



**Dave Hardy**  
Secretary of Revenue

**Matthew Irby**  
State Tax Commissioner

**STATE TAX DEPARTMENT**

August 31, 2021

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

OFFICE WEST VIRGINIA  
SECRETARY OF STATE  
2021 SEP - 1 P 3: 39  
FILED

Dear Secretary Warner:

Attached for filing in the State Register are final natural resource property valuation variables for the 2022 Tax Year that have been developed by the State Tax Department 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, 2021. The department received comments on the tentative valuation variables pertaining to §§110CSR1-J and 1-H.

First, the agency received many comments regarding the new capitalization methodology for oil and gas variables. It was noted that the modified version in the tentative variables did not match the weighted average cost of capital methodology outlined in the emergency rule for §110CSR1-J. A number of other mistakes were identified with the variables chosen. Due to the acceptance by the Secretary of State of the Emergency Rule on July 19<sup>th</sup>, the agency has wholly revamped this calculation and produced an entirely different capitalization rate using the methodology outlined in the rule.

Second, the agency received a comment from the timber industry regarding the historically low capitalization rates. These rates are the result of fiscal policy related to the Covid-19 pandemic, and do not necessarily fully encapsulate the risk associated with the long-term investment in the timber industry. As a result, the historic management rate has been adjusted from 0.5% to 1.0%. This is consistent with industry specific valuation procedures throughout the course of the pandemic. A similar adjustment was provided as one time relief in the WACC model adopted for oil and gas. Such an adjustment is not available for other properties, as the rate is explicitly set by rule.

Third, the agency also received a comment from the timber industry regarding the pricing of timber for 2020. After discussions with the Division of Forestry, it was determined that the 2020 timber pricing reports were particularly unreliable due to the Covid-19 pandemic. Pricing has been adjusted to the historical rates published last year, with 2020 not included in the average.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Irby', with a large, stylized flourish at the end.

**Matthew R. Irby**  
State Tax Commissioner

**Attachment**

**FILED**

2021 SEP -1 P 3: 39

OFFICE WEST VIRGINIA  
SECRETARY OF STATE

**OIL AND GAS PROPERTIES ANALYSIS**

**Tax Year 2022**

August 31, 2021  
Matthew R. Irby  
State Tax Commissioner  
Department of Revenue

## OIL AND GAS CAPITALIZATION RATE

The 07/01/2021 cost of capital analysis for West Virginia Oil and Gas was performed using the Q4 2020 Cost of Capital Professional study. Returns were selected and calculated for the time period ranging from 1928 to 2020 using an arithmetic mean.

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

An equity percentage of 65.00% was selected.

A debt percentage of 35.00% was selected.

### 5.4.2.a: Equity Portion :

**5.4.2.a.1:** A 2.01% Risk Free Rate (RFR) was selected, representing the 20-Year Treasury Constant Maturity Rate available on 07/01/2021 at the Federal Reserve Bank.

**5.4.2.a.2:** A 5.90% Equity Risk Premium (ERP) was selected, representing the Historical ERP calculated using the S&P 500 average annual return of 11.81% derived from CRSP data for the 1928 - 2020 period and a 5.91% 20-year T-Bond average annual return (Reconstructed) for the same timeframe

**5.4.2.a.3:** An implied 3.66% Industry Risk Premium (IRP) was calculated using an industry beta of 1.62. The 5-Year industry beta for 2020 US - Oil & Gas Exploration & Production was sourced from **Salvidio & Partners and included 12 firms**. Implied Industry Risk Premium = (Industry Beta \* ERP) - ERP = (1.62 \* 5.90%) - 5.90%.

**5.4.2.a.4** A 3.46% Size Premium (SP) was selected. The Size Premium was based on CRSP decile 6\_8 which included 917 firms with an equity market capitalization size ranging from \$451,955,000 to \$2,444,745,000 in Q4 2020. The CRSP decile 6\_8 mean annual return reached 15.27% between 1928 and 2020. The mean annual return for the S&P 500 for the same period was 11.81%.

**5.4.2.a.5:** A 2.32% Unsystematic Risk Premium (URP) was added for Management (1.00) and Property tax (1.32).

Cost of Capital Professional returned a 17.35% cost of equity capital for West Virginia Oil and Gas as of 07/01/2021 based on the Build-Up Model.

### 5.4.2.b: Debt Portion

**5.4.2.b.1:** A borrowing rate (pre-tax cost of debt) of 3.67% was selected. Damodaran 2020 (Oil and Gas Production and Exploration).

**5.4.2.b.2:** A tax rate of 19.37% was selected. Damodaran 2020 Effective Tax Rate (Money Making Firms -- Oil and Gas Production and Exploration).

**Final Estimate**

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

$$12.31\% = (17.35\% * 65.00\%) + (3.67\% * (1 - 19.37\%) * 35.00\%)$$

**Cost of Capital = 12.31% WACC for West Virginia Oil and Gas as of 07/01/2021.**

<b>CAPITALIZATION RATE - 12.31%</b>			
<b>Yr.</b>	<b>Multiplier</b>	<b>Yr.</b>	<b>Multiplier</b>
1	0.944953	21	0.098135
2	0.843784	22	0.087629
3	0.753446	23	0.078247
4	0.672779	24	0.069870
5	0.600749	25	0.062389
6	0.536431	26	0.055710
7	0.478999	27	0.049745
8	0.427716	28	0.044419
9	0.381924	29	0.039664
10	0.341034	30	0.035417
11	0.304521	31	0.031625
12	0.271918	32	0.028239
13	0.242806	33	0.025216
14	0.216810	34	0.022516
15	0.193598	35	0.020106
16	0.172871	36	0.017953
17	0.154363	37	0.016031
18	0.137836	38	0.014315
19	0.123079	39	0.012782
20	0.109902	40	0.011414



<b>Decline Rates for Natural Gas and Oil Formations: Central</b>					
<b>Central:Braxton, Clay, Fayette, Nicholas, Webster</b>					
<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
12	Alexander, Benson	-0.31	-0.20	-0.10	<b>Braxton</b>
14	Benson	-0.48	-0.08	-0.08	<b>Clay</b>
16	Benson, Balltown+	-0.45	-0.16	-0.12	<b>Fayette</b>
17	Gordon +	-0.30	-0.07	-0.07	<b>Nicholas</b>
18	Big Injun	-0.34	-0.13	-0.13	<b>Webster</b>
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.

