



Dave Hardy
Secretary of Revenue

STATE TAX DEPARTMENT

Matthew Irby
State Tax Commissioner

September 1, 2023

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

Dear Secretary Wamer.

Attached for filing in the State Register are final natural resource property valuation variables for the 2024 Tax Year that have been developed by the State Tax Division for use in determining the appraised value of coal, oil, natural gas, managed timberland and other natural resource properties for ad valorem tax purposes.

In accordance with the requirements of §§110CSR1-I, 1-J and 1-K, tentative variables were made available for public comments on July 1, 2023. The department received comments on the tentative valuation variables.

First, the agency received comments regarding the reserve oil and gas rates and the need to engage in an updated review of the rates. The current rates reflect the best information available at the time of filing. Second, the agency received comments regarding the factors used in calculating the capitalization rate for managed timberland. Corrections were made to the non-liquidity, the risk rate and the Inflation rate, but resulted in no change to the Managed Timberland Values. Third, the agency received comments regarding the coal and other minerals multiplier for years 9 through 15 and about the inflation rate. The rates and multiplier were adjusted accordingly.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew R. Irby".

Matthew R. Irby
State Tax Commissioner

Attachment

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WV SECRETARY OF STATE
SEPTEMBER 01, 2023 04:20 PM

OIL AND GAS PROPERTIES ANALYSIS

Tax Year 2024

September 1, 2023
Matthew A. Irby
State Tax Commissioner
Department of Revenue

OIL AND GAS CAPITALIZATION RATE

The Tax Year 2024 cost capital analysis for WV Oil and Gas was completed on 06/09/2023 using the Q4 2022 Cost of Capital Professional study. Returns were selected and calculated for the time period ranging from 1928 to 2022 using a geometric mean. The Capitalization Rate is based on the weighted cost of capital where the equity portion is set at 76% and the debt portion is set at 24%.

5.4.2.a: Equity Portion:

The Build-Up Model was selected for the computation of the cost of equity capital.

Given the components selected the formula used is as follows:

$$\begin{aligned} \text{CoE} &= \text{AFR} + \text{ERP} + \text{IRP} + \text{SP} + \text{USRP} \\ 15.75\% &= 4.14\% + 5.01\% + 2.76\% + 1.54\% + 2.30\% \end{aligned}$$

- 5.4.2.a.1 A 4.14% Risk Free Rate (AFR) was selected, representing the 20-Year Treasury Constant Maturity Rate available on 12/31/2022 at the Federal Reserve Bank.
- 5.4.2.a.2 A 5.01 % Equity Risk Premium (ERP) was selected, representing the Historical ERP calculated using the S&P 500 average annual return of 9.86% derived from CRSP data for the 1928 - 2022 period and a 4.85% 20-year T-Bond average annual return (Reconstructed) for the same timeframe.
- 5.4.2.a.3 An Implied 2.76% Industry Risk Premium (IRP) was calculated using an industry beta of 1.55. The 5-Year industry beta for 2022 US - Oil & Gas Exploration & Production was sourced from Salvidlo & Partners and included 15 firms. Implied Industry Risk Premium = (Industry Beta * ERP) - ERP = (1.55 * 5.01 %) - 5.01 %.
- 5.4.2.a.4 A 1.54% Size Premium (SP) was selected. The Size Premium was based on CRSP decile 6_8 which included 1,107 firms with an equity market capitalization size ranging from \$3n,076,000 to \$2,365,076,000 in Q4 2022. The CASP decile 6_8 mean annual return reached 11.41 % between 1928 and 2022. The mean annual return for the S&P 500 for the same period was 9.86%.
- 5.4.2.a.5 A 2.3% Unsystematic Risk Premium (USRP) was selected based on market and production factors.
- 5.4.2.b Debt Portion:
- 5.4.2.b.1 A borrowing rate (pre-tax cost of debt) of 5.87% was selected. (Moody's Seasoned Baa Corporate Bond Yield)
- 5.4.2.b.2 A tax rate of 19.34% was selected. Damodaran 2022 (Oil and Gas Exploration and Production Money Making Firms)

The Weighted Average Cost of Capital (WACC) was also computed for WV Oil and Gas TY 2024. Given the components selected the formula used is as follows:

$$WACC = (CoE * We) + (KdPreTax * (1 - t) * Wd)$$

$$13.10\% = (15.75\% * 76.00\%) + (5.87\% * (1 - 19.34\%) * 24.00\%)$$

The West Virginia Weighted Average Cost of Capital for oil and gas is calculated as 13.10% WACC.

Cost of Capital= 13.10% WACC for West Virginia Oil and Gas as of 07/01/2023.

