



MONTANA
DEPARTMENT OF
REVENUE

**2023 Capitalization Rate Study
Telecommunications - Medium & Small**

Final

Completed: April 28, 2023

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Telecommunications - Medium & Small

2023 Assessment Year

Capital Structure ^[1]

Equity	45.00%
Debt	55.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	11.67%	48%
Capital Asset Pricing Model - Ex Ante ^[2]	10.10%	12%
3 Stage Dividend Discount Model - Dividends ^[3]	8.35%	20%
3 Stage Dividend Discount Model - Earnings ^[3]	15.00%	<u>20%</u>
Weighted Average	<u>11.48%</u>	100%
Selected Cost of Equity	<u>11.48%</u>	

Debt Cost of Capital ^[4]

		Weighting
A - Mergent's - Avg. YTM of A Rated Corporate Bonds ^[4]	5.12%	0%
Baa - Mergent's - Avg. YTM of Baa Rated Corporate Bonds ^[4]	5.59%	0%
Ba - Avg. of MTDOR Debt Study, Bloomberg and Capital IQ	7.04%	43%
B - Avg. of MTDOR Debt Study, Bloomberg and Capital IQ	9.15%	43%
Caa - Avg. of MTDOR Debt Study, Bloomberg and Capital IQ	10.44%	<u>14%</u>
Weighted Average	<u>8.43%</u>	100%
Selected Cost of Debt	<u>8.43%</u>	

Weighted Average Cost of Capital (WACC)

Source of Capital	Capital Structure	Capital Cost of Capital	Marginal Tax Rate	Pre-tax Cost of Capital	After-tax Cost of Capital
Equity	45.00%	11.48%		5.17%	5.17%
Debt	55.00%	8.43%	24.00%	4.64%	3.52%
WACC	100.00%			9.80%	8.69%
WACC (Rounded)					8.70%

Notes

- [1] From worksheet: Capital Structure
- [2] From worksheet: Capital Asset Pricing Model Summary
- [3] From worksheet: Yield Equity Summary
- [4] January 2023, Mergent Bond Record

MONTANA DEPARTMENT OF REVENUE

**Direct Capitalization Rate Conclusion
Industry: Telecommunications - Medium & Small
2023 Assessment Year**

Capital Structure ^[1]

Equity	45.00%
Debt	55.00%

Equity Capitalization Rate ^[2]

NOI After-tax	5.30%
GCF	36.93%

Debt Capitalization Rate ^[3]

Calculated Current Yield	5.47%
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NOI After-tax Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	Pre-tax Capitalization Rate	After-tax Capitalization Rate
Equity	45.00%	5.30%		2.38%	2.38%
Debt	55.00%	5.47%	24.00%	3.01%	2.29%
Total	100.00%			5.39%	4.67%
Total (Rounded)					4.70%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	Pre-tax Capitalization Rate	After-tax Capitalization Rate
Equity	45.00%	36.93%		16.62%	16.62%
Debt	55.00%	5.47%	24.00%	3.01%	2.29%
WACC	100.00%			19.63%	18.90%
Total (Rounded)					18.95%

Notes:

[1] From worksheet: Capital Structure

[2] From worksheet: Direct Equity Summary

[3] From worksheet: Calculated Current Yield

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies

Industry: Telecommunications - Medium & Small

2023 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Cable TV and Telecom Services industries with a market capitalization under \$50B (excludes CHTR, CMCSA, T, TMUS, VZ, DTEGY, AMX).

Companies were then selected using the following screening criteria:

1. Headquartered and primarily operated in the United States.
2. Actively traded on an American exchange. All OTC and TO companies excluded.
3. Primarily provides two-way transmission of voice, image, data, or other information over wire, cable, fiber optics, microwave, or similar facilities.
4. Not engaged in material M&A activity.
5. Under \$50 Billion in market capitalization.

