3 +
1	Oriskany	-0.30	-0.30	-0.19
14	Benson	-0.31	-0.17	-0.12
20	Benson +	-0.44	-0.20	-0.08
21	Benson, Fifth	-0.29	-0.28	-0.09
32	Brallier +	-0.48	-0.20	-0.05
33	Elk, Benson	-0.39	-0.21	-0.08
34	Elk, Benson, Riley	-0.53	-0.19	-0.05
35	Elk, Benson, Riley +	-0.36	-0.19	-0.11
36	Elk, Benson, Balltown	-0.34	-0.18	-0.11
37	Elk, Alexander, Benson	-0.50	-0.07	-0.07
38	Elk, Alexander, Benson +	-0.40	-0.16	-0.16
39	Huntermville	-0.31	-0.31	-0.14
40	Fox, Haverty	-0.36	-0.21	-0.15
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
110	Marcellus	-0.59	-0.22	-0.17
111	Utica*	-0.59	-0.22	-0.17
9	Exception (Median)	-0.41	-0.22	-0.10
10	Non-Filer	-0.29	-0.07	-0.05

*New Formation(s) involved in recent production. These will be valued with the Marcellus Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: North

North: Brooke, Hancock, Marshall, Ohio, Tyler, Wetzel

Code	Formation	Year 1	Year 2	Year 3 +
11	Gordon	-0.47	-0.31	-0.09
13	Alexander, Benson, Riley	-0.26	-0.16	-0.15
15	Benson, Riley	-0.18	-0.16	-0.06
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
97	Coalbed Methane (Vertical)	-0.23	-0.08	-0.05
110	Marcellus	-0.52	-0.23	-0.18
111	Utica*	-0.52	-0.23	-0.18
9	Exception (Median)	-0.39	-0.23	-0.08
10	Non-Filer	-0.18	-0.16	-0.06

*New Formation(s) involved in recent production. These will be valued with the Marcellus Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: North Central				
North Central: Barbour, Doddridge, Gilmer, Harrison, Lewis, Marion, Monongalia, Taylor, Upshur				
Code	Formation	Year 1	Year 2	Year 3 +
11	Gordon	-0.41	-0.14	-0.12
12	Alexander, Benson	-0.37	-0.19	-0.11
13	Alexander, Benson, Riley	-0.40	-0.28	-0.05
14	Benson	-0.31	-0.17	-0.12
15	Benson, Riley	-0.34	-0.17	-0.14
18	Big Injun	-0.36	-0.16	-0.13
21	Benson, Fifth	-0.31	-0.20	-0.14
28	Weir	-0.34	-0.34	-0.07
29	Weir +	-0.28	-0.28	-0.23
33	Elk, Benson	-0.34	-0.16	-0.11
34	Elk, Benson, Riley	-0.42	-0.27	-0.08
37	Elk, Alexander, Benson	-0.49	-0.23	-0.08
38	Elk, Alexander, Benson +	-0.38	-0.20	-0.12
40	Fox, Haverty	-0.46	-0.16	-0.08
50	Rhinestreet	-0.28	-0.03	-0.03
57	Alexander, Benson, Balltown	-0.39	-0.26	-0.08
58	Alexander	-0.35	-0.20	-0.10
59	Alexander +	-0.39	-0.22	-0.10
60	Alexander, Benson, Riley +	-0.39	-0.35	-0.12
61	Balltown	-0.35	-0.20	-0.10
62	Balltown, Speechley	-0.28	-0.22	-0.10
63	Balltown, Speechley +	-0.30	-0.13	-0.10
64	Benson, Balltown, Speechley	-0.28	-0.22	-0.09
65	Benson, Bradford	-0.37	-0.20	-0.10
66	Benson, Balltown	-0.29	-0.23	-0.11
67	Benson, Riley +	-0.38	-0.14	-0.10
68	Benson, Speechley	-0.30	-0.22	-0.14
69	Brallier, Elk	-0.42	-0.20	-0.13
70	Brallier	-0.40	-0.22	-0.15
71	Deeper/Onondaga or Oriskany/Helderberg	-0.24	-0.24	-0.03
72	Elk, Alexander	-0.42	-0.22	-0.09
73	Elk, Benson +	-0.38	-0.20	-0.12
74	Elk	-0.43	-0.12	-0.10
75	Elk, Riley	-0.60	-0.35	-0.17
76	Fox +	-0.46	-0.18	-0.09
77	Haverty, Elk, Benson (No Alexander)	-0.35	-0.16	-0.16
78	Haverty	-0.45	-0.15	-0.15
79	Riley	-0.44	-0.22	-0.10
80	Speechley	-0.30	-0.18	-0.09
81	Alexander, Benson, Speechley	-0.39	-0.24	-0.10
82	Haverty, Elk, Alexander	-0.47	-0.14	-0.14
85	Fifth, Oil	-0.45	-0.25	-0.22
87	Bayard All	-0.30	-0.20	-0.05
88	Fifth	-0.29	-0.18	-0.12
89	Fifth +	-0.25	-0.15	-0.13
90	Gordon, Injun All	-0.41	-0.23	-0.23
91	Squaw	-0.37	-0.31	-0.06
92	Injun +	-0.34	-0.22	-0.22
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
97	Coalbed Methane (Vertical)	-0.23	-0.08	-0.05
98	Coalbed Methane (Horizontal)	-0.05	-0.05	-0.32
109	Trenton/Deeper *	-0.38	-0.21	-0.11
110	Marcellus	-0.59	-0.29	-0.23
111	Utica**	-0.59	-0.29	-0.23
9	Exception (Median)	-0.38	-0.21	-0.11
10	Non-Filer	-0.23	-0.03	-0.03

*New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

**New Formation(s) involved in recent production. These will be valued with the Marcellus Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: North West				
North West: Pleasants, Ritchie, Wood				
Code	Formation	Year 1	Year 2	Year 3 +
2	Huron, Rhinestreet	-0.41	-0.26	-0.07
4	Huron	-0.42	-0.24	-0.14
5	Huron, Shales above Huron	-0.39	-0.25	-0.14
8	Berea	-0.31	-0.15	-0.15
11	Gordon	-0.38	-0.10	-0.10
12	Alexander, Benson (No Riley)	-0.34	-0.23	-0.10
13	Alexander, Benson, Riley	-0.32	-0.20	-0.10
14	Benson	-0.19	-0.19	-0.10
44	Rhinestreet, Huron, Shallow Shale	-0.43	-0.28	-0.11
47	Alexander, Riley, (No Benson)	-0.41	-0.05	-0.05
48	Rhinestreet, Alexander, Benson, Riley	-0.31	-0.24	-0.10
49	Weir, Squaw, Big Injun	-0.27	-0.17	-0.07
50	Rhinestreet	-0.40	-0.27	-0.27
51	Rhinestreet +	-0.36	-0.21	-0.10
52	All Upper Devonian (Undiv)	-0.48	-0.33	-0.19
53	Huron, Chemung	-0.35	-0.11	-0.09
54	Huron, Hampshire, Pocono	-0.12	-0.12	-0.11
55	Upper Devonian (Above Huron)	-0.46	-0.33	-0.23
56	Chemung Sands= Riley, Bradford, Balltown, Speechley, Warren (No Benson or Alexander)	-0.28	-0.18	-0.10
83	Huron Oil	-0.74	-0.44	-0.40
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
109	Trenton/Deeper *	-0.39	-0.23	-0.13
110	Marcellus	-0.46	-0.29	-0.23
111	Utica**	-0.46	-0.29	-0.23
9	Exception (Median)	-0.39	-0.23	-0.13
10	Non-Filer	-0.12	-0.05	-0.05

