



**2022 Capitalization Rate Study
Telecommunications - Medium & Small**

FINAL

Completed: April 21, 2022

MONTANA DEPARTMENT OF REVENUE

Yield Capitalization Rate Conclusion

Industry: Telecommunications - Medium & Small

2022 Assessment Year

Capital Structure ^[1]

Equity	40.00%
Debt	60.00%

Equity Cost of Capital

		Weighting
Capital Asset Pricing Model - Ex Post ^[2]	9.40%	30%
Capital Asset Pricing Model - Ex Ante ^[2]	7.85%	30%
3 Stage Dividend Discount Model - Dividends ^[3]	10.80%	20%
3 Stage Dividend Discount Model - Earnings ^[3]	9.30%	<u>20%</u>
Weighted Average	<u>9.20%</u>	100%
Selected Cost of Equity	<u>9.20%</u>	

Debt Cost of Capital ^[4]

		Weighting
A - Mergent's - Avg. YTM of A Rated Corporate Bonds ^[4]	3.04%	0%
Baa - Mergent's - Avg. YTM of Baa Rated Corporate Bonds ^[4]	3.37%	0%
Ba - Avg of MTDOR Study, Bloomberg and Capital IQ ^[5]	5.31%	67%
B - Avg of MTDOR Study, Bloomberg and Capital IQ ^[5]	7.81%	<u>33%</u>
Weighted Average	<u>6.14%</u>	100%
Selected Cost of Debt	<u>6.14%</u>	

Weighted Average Cost of Capital (WACC)

Source of Capital	Capital Structure	Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	40.00%	9.20%		9.20%	3.68%
Debt	60.00%	6.14%	24.00%	4.67%	2.80%
WACC	100.00%				6.48%
WACC (Rounded)					6.50%

Notes

[1] From worksheet: Capital Structure

[2] From worksheet: Capital Asset Pricing Model Summary

[3] From worksheet: Yield Equity Summary

[4] January 2022, Mergent Bond Record

[5] Average corporate bond yields from: Montana Department of Revenue High Yield Debt Study and Kroll Capitalization Rate Study.

MONTANA DEPARTMENT OF REVENUE

Direct Capitalization Rate Conclusion
Industry: Telecommunications - Medium & Small
2022 Assessment Year

Capital Structure ^[1]

Equity	40.00%
Debt	60.00%

Equity Capitalization Rate ^[2]

NOI After-tax	7.57%
GCF	36.90%

Debt Capitalization Rate ^[3]

Calculated Current Yield	6.20%
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NOI After-tax Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	40.00%	7.57%		7.57%	3.03%
Debt	60.00%	6.20%	24.00%	4.71%	2.83%
Total	100.00%				5.86%
Total (Rounded)					5.90%

GCF Direct Capitalization Rate

Source of Capital	Capital Structure	Capitalization Rate	Marginal Tax Rate	After-tax Capitalization Rate	Weighted Capitalization Rate
Equity	40.00%	36.90%		36.90%	14.76%
Debt	60.00%	6.20%	24.00%	4.71%	2.83%
WACC	100.00%				17.59%
Total (Rounded)					17.60%

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

2022 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Cable TV, Telecom Services, and Telecom Utilities

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 \$100 Billion in market capitalization.

Ticker Symbol	Headquartered /Incorporated in the U.S.	Actively traded on American exchange	Under \$100 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	No	No	[1]
CCA.TO	No							
CHTR	Yes	Yes	No					
CMCSA	Yes	Yes	No					
DISH	Yes	Yes	Yes	No				
DTEGY	No							
DY	Yes	Yes	Yes	No				
GOGO	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
GSAT							No	[5]
HMTV	Yes	Yes	Yes	No				
IDT	Yes	Yes	Yes	No				
IRDM							No	[5]
LBTYA	No							
LILA	No							

MONTANA DEPARTMENT OF REVENUE

Selection of Guideline Companies

Industry: Telecommunications - Medium & Small

2022 Assessment Year

Screening Requirements:

The universe of companies is all companies listed in Value Line under the Cable TV, Telecom Services, and Telecom Utilities

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 \$100 Billion in market capitalization.

