



**Dave Hardy**  
Secretary of Revenue

**Matthew Irby**  
State Tax Commissioner

**STATE TAX DEPARTMENT**

July 2, 2021

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

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OFFICE WEST VIRGINIA  
SECRETARY OF STATE

Dear Secretary Warner:

On July 1, 2021, the State Tax Department filed with the Secretary of State tentative natural resource property valuation variables for the 2022 Tax Year for use in determining the appraised value of coal, oil, natural gas, managed timberland and other natural resource properties for ad valorem tax purposes.

The State Tax Department will accept written public comments on all variables until August 1, 2021. Final valuation variables will be filed on or before September 1, 2021. Public comments concerning the variables should be forwarded to the following address:

West Virginia State Tax Department  
Property Tax Division  
Attention: Travis Payne  
P.O. Box 2389  
Charleston, Wv 25328-2389

Sincerely,

**Matthew R. Irby**  
State Tax Commissioner



**Dave Hardy**  
Secretary of Revenue

**Matthew Irby**  
State Tax Commissioner

**STATE TAX DEPARTMENT**

July 1, 2021

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OFFICE WEST VIRGINIA  
SECRETARY OF STATE

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

Dear Secretary Warner:

Attached for filing in the State Register are tentative 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.

Sincerely,

  
Matthew R. Irby  
State Tax Commissioner

Attachment

Tax Commissioner's Office, 1001 Lee Street East, P.O. Box 11771, Charleston, WV 25339-1771  
Telephone 304-558-0751  
Fax 304-558-8999

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OFFICE WEST VIRGINIA  
SECRETARY OF STATE

**OIL AND GAS PROPERTIES ANALYSIS**

**Tax Year 2022**

**July 1, 2021  
Matthew R. Irby  
State Tax Commissioner  
Department of Revenue**

## OIL AND GAS 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	Safe Rate
	January December 2020	0.370%
	January December 2019	1.973%
	January December 2018	0.947%

<u>Risk Rate</u>	Interest differential between Loan Rate and 90 day Treasury Bills	
	Loan Rate*	Debt Risk Rate
2020	5.54%	5.170%
2019	6.74%	4.767%
2018	6.10%	5.153%

\*Prime plus 2%

<u>Equity</u>	Differential between Equity Rates and 90 day Treasury Bills	
	Equity Rate**	Equity Risk Rate
2020	12.96%	12.590%
2019	15.13%	13.161%
2018	13.16%	12.215%

<u>Composite Risk Rate</u>	Loan and Equity Rates weighted by industry estimated capital structure.		
	Equity Rate	Debt Rate	Composite Risk
2020	8.813%	1.551%	10.364%
2019	9.213%	1.430%	10.643%
2018	8.551%	1.546%	10.096%

Note: Debt Equity Ratio      Debt 30%      Equity 70%

<u>Non Liquidity Rate</u>	Interest differential between a 90 day Treasury Bill and a 1 year Treasury Bill which reflects a reasonable time necessary to sell active property.			
		1yr T Bill	90 d T Bill	Non Liquidity Rate
	January December 2020	0.380%	0.370%	0.010%
	January December 2019	2.050%	1.973%	0.077%
	January December 2018	2.332%	0.947%	1.385%

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

<u>Inflation Rate</u>			
	January December 2020		1.360%
	January December 2019		1.810%
	January December 2018		1.910%

**Capitalization Rate** Since the valuation of active mineral properties are predicated on a three year production average, the capitalization rate is considered in a similar manner.

	2020	2019	2018
Inflation Rate	-1.360%	-1.810%	-1.910%
Safe Rate	0.370%	1.973%	0.947%
Composite Risk Rate	10.364%	10.643%	10.096%
Non Liquidity Rate	0.010%	0.077%	1.385%
Management Rate	0.500%	0.500%	0.500%
<b>Total</b>	<b>9.884%</b>	<b>11.383%</b>	<b>11.018%</b>
<b>Three Yr Average:</b>	<b>10.762</b>	<b>Rounded to:</b>	<b>10.80%</b>

<b>CAPITALIZATION RATE</b>		<b>10.80%</b>	
<b>MULTIPLIERS:</b>			
1YR	0.903	9YR	5.580
2YR	1.717	10YR	6.483
3YR	2.452	11YR	7.385
4YR	3.116	12YR	8.288
5YR	3.715	13YR	9.190
6YR	4.255	14YR	10.093
7YR	4.743	15YR	10.996
8YR	5.183		



<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	Ravenc Cliff	-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, Ravencloff	-0.29	-0.29	-0.17	<b>Wyoming</b>
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.