Ticker Symbol	Headquartered /Incorporated in the U.S.	Actively traded on American exchange	Under \$50 Billion in Market Capitalization	Primarily operates a two-way comm network	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity (No = M&A)	Use as Guideline Company	Note
AMX			No					
ATNI	Yes	Yes	Yes	No				
ATUS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
BAND	Yes	Yes	Yes	No				
BCE	No							
CABO	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
CCA.TO	No							
CHTR	Yes	Yes	No					
CMCSA	Yes	Yes	No					
DISH	Yes	Yes	Yes	No				
DTEGY	No							
DY	Yes	Yes	Yes	No				
FYBR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
GOGO	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
IDT	Yes	Yes	Yes	No				
IRDM							No	[1]
LBTYA	No							
LILA	No							

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies

Industry: Telecommunications - Medium & Small

2023 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Cable TV and Telecom Services industries with a market capitalization under \$50B (excludes CHTR, CMCSA, T, TMUS, VZ, DTEGY, AMX).

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4. Not engaged in material M&A activity.
5. Under \$50 Billion in market capitalization.

Ticker Symbol	Headquartered /Incorporated in the U.S.	Actively traded on American exchange	Under \$50 Billion in Market Capitalization	Primarily operates a two-way comm network	Consider as Potential Guideline Company	Not Engaged in Material M&A Activity (No = M&A)	Use as Guideline Company	Note
LUMN	Yes	Yes	Yes	Yes	Yes	No		[2]
NUVR	Yes	No						
OOMA	Yes	Yes	Yes	No				
SATS							No	[1]
SHEN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
SJRB.TO	No							
T			No					
T.TO	No							
TCX	No							
TDS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
TEF	No							
TIGO	No							
TMUS			No					
USM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
VOD	No							
VZ			No					
WOW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
ZD	Yes	Yes	Yes	No				
ZM	Yes	Yes	Yes	No				

[1] Removed because primarily satellite based operations are not sufficiently comparable with other guideline public companies.

[2] Removed for significant M&A activity.

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure
Telecommunications - Medium & Small
2023 Assessment Year

(\$ and Shares Outstanding In Millions, Except Per Share Amounts)

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Ticker	Company	Industry Group	Financial Strength	Shares Outstanding	End of Year Closing Stock Price	MV Common Stock	MV Preferred Stock	MV Long Term Debt	PV of Operating Leases	Total Common, Preferred, LT Debt, & Op Leases	% Common	% Preferred	% Debt & Op Leases
		<i>Value Line</i>	<i>Value Line</i>	<i>10-K</i>	<i>Yahoo</i>	<i>ExF</i>	<i>10-K</i>	<i>10-K</i>	<i>10-K</i>	<i>G+H+I+J</i>	<i>G/K</i>	<i>H/K</i>	<i>(I+J)/K</i>
							<i>Note [1]</i>	<i>Note [2]</i>					
ATUS	Altice USA	CABLETV	B	456	4.60	2,098	0	21,935	299	24,332	9%	0%	91%
CABO	Cable One	CABLETV	B++	6	711.86	4,105	0	3,415	11	7,530	55%	0%	45%
FYBR	Frontier Commun. Parent	TELESERV	B+	244	25.48	6,228	0	9,125	213	15,566	40%	0%	60%
GOGO	Gogo Inc.	TELESERV	B	128	14.76	1,887	0	694	88	2,669	71%	0%	29%
SHEN	Shenandoah Telecom.	TELESERV	B+	50	15.88	796	0	75	53	924	86%	0%	14%
TDS	Telephone & Data	TELESERV	B+	112	10.49	1,180	1,074	3,008	1,054	6,316	19%	17%	64%
USM	U.S. Cellular	TELESERV	B+	85	20.85	1,766	0	2,454	976	5,196	34%	0%	66%
WOW	WideOpenWest Inc.	CABLETV	C++	86	9.11	787	0	695	17	1,498	53%	0%	47%
All Companies						18,846	1,074	41,400	2,711	64,031	29%	2%	69%
Average											46%	2%	52%
Median											46%	0%	54%
Trimmed Average											45%	0%	52%
High											86%	17%	91%
Low											9%	0%	14%
Selected											45%		55%

Notes:

[1] Market value of preferred stock assumed to equal book value

[2] Market value of debt is fair value of long term debt from 10-K notes

Rationale for Changes to Guideline Companies

2023 Changes to Guideline Companies

Added CABO, FYBR, SHEN

Removed LUMN for M&A activity

		Median	
Current Year	46%	0%	54%
Prior Year	30%	0%	64%
2 Years Prior	30%	0%	70%
3 Year Average	<u>35%</u>	<u>0%</u>	<u>62%</u>

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)
Telecommunications - Medium & Small
2023 Assessment Year

$$k_e = R_f + \beta \times ERP$$

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	11.67%	10.10%
$R_f =$	Risk Free Rate	4.14%	4.14%
$\beta =$	Beta	1.05	1.05
$ERP =$	Equity Risk Premium ($R_m - R_f$)	7.17%	5.68%
$R_m =$	Market Rate of Return	11.31%	9.82%

Risk Free Rate Measures (R_f):

The Value Line Investment Survey: Selection & Opinion^[1]

January 6, 2023 Page 1465

Selected Yields on Taxable U.S. Treasury Securities as of 12/27/22

10-year	3.84%
30-year	3.93%

Federal Reserve Statistical Release^[2]

U.S. government securities, Treasury constant maturities, Nominal, December 30, 2022

10-year	3.88%
20-year	4.14%
30-year	3.97%
Risk Free Rate Selected	<u>4.14%</u>

Notes

[1] "Value Line Selection & Opinion", Value Line (January 6, 2023)

[2] <https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H.15>

MONTANA DEPARTMENT OF REVENUE

**Capital Asset Pricing Model (CAPM)
Telecommunications - Medium & Small
2023 Assessment Year**

$$k_e = R_f + \beta \times ERP$$

Ex Post - Equity Risk Premium Measures (ERP = Rm - Rf)

Kroll, 2023 Cost of Capital Navigator

		<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP "Historical" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	11.31%	4.14%	7.17%
ERP "Supply-side" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	10.49%	4.14%	6.35%
Ex Post Equity Risk Premium Selected		11.31%	4.14%	7.17%

Ex Ante - Equity Risk Premium Measures (ERP = Rm - Rf)

DOR 3 Stage Dividend Growth Model, S & P 500, See Exhibit

	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP - <i>Ex Ante</i>	8.81%	4.14%	4.67%

Kroll, 2023 Cost of Capital Navigator

	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP "Conditional" - <i>Ex Ante</i>	9.50%	3.50%	6.00%

Damodaran Implied ERP (Jan 1, 2023)

	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
Implied Premium - <i>Ex Ante</i> - Trailing 12 month, with adjusted payout	8.99%	3.88%	5.11%
Implied Premium - <i>Ex Ante</i> - Trailing 12 month cash yields	9.82%	3.88%	5.94%
Implied Premium - <i>Ex Ante</i> - Average CF yield last 10 years	9.73%	3.88%	5.85%
Implied Premium - <i>Ex Ante</i> - Net cash yield	9.56%	3.88%	5.68%
Implied Premium - <i>Ex Ante</i> - Normalized earnings and payout	8.71%	3.88%	4.83%

	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
<u>Average</u>	9.30%		5.44%
<u>Median</u>	9.50%		5.68%
<u>High</u>	9.82%		6.00%
<u>Low</u>	8.71%		4.67%

Ex Ante Equity Risk Premium Selected

9.82%	4.14%	5.68%
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MONTANA DEPARTMENT OF REVENUE

**Support for Beta Selection in CAPM
Telecommunications - Medium & Small
2023 Assessment Year**

A	B	C	D	E
Ticker	Company	Industry Group	Financial Strength	Beta
		<i>Value Line</i>	<i>Value Line</i>	<i>Value Line</i>
ATUS	Altice USA	CABLETV	B	1.15
CABO	Cable One	CABLETV	B++	0.95
FYBR	Frontier Commun. Parent	TELESERV	B+	1.30
GOGO	Gogo Inc.	TELESERV	B	0.90
SHEN	Shenandoah Telecom.	TELESERV	B+	
TDS	Telephone & Data	TELESERV	B+	0.95
USM	U.S. Cellular	TELESERV	B+	0.70
WOW	WideOpenWest Inc.	CABLETV	C++	1.45
Average				1.06
Median				0.95
Trimmed Average				1.05
High				1.45
Low				0.70
Selected				1.05