*New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

**New Formation(s) involved in recent production. These will be valued with the Marcellus Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: South

South: McDowell, Mercer, Raleigh, Wyoming

Code	Formation	Year 1	Year 2	Year 3 +
8	Berea	-0.34	-0.15	-0.15
22	Big Lime	-0.31	-0.19	-0.07
23	Big Lime, Maxton	-0.31	-0.19	-0.07
24	Big Lime, Ravencloff	-0.29	-0.29	-0.17
25	Berea +	-0.37	-0.12	-0.08
26	Ravencloff	-0.40	-0.08	-0.07
28	Weir	-0.44	-0.20	-0.10
29	Weir +	-0.28	-0.21	-0.08
30	Weir, Big Lime	-0.37	-0.19	-0.13
42	Maxton, Ravencloff	-0.40	-0.08	-0.07
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.27	-0.13	-0.09
97	Coalbed Methane (Vertical)	0.03	0.10	-0.05
98	Coalbed Methane (Horizontal)	-0.05	-0.05	-0.32
110	Marcellus *	-0.36	-0.19	-0.09
9	Exception (Median)	-0.36	-0.19	-0.09
10	Non-Filer	-0.23	-0.08	-0.05

* New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: South Central

South Central: Boone, Kanawha

Code	Formation	Year 1	Year 2	Year 3 +
3	Devonian Shale	-0.23	-0.08	-0.05
4	Huron	-0.31	-0.15	-0.04
8	Berea	-0.23	-0.14	-0.09
18	Big Injun	-0.29	-0.25	-0.12
27	Huron, Shales above Huron	-0.21	-0.08	-0.05
28	Weir	-0.30	-0.21	-0.14
29	Weir +	-0.31	-0.25	-0.09
31	Devonian Shales +	-0.27	-0.07	-0.05
86	Big Injun-Oil	-0.19	-0.18	-0.10
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
109	Trenton/Deeper *	-0.33	-0.19	-0.08
110	Marcellus *	-0.33	-0.19	-0.08
9	Exception (Median)	-0.33	-0.19	-0.08
10	Non-Filer	-0.19	-0.07	-0.04

* New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: South West

South West: Cabell, Lincoln, Logan, Mingo, Wayne

Code	Formation	Year 1	Year 2	Year 3 +
3	Devonian Shale	-0.31	-0.15	-0.04
8	Berea	-0.36	-0.11	-0.11
18	Big Injun	-0.38	-0.22	-0.04
22	Big Lime	-0.19	-0.19	-0.19
43	Berea, Big Lime	-0.18	-0.18	-0.18
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
109	Trenton/Deeper *	-0.38	-0.22	-0.10
110	Marcellus *	-0.38	-0.22	-0.10
9	Exception (Median)	-0.38	-0.22	-0.10
10	Non-Filer	-0.18	-0.11	-0.04

* New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: West Central

West Central: Calhoun, Roane, Wirt

Code	Formation	Year 1	Year 2	Year 3 +
2	Huron, Rhinestreet	-0.49	-0.11	-0.06
4	Huron	-0.33	-0.22	-0.14
27	Huron, Shales above Huron	-0.42	-0.23	-0.12
44	Rhinestreet, Huron, Shallow Shale	-0.51	-0.14	-0.11
45	Devonian Shale, Pocono	-0.25	-0.17	-0.12
46	Pocono	-0.29	-0.25	-0.12
84	Big Injun, Oil	-0.41	-0.41	-0.11
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
109	Trenton/Deeper *	-0.42	-0.24	-0.10
110	Marcellus *	-0.42	-0.24	-0.10
9	Exception (Median)	-0.42	-0.24	-0.10
10	Non-Filer	-0.25	-0.11	-0.06

* New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

Decline Rates for Natural Gas and Oil Formations: West

West: Jackson, Mason, Putnam

Code	Formation	Year 1	Year 2	Year 3 +
1	Oriskany	-0.40	-0.40	-0.29
2	Huron, Rhinestreet	-0.13	-0.12	-0.03
3	Devonian Shale	-0.31	-0.15	-0.04
4	Huron	-0.29	-0.14	-0.05
5	Huron, Shales above Huron	-0.38	-0.15	-0.06
6	Huron, Berea	-0.29	-0.08	-0.08
7	Berea, Devonian Shale	-0.08	-0.08	-0.08
8	Berea	-0.36	-0.16	-0.16
93	4th Sand	-0.42	-0.32	-0.08
94	50 Foot	-0.34	-0.26	-0.07
95	Injun/Weir	-0.51	-0.26	-0.09
96	Maxton	-0.70	-0.27	-0.08
109	Trenton/Deeper *	-0.35	-0.20	-0.09
110	Marcellus *	-0.35	-0.20	-0.09
9	Exception (Median)	-0.35	-0.20	-0.09
10	Non-Filer	-0.08	-0.08	-0.03

* New Formation(s) involved in recent production. These will be valued with the Exception Rates until decline information is available.

Industry Operating Expense Survey and Results

This component was determined through a review of responses to a survey distributed by the State Tax Department to producers of all oil and natural gas wells producing in West Virginia and through use of other market data.

GAS

- % Working Interest Expenses for Typical Producing Well	=	45%
- Maximum Operating Expenses	=	\$5,000
- Coal Bed Methane, Vertical Wells Expenses	=	\$9,000

OIL

- % Working Interest Expenses for Typical Producing Well	=	35%
- Maximum Operating Expenses	=	\$5,750
- Maximum Enhanced Operating Expenses	=	\$9,000

MARCELLUS/UTICA

- % Working Interest Expenses for Vertical Producing Well	=	30%
- Maximum Operating Expenses	=	\$30,000
- % Working Interest Expenses for Horizontal Producing Well	=	20%
- Maximum Operating Expenses	=	\$175,000

HORIZONTAL WELLS (OTHER THAN MARCELLUS/UTICA AND COAL BED METHANE)

- % Working Interest Expenses for Horizontal Producing Well	=	30%
- Maximum Operating Expenses	=	\$20,000

Minimum Working Interest Appraisal = \$500 per well

Flat Rate Royalty Multiplier = 5.75

Home Use Only Wells: Appraised at \$500 per well

Industrial Use Only Wells:* MCF usage X \$ 2.62/MCF
BBL usage X \$48.66/BBL

*(Also includes Department of Environmental Protection reported wells.)