<b>Decline Rates for Natural Gas and Oil Formations: South West</b>					
<b>South West: Cabell, Lincoln, Logan, Mingo, Wayne</b>					
<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.

<b>Decline Rates for Natural Gas and Oil Formations: North West</b>					
<b>North West: Pleasants, Ritchie, Wood</b>					
<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.

**North Central: Barbour, Doddridge, Gilmer, Harrison, Lewis, Marlon, Monongalia, Taylor, Upshur**

Code	Formation	Year 1	Year 2	Year 3 +	
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	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.

<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 \$2.56/MCF  
BBL usage X \$56.99/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 \$30.00	DIS 2 \$1.00	DIS 3 \$30.00	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
KANAWHA	20	DIS 11 \$1.00	DIS 12 \$1.00	DIS 13 \$1.00	DIS 14 \$1.00	DIS 15 \$30.00	DIS 16 \$30.00	DIS 17 \$1.00	DIS 18 \$1.00	DIS 19 \$30.00	DIS 20 \$1.00
KANAWHA	20	DIS 21 \$1.00	DIS 22 \$1.00	DIS 23 \$30.00	DIS 24 \$30.00	DIS 25 \$30.00	DIS 26 \$1.00	DIS 27 \$1.00	DIS 28 \$30.00	DIS 29 \$1.00	DIS 30 \$1.00
KANAWHA	20	DIS 31 \$1.00									
LEWIS	21	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 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	
LINCOLN	22	DIS 1 \$25.00	DIS 2 \$25.00	DIS 3 \$1.00	DIS 4 \$25.00	DIS 5 \$25.00	DIS 6 \$25.00	DIS 7 \$25.00	DIS 8 \$25.00	DIS 9 \$25.00	DIS 10 \$1.00
LOGAN	23	DIS 1 \$15.00	DIS 2 \$15.00	DIS 3 \$15.00	DIS 4 \$15.00	DIS 5 \$1.00	DIS 6 \$1.00	DIS 7 \$1.00	DIS 8 \$15.00	DIS 9 \$1.00	
MARION	24	DIS 1 \$1.00	DIS 2 \$90.00	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 \$90.00	DIS 10 \$1.00
MARION	24	DIS 11 \$90.00	DIS 12 \$90.00	DIS 13 \$1.00	DIS 14 \$1.00	DIS 15 \$1.00	DIS 16 \$90.00	DIS 17 \$1.00	DIS 18 \$90.00	DIS 19 \$90.00	DIS 20 \$1.00
MARION	24	DIS 21 \$1.00	DIS 22 \$1.00								
MARSHALL	25	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$105.00	DIS 4 \$105.00	DIS 5 \$105.00	DIS 6 \$1.00	DIS 7 \$105.00	DIS 8 \$1.00	DIS 9 \$105.00	DIS 10 \$1.00
MARSHALL	25	DIS 11 \$1.00	DIS 12 \$105.00	DIS 13 \$105.00	DIS 14 \$105.00	DIS 15 \$105.00	DIS 16 \$1.00				
MASON	26	DIS 1 \$1.00	DIS 2 \$25.00	DIS 3 \$25.00	DIS 4 \$25.00	DIS 5 \$25.00	DIS 6 \$25.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$25.00
MASON	26	DIS 11 \$1.00	DIS 12 \$1.00	DIS 13 \$1.00	DIS 14 \$25.00	DIS 15 \$25.00	DIS 16 \$25.00				
MCDOWELL	27	DIS 1 \$20.00	DIS 2 \$1.00	DIS 3 \$20.00	DIS 4 \$20.00	DIS 5 \$1.00	DIS 6 \$20.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$1.00
MCDOWELL	27	DIS 11 \$20.00	DIS 12 \$1.00	DIS 13 \$20.00	DIS 14 \$1.00	DIS 15 \$1.00	DIS 16 \$1.00				
MERCER	28	DIS 1 \$1.00	DIS 2 \$15.00	DIS 3 \$1.00	DIS 4 \$1.00	DIS 5 \$1.00	DIS 6 \$15.00	DIS 7 \$1.00	DIS 8 \$1.00	DIS 9 \$15.00	DIS 10 \$1.00
MERCER	28	DIS 11 \$15.00									
MINERAL	29	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
MINERAL	29	DIS 11 \$1.00									
MINGO	30	DIS 1 \$1.00	DIS 2 \$1.00	DIS 3 \$20.00	DIS 4 \$20.00	DIS 5 \$20.00	DIS 6 \$20.00	DIS 7 \$20.00	DIS 8 \$1.00	DIS 9 \$20.00	DIS 10 \$20.00
MINGO	30	DIS 11 \$20.00	DIS 12 \$1.00								
MONONGALIA	31	DIS 1 \$35.00	DIS 2 \$1.00	DIS 3 \$35.00	DIS 4 \$35.00	DIS 5 \$35.00	DIS 6 \$1.00	DIS 7 \$35.00	DIS 8 \$35.00	DIS 9 \$1.00	DIS 10 \$1.00
MONONGALIA	31	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 \$35.00	
MONROE	32	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	
MORGAN	33	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		