MONTANA DEPARTMENT OF REVENUE

**Inflation & Real Growth
Telecommunications - Medium & Small
2023 Assessment Year**

A	B	C	D	Nominal Growth	
				E	F
Source Description	Inflation (CPI)	Real Growth (GDP)	Nominal Growth	Low	High
Livingston Survey ^[1]	2.55%	1.97%	4.52%		
Survey of Professional Forecasters ^[2]	2.44%	1.96%	4.40%		
Congressional Budget Office ^[3]	2.30%	1.80%	4.10%		
Average	2.43%	1.91%	4.34%		
Median	2.44%	1.96%	4.40%		
High	2.55%	1.97%	4.52%		
Low	2.30%	1.80%	4.10%		
Selected	2.45%	2.00%	4.45%	4.10%	4.52%

Inflationary Trend Factors						
Year	Dec. CPI-U Index	Percent Change From Previous	Dec. to Dec. Conversion Factor	Annual Avg. CPI-U Index	Percent Change From Previous	Annual Conversion Factor
	<i>Note [5]</i>	<i>Note [6]</i>	<i>Note [7]</i>	<i>Note [5]</i>	<i>Note [6]</i>	<i>Note [7]</i>
2011	225.672	2.9%	1.3152	224.939	3.1%	1.3010
2012	229.601	1.7%	1.2927	229.594	2.0%	1.2747
2013	233.049	1.5%	1.2735	232.957	1.4%	1.2563
2014	234.812	0.8%	1.2640	236.736	1.6%	1.2362
2015	236.525	0.7%	1.2548	237.017	0.1%	1.2347
2016	241.432	2.0%	1.2293	240.007	1.2%	1.2194
2017	246.524	2.1%	1.2039	245.120	2.1%	1.1939
2018	251.233	1.9%	1.1814	251.107	2.4%	1.1655
2019	256.974	2.2%	1.1550	255.657	1.8%	1.1447
2020	260.474	1.3%	1.1394	258.811	1.2%	1.1308
2021	278.802	6.6%	1.0645	270.970	4.5%	1.0800
2022	296.797	6.1%	1.0000	292.655	7.4%	1.0000

Notes

[1] Federal Reserve Bank of Philadelphia The Livingston Survey December 16, 2023 Table 3 Inflation Rate and Real GDP mean

<https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey>

[2] Federal Reserve Bank of Philadelphia Survey of Professional Forecasters February 10, 2023 Table 8 and Table 9 Average over next 10-Year mean

<https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/survey-of-professional-forecasters>

[3] The Budget and Economic Outlook: 2023 To 2033, Table B-1

<https://www.cbo.gov/about/products/budget-economic-data#4>

[5] Historical Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, all items, index averages (1982-84=100, unless otherwise noted)