Non-Filer Valuations

Working Interest = 150% of previous year's appraisal
Royalty Interest = 90% of previous year's appraisal

Valuation

The previously discussed variables are used to establish a future income stream converted to present worth through application of a capitalization rate. The sum of the discounted future net income per year represents a reasonable estimate of market value.

Lease Rate/Term Survey and Results

The non-producing property value for each county is determined by multiplying the average delay rental by a factor, which represents the average lease term under present economic conditions.

As a result of higher lease terms being inversely proportional to the value of oil and gas (thus counties with little leasing or production activities reflect inflated values) and with the volatile nature of county activity, necessary adjustments in the review have been made.

A compilation of lease terms produced a statewide average of 5 years. This term (5 years) was applied to all county lease rates and compared to the appraisal rates derived from calculations using individual county data as well as regional data. The resulting calculations were reviewed and considered in the assignment of an appraisal rate per acre.

The appraisal rate/acre amounts shown on the next page are preliminary figures, which may change if additional lease data is received. These rates have been applied to all county magisterial districts with either producing wells, lease activity within the past 5 years or both. Tax districts void of activity within the past 5 years have been assigned the minimum value per acre.

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
BARBOUR	1	1	\$60.00
		2	\$1.00
		3	\$60.00
		4	\$60.00
		5	\$60.00
		6	\$1.00
		7	\$60.00
		8	\$60.00
		9	\$60.00
		10	\$60.00
		11	\$60.00
BERKELEY	2	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
BOONE	3	1	\$20.00
		2	\$1.00
		3	\$1.00
		4	\$20.00
		5	\$20.00
		6	\$20.00
		7	\$1.00
		8	\$20.00
		9	\$1.00
BRAXTON	4	1	\$20.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$20.00
		6	\$20.00
		7	\$20.00
		8	\$1.00
BROOKE	5	1	\$1.00
		2	\$1.00
		3	\$100.00
		4	\$100.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
CABELL	6	1	\$25.00
		2	\$1.00
		3	\$25.00
		4	\$25.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$25.00
		9	\$1.00
		10	\$25.00
CALHOUN	7	1	\$30.00
		2	\$1.00
		3	\$30.00
		4	\$30.00
		5	\$30.00
		6	\$30.00
CLAY	8	1	\$20.00
		2	\$1.00
		3	\$20.00
		4	\$20.00
		5	\$20.00
		6	\$20.00
DODDRIDGE	9	1	\$90.00
		2	\$90.00
		3	\$90.00
		4	\$90.00
		5	\$90.00
		6	\$90.00
		7	\$90.00
		8	\$90.00
		9	\$1.00
FAYETTE	10	1	\$20.00
		2	\$20.00
		3	\$20.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$1.00
		11	\$1.00
		12	\$1.00
		13	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
GILMER	11	1	\$25.00
		2	\$25.00
		3	\$25.00
		4	\$1.00
		5	\$1.00
		6	\$25.00
GRANT	12	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
GREENBRIER	13	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$1.00
		11	\$1.00
		12	\$1.00
		13	\$1.00
		14	\$1.00
		15	\$1.00
		16	\$1.00
		17	\$1.00
		18	\$1.00
HAMPSHIRE	14	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$1.00
HANCOCK	15	1	\$25.00
		2	\$1.00
		3	\$25.00
		4	\$25.00
		5	\$1.00
		6	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
HARDY	16	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
HARRISON	17	1	\$90.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$90.00
		6	\$1.00
		7	\$90.00
		8	\$1.00
		9	\$90.00
		10	\$1.00
		11	\$90.00
		12	\$90.00
		13	\$1.00
		14	\$90.00
		15	\$90.00
		16	\$1.00
		17	\$1.00
		18	\$90.00
		19	\$1.00
		20	\$90.00
		21	\$1.00
JACKSON	18	1	\$40.00
		2	\$40.00
		3	\$1.00
		4	\$40.00
		5	\$1.00
		6	\$40.00
		7	\$40.00
JEFFERSON	19	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017					
COUNTY	CO #	DISTRICT #	TY2017 \$/AC		
KANAWHA	20	1	\$30.00		
		2	\$1.00		
		3	\$30.00		
				4	\$1.00
				5	\$1.00
				6	\$1.00
				7	\$1.00
				8	\$1.00
				9	\$1.00
				10	\$1.00
				11	\$1.00
				12	\$1.00
				13	\$1.00
				14	\$1.00
				15	\$30.00
				16	\$30.00
				17	\$1.00
				18	\$1.00
				19	\$30.00
				20	\$1.00
				21	\$1.00
				22	\$1.00
				23	\$30.00
				24	\$30.00
				25	\$30.00
				26	\$1.00
				27	\$1.00
				28	\$30.00
				29	\$1.00
				30	\$1.00
				31	\$1.00
LEWIS	21	1	\$35.00		
		2	\$35.00		
		3	\$35.00		
		4	\$35.00		
		5	\$1.00		
		6	\$35.00		
		7	\$1.00		
		8	\$1.00		
		9	\$1.00		
LINCOLN	22	1	\$25.00		
		2	\$25.00		
		3	\$1.00		
		4	\$25.00		
		5	\$25.00		
		6	\$25.00		
		7	\$25.00		
		8	\$25.00		
		9	\$25.00		
		10	\$1.00		