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 \$35.00	DIS 2 \$35.00	DIS 3 \$35.00	DIS 4 \$1.00	DIS 5 \$35.00	DIS 6 \$35.00	DIS 7 \$35.00	DIS 8 \$35.00		
WOOD	54	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 \$35.00	DIS 9 \$35.00	DIS 10 \$1.00
WOOD	54	DIS 11 \$35.00	DIS 12 \$35.00	DIS 13 \$1.00	DIS 14 \$1.00						
WYOMING	55	DIS 1 \$20.00	DIS 2 \$20.00	DIS 3 \$20.00	DIS 4 \$20.00	DIS 5 \$20.00	DIS 6 \$1.00	DIS 7 \$20.00	DIS 8 \$1.00	DIS 9 \$1.00	DIS 10 \$20.00

**MANAGED TIMBER  
PROPERTY ANALYSIS**

**Tax Year 2022**

**July 1, 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	\$228	\$140	\$50
Region 2	\$235	\$148	\$50
Region 3	\$258	\$164	\$50
Region 4	\$282	\$200	\$81
Region 5	\$200	\$140	\$50

**Class III/IV Parcels**

	<u>Grade 1</u>	<u>Grade 2</u>	<u>Grade 3</u>
Region 1	\$289	\$174	\$75
Region 2	\$297	\$184	\$75
Region 3	\$309	\$192	\$75
Region 4	\$327	\$213	\$75
Region 5	\$229	\$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**

<b>Harvest Interval Grades</b>	<b>Harvest Volumes per Acre</b>				
	<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

**Stumpage Prices:**

		<u>Sawtimber</u>	<u>Pulpwood</u>		
Stumpage Price Adjustment Factor		0.00%	2.17%		
<b>SAWTIMBER</b>	Current	1.0000	1.0000	1.0000	1.0000
<b>Region</b>	<b>\$/MBF</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	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
<b>PULPWOOD:</b>		2.1199	1.2800	1.3521	1.5508
<b>Region</b>	<b>\$/Cord</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	6.39	13.55	16.79	20.81	35.59
Region 2	5.20	11.02	13.66	16.94	28.97
Region 3	5.24	11.12	13.78	17.08	29.21
Region 4	10.90	23.10	28.63	35.49	60.70
Region 5	6.10	12.93	16.03	19.87	33.98

**Management Costs:**

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

**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>

## 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	1.3000	33.33%	0.4333	
	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>1.849</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> %
	* 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	2.7300	6.67%	0.1821	
	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> %
	2020 Risk Rate based on				
<b>D.</b>	<b>Management Factor of 0.5%</b>				<b>0.500</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>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	20.00%	0.2720	
	2019	1.810	6.67%	0.1207	
	2018	1.910	13.33%	0.2546	
	2017	2.110	33.33%	0.7033	
	2016	2.070	26.67%	0.5521	
					<b>(1.903)</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>2.062</b> %