CAPITALIZATION RATE -13.10%			
Year	Multiplier	Year	Multiplier
1	0.9403	16	0.1484
2	0.8314	17	0.1312
3	0.7351	18	0.1160
4	0.6500	19	0.1026
5	0.5747	20	0.0907
6	0.5081	21	0.0802
7	0.4493	22	0.0709
8	0.3972	23	0.0627
9	0.3512	24	0.0554
10	0.3105	25	0.0490
11	0.2746	26	0.0433
12	0.2428	27	0.0383
13	0.2146	28	0.0339
14	0.1898	29	0.0299
15	0.1678	30	0.0265

Decline Rates for Natural Gas and Oil Formations: Central					
Central: Braxton, Clay, Fayette, Nicholas, Webster					
Code	Formation	Year1	Year2	Year 3 +	
12	Alexander, Benson	-0.31	-0.20	-0.10	Braxton
14	Benson	-0.48	-0.08	-0.08	Clay
16	Benson, Balltown+	-0.45	-0.16	-0.12	Fayette
17	Gordon+	-0.30	-0.07	-0.07	Nicholas
18	Big Injun	-0.34	-0.13	-0.13	Webster
19	Big Injun, Big Lime	-0.36	-0.13	-0.13	
22	Big Lime	-0.34	-0.34	-0.13	
26	Ravenclyff	-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	Year1	Year2	Year 3 +	
1	Oriskany	-0.30	-0.30	-0.19	Berkeley
14	Benson	-0.31	-0.17	-0.12	Grant
20	Benson+	-0.44	-0.20	-0.08	Greenbrier
21	Benson, Fifth	-0.29	-0.28	-0.09	Hampshire
32	Brallier+	-0.48	-0.20	-0.05	Hardy
33	Elk, Benson	-0.39	-0.21	-0.08	Jefferson
34	Elk, Benson, Riley	-0.53	-0.19	-0.05	Mineral
35	Elk, Benson, Riley+	-0.36	-0.19	-0.11	Monroe
36	Elk, Benson, Balltown	-0.34	-0.18	-0.11	Morgan
37	Elk, Alexander, Benson	-0.50	-0.07	-0.07	Pendleton
38	Elk, Alexander, Benson +	-0.40	-0.16	-0.16	Pocahontas
39	Huntermville	-0.31	-0.31	-0.14	Preston
40	Fox, Haverty	-0.36	-0.21	-0.15	Randolph
93	4th Sand	-0.42	-0.32	-0.08	Summers
94	50 Foot	-0.34	-0.26	-0.07	Tucker
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	
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 Exception Rates until decline information is available.

Decline Rates for Natural Gas and Oli Formations: South					
South: McDowell, Mercer, Raleigh, Wyoming					
Code	Formation	Year1	Year2	Year 3 +	
8	Berea	-0.34	-0.15	-0.15	McDowell
22	Big Lime	-0.31	-0.19	-0.07	Mercer
23	Big Lime, Maxton	-0.31	-0.19	-0.07	Raleigh
24	Big Lime, Ravencloff	-0.29	-0.29	-0.17	Wyoming
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 West

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

Code	Formation	Year1	Year2	Year 3 +	
3	Devonian Shale	-0.31	-0.15	-0.04	Cabell
8	Berea	-0.36	-0.11	-0.11	Lincoln
18	Big Injun	-0.38	-0.22	-0.04	Logan
22	Big Lime	-0.19	-0.19	-0.19	Mingo
43	Berea, Big Lime	-0.18	-0.18	-0.18	Wayne
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: South Central					
South Central: Boone, Kanawha					
Code	Formation	Year 1	Year2	Year 3 +	
3	Devonian Shale	-0.23	-0.08	-0.05	Boone
4	Huron	-0.31	-0.15	-0.04	Kanawha
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: North					
North: Brooke, Hancock, Marshall, Ohio, Tyler, Wetzel					
Code	Formation	Year1	Year2	Year3 +	
11	Gordon	-0.47	-0.31	-0.09	Brooke
13	Alexander, Benson, Riley	-0.26	-0.16	-0.15	Hancock
15	Benson, Riley	-0.18	-0.16	-0.06	Marshall
93	4th Sand	-0.42	-0.32	-0.08	Ohio
94	50 Foot	-0.34	-0.26	-0.07	Tyler
95	Injun/Weir	-0.51	-0.26	-0.09	Wetzel
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	
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 Exception 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	Year3 +	
2	Huron, Rhinestreet	-0.41	-0.26	-0.07	Pleasants
4	Huron	-0.42	-0.24	-0.14	Ritchie
5	Huron, Shales above Huron	-0.39	-0.25	-0.14	Wood
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, Soecheley, 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.

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	Barbour
12	Alexander, Benson	-0.37	-0.19	-0.11	Doddridge
13	Alexander, Benson, Riley	-0.40	-0.28	-0.05	Gilmer
14	Benson	-0.31	-0.17	-0.12	Harrison
15	Benson, Riley	-0.34	-0.17	-0.14	Lewis
18	Big Injun	-0.36	-0.16	-0.13	Marion
21	Benson, Fifth	-0.31	-0.20	-0.14	Monongalia
28	Weir	-0.34	-0.34	-0.07	Taylor
29	Weir+	-0.28	-0.28	-0.23	Upshur
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	

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

North Central: continued				
Code	Formation	Year 1	Year 2	Year 3+
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
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.

Decline Rates for Natural Gas and Oil Formations: West					
West: Jackson, Mason, Putnam					
Code	Formation	Year 1	Year2	Year 3 +	
1	Oriskany	-0.40	-0.40	-0.29	Jackson
2	Huron, Rhinestreet	-0.13	-0.12	-0.03	Mason
3	Devonian Shale	-0.31	-0.15	-0.04	Putnam
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.

Decline Rates for Natural Gas and Oil Formations: West Central					
West Central: Calhoun, Roane, Wirt					
Code	Formation	Year 1	Year2	Year 3 +	
2	Huron, Rhinestreet	-0.49	-0.11	-0.06	Calhoun
4	Huron	-0.33	-0.22	-0.14	Roane
27	Huron, Shales above Huron	-0.42	-0.23	-0.12	Wirt
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.