<b>Decline Rates for Natural Gas and Oil Formations: East</b>					
<b>East: Berkeley, Grant, Greenbrier, Hampshire, Hardy, Jefferson, Mineral, Monroe, Morgan, Pendleton, Pocahontas, Preston, Randolph, Summers, Tucker</b>					
<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
1	Oriskany	-0.30	-0.30	-0.19	<b>Berkeley</b>
14	Benson	-0.31	-0.17	-0.12	<b>Grant</b>
20	Benson +	-0.44	-0.20	-0.08	<b>Greenbrier</b>
21	Benson, Fifth	-0.29	-0.28	-0.09	<b>Hampshire</b>
32	Brallier +	-0.48	-0.20	-0.05	<b>Hardy</b>
33	Elk, Benson	-0.39	-0.21	-0.08	<b>Jefferson</b>
34	Elk, Benson, Riley	-0.53	-0.19	-0.05	<b>Mineral</b>
35	Elk, Benson, Riley +	-0.36	-0.19	-0.11	<b>Monroe</b>
36	Elk, Benson, Balltown	-0.34	-0.18	-0.11	<b>Morgan</b>
37	Elk, Alexander, Benson	-0.50	-0.07	-0.07	<b>Pendleton</b>
38	Elk, Alexander, Benson +	-0.40	-0.16	-0.16	<b>Pocahontas</b>
39	Huntermville	-0.31	-0.31	-0.14	<b>Preston</b>
40	Fox, Haverty	-0.36	-0.21	-0.15	<b>Randolph</b>
93	4th Sand	-0.42	-0.32	-0.08	<b>Summers</b>
94	50 Foot	-0.34	-0.26	-0.07	<b>Tucker</b>
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.

<b>Decline Rates for Natural Gas and Oil Formations: South</b>					
<b>South: McDowell, Mercer, Raleigh, Wyoming</b>					
<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
8	Berea	-0.34	-0.15	-0.15	<b>McDowell</b>
22	Big Lime	-0.31	-0.19	-0.07	<b>Mercer</b>
23	Big Lime, Maxton	-0.31	-0.19	-0.07	<b>Raleigh</b>
24	Big Lime, Ravenc Cliff	-0.29	-0.29	-0.17	<b>Wyoming</b>
25	Berea +	-0.37	-0.12	-0.08	
26	Ravenc Cliff	-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, Ravenc Cliff	-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**

<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
3	Devonian Shale	-0.31	-0.15	-0.04	<b>Cabell</b>
8	Berea	-0.36	-0.11	-0.11	<b>Lincoln</b>
18	Big Injun	-0.38	-0.22	-0.04	<b>Logan</b>
22	Big Lime	-0.19	-0.19	-0.19	<b>Mingo</b>
43	Berea, Big Lime	-0.18	-0.18	-0.18	<b>Wayne</b>
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.

<b>Decline Rates for Natural Gas and Oil Formations: South Central</b>					
<b>South Central: Boone, Kanawha</b>					
<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
3	Devonian Shale	-0.23	-0.08	-0.05	<b>Boone</b>
4	Huron	-0.31	-0.15	-0.04	<b>Kanawha</b>
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.

<b>Decline Rates for Natural Gas and Oil Formations: North</b>					
<b>North: Brooke, Hancock, Marshall, Ohio, Tyler, Wetzel</b>					
<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
11	Gordon	-0.47	-0.31	-0.09	<b>Brooke</b>
13	Alexander, Benson, Riley	-0.26	-0.16	-0.15	<b>Hancock</b>
15	Benson, Riley	-0.18	-0.16	-0.06	<b>Marshall</b>
93	4th Sand	-0.42	-0.32	-0.08	<b>Ohio</b>
94	50 Foot	-0.34	-0.26	-0.07	<b>Tyler</b>
95	Injun/Weir	-0.51	-0.26	-0.09	<b>Wetzel</b>
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**

<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
2	Huron, Rhinestreet	-0.41	-0.26	-0.07	<b>Pleasants</b>
4	Huron	-0.42	-0.24	-0.14	<b>Ritchie</b>
5	Huron, Shales above Huron	-0.39	-0.25	-0.14	<b>Wood</b>
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 *	-0.39	-0.23	-0.13	
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.

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<b>North Central: Barbour, Doddridge, Gilmer, Harrison, Lewis, Marion, Monongalia, Taylor, Upshur</b>					
<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>	
11	Gordon	-0.41	-0.14	-0.12	<b>Barbour</b>
12	Alexander, Benson	-0.37	-0.19	-0.11	<b>Doddridge</b>
13	Alexander, Benson, Riley	-0.40	-0.28	-0.05	<b>Gilmer</b>
14	Benson	-0.31	-0.17	-0.12	<b>Harrison</b>
15	Benson, Riley	-0.34	-0.17	-0.14	<b>Lewis</b>
18	Big Injun	-0.36	-0.16	-0.13	<b>Marion</b>
21	Benson, Fifth	-0.31	-0.20	-0.14	<b>Monongalia</b>
28	Weir	-0.34	-0.34	-0.07	<b>Taylor</b>
29	Weir +	-0.28	-0.28	-0.23	<b>Upshur</b>
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	Rhinstreet	-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.

<b>North Central: continued</b>				
<b>Code</b>	<b>Formation</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3 +</b>
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.

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

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

## 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	=	\$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 \$2.03/MCF  
BBL usage X \$39.16/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.