Ticker Symbol	Headquartered /Incorporated in the U.S.	Actively traded on American exchange	Under \$100 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	Yes	Yes	
NUVR	Yes	No	Yes	Yes	No	Yes	No	
OOMA	Yes	Yes	Yes	No				
SATS							No	[4]
SHEN	Yes	Yes	Yes	Yes	Yes	No	No	[2]
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	
VG	Yes	Yes	Yes	Yes	Yes	No	No	[3]
VOD	No							
VZ			No					
WOW	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
ZD	Yes	Yes	Yes	No				
ZM	Yes	Yes	Yes	No				

[1] CABO completed its acquisition of Hargray in 2Q21, agreed to purchase certain assets of CableAmerica.

[2] Sold wireless segment in July 2021. Issued special dividend August 2021.

[3] Vonage Holdings has entered into an agreement with Ericsson for the sale of the company.

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

MONTANA DEPARTMENT OF REVENUE

Support for Capital Structure
Telecommunications - Medium & Small
2022 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	455	16.18	7,357	0	26,668	276	34,301	21%	0%	79%
GOGO	Gogo Inc.	TELESERV	C++	111	13.53	1,499	0	937	85	2,520	59%	0%	41%
LUMN	Lumen Technologies	TELUTIL	B	1,024	12.55	12,845	0	29,221	1,556	43,622	29%	0%	71%
TDS	Telephone & Data	TELESERV	B	107	20.15	2,161	1,074	3,152	1,101	7,488	29%	14%	57%
USM	U.S. Cellular	TELESERV	B+	53	31.52	1,666	0	2,949	1,018	5,633	30%	0%	70%
WOW	WideOpenWest, Inc.	CABLETV	C++	87	21.52	1,881	0	746	19	2,645	71%	0%	29%
All Companies						27,409	1,074	63,673	4,054	96,210	28%	1%	70%
Average											40%	2%	58%
Median											30%	0%	64%
Trimmed Average											37%	0%	60%
High											71%	14%	79%
Low											21%	0%	29%
Selected											40%		60%

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

2022 Changes to Guideline Companies

CNSL removed from Value Line universe

		<u>Median</u>	
Current Year	30%	0%	64%
Prior Year	30%	0%	70%
2 Years Prior	28%	0%	72%
3 Year Average	29%	0%	69%

MONTANA DEPARTMENT OF REVENUE

**Capital Asset Pricing Model (CAPM)
Telecommunications - Medium & Small
2022 Assessment Year**

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

		<i>Ex Post</i>	<i>Ex Ante</i>
$k_e =$	Cost of Equity	9.40%	7.85%
$R_f =$	Risk Free Rate	1.94%	1.94%
$\beta =$	Beta	1.00	1.00
$ERP =$	Equity Risk Premium ($R_m - R_f$)	7.46%	5.91%
$R_m =$	Market Rate of Return	9.40%	7.85%

Risk Free Rate Measures (R_f):

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

January 7, 2022 Page 2089

Selected Yields on Taxable U.S. Treasury Securities as of 12/27/21

10-year	1.48%
30-year	1.88%

Federal Reserve Statistical Release^[2]

U.S. government securities, Treasury constant maturities, Nominal, December 31, 2021

10-year	1.52%
20-year	1.94%
30-year	1.90%
Risk Free Rate Selected	<u>1.94%</u>

Notes

[1] "Value Line Selection & Opinion", Value Line (January 7, 2022)

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

Ex Post - Equity Risk Premium Measures ($ERP = R_m - R_f$)

Duff & Phelps, 2022 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>	9.40%	1.94%	7.46%
ERP "Supply-side" - <i>Ex Post</i>	<i>Arithmetic Avg.</i>	8.16%	1.94%	6.22%
Ex Post Equity Risk Premium Selected		<u>9.40%</u>	<u>1.94%</u>	<u>7.46%</u>

MONTANA DEPARTMENT OF REVENUE

Capital Asset Pricing Model (CAPM)
Telecommunications - Medium & Small
2022 Assessment Year

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

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>	8.05%	1.94%	6.11%

Duff & Phelps, 2022 Cost of Capital Navigator

	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
ERP "Conditional" - <i>Ex Ante</i>	8.00%	2.50%	5.50%

Damodaran Implied ERP (Jan 5, 2022)

	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
Implied Premium (FCFE) - <i>Ex Ante</i>	5.76%	1.52%	4.24%
Implied Premium (FCFE with sustainable payout) - <i>Ex Ante</i>	6.42%	1.52%	4.90%

	<u>R_m</u>	<u>R_f</u>	<u>ERP</u>
<u>Average</u>	7.06%		5.19%
<u>Median</u>	7.21%		5.20%
<u>High</u>	8.05%		6.11%
<u>Low</u>	5.76%		4.24%