**Stumpage  
Prices:**

		<u>Sawtimber</u>	<u>Pulpwood</u>		
<i>Stumpage Price Adjustment Factor</i>		0.00%	0.55%		
<b>SAWTIMBER</b>	Current	1.0000	1.0000	1.0000	1.0000
<b>Region</b>	<b>\$/MBF</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	217.84	217.84	217.84	217.84	217.84
Region 2	217.46	217.46	217.46	217.46	217.46
Region 3	225.90	225.90	225.90	225.90	225.90
Region 4	227.28	227.28	227.28	227.28	227.28
Region 5	176.20	176.20	176.20	176.20	176.20
<b>PULPWOOD:</b>		1.2116	1.2800	1.3521	1.5508
<b>Region</b>	<b>\$/Cord</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	1.52	1.84	1.95	2.06	2.36
Region 2	5.29	6.41	6.78	7.16	8.21
Region 3	4.44	5.38	5.69	6.01	6.89
Region 4	11.07	13.41	14.16	14.96	17.16
Region 5	5.77	7.00	7.39	7.81	8.95

**Management Costs:**

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

**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**

Year	Volume	\$/MBF	W/A%	\$/MBF
2020		240.50	33.33%	80.17
2019	29,481.29	209.92	26.67%	55.98
2018	9,307.85	208.95	20.00%	41.79
2017	21,212.89	213.81	13.33%	28.51
2016	11,080.07	170.93	6.67%	11.40
	71,082.10			217.84

**REGION 1 - Pulpwood \***

Year	Volume	\$/CORD	W/A%	\$/CORD
2020			0.00%	
2019			0.00%	
2018			60.00%	
2017	3,802.40	5.81	20.00%	1.16
2016	240.00	2.70	13.33%	0.36
	4,042.40			1.52

**REGION 2 - Sawtimber**

Year	Volume	\$/MBF	W/A%	\$/MBF
2020		247.00	33.33%	82.33
2019	38,984.42	197.22	26.67%	52.59
2018	37,951.25	214.78	20.00%	42.96
2017	57,210.90	203.96	13.33%	27.19
2016	41,475.00	185.68	6.67%	12.38
	175,601.57			217.46

**REGION 2 - Pulpwood**

Year	Volume	\$/CORD	W/A%	\$/CORD
2020		4.23	33.33%	1.41
2019	8,026.30	6.93	26.67%	1.85
2018	5,952.60	4.23	20.00%	0.85
2017	5,606.50	6.84	13.33%	0.91
2016	25,517.30	4.17	6.67%	0.28
	45,102.70			5.29

**REGION 3 - Sawtimber**

Year	Volume	\$/MBF	W/A%	\$/MBF
2020		245.43	33.33%	81.81
2019	86,183.30	233.19	26.67%	62.18
2018	107,266.20	212.95	20.00%	42.59
2017	112,269.80	191.34	13.33%	25.51
2016	136,304.30	207.12	6.67%	13.81
	442,023.60			225.90

**REGION 3 -  
Pulpwood**

Year	Volume	\$/CORD	W/A%	\$/CORD
2020		6.04	33.33%	2.01
2019	126,600.70	1.29	26.67%	0.34
2018	25,448.30	7.86	20.00%	1.57
2017	143,565.20	1.92	13.33%	0.26
2016	169,606.30	3.85	6.67%	0.26
	465,220.50			4.44

**REGION 4 -  
Sawtimber**

Year	Volume	\$/MBF	W/A%	\$/MBF
2020		251.26	33.33%	83.75
2019	29,355.02	218.49	26.67%	58.26
2018	25,582.56	238.37	20.00%	47.67
2017	15,073.14	170.26	13.33%	22.70
2016	9,925.16	223.42	6.67%	14.90
	79,935.88			227.28

**REGION 4 -  
Pulpwood**

Year	Volume	\$/CORD	W/A%	\$/CORD
2020		12.56	33.33%	4.19
2019	2,349.30	10.05	26.67%	2.68
2018	4,428.90	11.16	20.00%	2.23
2017	3,813.30	11.14	13.33%	1.49
2016	4,538.50	7.22	6.67%	0.48
	15,130.00			11.07