Average Industry Operating Expense Results - Safe Harbor

CONVENTIONAL GAS

- Average Operating Expenses	=	\$5,000
- Coal Bed Methane, Vertical Wells Expenses	=	\$9,000

OIL

- Average Operating Expenses	=	\$5,750
- Average Enhanced Operating Expenses	=	\$9,000

Minimum Working Interest Appraisal	=	\$500perwell
Flat Rate Royalty Multiplier	=	5.75

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

Industrial Use Only Wells: Gas MCF usage X \$6.50/MCF
Oil BBL usage X \$85.00/BBL
NGL BBL usage X \$35.00/BBL

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

Non-Filer Pricing

Under W.Va. CSR sec. 110-1J-8 the Tax Commissioner shall now use the average industry price of the producing area and strata multiplied by the production of the well as reported to the WV Department of Environmental Protection in determining the working interest income. The following prices will be used across the state:

Natural Gas	=	\$6.50 per mcf
Oil	=	\$85 per barrel
Natural Gas Liquids	=	\$35 per barrel

Minimum Pricing

As provided under W.Va. Code sec. 11-1C-10, the following minimum net value (after expenses) are set:

Natural Gas	=	\$0.30 per mcf
Oil	=	\$10.00 per barrel
Natural Gas Liquids	...	\$0.30 per MMBtu

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 well units, 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.

COUNTY	CO #	TY 2024 \$/AC BY COUNTY AND DISTRICT									
BARBOUR	1	DIS1 \$55.00	DIS2 \$1.00	DIS3 \$55.00	DIS4 \$55.00	DISS \$55.00	DIS6 \$1.00	DIS7 \$55.00	DISS \$55.00	DIS9 \$55.00	DIS10 \$55.00
BARBOUR	1	DIS11 \$55.00									
BERKELEY	2	DIS1 \$1.00	DIS2 \$1.00	DIS3 \$1.00	DIS4 \$1.00	DISS \$1.00	DIS6 \$1.00	DIS7 \$1.00	DISS \$1.00		
BOONE	3	DIS1 \$20.00	DIS2 \$1.00	DIS3 \$1.00	DIS4 \$20.00	DISS \$20.00	DIS& \$20.00	DIS7 \$1.00	DISS \$20.00	DIS9 \$1.00	
BRAXTON	4	D1S1 \$20.00	D1S2 \$1.00	D1S3 \$1.00	D1S4 \$1.00	DISS \$20.00	D1S6 \$20.00	D1S7 \$20.00	DISS \$1.00		
BROOKE	5	DIS1 \$1.00	DIS2 \$1.00	D1S3 \$105.00	DIS4 \$105.00	DISS \$1.00	DIS& \$1.00	DIS7 \$1.00	DISS \$1.00		
CABELL	6	DIS1 \$25.00	DIS2 \$1.00	DIS3 \$25.00	DIS4 \$25.00	DISS \$1.00	D1S6 \$1.00	D1S7 \$1.00	D1S8 \$25.00	DIS9 \$1.00	D1S10 \$25.00
CALHOUN	7	DIS1 \$30.00	DIS 2 \$1.00	DIS3 \$30.00	D1S4 \$30.00	DISS \$30.00	D1S6 \$30.00				
CLAY	8	D1S1 \$20.00	DIS2 \$1.00	D1S3 \$20.00	DIS4 \$20.00	DISS \$20.00	DIS& \$20.00				
DODDRIDGE	9	D1S1 \$100.00	DIS 2 \$100.00	DIS3 \$100.00	D1S4 \$100.00	DISS \$100.00	D1S6 \$100.00	DIS7 \$100.00	DISS \$100.00	DIS9 \$1.00	
FAYffie	10	D1S1 \$20.00	DIS2 \$20.00	DIS3 \$20.00	DIS4 \$1.00	DISS \$1.00	D1S6 \$1.00	DIS7 \$1.00	DISS \$1.00	D1S9 \$1.00	DIS10 \$1.00
FAYETTE	10	D1S11 \$1.00	DIS12 \$1.00	DIS 13 \$1.00							
GILMER	11	DIS1 \$25.00	DIS2 \$25.00	D1S3 \$25.00	D1S4 \$1.00	DISS \$1.00	D1S6 \$25.00				
GRANT	12	D1S1 \$1.00	DIS2 \$1.00	D1S3 \$1.00	DIS4 \$1.00	DISS \$1.00	D1S6 \$1.00				
GREENBRIER	13	DIS1 \$1.00	DIS2 \$1.00	DIS3 \$1.00	D1S4 \$1.00	DISS \$1.00	DIS6 \$1.00	DIS7 \$1.00	DISS \$1.00	DIS 9 \$1.00	DIS10 \$1.00
GREENBRIER	13	DIS11 \$1.00	D1S12 \$1.00	D1S13 \$1.00	D1S14 \$1.00	D1S15 \$1.00	D1S16 \$1.00	D1S17 \$1.00	D1S18 \$1.00		
HAMPSHIRE	14	D1S1 \$1.00	D1S2 \$1.00	D1S3 \$1.00	D1S4 \$1.00	DISS \$1.00	D1S6 \$1.00	D1S7 \$1.00	DISS \$1.00	D1S9 \$1.00	D1S10 \$1.00
HANCOCI	15	D1S1 \$25.00	DIS2 \$1.00	D1S3 \$25.00	DIS4 \$25.00	DISS \$1.00	DIS& \$1.00				
HARDY	16	D1S1 \$1.00	D1S2 \$1.00	DIS3 \$1.00	DIS4 \$1.00	DISS \$1.00	D1S6 \$1.00				
HARRISON	17	DIS1 \$90.00	DIS2 \$1.00	DIS3 \$1.00	DIS4 \$1.00	DISS \$90.00	DIS6 \$1.00	DIS7 \$90.00	DISS \$1.00	DIS9 \$90.00	DIS10 \$1.00
HARRISON	17	DIS11 \$90.00	DIS12 \$90.00	DIS13 \$1.00	DIS14 \$90.00	D1S15 \$90.00	D1S16 \$1.00	DIS17 \$1.00	D1S18 \$90.00	D1S19 \$1.00	DIS20 \$90.00
HARRISON	17	DIS21 \$1.00									
JACKSON	18	DIS1 \$40.00	D1S2 \$40.00	D1S3 \$1.00	DIS4 \$40.00	DISS \$1.00	DIS6 \$40.00	D1S7 \$40.00			
JEFFERSON	19	DIS1 \$1.00	D1S2 \$1.00	DIS3 \$1.00	DIS4 \$1.00	DISS \$1.00	DIS& \$1.00	D1S7 \$1.00	DISS \$1.00	DIS9 \$1.00	DIS10 \$1.00