Equity Risk Premium Selected

7.85%	1.94%	5.91%
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MONTANA DEPARTMENT OF REVENUE

Support for Beta Selection in CAPM
Telecommunications - Medium & Small
2022 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	1.00
GOGO	Gogo Inc.	TELESERV	C++	0.80
LUMN	Lumen Technologies	TELUTIL	B	0.95
TDS	Telephone & Data	TELESERV	B	1.00
USM	U.S. Cellular	TELESERV	B+	0.75
WOW	WideOpenWest, Inc.	CABLETV	C++	1.35
Average				0.98
Median				0.98
Trimmed Average				0.94
High				1.35
Low				0.75
Selected				1.00

MONTANA DEPARTMENT OF REVENUE

Inflation & Real Growth
Telecommunications - Medium & Small
2022 Assessment Year

A	B	C	D	Nominal Growth	
				E	F
Source Description	Inflation (CPI)	Real Growth (GDP)	Nominal Growth	Low	High
Livingston Survey ^[1]	2.44%	2.21%	4.65%		
Survey of Professional Forecasters ^[2]	2.49%	2.25%	4.74%		
Congressional Budget Office ^[3]					
Average	2.47%	2.23%	4.70%		
Median	2.47%	2.23%	4.70%		
High	2.49%	2.25%	4.74%		
Low	2.44%	2.21%	4.65%		
Selected	2.45%	2.25%	4.70%	4.65%	4.74%

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%	1.2354	224.939	3.1%	1.2046
2012	229.601	1.7%	1.2143	229.594	2.0%	1.1802
2013	233.049	1.5%	1.1963	232.957	1.4%	1.1632
2014	234.812	0.8%	1.1873	236.736	1.6%	1.1446
2015	236.525	0.7%	1.1787	237.017	0.1%	1.1433
2016	241.432	2.0%	1.1548	240.007	1.2%	1.1290
2017	246.524	2.1%	1.1309	245.120	2.1%	1.1055
2018	251.233	1.9%	1.1097	251.107	2.4%	1.0791
2019	256.974	2.2%	1.0849	255.657	1.8%	1.0599
2020	260.474	1.3%	1.0704	258.811	1.2%	1.0470
2021	278.802	6.6%	1.0000	270.970	4.5%	1.0000

Notes

[1] Federal Reserve Bank of Philadelphia The Livingston Survey December 17, 2021 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 11, 2022 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] Not available at study date

<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-202001.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

2022 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	2021 Year End Stock Price	2022 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	16.18	0.00	0.00%	0.00%	0.00%		
GOGO	Gogo Inc.	13.53	0.00	0.00%	0.00%	0.00%		
LUMN	Lumen Technologies	12.55	1.00	7.97%	5.85%	0.00%	13.81%	7.97%
TDS	Telephone & Data	20.15	0.72	3.57%	4.22%	7.05%	7.79%	10.62%
USM	U.S. Cellular	31.52	0.00	0.00%	0.00%	0.00%		
WOW	WideOpenWest, Inc.	21.52	0.00	0.00%	0.00%	0.00%		
Average							10.80%	9.29%
Median							10.80%	9.29%
High							13.81%	10.62%
Low							7.79%	7.97%
Selected							10.80%	9.30%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Short Term Growth Rate Calculations

Telecommunications - Medium & Small

2022 Assessment Year

A	B	C	D	E	F	G
Ticker	Company	End of Year Closing Stock Price	Div'ds Decl'd per sh 2022 Est	Expected Dividend Yield	Div'ds Decl'd per sh 2024-2026 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	16.18	0.00	0.00%	0.00	0.00%
GOGO	Gogo Inc.	13.53	0.00	0.00%	0.00	0.00%
LUMN	Lumen Technologies	12.55	1.00	7.97%	1.20	6.27%
TDS	Telephone & Data	20.15	0.72	3.57%	0.80	3.57%
USM	U.S. Cellular	31.52	0.00	0.00%	0.00	0.00%
WOW	WideOpenWest, Inc.	21.52	0.00	0.00%	0.00	0.00%

A	B	C	D	E
Ticker	Company	Earnings per share 2022 Est	Earnings per share 2024-2026 Est	Short-Term Growth Rate
		<i>Value Line</i>	<i>Value Line</i>	<i>Note [1]</i>
ATUS	Altice USA	1.75	2.50	12.62%
GOGO	Gogo Inc.	0.20	0.53	38.38%
LUMN	Lumen Technologies	1.20	1.80	14.47%
TDS	Telephone & Data	1.15	1.50	9.26%
USM	U.S. Cellular	1.90	2.10	3.39%
WOW	WideOpenWest, Inc.	0.15	0.70	67.11%