**REGION 5 -  
Sawtimber**

<b>Year.</b>	<b>Volume</b>	<b>\$/MBF</b>	<b>W/A%</b>	<b>\$/MBF</b>
2020		199.89	33.33%	66.63
2019	35,343.64	173.82	26.67%	46.35
2018	10,243.05	162.33	20.00%	32.47
2017	45,373.14	150.53	13.33%	20.07
2016	23,026.02	160.15	6.67%	10.68
	<b>113,985.85</b>			<b>176.20</b>

**REGION 5 -  
Pulpwood**

<b>Year</b>	<b>Volume</b>	<b>\$/CORD</b>	<b>W/A%</b>	<b>\$/CORD</b>
2020		5.73	33.33%	1.91
2019	1,659.60	4.99	26.67%	1.33
2018	1,568.50	7.32	20.00%	1.46
2017	9,644.70	5.99	13.33%	0.80
2016	2,794.40	4.05	6.67%	0.27
	<b>15,667.20</b>			<b>5.77</b>

**COAL PROPERTIES ANALYSIS**

**Tax Year 2022**

July 1, 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%	13.308%	13.618%
Non Liquidity Rate	0.010%	0.500%	0.359%
Management Rate	0.500%	0.500%	0.500%
Total	10.891%	14.602%	14.540%

Three Yr Average: 13.344      Rounded to: **13.30%**

<b><u>CAPITALIZATION RATE -</u></b>		<b>13.30%</b>	
<b><u>MULTIPLIERS:</u></b>			
1YR	0.883	9YR	5.075
2YR	1.662	10YR	5.958
3YR	2.349	11YR	6.840
4YR	2.956	12YR	7.723
5YR	3.492	13YR	8.605
6YR	3.964	14YR	9.488
7YR	4.382	15YR	10.371
8YR	4.750		

**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)	\$48.46 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

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

2020 WVPSA Reported Tons	Spot Sales 2,232,142	Term Sales 12,153,080	Total 14,385,222
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COAL TY22 ROYALTY RATES	2020 - Active Return 1YR		2019 - Active Return 2YR		2016 3YR		2017 4YR		2018 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			528.27	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	5.00	6.00	5.00
WEIGHTED AVERAGE			6.70	3.68	6.36	5.83	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 1I for details of the process.

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

The above Legislative Rule was modified during the 2005 Legislative Session requiring biennial (every other year) updating of the geostatistical basis for several valuation factors used in the Reserve Coal Valuation Model. To satisfy that requirement, maps and data files concerning the Market Interest Factor, the Market Mineability Factor, the Use Conflict Factor and the Environmental Factor 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

**OTHER MINED MINERAL  
PROPERTY ANALYSIS**

**Tax Year 2022**

**July 1, 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 Rate**</u>	Differential between Equity Rates and 90 day Treasury Bills			<u>Equity Risk 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.		
	Equity Rate	Debt/(Debt+Equity)	Debt Rate	Composite Risk
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%

**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	13.964%	13.964%	13.206%

Three Yr Average: 13.344 Rounded to: 13.30%

<b>CAPITALIZATION RATE -</b>		<b>13.30%</b>	
<b>MULTIPLIERS:</b>			
1YR	0.883	9YR	5.075
2YR	1.662	10YR	5.958
3YR	2.349	11YR	6.840
4YR	2.956	12YR	7.723
5YR	3.492	13YR	8.605
6YR	3.964	14YR	9.488
7YR	4.382	15YR	10.371
8YR	4.750		

## OTHER MINED MINERALS

### ROYALTY RATE SURVEY

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

RESOURCE	DATA SOURCES	AVERAGE ROYALTY	MEDIAN ROYALTY	TY2020 RATE
LIMESTONE	15	\$0.22	\$0.20	<b>\$0.22</b>
SANDSTONE	8	\$0.31	\$0.25	<b>\$0.30</b>
CLAY/SHALE	34	\$0.12	\$0.10	<b>\$0.11</b>
SAND/GRAVEL	10	\$0.35	\$0.40	<b>\$0.40</b>
SALT BRINE	1	N/A	N/A	<b>\$0.10</b>

## RESERVE VALUES

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