COUNTY	CO #	TY 2022 \$/AC BY COUNTY AND DISTRICT									
BARBOUR	1	DIS 1 \$55.00	DIS 2 \$1.00	DIS 3 \$55.00	DIS 4 \$55.00	DIS 5 \$55.00	DIS 6 \$1.00	DIS 7 \$55.00	DIS 8 \$55.00	DIS 9 \$55.00	DIS 10 \$55.00
BARBOUR	1	DIS 11 \$55.00									
BERKELEY	2	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00		
BOONE	3	DIS 1 \$20.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$20.00	DIS 5 \$20.00	DIS 6 \$20.00	DIS 7 \$1.00	DIS 8 \$20.00	DIS 9 \$1.00	
BRAXTON	4	DIS 1 \$20.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$20.00	DIS 6 \$20.00	DIS 7 \$20.00	DIS 8 \$1.00		
BROOKE	5	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$105.00	DIS 4 \$105.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00		
CABELL	6	DIS 1 \$25.00	DIS 2 \$1.00	DIS 3 \$25.00	DIS 4 \$25.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$25.00	DIS 9 \$1.00	DIS 10 \$25.00
CALHOUN	7	DIS 1 \$30.00	DIS 2 \$1.00	DIS 3 \$30.00	DIS 4 \$30.00	DIS 5 \$30.00	DIS 6 \$30.00				
CLAY	8	DIS 1 \$20.00	DIS 2 \$1.00	DIS 3 \$20.00	DIS 4 \$20.00	DIS 5 \$20.00	DIS 6 \$20.00				
DODDRIDGE	9	DIS 1 \$100.00	DIS 2 \$100.00	DIS 3 \$100.00	DIS 4 \$100.00	DIS 5 \$100.00	DIS 6 \$100.00	DIS 7 \$100.00	DIS 8 \$100.00	DIS 9 \$1.00	
FAYETTE	10	DIS 1 \$20.00	DIS 2 \$20.00	DIS 3 \$20.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$1.00
FAYETTE	10	DIS 11 \$1.00	DIS 12 \$1.00	DIS 13 \$1.00							
GILMER	11	DIS 1 \$25.00	DIS 2 \$25.00	DIS 3 \$25.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$25.00				
GRANT	12	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00					
GREENBRIER	13	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$1.00
GREENBRIER	13	DIS 11 \$1.00	DIS 12 \$1.00	DIS 13 \$1.00	DIS 14 \$1.00	DIS 15 \$1.00	DIS 16 \$1.00	DIS 17 \$1.00	DIS 18 \$1.00		
HAMPSHIRE	14	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$1.00
HANCOCK	15	DIS 1 \$25.00	DIS 2 \$1.00	DIS 3 \$25.00	DIS 4 \$25.00	DIS 5 \$1.00	DIS 6 \$1.00				
HARDY	16	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00				
HARRISON	17	DIS 1 \$90.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$90.00	DIS 6 \$1.00	DIS 7 \$90.00	DIS 8 \$1.00	DIS 9 \$90.00	DIS 10 \$1.00
HARRISON	17	DIS 11 \$90.00	DIS 12 \$90.00	DIS 13 \$1.00	DIS 14 \$90.00	DIS 15 \$90.00	DIS 16 \$1.00	DIS 17 \$1.00	DIS 18 \$90.00	DIS 19 \$1.00	DIS 20 \$90.00
HARRISON	17	DIS 21 \$1.00									
JACKSON	18	DIS 1 \$40.00	DIS 2 \$40.00	DIS 3 \$1.00	DIS 4 \$40.00	DIS 5 \$1.00	DIS 6 \$40.00	DIS 7 \$40.00			
JEFFERSON	19	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$1.00

COUNTY	CO #	TY 2022 \$/AC BY COUNTY AND DISTRICT									
KANAWHA	20	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$30.00	\$1.00	\$30.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
KANAWHA	20	DIS 11	DIS 12	DIS 13	DIS 14	DIS 15	DIS 16	DIS 17	DIS 18	DIS 19	DIS 20
		\$1.00	\$1.00	\$1.00	\$1.00	\$30.00	\$30.00	\$1.00	\$1.00	\$30.00	\$1.00
KANAWHA	20	DIS 21	DIS 22	DIS 23	DIS 24	DIS 25	DIS 26	DIS 27	DIS 28	DIS 29	DIS 30
		\$1.00	\$1.00	\$30.00	\$30.00	\$30.00	\$1.00	\$1.00	\$30.00	\$1.00	\$1.00
KANAWHA	20	DIS 31									
		\$1.00									
LEWIS	21	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	
		\$35.00	\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$1.00	\$1.00	\$1.00	
LINCOLN	22	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$25.00	\$25.00	\$1.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$1.00
LOGAN	23	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	
		\$15.00	\$15.00	\$15.00	\$15.00	\$1.00	\$1.00	\$1.00	\$15.00	\$1.00	
MARION	24	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$1.00	\$90.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$90.00	\$1.00
MARION	24	DIS 11	DIS 12	DIS 13	DIS 14	DIS 15	DIS 16	DIS 17	DIS 18	DIS 19	DIS 20
		\$90.00	\$90.00	\$1.00	\$1.00	\$1.00	\$90.00	\$1.00	\$90.00	\$90.00	\$1.00
MARION	24	DIS 21	DIS 22								
		\$1.00	\$1.00								
MARSHALL	25	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$1.00	\$1.00	\$105.00	\$105.00	\$105.00	\$1.00	\$105.00	\$1.00	\$105.00	\$1.00
MARSHALL	25	DIS 11	DIS 12	DIS 13	DIS 14	DIS 15	DIS 16				
		\$1.00	\$105.00	\$105.00	\$105.00	\$105.00	\$1.00				
MASON	26	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$1.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$1.00	\$1.00	\$1.00	\$25.00
MASON	26	DIS 11	DIS 12	DIS 13	DIS 14	DIS 15	DIS 16				
		\$1.00	\$1.00	\$1.00	\$25.00	\$25.00	\$25.00				
MCDOWELL	27	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$20.00	\$1.00	\$20.00	\$20.00	\$1.00	\$20.00	\$1.00	\$1.00	\$1.00	\$1.00
MCDOWELL	27	DIS 11	DIS 12	DIS 13	DIS 14	DIS 15	DIS 16				
		\$20.00	\$1.00	\$20.00	\$1.00	\$1.00	\$1.00				
MERCER	28	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$1.00	\$15.00	\$1.00	\$1.00	\$1.00	\$15.00	\$1.00	\$1.00	\$15.00	\$1.00
MERCER	28	DIS 11									
		\$15.00									
MINERAL	29	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
MINERAL	29	DIS 11									
		\$1.00									
MINGO	30	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$1.00	\$1.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$1.00	\$20.00	\$20.00
MINGO	30	DIS 11	DIS 12								
		\$20.00	\$1.00								
MONONGALIA	31	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$35.00	\$1.00	\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$35.00	\$1.00	\$1.00
MONONGALIA	31	DIS 11	DIS 12	DIS 13	DIS 14	DIS 15	DIS 16	DIS 17	DIS 18	DIS 19	
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$35.00	
MONROE	32	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	
MORGAN	33	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8		
		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00		