COUNTY	CO#	TV 2024 \$/AC BY COUNTY AND DISTRICT									
KANAWHA	20	D1S1	D1S2	01S3	D1S4	DISS	DIS6	D1S7	D1S8	DIS9	DIS10
		\$30.00	\$1.00	\$30.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
KANAWHA	20	DIS11	DIS 12	DIS13	OIS14	DIS15	DIS16	DIS17	DIS18	DIS19	DIS20
		\$1.00	\$1.00	\$1.00	\$1.00	\$30.00	\$30.00	\$1.00	\$1.00	\$30.00	\$1.00
KANAWHA	20	OIS21	DIS22	DIS23	D1S24	D1S25	DIS26	D1S27	D1S28	OIS29	OIS30
		\$1.00	\$1.00	\$30.00	\$30.00	\$30.00	\$1.00	\$1.00	\$30.00	\$1.00	\$1.00
KANAWHA	20	OIS31									
		\$1.00									
LEWIS	21	D1S1	DIS2	DIS 3	D1S4	DISS	DIS6	DIS7	DISS	DIS9	
		\$35.00	\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$1.00	\$1.00	\$1.00	
LINCOLN	22	D1S1	D1S2	DIS3	DIS4	DISS	DIS6	DIS 7	DISS	DIS9	OIS10
		\$25.00	\$25.00	\$1.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$1.00
LOGAN	23	D1S1	DIS2	DIS3	D1S4	DISS	DIS6	D1S7	DIS8	DIS9	
		\$15.00	\$15.00	\$15.00	\$15.00	\$1.00	\$1.00	\$1.00	\$15.00	\$1.00	
MARION	24	D1S1	D1S2	DIS3	DIS4	DISS	DIS6	D1S7	DISS	DIS9	DIS10
		\$1.00	\$90.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$90.00	\$1.00
MARION	24	DIS11	DIS 12	DIS13	DIS14	DIS15	DIS 16	DIS17	DIS 18	DIS19	DIS20
		\$90.00	\$90.00	\$1.00	\$1.00	\$1.00	\$90.00	\$1.00	\$90.00	\$90.00	\$1.00
MARION	24	D1S21	DIS22								
		\$1.00	\$1.00								
MARSHALL	25	D1S1	D1S2	D1S3	D1S4	DISS	D1S6	DIS7	DISS	DIS9	DIS 10
		\$1.00	\$1.00	\$105.00	\$105.00	\$105.00	\$1.00	\$105.00	\$1.00	\$105.00	\$1.00
MARSHALL	25	DIS11	D1S12	DIS13	D1S14	DIS15	DIS16				
		\$1.00	\$105.00	\$105.00	\$105.00	\$105.00	\$1.00				
MASON	26	D1S1	D1S2	DIS3	D1S4	DISS	D1S6	DIS 7	DISS	DIS9	DIS10
		\$1.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$1.00	\$1.00	\$1.00	\$25.00
MASON	26	DIS11	DIS 12	OIS13	D1S14	DIS15	DIS16				
		\$1.00	\$1.00	\$1.00	\$25.00	\$25.00	\$25.00				
MCDOWELL	27	D1S1	DIS2	DIS3	D1S4	DISS	D1S6	DIS7	DISS	DIS9	D1S10
		\$20.00	\$1.00	\$20.00	\$20.00	\$1.00	\$20.00	\$1.00	\$1.00	\$1.00	\$1.00
MCDOWELL	27	DIS 11	D1S12	DIS13	DIS14	DIS15	DIS16				
		\$20.00	\$1.00	\$20.00	\$1.00	\$1.00	\$1.00				
MERCER	28	D1S1	DIS2	01S3	DIS4	DISS	OIS6	DIS7	D1S8	DIS9	DIS10
		\$1.00	\$15.00	\$1.00	\$1.00	\$1.00	\$15.00	\$1.00	\$1.00	\$15.00	\$1.00
MERCER	28	DIS11									
		\$15.00									
MINERAL	29	D1S1	D1S2	DIS3	D1S4	DISS	D1S6	DIS7	D1S8	DIS9	OIS10
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
MINERAL	29	DIS11									
		\$1.00									
MINGO	30	D1S1	D1S2	DIS 3	DIS4	DISS	OIS6	DIS 7	DISS	DIS9	D1S10
		\$1.00	\$1.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$1.00	\$20.00	\$20.00
MINGO	30	DIS11	DIS 12								
		\$20.00	\$1.00								
MONONGALIA	31	DIS1	D1S2	OIS3	D1S4	OIS5	OIS6	DIS 7	DIS8	OIS9	D1S10
		\$35.00	\$1.00	\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$35.00	\$1.00	\$1.00
MONONGALIA	31	OIS11	D1S12	DIS13	D1S14	D1S15	OIS16	OIS17	DIS18	DIS19	
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$35.00	
MONROE	32	D1S1	D1S2	DIS3	D1S4	DISS	DIS6	DIS 7	DISS	OIS9	
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	
MORGAN	33	OIS1	DIS2	DIS3	D1S4	DISS	DIS6	DIS 7	OIS8		
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00		