<https://www.bls.gov/cpi/tables/supplemental-files/historical-cpi-u-202212.pdf>

[6] (Row year - Previous Year) / Row Year

[7] Most current year / Row year

MONTANA DEPARTMENT OF REVENUE

3 Stage Dividend Discount Model (DDM)

Telecommunications - Medium & Small

2023 Assessment Year

$$k_e = (D_1 / P_0) + g$$

k_e = Cost of Equity

D_1 = Expected Dividend

P_0 = Current Price Per Share

g = Sustainable Long-Term Growth

A	B	C	D	E	F	G	H	I
Ticker	Company	2022 Year End Stock Price	2023 Est Div'ds Decl'd per sh	Expected Equity Payout Yield	Sustainable Long-Term Growth Rate [1]	Sustainable Long-Term Growth Rate [1]	Cost of Equity Dividend Growth	Cost of Equity Earnings Growth
		<i>Yahoo</i>	<i>Value Line</i>	<i>D/C</i>	<i>Dividends</i>	<i>Earnings</i>	<i>E+F</i>	<i>E+G</i>
		P_0	D_1	D_1/P_0	g	g	k_e	k_e
ATUS	Altice USA	4.60	0.00	0.00%	0.00%	0.00%		
CABO	Cable One	711.86	11.50	1.62%	4.38%	6.68%	6.00%	8.29%
FYBR	Frontier Commun. Parent	25.48	0.00	0.00%	0.00%	0.00%		
GOGO	Gogo Inc.	14.76	0.00	0.00%	0.00%	0.00%		
SHEN	Shenandoah Telecom.	15.88	0.09	0.57%	7.64%	7.64%	8.21%	8.21%
TDS	Telephone & Data	10.49	0.74	7.05%	3.80%	21.45%	10.86%	28.51%
USM	U.S. Cellular	20.85	0.00	0.00%	0.00%	0.00%		
WOW	WideOpenWest Inc.	9.11	0.00	0.00%	0.00%	0.00%		
Average							8.35%	15.00%
Median							8.21%	8.29%
High							10.86%	28.51%
Low							6.00%	8.21%
Selected							8.35%	15.00%

Notes

[1] From worksheet: DDM Sustainable Long-Term Growth

Implied Sustainable LTG:

5.28%

11.92%

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Telecommunications - Medium & Small

2023 Assessment Year

A	B	C	D	E	F	G
Ticker	Company	End of Year Closing Stock Price	Div'ds Decl'd per sh 2023 Est	Expected Dividend Yield	Div'ds Decl'd per sh 2025-2027 Est	Short-Term Growth Rate
		<i>Yahoo</i>	<i>Value Line</i>	<i>D / C</i>	<i>Value Line</i>	<i>Note [1]</i>
ATUS	Altice USA	4.60	0.00	0.00%	0.00	0.00%
CABO	Cable One	711.86	11.50	1.62%	13.00	4.17%
FYBR	Frontier Commun. Parent	25.48	0.00	0.00%	0.00	0.00%
GOGO	Gogo Inc.	14.76				
SHEN	Shenandoah Telecom.	15.88	0.09	0.57%	0.15	18.56%
TDS	Telephone & Data	10.49	0.74	7.05%	0.82	3.48%
USM	U.S. Cellular	20.85	0.00	0.00%	0.00	0.00%
WOW	WideOpenWest Inc.	9.11	0.00	0.00%	0.00	0.00%

A	B	C	D	E
Ticker	Company	Earnings per share 2023 Est	Earnings per share 2025-2027 Est	Short-Term Growth Rate
		<i>Value Line</i>	<i>Value Line</i>	<i>Note [1]</i>
ATUS	Altice USA	0.85	1.85	29.59%
CABO	Cable One	52.50	72.05	11.13%
FYBR	Frontier Commun. Parent	0.60	1.50	35.72%
GOGO	Gogo Inc.			
SHEN	Shenandoah Telecom.	0.09	0.15	18.56%
TDS	Telephone & Data	0.80	1.60	25.99%
USM	U.S. Cellular	1.35	2.00	14.00%
WOW	WideOpenWest Inc.	0.35	0.70	25.99%

Notes

[1] 4 year compound annual growth rate (CAGR) - 3 periods

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Support for DDM - Sustainable Long Term Growth