COUNTY	CO #	TY 2022 \$/AC BY COUNTY AND DISTRICT									
NICHOLAS	34	DIS 1 \$1.00	DIS 2 \$15.00	DIS 3 \$15.00	DIS 4 \$15.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$15.00	DIS 8 \$1.00	DIS 9 \$1.00	
OHIO	35	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$105.00	DIS 4 \$105.00	DIS 5 \$1.00	DIS 6 \$105.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$1.00
PENDLETON	36	DIS 1 \$1.00	DIS 2 \$10.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$10.00			
PLEASANTS	37	DIS 1 \$40.00	DIS 2 \$40.00	DIS 3 \$40.00	DIS 4 \$40.00	DIS 5 \$40.00	DIS 6 \$1.00	DIS 7 \$40.00	DIS 8 \$40.00		
POCAHONTAS	38	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00		
PRESTON	39	DIS 1 \$30.00	DIS 2 \$30.00	DIS 3 \$30.00	DIS 4 \$30.00	DIS 5 \$30.00	DIS 6 \$30.00	DIS 7 \$1.00	DIS 8 \$30.00	DIS 9 \$1.00	DIS 10 \$30.00
PRESTON	39	DIS 11 \$1.00	DIS 12 \$1.00	DIS 13 \$1.00	DIS 14 \$1.00	DIS 15 \$1.00	DIS 16 \$1.00	DIS 17 \$1.00	DIS 18 \$1.00	DIS 19 \$1.00	DIS 20 \$1.00
PUTNAM	40	DIS 1 \$25.00	DIS 2 \$25.00	DIS 3 \$1.00	DIS 4 \$25.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$25.00	DIS 9 \$1.00	DIS 10 \$25.00
PUTNAM	40	DIS 11 \$25.00	DIS 12 \$25.00	DIS 13 \$1.00							
RALEIGH	41	DIS 1 \$20.00	DIS 2 \$20.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$20.00	DIS 6 \$1.00	DIS 7 \$20.00	DIS 8 \$20.00	DIS 9 \$20.00	DIS 10 \$1.00
RALEIGH	41	DIS 11 \$20.00	DIS 12 \$20.00								
RANDOLPH	42	DIS 1 \$20.00	DIS 2 \$20.00	DIS 3 \$1.00	DIS 4 \$20.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$20.00
RANDOLPH	42	DIS 11 \$20.00	DIS 12 \$1.00	DIS 13 \$1.00	DIS 14 \$1.00	DIS 15 \$1.00	DIS 16 \$20.00	DIS 17 \$1.00	DIS 18 \$1.00		
RITCHIE	43	DIS 1 \$80.00	DIS 2 \$1.00	DIS 3 \$80.00	DIS 4 \$1.00	DIS 5 \$80.00	DIS 6 \$1.00	DIS 7 \$80.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$80.00
ROANE	44	DIS 1 \$35.00	DIS 2 \$35.00	DIS 3 \$35.00	DIS 4 \$35.00	DIS 5 \$1.00	DIS 6 \$35.00	DIS 7 \$35.00	DIS 8 \$1.00	DIS 9 \$35.00	
SUMMERS	45	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$5.00	DIS 6 \$1.00	DIS 7 \$1.00			
TAYLOR	46	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$90.00	DIS 4 \$90.00	DIS 5 \$90.00	DIS 6 \$90.00	DIS 7 \$90.00			
TUCKER	47	DIS 1 \$15.00	DIS 2 \$15.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$15.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$15.00	DIS 10 \$1.00
TUCKER	47	DIS 11 \$15.00	DIS 12 \$1.00								
TYLER	48	DIS 1 \$100.00	DIS 2 \$100.00	DIS 3 \$1.00	DIS 4 \$100.00	DIS 5 \$100.00	DIS 6 \$100.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$100.00
UPSHUR	49	DIS 1 \$70.00	DIS 2 \$70.00	DIS 3 \$1.00	DIS 4 \$70.00	DIS 5 \$70.00	DIS 6 \$70.00	DIS 7 \$70.00			
WAYNE	50	DIS 1 \$20.00	DIS 2 \$20.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$20.00	DIS 9 \$20.00	DIS 10 \$20.00
WAYNE	50	DIS 11 \$1.00	DIS 12 \$20.00								
WEBSTER	51	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$1.00	DIS 4 \$15.00	DIS 5 \$15.00	DIS 6 \$15.00	DIS 7 \$1.00			
WETZEL	52	DIS 1 \$100.00	DIS 2 \$100.00	DIS 3 \$100.00	DIS 4 \$100.00	DIS 5 \$100.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$100.00	DIS 9 \$1.00	DIS 10 \$1.00
WETZEL	52	DIS 11 \$1.00	DIS 12 \$100.00	DIS 13 \$1.00							

COUNTY	CO #	TY 2022 \$/AC BY COUNTY AND DISTRICT									
WIRT	53	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8		
		\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$35.00	\$35.00	\$35.00	\$35.00	
WOOD	54	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$35.00	\$35.00	\$35.00	\$35.00	\$1.00	\$35.00	\$35.00	\$35.00	\$35.00	\$35.00
WOOD	54	DIS 11	DIS 12	DIS 13	DIS 14						
		\$35.00	\$35.00	\$1.00	\$1.00						
WYOMING	55	DIS 1	DIS 2	DIS 3	DIS 4	DIS 5	DIS 6	DIS 7	DIS 8	DIS 9	DIS 10
		\$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 2022**