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
LOGAN	23	1	\$15.00
		2	\$15.00
		3	\$15.00
		4	\$15.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$15.00
		9	\$1.00
MARION	24	1	\$1.00
		2	\$90.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$90.00
		10	\$1.00
		11	\$90.00
		12	\$90.00
		13	\$1.00
		14	\$1.00
		15	\$1.00
		16	\$90.00
		17	\$1.00
		18	\$90.00
		19	\$90.00
		20	\$1.00
		21	\$1.00
		22	\$1.00
MARSHALL	25	1	\$1.00
		2	\$1.00
		3	\$100.00
		4	\$100.00
		5	\$100.00
		6	\$1.00
		7	\$100.00
		8	\$1.00
		9	\$100.00
		10	\$1.00
		11	\$1.00
		12	\$100.00
		13	\$100.00
		14	\$100.00
		15	\$100.00
		16	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
MASON	26	1	\$1.00
		2	\$25.00
		3	\$25.00
		4	\$25.00
		5	\$25.00
		6	\$25.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$25.00
		11	\$1.00
		12	\$1.00
		13	\$1.00
		14	\$25.00
		15	\$25.00
		16	\$25.00
MC DOWELL	27	1	\$20.00
		2	\$1.00
		3	\$20.00
		4	\$20.00
		5	\$1.00
		6	\$20.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$1.00
		11	\$20.00
		12	\$1.00
		13	\$20.00
		14	\$1.00
		15	\$1.00
		16	\$1.00
MERCER	28	1	\$1.00
		2	\$15.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$15.00
		7	\$1.00
		8	\$1.00
		9	\$15.00
		10	\$1.00
		11	\$15.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
MINERAL	29	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$1.00
		11	\$1.00
MINGO	30	1	\$1.00
		2	\$1.00
		3	\$20.00
		4	\$20.00
		5	\$20.00
		6	\$20.00
		7	\$20.00
		8	\$1.00
		9	\$20.00
		10	\$20.00
		11	\$20.00
		12	\$1.00
MONONGALIA	31	1	\$30.00
		2	\$1.00
		3	\$30.00
		4	\$30.00
		5	\$30.00
		6	\$1.00
		7	\$30.00
		8	\$30.00
		9	\$1.00
		10	\$1.00
		11	\$1.00
		12	\$1.00
		13	\$1.00
		14	\$1.00
		15	\$1.00
		16	\$1.00
		17	\$1.00
		18	\$30.00
		19	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
MONROE	32	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
MORGAN	33	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
NICHOLAS	34	1	\$1.00
		2	\$15.00
		3	\$15.00
		4	\$15.00
		5	\$1.00
		6	\$1.00
		7	\$15.00
		8	\$1.00
		9	\$1.00
OHIO	35	1	\$1.00
		2	\$1.00
		3	\$100.00
		4	\$100.00
		5	\$1.00
		6	\$100.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$1.00
PENDLETON	36	1	\$1.00
		2	\$10.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$10.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
PLEASANTS	37	1	\$45.00
		2	\$45.00
		3	\$45.00
		4	\$45.00
		5	\$45.00
		6	\$1.00
		7	\$45.00
		8	\$45.00
POCAHONTAS	38	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
PRESTON	39	1	\$30.00
		2	\$30.00
		3	\$30.00
		4	\$30.00
		5	\$30.00
		6	\$30.00
		7	\$1.00
		8	\$30.00
		9	\$1.00
		10	\$30.00
		11	\$1.00
		12	\$1.00
		13	\$1.00
		14	\$1.00
		15	\$1.00
		16	\$1.00
		17	\$1.00
		18	\$1.00
		19	\$1.00
		20	\$1.00
PUTNAM	40	1	\$25.00
		2	\$25.00
		3	\$1.00
		4	\$25.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$25.00
		9	\$1.00
		10	\$25.00
		11	\$25.00
		12	\$25.00
		13	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
RALEIGH	41	1	\$20.00
		2	\$20.00
		3	\$1.00
		4	\$1.00
		5	\$20.00
		6	\$1.00
		7	\$20.00
		8	\$20.00
		9	\$20.00
		10	\$1.00
		11	\$20.00
		12	\$20.00
RANDOLPH	42	1	\$20.00
		2	\$20.00
		3	\$1.00
		4	\$20.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$20.00
		11	\$20.00
		12	\$1.00
		13	\$1.00
		14	\$1.00
		15	\$1.00
		16	\$20.00
		17	\$1.00
		18	\$1.00
RITCHIE	43	1	\$70.00
		2	\$1.00
		3	\$70.00
		4	\$1.00
		5	\$70.00
		6	\$1.00
		7	\$70.00
		8	\$1.00
		9	\$1.00
		10	\$70.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
ROANE	44	1	\$35.00
		2	\$35.00
		3	\$35.00
		4	\$35.00
		5	\$1.00
		6	\$35.00
		7	\$35.00
		8	\$1.00
		9	\$35.00
SUMMERS	45	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$1.00
		5	\$10.00
		6	\$1.00
		7	\$1.00
TAYLOR	46	1	\$1.00
		2	\$1.00
		3	\$90.00
		4	\$90.00
		5	\$90.00
		6	\$90.00
		7	\$90.00
TUCKER	47	1	\$20.00
		2	\$20.00
		3	\$1.00
		4	\$1.00
		5	\$20.00
		6	\$1.00
		7	\$1.00
		8	\$1.00
		9	\$20.00
		10	\$1.00
		11	\$20.00
		12	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
TYLER	48	1	\$90.00
		2	\$90.00
		3	\$1.00
		4	\$90.00
		5	\$90.00
		6	\$90.00
		7	\$1.00
		8	\$1.00
		9	\$1.00
		10	\$90.00
UPSHUR	49	1	\$70.00
		2	\$70.00
		3	\$1.00
		4	\$70.00
		5	\$70.00
		6	\$70.00
		7	\$70.00
WAYNE	50	1	\$20.00
		2	\$20.00
		3	\$1.00
		4	\$1.00
		5	\$1.00
		6	\$1.00
		7	\$1.00
		8	\$20.00
		9	\$20.00
		10	\$20.00
		11	\$1.00
		12	\$20.00
WEBSTER	51	1	\$1.00
		2	\$1.00
		3	\$1.00
		4	\$15.00
		5	\$15.00
		6	\$15.00
		7	\$1.00

OIL & GAS RESERVE RATES FOR TY 2017			
COUNTY	CO #	DISTRICT #	TY2017 \$/AC
WETZEL	52	1	\$90.00
		2	\$90.00
		3	\$90.00
		4	\$90.00
		5	\$90.00
		6	\$1.00
		7	\$1.00
		8	\$90.00
		9	\$1.00
		10	\$1.00
		11	\$1.00
		12	\$90.00
		13	\$1.00
WIRT	53	1	\$35.00
		2	\$35.00
		3	\$35.00
		4	\$1.00
		5	\$35.00
		6	\$35.00
		7	\$35.00
		8	\$35.00
WOOD	54	1	\$40.00
		2	\$40.00
		3	\$40.00
		4	\$40.00
		5	\$1.00
		6	\$40.00
		7	\$40.00
		8	\$40.00
		9	\$40.00
		10	\$1.00
		11	\$40.00
		12	\$40.00
		13	\$1.00
		14	\$1.00
WYOMING	55	1	\$20.00
		2	\$20.00
		3	\$20.00
		4	\$20.00
		5	\$20.00
		6	\$1.00
		7	\$20.00
		8	\$1.00
		9	\$1.00
		10	\$20.00

**MANAGED TIMBER
PROPERTY ANALYSIS**

Tax Year 2017

September 1, 2016
Mark W. Matkovich
State Tax Commissioner
Department of Revenue

MANAGED TIMBERLAND APPRAISAL RATES TAX YEAR 2017

(based on market 2011-2015)

Rates Per Acre

Class II Parcels

	<u>Grade 1</u>	<u>Grade 2</u>	<u>Grade 3</u>
Region 1	\$205	\$140	\$50
Region 2	\$200	\$140	\$50
Region 3	\$265	\$175	\$50
Region 4	\$270	\$185	\$55
Region 5	\$205	\$140	\$50

Class III/IV Parcels

	<u>Grade 1</u>	<u>Grade 2</u>	<u>Grade 3</u>
Region 1	\$225	\$150	\$75
Region 2	\$225	\$150	\$75
Region 3	\$240	\$155	\$75
Region 4	\$245	\$165	\$75
Region 5	\$225	\$150	\$75