COUNTY	CO#	TY 2024 \$/AC BY COUNTY AND DISTRICT									
NICHOLAS	34	DIS1 \$1.00	DIS2 \$15.00	DIS 3 \$15.00	DIS4 \$15.00	DISS \$1.00	DIS6 \$1.00	DIS7 \$15.00	DISS \$1.00	DIS9 \$1.00	
OHIO	35	DIS 1 \$1.00	DIS2 \$1.00	DIS 3 \$105.00	DIS4 \$105.00	DISS \$1.00	OIS6 \$105.00	DIS7 \$1.00	DISS \$1.00	OIS9 \$1.00	OIS10 \$1.00
PENDLETON	36	DIS 1 \$1.00	DIS2 \$10.00	OIS3 \$1.00	OIS4 \$1.00	DISS \$1.00	DIS6 \$1.00	DIS7 \$10.00			
PLEASANTS	37	OIS1 \$40.00	DIS2 \$40.00	DIS3 \$40.00	DIS4 \$40.00	DISS \$40.00	DIS6 \$1.00	DIS7 \$40.00	DISS \$40.00		
POCAHONTAS	38	DIS1 \$1.00	DIS2 \$1.00	DIS 3 \$1.00	OIS4 \$1.00	DISS \$1.00	DIS6 \$1.00	DIS7 \$1.00	DISS \$1.00		
PRESTON	39	DIS1 \$30.00	OIS2 \$30.00	DIS 3 \$30.00	DIS4 \$30.00	DISS \$30.00	DIS& \$30.00	OIS7 \$1.00	DISS \$30.00	DIS9 \$1.00	DIS10 \$30.00
PRESTON	39	OIS11 \$1.00	DIS12 \$1.00	DIS13 \$1.00	DIS14 \$1.00	DIS15 \$1.00	OIS16 \$1.00	DIS17 \$1.00	DIS18 \$1.00	DIS19 \$1.00	DIS20 \$1.00
PUTNAM	40	DIS1 \$25.00	DIS2 \$25.00	DIS 3 \$1.00	DIS4 \$25.00	DISS \$1.00	DIS& \$1.00	DIS7 \$1.00	DISS \$25.00	DIS9 \$1.00	DIS10 \$25.00
PUTNAM	40	DIS11 \$25.00	DIS12 \$25.00	DIS13 \$1.00							
RALEIGH	41	DIS1 \$20.00	DIS2 \$20.00	OIS3 \$1.00	DIS4 \$1.00	DISS \$20.00	DIS& \$1.00	DIS7 \$20.00	DISS \$20.00	OIS9 \$20.00	DIS10 \$1.00
RALEIGH	41	DIS 11 \$20.00	DIS12 \$20.00								
RANDOLPH	42	DIS 1 \$20.00	OIS2 \$20.00	DIS3 \$1.00	DIS4 \$20.00	DISS \$1.00	DIS6 \$1.00	DIS7 \$1.00	DISS \$1.00	DIS9 \$1.00	DIS10 \$20.00
RANDOLPH	42	DIS11 \$20.00	OIS12 \$1.00	DIS13 \$1.00	DIS 14 \$1.00	DIS15 \$1.00	OIS16 \$20.00	DIS17 \$1.00	DIS 18 \$1.00		
RITCHIE	43	DIS 1 \$80.00	DIS2 \$1.00	OIS3 \$80.00	DIS4 \$1.00	DISS \$80.00	DIS& \$1.00	DIS7 \$80.00	DISS \$1.00	DIS9 \$1.00	DIS10 \$80.00
ROANE	44	DIS1 \$35.00	OIS2 \$35.00	DIS3 \$35.00	DIS4 \$35.00	DISS \$1.00	OIS6 \$35.00	OIS7 \$35.00	OIS8 \$1.00	DIS9 \$35.00	
SUMMERS	45	DIS 1 \$1.00	DIS2 \$1.00	DIS3 \$1.00	DIS4 \$1.00	DISS \$5.00	DIS& \$1.00	OIS7 \$1.00			
TAYLOR	46	DIS 1 \$1.00	DIS2 \$1.00	DIS3 \$90.00	DIS4 \$90.00	DISS \$90.00	OIS6 \$90.00	DIS7 \$90.00			
TUCKER	47	DIS 1 \$15.00	DIS2 \$15.00	DIS3 \$1.00	DIS4 \$1.00	DISS \$15.00	OIS6 \$1.00	DIS7 \$1.00	DISS \$1.00	DIS9 \$15.00	DIS10 \$1.00
TUCKER	47	DIS11 \$15.00	DIS12 \$1.00								
M E R	48	DIS1 \$100.00	DIS2 \$100.00	DIS3 \$1.00	DIS4 \$100.00	DISS \$100.00	DIS& \$100.00	DIS7 \$1.00	DISS \$1.00	DIS9 \$1.00	DIS10 \$100.00
UPSHUR	49	DIS 1 \$70.00	DIS2 \$70.00	DIS3 \$1.00	DIS4 \$70.00	DISS \$70.00	OIS6 \$70.00	DIS7 \$70.00			
WAYNE	50	OIS1 \$20.00	DIS2 \$20.00	DIS3 \$1.00	DIS4 \$1.00	DISS \$1.00	DIS& \$1.00	OIS7 \$1.00	DISS \$20.00	DIS9 \$20.00	DIS10 \$20.00
WAYNE	50	DIS11 \$1.00	DIS12 \$20.00								
WEBSTER	51	OIS1 \$1.00	DIS2 \$1.00	DIS3 \$1.00	DIS4 \$15.00	DISS \$15.00	DIS6 \$15.00	DIS7 \$1.00			
WETZEL	52	DIS1 \$100.00	DIS2 \$100.00	DIS3 \$100.00	DIS4 \$100.00	DISS \$100.00	DIS& \$1.00	DIS7 \$1.00	DISS \$100.00	OIS9 \$1.00	DIS10 \$1.00
WETZEL	52	OIS11 \$1.00	DIS12 \$100.00	DIS13 \$1.00							