Telecommunications - Medium & Small

2023 Assessment Year

Dividend Growth Rate									Stage 1				
Ticker	Company	Year End Stock Price	Expected Short-Term Dividend Growth Rate	Expected Long-Term Growth Rate	Expected Dividend Yield	Internal Rate of Return	Implied Sustainable Long-Term Growth Rate (g)	Initial Investment	D ₁	D ₂	D ₃	D ₄	D ₅
		Yahoo	Note [1]	Note [2]	D_1/P_0	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
ATUS	Altice USA	4.60	0.00%	4.45%	0.00%			(4.60)	0.00	0.00	0.00	0.00	0.00
CABO	Cable One	711.86	4.17%	4.45%	1.62%	6.00%	4.38%	(711.86)	11.50	11.98	12.48	13.00	13.54
FYBR	Frontier Commun. Paren	25.48	0.00%	4.45%	0.00%			(25.48)	0.00	0.00	0.00	0.00	0.00
GOGO	Gogo Inc.	14.76	0.00%	4.45%	0.00%			(14.76)	0.00	0.00	0.00	0.00	0.00
SHEN	Shenandoah Telecom.	15.88	18.56%	4.45%	0.57%	8.21%	7.64%	(15.88)	0.09	0.11	0.13	0.15	0.18
TDS	Telephone & Data	10.49	3.48%	4.45%	7.05%	10.86%	3.80%	(10.49)	0.74	0.77	0.79	0.82	0.85
USM	U.S. Cellular	20.85	0.00%	4.45%	0.00%			(20.85)	0.00	0.00	0.00	0.00	0.00
WOW	WideOpenWest Inc.	9.11	0.00%	4.45%	0.00%			(9.11)	0.00	0.00	0.00	0.00	0.00

Earnings Growth Rate									Stage 1				
Ticker	Company	Year End Stock Price	Expected Short-Term Earnings Growth Rate	Expected Long-Term Growth Rate	Expected Dividend Yield	Internal Rate of Return	Implied Sustainable Long-Term Growth Rate (g)	Initial Investment	D ₁	D ₂	D ₃	D ₄	D ₅
		Yahoo	Note [1]	Note [2]	D_1/P_0	$K_e = IRR \text{ of } D_1 : D_{500}$	$g = IRR - Div. \text{ Yield}$						
ATUS	Altice USA	4.60	29.59%	4.45%	0.00%			(4.60)	0.00	0.00	0.00	0.00	0.00
CABO	Cable One	711.86	11.13%	4.45%	1.62%	8.29%	6.68%	(711.86)	11.50	12.78	14.20	15.78	17.54
FYBR	Frontier Commun. Paren	25.48	35.72%	4.45%	0.00%			(25.48)	0.00	0.00	0.00	0.00	0.00
GOGO	Gogo Inc.	14.76	0.00%	4.45%	0.00%			(14.76)	0.00	0.00	0.00	0.00	0.00
SHEN	Shenandoah Telecom.	15.88	18.56%	4.45%	0.57%	8.21%	7.64%	(15.88)	0.09	0.11	0.13	0.15	0.18
TDS	Telephone & Data	10.49	25.99%	4.45%	7.05%	28.51%	21.45%	(10.49)	0.74	0.93	1.17	1.48	1.86
USM	U.S. Cellular	20.85	14.00%	4.45%	0.00%			(20.85)	0.00	0.00	0.00	0.00	0.00
WOW	WideOpenWest Inc.	9.11	25.99%	4.45%	0.00%			(9.11)	0.00	0.00	0.00	0.00	0.00

Notes

[1] From worksheet: DDM Short Term Growth Rate Calculations

[2] From worksheet: Inflation & Real Growth

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Telecommunications - Medium & Small

2023 Assessment Year

Dividend	Stage 2															Stage 3		
	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃	D ₁₄	D ₁₅	D ₁₆	D ₁₇	D ₁₈	D ₁₉	D ₂₀	D ₂₁	D ₂₂	D ₅₀₀
ATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
CABO	14.11	14.70	15.32	15.96	16.63	17.32	18.05	18.81	19.59	20.42	21.27	22.16	23.09	24.06	25.07	26.18	27.35	29,863,044,065
FYBR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
GOGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
SHEN	0.21	0.25	0.29	0.34	0.40	0.47	0.55	0.65	0.77	0.90	1.06	1.25	1.47	1.73	2.03	2.12	2.21	2,417,884,706
TDS	0.88	0.91	0.94	0.98	1.01	1.05	1.08	1.12	1.16	1.20	1.24	1.29	1.33	1.38	1.43	1.49	1.56	1,704,919,526
USM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
WOW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Earnings	Stage 2															Stage 3		
	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃	D ₁₄	D ₁₅	D ₁₆	D ₁₇	D ₁₈	D ₁₉	D ₂₀	D ₂₁	D ₂₂	D ₅₀₀
ATUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
CABO	19.41	21.49	23.78	26.32	29.13	32.25	35.69	39.50	43.73	48.40	53.57	59.29	65.62	72.63	80.39	83.97	87.71	95,779,455,255
FYBR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
GOGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
SHEN	0.21	0.25	0.29	0.34	0.40	0.47	0.55	0.65	0.77	0.90	1.06	1.25	1.47	1.73	2.03	2.12	2.21	2,417,884,706
TDS	2.32	2.89	3.60	4.49	5.59	6.96	8.67	10.80	13.46	16.76	20.87	26.00	32.39	40.34	50.24	52.48	54.81	59,858,559,726
USM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
WOW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