- Region 1 = Brooke, Cabell, Hancock, Jackson, Marshall, Mason, Ohio, Pleasants, Putnam, Tyler, Wetzel, and Wood Counties
- Region 2 = Braxton, Calhoun, Clay, Doddridge, Gilmer, Harrison, Lewis, Marion, Monongalia, Ritchie, Roane, Taylor, and Wirt Counties
- Region 3 = Barbour, Greenbrier, Monroe, Nicholas, Pendleton, Pocahontas, Preston, Randolph, Tucker, Upshur, and Webster Counties
- Region 4 = Berkeley, Grant, Hampshire, Hardy, Jefferson, Mineral and Morgan Counties
- Region 5 = Boone, Fayette, Kanawha, Lincoln, Logan, McDowell, Mercer, Mingo, Raleigh, Summers, Wayne, and Wyoming Counties

Harvest Volumes per Acre

Harvest Interval Grades

	<u>35 yrs.</u>	<u>45 yrs.</u>	<u>55 yrs.</u>	<u>80 yrs.</u>	<u>Total</u>
1 - Site Index 75 or more	4.6 cords	--	2.6 cords	3.3 cords	10.5 cords
	1.5 Mbf	--	4.4 Mbf	8.6 Mbf	14.5 Mbf
2 - Site Index 65 - 75	3.3 cords	--	7.0 cords	4.6 cords	14.9 cords
	1.0 Mbf	--	3.2 Mbf	5.5 Mbf	9.7 Mbf
3 - Site Index less than 65	--	3.1 cords	--	15.4 cords	18.5 cords
	--	0.8 Mbf	--	3.7 Mbf	4.5 Mbf

Managed Timberland Statistics

Estimation of Required Rate of Return: Class II Rates

A. Safe Rate of Return (5 Year T-Bill Rate)

Year	Rate	W/A %	W/A Rate
2015	1.5292	26.67%	0.4078
2014	1.6410	33.33%	0.5469
2013	1.1725	13.33%	0.1563
2012	0.7608	6.67%	0.0507
2011	1.5225	20.00%	0.3045

1.466 %

B. Nonliquidity Rate

(12 Month T-Bills vs. 3 Month T-Bills)

Year	Rate	W/A %	W/A Rate
2015	0.2683	33.33%	0.0894
2014	0.0883	26.67%	0.0235
2013	0.0733	20.00%	0.0147
2012	0.1292	13.33%	0.0172
2011	0.1817	6.67%	0.0121

0.157 %

C. Risk Rate (30 yr T-bills vs 5 yr T-bills)

Year	Rate	W/A %	W/A Rate
2015	1.3117	13.33%	0.1748
2014	1.6992	26.67%	0.4532
2013	2.2758	20.00%	0.4552
2012	2.1600	33.33%	0.7199
2011	2.3883	6.67%	0.1593

1.962 %

D. Management Factor of 0.5%

0.500 %

E. Property Tax Component

(60% of Class II Rate)

Year	Rate	W/A %	W/A Rate
2015	0.714	33.33%	0.2380
2014	0.714	26.67%	0.1904
2013	0.708	20.00%	0.1416
2012	0.714	13.33%	0.0952
2011	0.708	6.67%	0.0472

0.712 %

F. Inflation Rate:

(Bureau of Labor Statistics)

Year	Rate	W/A %	W/A Rate
2015	0.730	33.33%	0.2433
2014	0.760	26.67%	0.2027
2013	1.500	20.00%	0.3000
2012	1.700	13.33%	0.2266
2011	3.000	6.67%	0.2001

(1.173) %

TOTAL REQUIRED RATE OF RETURN (REAL)

3.625 %

LESS: PROPERTY TAX COMPONENT

(0.712)

TOTAL DISCOUNT COMPONENT

2.913 %

Stumpage Prices:

	<u>Sawtimber</u>	<u>Pulpwood</u>
Stumpage Price Adjustment Factor	0.00%	1.85%

<u>SAWTIMBER</u>	Current	1.0000	1.0000	1.0000	1.0000
		\$/MBF at age	\$/MBF at age	\$/MBF at age	\$/MBF at age
Region	\$/MBF	35	45	55	80
Region 1	181.34	181.34	181.34	181.34	181.34
Region 2	172.92	172.92	172.92	172.92	172.92
Region 3	239.28	239.28	239.28	239.28	239.28
Region 4	235.49	235.49	235.49	235.49	235.49
Region 5	190.59	190.59	190.59	190.59	190.59

<u>PULPWOOD:</u>	Current	1.8995	2.2816	2.7407	4.3339
		\$/cd at age	\$/cd at age	\$/cd at age	\$/cd at age
Region	\$/Cord	35	45	55	80
Region 1	8.54	16.23	19.49	23.41	37.02
Region 2	6.73	12.79	15.36	18.45	29.18
Region 3	5.13	9.75	11.71	14.07	22.24
Region 4	8.10	15.39	18.49	22.21	35.12
Region 5	5.77	10.96	13.16	15.81	25.00

Management Costs:

Region	\$/acre (1)
1	3.17
2	3.17
3	3.17
4	3.17
5	3.17
State	

Tax Rates:

Effective Federal Income Tax Rate	35.00%
Effective WV State Income Tax Rate (6.5% * (1-.35))	4.23%
Effective WV Severance Tax Rate (1.5% * (1-.35))	0.98%

Yield (Volumes) (80 year rotation)

Timberland Productivity Grades	Site Index	Yield - MBF	Yield - Cords
Grade I	75 or more	14.5	10.5
Grade II	65-74	9.7	14.9
Grade III	less than 65	4.5	18.5

Managed Timberland Statistics

Estimation of Required Rate of Return: Class III & IV Blended Rates

A. Safe Rate of Return (5 Year T-Bill Rate)

Year	Rate	W/A %	W/A Rate
2015	1.5292	26.67%	0.4078
2014	1.6410	33.33%	0.5469
2013	1.1725	13.33%	0.1563
2012	0.7608	6.67%	0.0507
2011	1.5225	20.00%	0.3045

1.466 %

B. Nonliquidity Rate

(12 Month T-Bills vs. 3 Month T-Bills)

Year	Rate	W/A %	W/A Rate
2015	0.2683	33.33%	0.0894
2014	0.0883	26.67%	0.0235
2013	0.0733	20.00%	0.0147
2012	0.1292	13.33%	0.0172
2011	0.1817	6.67%	0.0121

0.157 %

C. Risk Rate (30 yr T-bills vs 5 yr T-bills)

Year	Rate	W/A %	W/A Rate
2015	1.3117	13.33%	0.1748
2014	1.6992	26.67%	0.4532
2013	2.2758	20.00%	0.4552
2012	2.1600	33.33%	0.7199
2011	2.3883	6.67%	0.1593

1.962 %

D. Management Factor of 0.5%

0.500 %

E. Property Tax Component

(60% of Blended III&IV Rates)