**FILED**

2021 SEP -1 P 3:43

OFFICE WEST VIRGINIA  
SECRETARY OF STATE

August 31, 2021  
Matthew R. Irby  
State Tax Commissioner  
Department of Revenue

## MANAGED TIMBERLAND APPRAISAL RATES TAX YEAR 2022

(based on market 2016-2020)  
Tentative Rates Per Acre

### Class II Parcels

	<u>Grade 1</u>	<u>Grade 2</u>	<u>Grade 3</u>
Region 1	\$250	\$160	\$50
Region 2	\$260	\$150	\$50
Region 3	\$280	\$170	\$50
Region 4	\$300	\$190	\$50
Region 5	\$210	\$140	\$50

### Class III/IV Parcels

	<u>Grade 1</u>	<u>Grade 2</u>	<u>Grade 3</u>
Region 1	\$228	\$150	\$75
Region 2	\$236	\$150	\$75
Region 3	\$244	\$150	\$75
Region 4	\$261	\$168	\$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 <u>Grades</u>	<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 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 65	— —	3.1 cords 0.8 Mbf	— —	15.4 cords 3.7 Mbf		18.5 cords 4.5 Mbf

## Managed Timberland Statistics

### Estimation of Required Rate of Return: Class II Rates

<b>A.</b>	<b>Safe Rate of Return (5 Year T-Bill or 5 Year Bond Rate)</b>					
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>		
	2020	2.0700	33.33%	0.6899		
	2019	1.9575	26.67%	0.5221		
	2018	2.7480	20.00%	0.5496		
	2017	1.9100	13.33%	0.2546		
	2016	1.3383	6.67%	0.0893	<b>2.105</b>	<b>%</b>
<b>B.</b>	<b>Nonliquidity Rate</b> (12 Month T-Bills vs. 3 Month T-Bills)					
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>		
*	2020	1.0100	33.33%	0.3366		
	2019	0.5000	26.67%	0.1334		
	2018	0.3583	20.00%	0.0717		
	2017	0.2542	13.33%	0.0339		
	2016	0.2950	6.67%	0.0197	<b>0.595</b>	<b>%</b>
	* NONLIQUIDITY ESTIMATED					
<b>C.</b>	<b>Risk Rate (30 yr T-bills or 5 year Corp Bond vs 5 yr T-bills)</b>					
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>		
*	2020	1.7000	6.67%	0.3366		
	2019	0.6250	13.33%	0.0833		
	2018	0.3642	20.00%	0.0728		
	2017	0.9850	26.67%	0.2627		
	2016	1.2592	33.33%	0.4197	<b>1.021</b>	<b>%</b>
	2020 Risk Rate based on					
<b>D.</b>	<b>Management Factor of 1.0%</b>				<b>1.000</b>	<b>%</b>
<b>E.</b>	<b>Property Tax Component</b> (60% of Blended III&IV Rates)					
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>		
	2020	0.720	33.33%	0.2400		
	2019	0.720	26.67%	0.1920		
	2018	0.708	20.00%	0.1416		
	2017	0.714	13.33%	0.0952		
	2016	0.708	6.67%	0.0472	<b>0.716</b>	<b>%</b>
<b>F.</b>	<b>Inflation Rate:</b> (Bureau of Labor Statistics)					
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>		
	2020	1.360	33.33%	0.4533		
	2019	1.810	26.67%	0.4827		
	2018	1.910	20.00%	0.3820		
	2017	2.110	13.33%	0.2813		
	2016	2.070	6.67%	0.1381	<b>(1.737)</b>	<b>%</b>
	<b>TOTAL REQUIRED RATE OF RETURN (REAL)</b>				<b>2.778</b>	<b>%</b>
	<b>LESS: PROPERTY TAX COMPONENT</b>				<b>(0.716)</b>	
	<b>TOTAL DISCOUNT COMPONENT</b>				<b>2.985</b>	<b>%</b>

## Stumpage Prices

Note: Previous year's stumpage prices used because current year prices are not valid resulting from skewed sales and in consistent reporting related to the COVID 19 Pandemic

<i>Stumpage Price Adjustment Factor</i>	<u>Sawtimber</u> 0.00%	<u>Pulpwood</u> 0.55%
---	---------------------------	--------------------------

<u>SAWTIMBER</u>	Region	Current \$/MBF	1.0000 \$/MBF at age 35	1.0000 \$/MBF at age 45	1.0000 \$/MBF at age 55	1.0000 \$/MBF at age 80
	Region 1	198.33	198.33	198.33	198.33	198.33
	Region 2	198.66	198.66	198.66	198.66	198.66
	Region 3	219.12	219.12	219.12	219.12	219.12
	Region 4	220.51	220.51	220.51	220.51	220.51
	Region 5	170.43	170.43	170.43	170.43	170.43

<u>PULPWOOD:</u>	Region	\$/Cord	1.2116 \$/cd at age 35	1.2800 \$/cd at age 45	1.3521 \$/cd at age 55	1.5508 \$/cd at age 80
	Region 1	6.39	7.74	8.18	8.64	9.91
	Region 2	5.20	6.30	6.66	7.03	8.06
	Region 3	5.24	6.35	6.71	7.09	8.13
	Region 4	10.90	13.20	13.95	14.73	16.90
	Region 5	6.01	7.29	7.70	8.13	9.32