MONTANA DEPARTMENT OF REVENUE

Support for Yield Capitalization Rate - Debt Rating

Telecommunications - Medium & Small

2023 Assessment Year

A	B	C	D	E	I
Ticker	Company	Industry Group	Financial Strength	Moody's Long Term Rating	Yield to Maturity
		<i>Value Line</i>	<i>Value Line</i>	<i>Moody's</i>	
ATUS	Altice USA	CABLETV	B	B	9.15%
CABO	Cable One	CABLETV	B++	Ba3	7.04%
FYBR	Frontier Commun. Parent	TELESERV	B+	B3	9.15%
GOGO	Gogo Inc.	TELESERV	B	B2	9.15%
SHEN	Shenandoah Telecom.	TELESERV	B+		
TDS	Telephone & Data	TELESERV	B+	Ba1	7.04%
USM	U.S. Cellular	TELESERV	B+	Ba2	7.04%
WOW	WideOpenWest Inc.	CABLETV	C++	Caa	10.44%
Average					8.43%
Median					9.15%
Trimmed Average					8.31%
High					10.44%
Low					7.04%
Selected					8.43%

**Highlighted ratings are estimated based on financial strength and historical interest coverage ratios*

MONTANA DEPARTMENT OF REVENUE
Support for Direct Capitalization - Equity Capitalization Rates
Telecommunications - Medium & Small
2023 Assessment Year

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Ticker	Company	End of Year Closing Stock Price	VL Historic EPS	VL Est EPS	VL Historic P/E Ratio	VL Est P/E Ratio	Ke Estimate - Earnings (Hist. P/E)	Ke Estimate - Earnings (Est. P/E)	VL Historic Cash Flow Per Share	VL Est Cash Flow Per Share	VL Historic P/CF Ratio	VL Est P/CF Ratio	Ke Estimate - Cash Flow (Hist. P/CF)	Ke Estimate - Cash Flow (Est. P/CF)	Market Value of Equity	Book Value of Equity	MTBR
		Yahoo	Value Line	Value Line	C/D	C/E	1/F	1/G	Value Line	Value Line	C/J	C/K	1/L	1/M	Price x Shrs	Value Line	P/Q
ATUS	Altice USA	4.60	0.42	0.45	10.95	10.22	9.13%	9.78%	6.11	4.40	0.75	1.05	132.83%	95.65%	2,098	(820)	(2.56)
CABO	Cable One	711.86	38.06	52.50	18.70	13.56	5.35%	7.38%	104.33	110.00	6.82	6.47	14.66%	15.45%	4,105	1,793	2.29
FYBR	Frontier Commun. Parent	25.48	1.79	0.50	14.23	50.96	7.03%	1.96%	4.70	0.00	5.42		18.45%		6,228	4,600	1.35
GOGO	Gogo Inc.	14.76	0.71	0.00	20.79		4.81%		2.31	0.00	6.39		15.65%		1,887	(320)	(5.89)
SHEN	Shenandoah Telecom.	15.88	(0.10)	0.00					1.27	1.40	12.50	11.34	8.00%	8.82%	796	638	1.25
TDS	Telephone & Data	10.49	(0.08)	(0.10)					8.23	8.35	1.27	1.26	78.46%	79.60%	1,180	5,849	0.20
USM	U.S. Cellular	20.85	0.34	0.65	61.32	32.08	1.63%	3.12%	8.59	8.90	2.43	2.34	41.20%	42.69%	1,766	4,554	0.39
WOW	WideOpenWest Inc.	9.11	0.04	0.30	227.75	30.37	NMF	3.29%	1.15	2.55	7.92	3.57	12.62%	27.99%	787	571	1.38
Average					58.96	27.44	5.59%	5.11%			5.44	4.34	40.23%	45.03%			(0.20)
Median					19.75	30.37	5.08%	3.29%			5.91	2.96	17.05%	35.34%			0.82
Trimmed Average					28.76	25.33	4.70%	4.60%			5.04	3.41	30.17%	41.43%			0.34
High					227.75	50.96	9.13%	9.78%			12.50	11.34	132.83%	95.65%			2.29
Low					10.95	10.22	1.63%	1.96%			0.75	1.05	8.00%	8.82%			(5.89)
Selected					18.87		5.30%				2.71		36.93%				0.34