Year	Rate	W/A %	W/A Rate
2015	1.314	33.33%	0.4380
2014	1.314	26.67%	0.3504
2013	1.314	20.00%	0.2628
2012	1.326	13.33%	0.1768
2011	1.326	6.67%	0.0884

1.316 %

F. Inflation Rate:

(Bureau of Labor Statistics)

Year	Rate	W/A %	W/A Rate
2015	0.730	33.33%	0.2433
2014	0.760	26.67%	0.2027
2013	1.500	20.00%	0.3000
2012	1.700	13.33%	0.2266
2011	3.000	6.67%	0.2001

(1.173) %

TOTAL REQUIRED RATE OF RETURN (REAL)

4.229 %

LESS: PROPERTY TAX COMPONENT

(1.316)

TOTAL DISCOUNT COMPONENT

2.913 %

Stumpage Prices:

		<u>Sawtimber</u>	<u>Pulpwood</u>		
Stumpage Price Adjustment Factor		0.00%	1.85%		
		1.0000	1.0000	1.0000	1.0000
SAWTIMBER	Current	\$/MBF at age	\$/MBF at age	\$/MBF at age	\$/MBF at age
Region	\$/MBF	35	45	55	80
Region 1	181.34	181.34	181.34	181.34	181.34
Region 2	172.92	172.92	172.92	172.92	172.92
Region 3	239.28	239.28	239.28	239.28	239.28
Region 4	235.49	235.49	235.49	235.49	235.49
Region 5	190.59	190.59	190.59	190.59	190.59
		1.8995	2.2816	2.7407	4.3339
PULPWOOD:		\$/cd at age	\$/cd at age	\$/cd at age	\$/cd at age
Region	\$/Cord	35	45	55	80
Region 1	8.54	16.23	19.49	23.41	37.02
Region 2	6.73	12.79	15.36	18.45	29.18
Region 3	5.13	9.75	11.71	14.07	22.24
Region 4	8.10	15.39	18.49	22.21	35.12
Region 5	5.77	10.96	13.16	15.81	25.00

Management Costs:

Region	<u>\$/acre (1)</u>
1	3.17
2	3.17
3	3.17
4	3.17
5	3.17
State	

Tax Rates:

Effective Federal Income Tax Rate	35.00%
Effective WV State Income Tax Rate (6.5% * (1-.35))	4.23%
Effective WV Severance Tax Rate (1.5% * (1-.35))	0.98%

Yield (Volumes) (80 year rotation)

Timberland		Yield - MBF	Yield - Cords
Productivity Grades	Site Index		
Grade I	75 or more	14.5	10.5
Grade II	65-74	9.7	14.9
Grade III	less than 65	4.5	18.5

West Virginia Wgt/Avg Managed Timberland Stumpage Prices

REGION 1 - Sawtimber

Year	Volume	\$/MBF	W/A%	\$/MBF
2015	12,561.80	192.85	33.33%	64.28
2014	12,162.06	176.34	26.67%	47.02
2013	19,017.77	177.45	20.00%	35.49
2012	12,628.15	186.56	13.33%	24.87
2011	11,195.24	144.89	6.67%	9.66
	67,565.02			181.34

REGION 1 - Pulpwood *

Year	Volume	\$/CORD	W/A%	\$/CORD
2015	7,218.90	15.03	33.33%	5.01
2014	464.40	5.40	26.67%	1.44
2013	6,102.20	2.96	20.00%	0.59
2012	45,387.00	6.42	13.33%	0.86
2011	48.10	9.67	6.67%	0.64
	59,220.60			8.54

REGION 2 - Sawtimber

Year	Volume	\$/MBF	W/A%	\$/MBF
2015	26,487.65	175.25	33.33%	58.42
2014	22,001.80	182.47	26.67%	48.66
2013	25,896.85	177.79	20.00%	35.56
2012	25,640.98	149.01	13.33%	19.87
2011	12,639.41	156.26	6.67%	10.42
	112,666.69			172.92

REGION 2 - Pulpwood

Year	Volume	\$/CORD	W/A%	\$/CORD
2015	42,863.30	5.97	33.33%	1.99
2014	2,168.10	5.04	26.67%	1.34
2013	119,279.40	12.83	20.00%	2.57
2012	22,647.40	2.86	13.33%	0.38
2011	5,235.20	6.78	6.67%	0.45
	192,193.40			6.73

REGION 3 - Sawtimber

Year	Volume	\$/MBF	W/A%	\$/MBF
2015	135,967.80	207.12	33.33%	69.04
2014	91,467.44	280.52	26.67%	74.81
2013	161,397.70	275.63	20.00%	55.13
2012	111,920.60	201.57	13.33%	26.88
2011	102,218.30	201.45	6.67%	13.43
	602,971.84			239.28

REGION 3 - Pulpwood

Year	Volume	\$/CORD	W/A%	\$/CORD
2015	184,907.30	3.85	33.33%	1.28
2014	170,736.30	3.57	26.67%	0.95
2013	153,197.40	7.78	20.00%	1.56
2012	183,132.60	6.39	13.33%	0.85
2011	159,040.70	7.34	6.67%	0.49
	851,014.30			5.13

REGION 4 - Sawtimber

Year	Volume	\$/MBF	W/A%	\$/MBF
2015	6,644.42	223.42	33.33%	74.47
2014	5,020.90	303.89	26.67%	81.04
2013	12,820.20	211.47	20.00%	42.29
2012	4,808.73	193.47	13.33%	25.80
2011	15,517.51	178.40	6.67%	11.89
	<u>44,811.76</u>			<u>235.49</u>

REGION 4 - Pulpwood

Year	Volume	\$/CORD	W/A%	\$/CORD
2015	6,137.40	7.22	33.33%	2.41
2014	7,765.20	8.16	26.67%	2.18
2013	15,488.60	8.32	20.00%	1.66
2012	7,382.20	9.61	13.33%	1.28
2011	21,074.10	8.64	6.67%	0.58
	<u>57,847.50</u>			<u>8.10</u>

REGION 5 - Sawtimber

Year	Volume	\$/MBF	W/A%	\$/MBF
2015	37,714.40	160.15	33.33%	53.38
2014	21,661.40	265.95	26.67%	70.92
2013	31,859.00	198.20	20.00%	39.64
2012	10,887.05	138.63	13.33%	18.48
2011	24,760.43	122.43	6.67%	8.16
	<u>126,882.28</u>			<u>190.59</u>

REGION 5 - Pulpwood

Year	Volume	\$/CORD	W/A%	\$/CORD
2015	2,889.50	4.05	33.33%	1.35
2014	10,191.40	6.19	26.67%	1.65
2013	18,292.60	7.13	20.00%	1.43
2012	8,296.30	6.93	13.33%	0.92
2011	6,432.30	6.26	6.67%	0.42
	<u>46,102.10</u>			<u>5.77</u>

COAL PROPERTIES ANALYSIS

Tax Year 2017

September 1, 2016
Mark W. Matkovich
State Tax Commissioner
Department of Revenue

COAL CAPITALIZATION RATE

Capitalization Rate Analysis and Results:

In developing a capitalization rate for use in valuing specific income-producing properties consideration is given to the three approaches generally employed in estimating a discount rate. As a matter of practicality, the Bands-of-Investment and Summation Technique approaches are utilized in establishing discount rates for active coal. Data for analysis has been derived in accordance with current Legislative Rule Title 110, Series 11.