### 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))	5.14%
Effective WV Severance Tax Rate	(1.5% * (1-.21))	1.19%

### 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

<b>A.</b>	<b>Safe Rate of Return (5 Year T-Bill or 5 Year Bond Rate)</b>			
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>
	2020	2.0700	33.33%	0.6899
	2019	1.9575	26.67%	0.5221
	2018	2.7480	20.00%	0.5496
	2017	1.9100	13.33%	0.2546
	2016	1.3383	6.67%	0.0893
				<b>2.105</b>
				<b>%</b>
<b>B.</b>	<b>Nonliquidity Rate</b> (12 Month T-Bills vs. 3 Month T-Bills)			
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>
*	2020	1.0100	33.33%	0.3366
	2019	0.5000	26.67%	0.1334
	2018	0.3583	20.00%	0.0717
	2017	0.2542	13.33%	0.0339
	2016	0.2950	6.67%	0.0197
				<b>0.595</b>
				<b>%</b>
	* NONLIQUIDITY ESTIMATED			
<b>C.</b>	<b>Risk Rate (30 yr T-bills or 5 year Corp Bond vs 5 yr T-bills)</b>			
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>
*	2020	1.7000	6.67%	0.3366
	2019	0.6250	13.33%	0.0833
	2018	0.3642	20.00%	0.0728
	2017	0.9850	26.67%	0.2627
	2016	1.2592	33.33%	0.4197
				<b>1.021</b>
				<b>%</b>
	2020 Risk Rate based on			
<b>D.</b>	<b>Management Factor of 1.0%</b>			<b>1.000</b>
<b>E.</b>	<b>Property Tax Component</b> (60% of Blended III&IV Rates)			<b>%</b>
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>
	2020	0.720	33.33%	0.2400
	2019	0.720	26.67%	0.1920
	2018	0.708	20.00%	0.1416
	2017	0.714	13.33%	0.0952
	2016	0.708	6.67%	0.0472
				<b>0.716</b>
				<b>%</b>
<b>F.</b>	<b>Inflation Rate:</b> (Bureau of Labor Statistics)			
	<b>Year</b>	<b>Rate</b>	<b>W/A %</b>	<b>W/A Rate</b>
	2020	1.360	33.33%	0.4533
	2019	1.810	26.67%	0.4827
	2018	1.910	20.00%	0.3820
	2017	2.110	13.33%	0.2813
	2016	2.070	6.67%	0.1381
				<b>(1.737)</b>
				<b>%</b>
	<b>TOTAL REQUIRED RATE OF RETURN (REAL)</b>			
				<b>2.778</b>
	<b>LESS: PROPERTY TAX COMPONENT</b>			
				<b>(0.716)</b>
	<b>TOTAL DISCOUNT COMPONENT</b>			
				<b>2.985</b>
				<b>%</b>

**Stumpage Prices:**

	<b>Sawtimber</b>	<b>Pulpwood</b>
<b>Stumpage Price Adjustment Factor</b>	0.00%	0.55%

<b>SAWTIMBER</b>	<b>Region</b>	<b>Current \$/MBF</b>	<b>1.0000</b>	<b>1.0000</b>	<b>1.0000</b>	<b>1.0000</b>
			<b>\$/MBF at age 35</b>	<b>\$/MBF at age 45</b>	<b>\$/MBF at age 55</b>	<b>\$/MBF at age 80</b>
	Region 1	200.13	200.13	200.13	200.13	200.13
	Region 2	202.68	202.68	202.68	202.68	202.68
	Region 3	210.55	210.55	210.55	210.55	210.55
	Region 4	212.23	212.23	212.23	212.23	212.23
	Region 5	171.87	171.87	171.87	171.87	171.87

<b>PULPWOOD:</b>	<b>Region</b>	<b>\$/Cord</b>	<b>1.2116</b>	<b>1.2800</b>	<b>1.3521</b>	<b>1.5508</b>
			<b>\$/cd at age 35</b>	<b>\$/cd at age 45</b>	<b>\$/cd at age 55</b>	<b>\$/cd at age 80</b>
	Region 1	3.94	4.78	5.05	5.33	6.12
	Region 2	5.83	7.06	7.46	7.88	9.04
	Region 3	4.09	4.96	5.24	5.53	6.35
	Region 4	11.13	13.49	14.25	15.05	17.27
	Region 5	5.78	7.00	7.40	7.81	8.96

**Management Costs:**

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

**Tax Rates:**

Effective Federal Income Tax Rate		<u>21.00%</u>
Effective WV State Income Tax Rate	(6.5% * (1-.21))	<u>5.14%</u>
Effective WV Severance Tax Rate	(1.5% * (1-.21))	<u>1.19%</u>

**Yield (Volumes) (80 year rotation)**

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

**West Virginia Wgt/Avg  
Managed Timberland  
Stumpage Prices**

**REGION 1 - Sawtimber**

	<b>Year</b>	<b>Volume</b>	<b>\$/MBF</b>	<b>W/A%</b>	<b>\$/MBF</b>
See Note 1	2020				N/A
	2019	29,481.29	\$209.92	40.00%	\$83.97
	2018	9,307.85	\$208.95	30.00%	\$62.69
	2017	21,212.89	\$170.93	20.00%	\$34.19
	2016	11,080.07	\$192.95	10.00%	\$19.30
		<b>71,082.10</b>			<b>\$200.13</b>

**REGION 1 - Pulpwood \***

	<b>Year</b>	<b>Volume</b>	<b>\$/CORD</b>	<b>W/A%</b>	<b>\$/CORD</b>
See Note 1	2020				N/A
See Note 2	2019				N/A
See Note 2	2018				N/A
	2017	3,802.40	\$5.81	40.00%	\$2.32
	2016	240.00	\$2.70	60.00%	\$1.62
		<b>4,042.40</b>			<b>\$3.94</b>

**REGION 2 - Sawtimber**

	<b>Year</b>	<b>Volume</b>	<b>\$/MBF</b>	<b>W/A%</b>	<b>\$/MBF</b>
See Note 1	2020				N/A
	2019	38,964.42	\$197.22	40.00%	\$78.89
	2018	37,951.25	\$214.78	30.00%	\$64.43
	2017	57,210.90	\$203.96	20.00%	\$40.79
	2016	41,475.00	\$185.68	10.00%	\$18.57
		<b>175,601.57</b>			<b>\$202.68</b>