MONTANA DEPARTMENT OF REVENUE

Support for Direct Capitalization - Debt Capitalization Rate

Telecommunications - Medium & Small

2023 Assessment Year

(\$ in Millions)

A	B	C	D	E	F	G	H	I	J
Ticker	Company	Current Year Interest Exp.	Previous Year MV LT Debt	Previous Year BV LT Debt	Current Year MV LT Debt	Current Year BV LT Debt	Average MV LT Debt	Current Yield	MTBR
		10-K	10-K	10-K	10-K	10-K	(D+F)/2	(C/H)	(F/G)
ATUS	Altice USA	1,332	26,694	26,547	21,935	26,588	24,314	5.48%	0.82
CABO	Cable One	138	3,803	3,838	3,415	3,809	3,609	3.82%	0.90
FYBR	Frontier Commun. Parent	512	7,983	7,983	9,125	9,125	8,554	5.99%	1.00
GOGO	Gogo Inc.	39	937	804	694	697	815	4.77%	1.00
SHEN	Shenandoah Telecom.								
TDS	Telephone & Data	174	3,152	2,934	3,008	3,750	3,080	5.65%	0.80
USM	U.S. Cellular	163	2,940	2,731	2,454	3,200	2,697	6.04%	0.77
WOW	WideOpenWest Inc.	39	724	741	695	743	709	5.46%	0.94
All Companies		2,396	46,232	45,579	41,325	47,911	43,779	5.47%	0.86
Average								5.31%	0.89
Median								5.48%	0.90
Trimmed Average								5.47%	0.89
High								6.04%	1.00
Low								3.82%	0.77
Selected								5.47%	0.89

MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Telecommunications - Medium & Small

2023 Assessment Year

		End of Period Closing Stock Price											
1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	B	C	D	E	F	G	H	I	J	K	L	M	N
Ticker	Company	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
ATUS	Altice USA	14.42	11.56	12.48	9.28	11.38	9.25	10.51	10.00	5.83	6.61	4.56	4.60
CABO	Cable One	1,544.73	1,432.85	1,464.24	1,166.20	1,303.10	1,289.32	1,376.68	1,135.00	853.05	859.43	724.29	711.86
FYBR	Frontier Commun. Parent	26.66	27.55	27.67	26.39	25.93	23.54	25.91	25.76	23.43	23.42	25.77	25.48
GOGO	Gogo Inc.	12.45	14.24	19.06	18.41	20.26	16.19	17.36	14.86	12.12	14.22	15.69	14.76
SHEN	Shenandoah Telecom.	22.77	22.35	23.58	20.20	22.96	22.20	22.30	22.29	17.02	22.66	19.47	15.88
TDS	Telephone & Data	19.80	17.35	18.88	18.32	17.73	15.79	15.81	16.27	13.90	17.00	10.54	10.49
USM	U.S. Cellular	30.62	27.51	30.23	28.78	30.71	28.96	29.29	28.59	26.03	31.17	21.26	20.85
WOW	WideOpenWest Inc.	18.61	16.99	17.44	20.05	21.98	18.21	18.38	17.80	12.27	13.71	10.38	9.11