<u>Safe Rate</u>	90 day Treasury Bills	<u>Safe Rate</u>
January	December 2015	0.053%
January	December 2014	0.033%
January	December 2013	0.058%

<u>Risk Rate</u>	Interest differential between Loan Rate and 90 day Treasury Bills	
	<u>Loan Rate*</u>	<u>Debt Risk Rate</u>
	2015 5.26%	5.207%
	2014 5.25%	5.217%
	2013 5.25%	5.192%

*Prime plus 2%

<u>Equity</u>	Differential between Equity Rates and 90 day Treasury Bills	
	<u>Equity Rate**</u>	<u>Equity Risk Rate</u>
	2015 [14.75%/(1-.30)]-0.053	21.038%
	2014 [15.50%/(1-.30)]-0.033	22.110%
	2013 [13.25%/(1-.30)]-0.058	18.871%

** Value Line Investment Survey Analysis

<u>Composite Risk Rate</u>	Loan and Equity Rates weighted by industry estimated capital structure		
	<u>Equity Rate</u>	<u>Debt Rate</u>	<u>Composite Risk</u>
2015	13.675%	1.822%	15.497%
2014	15.477%	1.565%	17.042%
2013	11.322%	2.077%	13.399%

Note: Debt Equity Ratio Debt 35% Equity 65%

<u>Non Liquidity Rate</u>	Interest differential between a 90 day Treasury Bill and a 1 year Treasury Bill which reflects a reasonable time necessary to sell active property.			
	1yr T Bill	90 d T Bill	<u>Non Liquidity Rate</u>	
January	December 2015	0.322%	0.053%	0.269%
January	December 2014	0.121%	0.033%	0.088%
January	December 2013	0.132%	0.058%	0.074%

<u>Management Rate</u>	Charges for the management of investment portfolios.	
Fixed Rate (by Rule)		0.500%

<u>Inflation Rate</u>			
January	December 2015		0.730%
January	December 2014		0.760%
January	December 2013		1.500%

Capitalization Rate Since the valuation of active coal property is predicated on a three year production average, the capitalization rate is considered in a similar manner.

	2015	2014	2013
Inflation Rate	-0.730%	-0.760%	-1.500%
Safe Rate	0.053%	0.033%	0.058%
Composite Risk Rate	15.497%	17.042%	13.399%
Non Liquidity Rate	0.269%	0.088%	0.074%
Management Rate	0.500%	0.500%	0.500%
Total	15.589%	16.903%	12.531%
Three Yr Average:	15.008	Rounded to:	15.00%

CAPITALIZATION RATE - 15.0%			
MULTIPLIERS:			%
1YR	0.933	9YR	5.117
2YR	1.743	10YR	5.382
3YR	2.448	11YR	5.613
4YR	3.062	12YR	5.813
5YR	3.595	13YR	5.987
6YR	4.058	14YR	6.139
7YR	4.462	15YR	6.271
8YR	4.812		

COAL

Price and Royalty Rate Analysis

The development of royalty rates for the various categories of mines and markets involves information collection and review from a variety of sources. Coal lease rates have been derived from transaction information provided by county producers, assessors, tax auditors, and by individual lessors/lessees involved in the specific transaction. The prices for mined coal, as per 110-CSR 11, have been calculated from information provided by the WV Public Service Commission and U.S. Energy Information Administration concerning power plant fuel purchases. Prices provided by producers as part of tax filing and from data obtained from market summaries are included for comparison. Because a large portion of the data used in this analysis is, by law, considered confidential, only a summary of the results are published.

COAL SALE PRICES CY2015 FOR TY2017 APPLICATION

GRAND SUMMARY ALL SOURCES 201	STEAM SPOT	STEAM TERM	MET
PSC	\$54.62	\$54.03	
FERC	\$51.10	\$60.81	
Active Return Summary		\$52.05 52.1 MM tons	\$74.60 23.6 MM Tons
Coal Market Publication (Platts)		\$46.09 CAPP (12/1.67) Barge	
		\$46.65 PGH - (13/3) Rail	
			\$87.54 Low Vol HCC

STATE STEAM PRICE (SPOT Market)	\$58.15 FERC & PSC, 3 YR AVE
STATE MET PRICE	\$74.60 Active Return, 1 YR

	Spot Sales	Term Sales	Total
2015 WVPSC Tons reported in millions	6,112,303	13,291,896	19,404,199

COAL TY2017 ROYALTY RATES	2015		2014		2013		2012		2011	
	%S	%D	%S	%D	%S	%D	%S	%D	%S	%D
TOTAL RECORDS	447	452	1,447	905	1,354	599	1,908	2,756	1,677	2,241
SUM of PERCENT	2904.85	2327.95	8,869.07	4,695.25	8,087.34	3,313.93	11,881.66	14,663.03	8,924.28	11,181.05
STRAIGHT AVERAGE	6.50	5.15	6.13	5.19	5.97	5.53	6.23	5.32	5.32	4.99
MEDIAN	6.00	5.00	6.00	5.00	5.00	5.00	6.00	5.13	5.00	5.00
WEIGHTED AVERAGE(by Mineac)	6.80	5.10	6.94	5.49	6.58	5.84	6.45	6.28	6.27	5.72
TENTATIVE RATE DEEP (%)	5.69									
TENTATIVE RATE SURFACE (%)	6.61									

ROYALTY RATE CALCULATIONS										
Steam Coal/ Deep Mine	\$58.15	per ton X	5.69%	=	\$3.31	per ton				
Metallurgical Coal/ Deep Mine	\$74.60	per ton X	5.69%	=	\$4.24	per ton				
Steam Coal/ Surface Mine	\$58.15	per ton X	6.61%	=	\$3.84	per ton				
Metallurgical Coal/ Surface Mine	\$74.60	per ton X	6.61%	=	\$4.93	per ton				

Explanation of Reserve Coal Valuation

The RCVM consists of a computer model, which utilizes a database consisting of coal beds and characteristics, property locations, mine locations, sales, transportation, etc., for the entire state. An extensive algorithm calculates in-place tonnage, expected time of mining and present value for all the mineable coal on every property.

There are, therefore, no set "rates" available on reserve coal under the Rule. The RCVM values on each property will not be available until all data has been entered, after October 15 of each year. Please refer to the State Register, Legislative Rules, Title 110, Series 1I for details of the process.