**REGION 2 - Pulpwood**

	<b>Year</b>	<b>Volume</b>	<b>\$/CORD</b>	<b>W/A%</b>	<b>\$/CORD</b>
See Note 1	2020				N/A
	2019	8,026.30	\$6.93	40.00%	\$2.77
	2018	5,952.60	\$4.23	30.00%	\$1.27
	2017	5,606.50	\$6.84	20.00%	\$1.37
	2016	25,517.30	\$4.17	10.00%	\$0.42
		<b>45,102.70</b>			<b>\$5.83</b>

**REGION 3 - Sawtimber**

	<b>Year</b>	<b>Volume</b>	<b>\$/MBF</b>	<b>W/A%</b>	<b>\$/MBF</b>
See Note 1	2020				N/A
	2019	86,183.30	\$197.17	40.00%	\$78.87
	2018	107,266.20	\$233.19	30.00%	\$69.96
	2017	112,269.80	\$212.95	20.00%	\$42.59
	2016	136,304.30	\$191.34	10.00%	\$19.13
			<u>442,023.60</u>		

**REGION 3 - Pulpwood**

	<b>Year</b>	<b>Volume</b>	<b>\$/CORD</b>	<b>W/A%</b>	<b>\$/CORD</b>
See Note 1	2020				N/A
	2019	126,600.70	\$1.29	40.00%	\$0.52
	2018	25,448.30	\$6.04	30.00%	\$1.81
	2017	143,565.20	\$7.86	20.00%	\$1.57
	2016	25,448.30	\$1.92	10.00%	\$0.19
			<u>321,062.50</u>		

**REGION 4 - Sawtimber**

	<b>Year</b>	<b>Volume</b>	<b>\$/MBF</b>	<b>W/A%</b>	<b>\$/MBF</b>
See Note 1	2020				N/A
	2019	29,355.02	\$204.95	40.00%	\$81.98
	2018	25,582.56	\$218.49	30.00%	\$65.55
	2017	15,073.14	\$238.37	20.00%	\$47.67
	2016	9,925.16	\$170.26	10.00%	\$17.03
			<u>79,935.88</u>		

**REGION 4 - Pulpwood**

	<b>Year</b>	<b>Volume</b>	<b>\$/CORD</b>	<b>W/A%</b>	<b>\$/CORD</b>
See Note 1	2020				N/A
	2019	2,349.30	\$10.05	40.00%	\$4.02
	2018	4,428.90	\$12.56	30.00%	\$3.77
	2017	3,813.30	\$11.16	20.00%	\$2.23
	2016	4,538.50	\$11.14	10.00%	\$1.11
			<u>15,130.00</u>		

**REGION 5 - Sawtimber**

	<b>Year</b>	<b>Volume</b>	<b>\$/MBF</b>	<b>W/A%</b>	<b>\$/MBF</b>
See Note 1	2020				N/A
	2019	35,343.64	\$180.50	40.00%	\$72.20
	2018	10,243.05	\$173.82	30.00%	\$52.15
	2017	45,373.14	\$162.33	20.00%	\$32.47
	2016	23,026.02	\$150.53	10.00%	\$15.05
			<u>113,985.85</u>		

**REGION 5 - Pulpwood**

	<b>Year</b>	<b>Volume</b>	<b>\$/CORD</b>	<b>W/A%</b>	<b>\$/CORD</b>
See Note 1	2020				N/A
	2019	1,659.60	\$4.99	40.00%	\$2.00
	2018	1,568.50	\$5.73	30.00%	\$1.72
	2017	9,644.70	\$7.32	20.00%	\$1.46
	2016	2,794.40	\$5.99	10.00%	\$0.60
			<u>15,667.20</u>		

Note 1: Reliable data for 2020 not available for 2022 season resulting from COVID 19 activity and reporting issues

Note 2: No reported production

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**COAL PROPERTIES ANALYSIS**

OFFICE WEST VIRGINIA  
SECRETARY OF STATE

**Tax Year 2022**

**August 31 2021  
Matthew R. 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 11.

<u>Safe Rate</u>	90 day Treasury Bills			<u>Safe Rate</u>
	January	December	2020	0.370%
	January	December	2019	2.104%
	January	December	2018	1.973%

<u>Risk Rate</u>	Interest differential between Loan Rate and 90 day Treasury Bills			
	<u>Loan Rate*</u>		<u>Debt Risk Rate</u>	
	2020	5.54%	5.170%	
	2019	7.28%	5.176%	
	2018	6.90%	4.927%	
		*Prime plus 2%		

<u>Equity</u>	Differential between Equity Rates and 90 day Treasury Bills			
	<u>Equity Rate**</u>		<u>Equity Risk Rate</u>	
	2020	11.44%	14.761%	
	2019	15.13%	18.166%	
	2018	15.00%	18.297%	

<u>Composite Risk Rate</u>	Loan and Equity Rates weighted by industry estimated capital structure.			
	Equity Rate	Debt/(Debt+Equity)	Debt Rate	Composite Risk
2020	11.071%	25.0%	1.293%	12.363%
2019	11.232%		2.076%	13.308%
2018	11.893%	35.0%	1.724%	13.618%

**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 T Bill</u>	<u>90 d T Bill</u>	<u>Non Liquidity Rate</u>
January	December	2020	0.380%	0.370%	0.010%
January	December	2019	2.050%	1.550%	0.500%
January	December	2018	2.332%	1.973%	0.359%

**Management Rate**

Charges for the management of investment portfolios.