COUNTY	CO#	TY 2024 \$/AC BY COUNTY AND DISTRICT									
WIRT	53	DIS1	DIS2	DIS3	DIS4	DISS	DIS6	DIS7	DISS		
		\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$35.00	\$35.00	\$35.00		
WOOD	54	DIS1	DIS2	DIS3	DIS4	DISS	DIS6	DIS7	DIS8	DIS9	DIS10
		\$35.00	\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$35.00	\$35.00	\$35.00	\$1.00
WOOD	54	DIS11	DIS12	DIS13	DIS14						
		\$35.00	\$35.00	\$1.00	\$1.00						
WYOMING	55	DIS1	DIS2	DIS3	DIS4	DISS	DIS6	DIS7	DISS	DIS9	DIS10
		\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$1.00	\$20.00	\$1.00	\$1.00	\$20.00

**MANAGED TIMBER
PROPERTY ANALYSIS**

Tax Year 2024

**September 1, 2023
Matthew R. Irby
State Tax Commissioner
Department of Revenue**

TIVIBERLAND APPRAISAL RATES

TAX YEAR - 2024

(based on market 2017-2022)

Tentative Rates Per Acre

Class II Parcels				
	<u>limde 1</u>	<u>5imdt2</u>	<u>gmde!</u>	
Region 1	\$200	\$140	\$50	
Region 2	\$200	\$140	\$50	
Region 3	\$200	\$140	\$50	
Region 4	\$200	\$140	\$50	
Region 5	\$200	\$140	\$50	

Class III/IV Parcels				
	<u>g[ade 1</u>	<u>gmdli</u>	<u>9 m de j</u>	
Region 1	\$225	\$150	\$75	
Region 2	\$225	\$150	\$75	
Region 3	\$225	\$150	\$75	
Region 4	\$225	\$150	\$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, Unclon, Logan, McDowell, Mercer, Mingo, Raleigh, Summers, Wayne, and Wyoming Counties

Harvest Volumes per Acre

Harvest Interval <u>Grades</u>	<u>35yrs.</u>	<u>§ m :</u>	<u>§ i m :</u>	<u>-</u>	<u>!91!!</u>
1 - Site Index 75 or more	4.6 cords 1.5 Mbf	— ..	2.6 cords 4.4 Mbf	3.3 cords 8.6 Mbf	10.5 cords 14.5 Mbf
2 - Site Index 65 - 75	3.3 cords 1.0 Mbf	— -	7.0 cords 3.2 Mbf	4.6 cords 5.5 Mbf	14.9 cords 9.7 Mbf
3 - Site Index less than 85	— —	3.1 cords 0.8 Mbf	— —	15.4 cords 3.7 Mbf	18.5 cords 4.5 Mbf