Title 110, Series 11
Valuation of Active and Reserve Coal Property for Ad Valorem Property Tax Purposes

The above Legislative Rule was modified during the 2005 Legislative Session requiring biennial (every other year) updating of the geostatistical basis for several valuation factors used in the Reserve Coal Valuation Model. To satisfy that requirement, maps and data files concerning the Market Interest Factor, the Market Mineability Factor, the Use Conflict Factor and the Environmental Factor have been revised for Tax Year 2015. Preliminary research has been conducted to determine the effects of the factors on coal valuation. The results are as follows:

Market Interest Factor

This is the relationship between transactions (sales, leases, prospects, permit applications, etc.) and mining as it relates to properties and locations. Trans_Ct is the number of transactions counted within the radius.

Radius = 5 miles

If Trans_Ct >= 20 Then TransFactor = 20

If Trans_Ct < 20 And Trans_Ct >= 10 Then TransFactor = 40

Else TransFactor = 80

Market Mineability Factor

This is the relationship between property location and mining, through time. Determining feature is count of mines within the radius.

Radius = 2.5 miles

Surface Mines: Smine

Deep Mines: Dmine

Boom Mines: Bmine

Historic Mines: Omine

Current Mines: Cmine

To assign MineFactor:

If Cmine > 0 Then MineFactor = 20

If Cmine = 0 And (Omine > 0 Or Bmine > 0) Then MineFactor = 40

Else MineFactor = 80

Use Conflict Factor

This is the relationship between oil & gas well drilling and mining as it relates to property location. Well density is in wells per square mile.

WellDensity < 5 Then WellFactor = 0

WellDensity >= 5 And WellDensity < 10 Then WellFactor = 20

WellDensity >= 10 And WellDensity < 20 Then WellFactor = 40

WellDensity > 20 Then WellFactor = 80

Environmental Factor

This is the relationship of known environmental hazards and impediments to the likelihood of mining occurring at this location.

The rates are compiled from maps and represent densities of problems mapped.

Envrate <= 20 or Null Then EnvFactor = 0

Envrate > 20 and Envrate <= 40 Then EnvFactor = 20

Envrate > 40 and Envrate < 80 Then EnvFactor = 40

Envrate >= 80 Then EnvFactor = 80

**OTHER MINED MINERAL
PROPERTY ANALYSIS**

Tax Year 2017

September 1, 2016
Mark W. Matkovich
State Tax Commissioner
Department of Revenue

OTHER MINED MINERALS CAPITALIZATION RATE

Capitalization Rate Analysis and Results:

In developing a capitalization rate for use in valuing specific income-producing properties consideration is given to the three approaches generally employed in estimating a discount rate. As a matter of practicality, the Bands-of-Investment and Summation Technique approaches are utilized in establishing discount rates for active coal. Data for analysis has been derived in accordance with current Legislative Rule Title 110, Series 1k.

<u>Safe Rate</u>	90 day Treasury Bills	<u>Safe Rate</u>
January	December 2015	0.053%
January	December 2014	0.033%
January	December 2013	0.058%

Risk Rate Interest differential between Loan Rate and 90 day Treasury Bills

<u>Loan Rate*</u>	<u>Debt Risk Rate</u>
2015 5.26%	5.207%
2014 5.25%	5.217%
2013 5.25%	5.192%

*Prime plus 2%

Equity Differential between Equity Rates and 90 day Treasury Bills

<u>Equity Rate**</u>	<u>Equity Risk Rate</u>
2015 [11.75%/(1-.30)]-0.053	16.733%
2013 [11.75%/(1-.30)]-0.033	16.753%
2012 [11.75%/(1-.30)]-0.058	16.728%

** Value Line Investment Survey Analysis

Composite Risk Rate Loan and Equity Rates weighted by industry estimated capital structure.

	<u>Equity Rate</u>	<u>Debt Rate</u>	<u>Composite Risk</u>
2015	10.040%	2.083%	12.123%
2014	10.052%	2.087%	12.139%
2013	10.037%	2.077%	12.114%

Note: Debt Equity Ratio Debt 40% Equity 60%

Non Liquidity Rate Interest differential between 90 day Treasury Bills and a 1 year Treasury Bill which reflects a reasonable time necessary to sell active property.

			<u>1yr T Bill</u>	<u>90 d T Bill</u>	<u>Non Liquidity Rate</u>
January	December	2015	0.322%	0.053%	0.269%
January	December	2014	0.121%	0.033%	0.088%
January	December	2013	0.132%	0.058%	0.074%

Management Rate Charges for the management of investment portfolios.

Fixed Rate (by Rule)	0.500%
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Inflation Rate

January	December	2015	0.730%
January	December	2014	0.760%
January	December	2013	1.500%

Property Tax Rate Sixty percent (60%) of State average Class III property tax rate.

January	December	2015	60% of 2.190 =	1.314%
January	December	2014	60% of 2.190 =	1.314%
January	December	2013	60% of 2.190 =	1.314%

Capitalization Rate

Since the valuation of other mined mineral property is predicated on a three year production average, the capitalization rate is considered in a similar manner.

	<u>2015</u>	<u>2014</u>	<u>2013</u>
Inflation Rate	-0.730%	-0.760%	-1.500%
Safe Rate	0.053%	0.033%	0.058%
Composite Risk Rate	12.123%	12.139%	12.114%
Non Liquidity Rate	0.269%	0.088%	0.074%
Management Rate	0.500%	0.500%	0.500%
Property Tax Rate	1.314%	1.314%	1.314%
Total	13.529%	13.314%	12.560%

Three Yr Average: 13.134% Rounded to: **13.10%**

CAPITALIZATION RATE - 13.10%

MULTIPLIERS:	%	%
1YR	0.940	5.437
2YR	1.772	5.748
3YR	2.507	6.022
4YR	3.157	6.265
5YR	3.731	6.480
6YR	4.240	6.669
7YR	4.689	6.837
8YR	5.086	

OTHER MINED MINERALS

ROYALTY RATE SURVEY

The determination of royalty rates for other mined minerals within the state of West Virginia is dependent upon the availability of leasehold information. Since this information is limited, the Department has chosen to review data for the most recent thirty year period. A summary only of this review is shown below in order to protect the confidentiality of parties involved.

<u>RESOURCE</u>	<u>DATA SOURCES</u>	<u>AVERAGE ROYALTY</u>	<u>MEDIAN ROYALTY</u>	<u>TY2017 RATE</u>
LIMESTONE	15	\$0.22	\$0.20	\$0.22
SANDSTONE	8	\$0.31	\$0.25	\$0.30
CLAY/SHALE	34	\$0.12	\$0.10	\$0.11
SAND/GRAVEL	10	\$0.35	\$0.40	\$0.40
SALT BRINE	1	N/A	N/A	\$0.10

RESERVE VALUES

	<u>number of sales</u>	<u>\$/AC</u>
LIMESTONE	5	\$3,000.00
SANDSTONE	8	\$2,300.00
CLAY/SHALE	16	\$850.00
SAND/GRAVEL	6	\$4,000.00
SALT	2	\$1,140.00