Fixed Rate (by Rule)	0.500%
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**Inflation Rate**

January	December	2020	1.360%
January	December	2019	1.810%
January	December	2018	1.910%

**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>	<u>2019</u>	<u>2018</u>
Inflation Rate	-1.360%	-1.810%	-1.910%
Safe Rate	0.370%	2.104%	1.973%
Composite Risk Rate	12.363%	13.302%	13.618%
Non Liquidity Rate	0.010%	0.500%	0.359%
Management Rate	0.500%	0.500%	0.500%
Total	11.883%	14.596%	14.540%

Three Yr Average: 13.673                      Rounded to: **13.70%**

<b><u>CAPITALIZATION RATE</u></b>		<b>13.70%</b>	
Yr	<u>MULTIPLIERS:</u>		
1	0.454	9	4.848
2	1.279	10	5.144
3	2.004	11	5.403
4	2.642	12	5.632
5	3.203	13	5.833
6	3.697	14	6.009
7	4.131	15	6.165
8	4.513		

**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 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, 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 FOR TY22 APPLICATION**

GRAND SUMMARY ALL SOURCES	STEAM SPOT	STEAM TERM	MET
PSC (2020)	\$58.91	\$46.36	
FERC (2020)	\$47.67	\$48.07	
Active Return Summary (2020)	In Progress	In Progress	In Progress
Coal Market Publication (3 year average - Platts)	\$46.46 PGH (13/3) Rail \$53.54 CAPP (12/1.67) Barge		\$108.76 Low Vol HCC \$111.59 High Vol A \$103.02 High Vol B

<b>STATE STEAM PRICE</b>	\$53.12 FERC & PSC, 3Yr Ave SPOT
<b>STATE MET PRICE</b>	\$107.79 Platts - Estimate

	Spot Sales	Term Sales	Total
2020 WVPSR Reported Tons	2,232,142	12,153,080	14,385,222

COAL TY20 ROYALTY RATES	2020 - Active Return 1YR		2019 - Active Return 2YR		2018 3YR		2017 4YR		2016 5YR	
	%S	%D	%S	%D	S	%D	%S	%D	%S	%D
TOTAL RECORDS	In Progress		77	25	76	47	640	672	1,644	1,061
SUM of PERCENT			529.27	133.33	517.21	268.47	3,968.00	3,702.72	9,633.84	5,379.27
STRAIGHT AVERAGE			6.86	5.33	6.81	5.71	6.20	5.51	5.86	5.07
MEDIAN			7.00	6.00	6.00	5.00	6.00	6.00	6.00	5.00
WEIGHTED AVERAGE			6.70	3.68	6.36	5.63	6.45	5.83	6.74	5.76

ROYALTY RATE DEEP (%)	5.28
ROYALTY RATE SURFACE (%)	6.56

**ROYALTY RATE CALCULATIONS**

Steam Coal/ Deep Mine	\$53.12	per ton X	5.28%	=	\$2.80	per ton
Metallurgical Coal/ Deep Mine	\$107.79	per ton X	5.28%	=	\$5.69	per ton
Steam Coal/ Surface Mine	\$53.12	per ton X	6.56%	=	\$3.49	per ton
Metallurgical Coal/ Surface Mine	\$107.79	per ton X	6.56%	=	\$7.07	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 11 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 were revised for Tax Year 2021 (next update in TY23). 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 >= 25 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 < 15 Then WellFactor = 40

WellDensity > 15 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 <= 50 Then EnvFactor = 40

Envrate > 50 Then EnvFactor = 80

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SECRETARY OF STATE

**OTHER MINED MINERAL  
PROPERTY ANALYSIS**

**Tax Year 2022**

**August 31, 2021  
Matthew R. Irby  
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 11.

<u>Safe Rate</u>	90 day Treasury Bills			<u>Safe Rate</u>
	January	December	2020	0.370%
	January	December	2019	2.104%
	January	December	2018	1.973%

<u>Risk Rate</u>	Interest differential between Loan Rate and 90 day Treasury Bills			<u>Debt Risk Rate</u>
	<u>Loan Rate*</u>			
	2020	5.54%		5.170%
	2019	7.28%		5.176%
	2018	6.90%		4.927%
		*Prime plus 2%		

<u>Equity</u>	Differential between Equity Rates and 90 day Treasury Bills			<u>Equity Risk Rate</u>
	<u>Equity Rate**</u>			
	2020	12.00%		16.298%
	2019	12.00%		14.112%
	2018	12.00%		14.243%

<u>Composite Risk Rate</u>	Loan and Equity Rates weighted by industry estimated capital structure.			
	<u>Equity Rate</u>	<u>Debt/(Debt+Equity)</u>	<u>Debt Rate</u>	<u>Composite Risk</u>
2020	11.001%		1.680%	12.681%
2019	9.533%		1.817%	11.350%
2018	9.258%		1.724%	10.982%

**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 T Bill</u>	<u>90 d T Bill</u>	<u>Non Liquidity Rate</u>
January	December	2020	0.380%	0.370%	0.010%
January	December	2019	2.050%	1.550%	0.500%
January	December	2018	2.332%	1.973%	0.359%

**Management Rate**

Charges for the management of investment portfolios.

Fixed Rate (by Rule)	0.500%
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**Inflation Rate**

January	December	2020	1.360%
January	December	2019	1.810%
January	December	2018	1.910%

**Property Tax**

2020	1.320%
2019	1.320%
2018	1.302%

**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>	<u>2019</u>	<u>2018</u>
Inflation Rate	-1.360%	-1.810%	-1.910%
Safe Rate	0.370%	2.104%	1.973%
Composite Risk Rate	12.681%	11.350%	10.982%
Non Liquidity Rate	0.010%	0.500%	0.359%
Management Rate	0.500%	0.500%	0.500%
Property Tax	1.320%	1.320%	1.302%
Total	13.521%	13.964%	13.206%

**Three Yr Average:** 13.564%

Rounded to:

**13.60%**

<b>CAPITALIZATION RATE -</b>		<b>13.70%</b>	
<b>Yr</b>	<b>Multipliers</b>	<b>Yr</b>	
1	0.454	9	4.866
2	1.280	10	5.163
3	2.007	11	5.425
4	2.647	12	5.656
5	3.210	13	5.859
6	3.706	14	6.038
7	4.143	15	6.196
8	4.527		

## **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.

<b>Resource</b>	<b># of Data Sources</b>	<b>Ave Royalty</b>	<b>Median Royalty</b>	<b>TY2022 Rate</b>
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	<b>\$0.34</b>	\$0.40	\$0.40
SALT BRINE	1	n/a	n/a	n/a

### **Reserve Values**

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