Estimation of Required Rate of Return

A. Safe Rate of Return (5 Year T-Bill or 5 Year Corp Bond Rate)				
Year	Rate	W/A%	W/A Rate	
2022	2.9992	33.33%	0.9996	
2021	1.2600	26.67%	0.3360	
2020	2.0700	20.00%	0.4140	
2019	1.9575	13.33%	0.2609	
2018	2.7480	6.67%	0.1833	2.194 %
<hr/>				
B. Nonliquidity Rate (20 yr T-Bill vs. 3 Month T-Bills)				
Year	Rate	W/A%	W/A Rate	
2022	0.7108	20.00%	0.1422	
2021	1.8200	33.33%	0.6066	
2020	1.0100	26.67%	0.2694	
2019	0.5000	13.33%	0.0667	
2018	0.3583	6.67%	0.0239	1.109 %
<hr/>				
C. Risk Rate (30 yr T-bills or 5 year Corp Bond vs 30 day T-bills)				
Year	Rate	W/A%	W/A Rate	
2022	1.1580	33.33%	0.3860	
2021	1.2000	26.67%	0.3200	
2020	1.7000	20.00%	0.3400	
2019	0.6240	13.33%	0.0832	
2018	0.3642	6.67%	0.0243	1.079 %
<hr/>				
D. Management Factor of 1.0%				
E. Property Tax Component (60% of Blended III&IV Rates)				
Year	Rate	W/A%	W/A Rate	
2022	0.720	33.33%	0.2400	
2021	0.720	26.67%	0.1920	
2020	0.720	20.00%	0.1440	
2019	0.720	13.33%	0.0944	
2018	0.708	6.67%	0.0476	0.718 %
<hr/>				
F. Inflation Rate: (BLS • 20 yr average)				
Year	Rate	W/A%	W/A Rate	
2022	2.480	13.33%	0.3306	
2021	2.560	6.67%	0.1708	
2020	1.360	33.33%	0.4533	
2019	1.810	26.67%	0.4827	
2018	1.910	20.00%	0.3820	(1.819) %
<hr/>				
TOTAL REQUIRED RATE OF RETURN (REAL)				4.280 %
LESS: PROPERTY TAX COMPONENT				(0.718)
TOTAL DISCOUNT COMPONENT				3.562 %

Management Costs:

Region	\$/acre (1)
1	3.25
2	3.25
3	3.25
4	3.25
5	3.25
State	

Tax Rates:

Effective Federal Income Tax Rate		21.00%
Effective WV State Income Tax Rate	(6.5% • (1-.21))	
Effective WV Severance Tax Rate	(0% • (1-.21))	.000%

Yield (Volumes) (80 year rotation)

Timberland Product 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	lessthan65	4.5	18.5

COAL PROPERTIES ANALYSIS

Tax Year 2024

**September 1, 2023
Matthew A. Irby
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 1 I.

<u>Safe Rate</u>	90 day Treasury Bills	<u>Safe Rate</u>
2022	December	4.360%
2021	December	0.060%
2020	December	0.3700%

<u>Risk Rate</u>	Interest differential between Loan Rate and 90 day Treasury Bills	<u>Debt Risk Rate</u>
	<u>Loan Rate*</u>	
2022	9.50%	5.1400%
2021	5.54%	5.480%
2020	5.54%	5.170%

*Prime plus 2%

	Differential between Equity Rates and 90 day Treasury Bills	<u>Equity Risk Rate</u>
	<u>Equity Rate**</u>	
2022	12.93%	19.048%
2021	11.04%	16.264%
2020	11.44%	14.761%

**COE - BVR Cost of Capital Professional (CRSP, Center for Research in Security Prices, Salvador Partners, Damodaran, Stern School)

<u>Composite Risk Rate</u>	Loan and Equity Rates weighted by industry estimated capital structure.			
	<u>Em&lt;i>Equity Rate</u>	<u>Debt/(Debt+Equity)</u>	<u>Debt Rate</u>	<u>Composite Risk</u>
2022	13.333%	30.0%	1.542%	14.875%
2021	12.198%	25.0%	1.370%	13.568%
2020	11.071%	25.0%	1.293%	12.364%

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

		<u>1yr T BH</u>	<u>90d T Bill</u>	<u>Non-Uajudity Rate</u>
2022	December	4.680%	4.360%	0.320%
2021	December	0.320%	0.060%	0.260%
2020	December	0.380%	0.370%	0.010%

Management Rate Charges for the management of investment portfolios.

Fixed Rate (by Rule) 0.500%

Inflation Rate

2022	December	2.480%
2021	December	2.560%
2020	December	1.360%

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.

			<u>2020</u>
Inflation Rate	-2.480%	-2.560%	-1.360%
Safe Rate	4.360%	0.060%	0.370%
Composite Risk Rate	14.875%	13.568%	12.364%
Non Liquidity Rate	0.320%	0.260%	0.010%
Management Rate	0.500%	0.500%	0.500%
Property Tax	NIA	NIA	NIA
Total	17.575%	11.828%	11.884%

Three Yr Average: 13.76 Rounded to: 13.80%

<u>CAPITALIZATION RATE</u>		13.80%	
<u>MULTIPLIERS:</u>			
1YR	0.879	9YR	4.983
2YA	1.651	10YR	5.257
3YR	2.329	11YR	5.498
4YR	2.926	12YR	5.710
5YR	3.450	13YR	5.897
6YR	3.910	14YR	6.060
7YR	4.315	15YR	6.204
8YR	4.670		

COAL SALE PRICES FOR TY24 APPLICATION

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 active operations, assessors, tax auditors, and by individual lessors/lessees involved in the specific transaction. The prices for mined coal, as per 110-CSR-1 I, 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.

GRANDSUMMARY.ALLSOURCES	STEAM SPOT	STEAM IEBM	MEI
PSC (2022)	\$62.30	\$51.25	
FERC (2022)	\$66.91	ss2n	
Active Return (AR) Summary (2022)	\$64.49		\$151.23
Coal Market Publication (3 year average - Platts)	\$78.14 PGH (13/3) Rail		\$211.54 Low Vol HCC
(3 year average Platts - minus transportation)	\$85.65 CAPP (12/1.67) Barge		\$213.82 High Vol A
	\$157.59 High Vol B		\$193.59 High Vol 8

STATE STEAM PRICE
STATE MET PRICE

\$60.16 FERC & PSC, 3 Yr Ave SPOT
\$151.23 Active Returns

	Spot Sales	Term Sales	Total
2022 WV-PSC Reported Tons	6,785,378	6,795,222	13,580,600

COAL TY24 ROYALTY RATES	2022 - Average 81um IYR		2021		2020		2019		2018	
	%S	%0	%S	1'D	%S	i.O	S	"4D	%S	%0
TOTAL RECORDS	142	38	38	28	27	25	11	25	78	47
SUM of	892.90	234.210	384.31	212.51	158.90	126.05	528.27	133.33	517.21	288.47
PERCENT smA1OHT AVERAOE	6.29	6.18	8.21	6.25	5.81	5.04	8.8B	5.33	8.81	5.71
MEDIAN	8.00	8.00	8.2	8.19	8.50	6.00	7.00	8.00	8.00	5.00
WEIOHrED AVERAGE ROYALTY RATE DEEP (%)	5.81	8.43	8.11	4.83	8.8B	5.39	8.70	3.88	8.36	5.113
ROYALTY RATE SURFACE (%)	6.33									

Steam ~~Coal~~ Deep Mine 5.19% per ton x
 Metallurgical Coal/ Deep Mine 5.19% per ton X
 Steam Coal/ Surface Mint 8.33% per ton X
 Metallurgical Coal/ Surface Mine 6.33% per ton X

\$3.12	per ton
\$7.85	per ton
\$3.81	per ton
\$8.56	per ton

Explanation of Reserve Coal Valuation

The ACVM 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 11 for details.

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 were revised for Tax Year 2023 (next update in TY25). 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 >= 30 Then TransFactor = 20
If Trans=Ct < 30 And Trans_Ct >= 28 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: $mine
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 < 12 Then WellFactor = 40
WellDensity > 12 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 <= 10 or Null Then EnvFactor = 0
Envrate > 10 and Envrate <= 20 Then EnvFactor = 20
Envrate > 20 and Envrate <= 30 Then EnvFactor = 40
Envrate > 30 Then EnvFactor = 80
```

**OTHER MINED MINERAL
PROPERTY ANALYSIS**

TAX YEAR 2024

September 1, 2023
Matthew R. Irby
State Tax Commissioner
Department of Revenue

NON-COAL MINERALS CAPITALIZATION RATE TV 24

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>
2022	December	4.360%
2021	December	0.060%
2020	December	0.370%

<u>Risk Rate</u>	Interest differential between Loan Rate and 90 day Treasury Bills	
	<u>Loan Rate</u>	<u>Debt Risk Rate</u>
2022	9.50%	5.140%
2021	5.54%	5.480%
2020	5.54%	5.170%

*Prime plus 2%

§ m m	Differential between Equity Rates and 90 day Treasury Bills	
	<u>Equity Rate</u>	<u>Equity Risk Rate</u>
2022**	11.53%	16.985%
2021**	11.97%	17.634%
2020	12.00%	16.298%

**COE - BVR Cost of Capital Professional {CRSP, Center for Research in security Prices, Salvador Partners, Damodaran, Stern School}

<u>Composite Risk Rate</u>	Loan and Equity Rates weighted by industry estimated capital structure.			
	Rate	<u>Debt/Debt+Equity</u>	<u>Debt Rate</u>	<u>Composite Risk</u>
2022	13.25%	22.0%	1.131%	14.379%
2021	13.23%	25.0%	1.370%	14.600%
2020	11.00%	25.0%	1.680%	12.680%

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

		<u>1yr TBill</u>	<u>90d TBill</u>	<u>Non-Liquidity Rate</u>
2022	December	4.680%	4.360%	0.320%
2021	December	0.320%	0.060%	0.260%
2020	December	0.380%	0.370%	0.010%

Management Rate Charges for the management of investment portfolios.

Fixed Rate (by Rule) 0.500%

Inflation Rate

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2021 December 2.560%
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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.

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Inflation Rate	-2.480%	-2.560%	-1.360%
Safe Rate	4.360%	0.060%	0.370%
Composite Risk Rate	14.379%	14.600%	12.680%
Non Liquidity Rate	0.320%	0.260%	0.010%
Management Rate	0.500%	0.500%	0.500%
Total	17.079%	12.860%	12.200%

Three Yr Average: 14.046 Rounded to: 14.00%

<u>CAPITALIZATION RATE</u> •		14.00%	
<u>MULTIPLIERS:</u>			
1YR	<i>0.an</i>	9YR	4.946
2YR	1.647	10YR	5.216
3YR	2.322	11YR	5.453
4YR	2.914	12YR	5.660
5YR	3.433	13YR	5.842
6YR	3.889	14YR	6.002
7YR	4.288	15YR	6.142
8YR	4.639		

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 to protect the confidentiality of parties involved.

Resource	# of Data Sources	Ave Royalty	Median Royalty	TV2023 Rate
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	<i>NIA</i>	<i>NIA</i>	<i>NA</i>

Reserve Values	# of Sales	\$/AC
LIMESTONE	5	\$3,000
SANDSTONE	8	\$2,300
CLAY/SHALE	16	\$850
SAND/GRAVEL	6	\$4,000
SALT	2	\$1,140