Notes

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

MONTANA DEPARTMENT OF REVENUE

Support for DDM - Sustainable Long Term Growth

Telecommunications - Medium & Small

2022 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	16.18	0.00%	4.70%	0.00%			(16.18)	0.00	0.00	0.00	0.00	0.00
GOGO	Gogo Inc.	13.53	0.00%	4.70%	0.00%			(13.53)	0.00	0.00	0.00	0.00	0.00
LUMN	Lumen Technologies	12.55	6.27%	4.70%	7.97%	13.81%	5.85%	(12.55)	1.00	1.06	1.13	1.20	1.28
TDS	Telephone & Data	20.15	3.57%	4.70%	3.57%	7.79%	4.22%	(20.15)	0.72	0.75	0.77	0.80	0.83
USM	U.S. Cellular	31.52	0.00%	4.70%	0.00%			(31.52)	0.00	0.00	0.00	0.00	0.00
WOW	WideOpenWest, Inc.	21.52	0.00%	4.70%	0.00%			(21.52)	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	16.18	12.62%	4.70%	0.00%			(16.18)	0.00	0.00	0.00	0.00	0.00
GOGO	Gogo Inc.	13.53	38.38%	4.70%	0.00%			(13.53)	0.00	0.00	0.00	0.00	0.00
LUMN	Lumen Technologies	12.55	14.47%	4.70%	7.97%	20.28%	12.31%	(12.55)	1.00	1.14	1.31	1.50	1.72
TDS	Telephone & Data	20.15	9.26%	4.70%	3.57%	10.62%	7.05%	(20.15)	0.72	0.79	0.86	0.94	1.03
USM	U.S. Cellular	31.52	3.39%	4.70%	0.00%			(31.52)	0.00	0.00	0.00	0.00	0.00
WOW	WideOpenWest, Inc.	21.52	67.11%	4.70%	0.00%			(21.52)	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

2022 Assessment Year

Dividend	Stage 2															Stage 3		
Ticker	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
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
LUMN	1.35	1.44	1.53	1.62	1.72	1.83	1.94	2.06	2.18	2.32	2.46	2.61	2.77	2.95	3.13	3.27	3.43	11,735,074,085
TDS	0.86	0.89	0.92	0.96	0.99	1.03	1.06	1.10	1.14	1.19	1.23	1.27	1.32	1.37	1.42	1.49	1.56	5,324,208,805
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		
Ticker	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
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
LUMN	1.95	2.22	2.53	2.88	3.28	3.73	4.25	4.84	5.50	6.27	7.13	8.12	9.24	10.52	11.97	12.53	13.12	44,923,547,054
TDS	1.12	1.22	1.33	1.45	1.58	1.72	1.87	2.04	2.22	2.42	2.64	2.87	3.13	3.41	3.72	3.89	4.07	13,944,754,126
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

2022 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	Ba2	5.31%
GOGO	Gogo Inc.	TELESERV	C++	B3	7.81%
LUMN	Lumen Technologies	TELUTIL	B	Ba1	5.31%
TDS	Telephone & Data	TELESERV	B	Ba1	5.31%
USM	U.S. Cellular	TELESERV	B+	Ba2	5.31%
WOW	WideOpenWest, Inc.	CABLETV	C++	B2	7.81%
Average					6.14%
Median					5.31%
Trimmed Average					5.94%
High					7.81%
Low					5.31%
Selected					6.14%

**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
2022 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	16.18	2.15	1.40	7.53	11.56	13.29%	8.65%	5.29	5.55	3.06	2.92	32.69%	34.30%	7,357	(1,141)	(6.45)	
GOGO	Gogo Inc.	13.53	1.07	0.00	12.64		7.91%		(0.40)	0.00					1,499	(641)	(2.34)	
LUMN	Lumen Technologies	12.55	1.91	1.50	6.57	8.37	15.22%	11.95%	5.91	5.91	2.12	2.12	47.09%	47.09%	12,845	11,840	1.08	
TDS	Telephone & Data	20.15	1.01	1.10	19.95	18.32	5.01%	5.46%	9.96	8.83	2.02	2.28	49.43%	43.82%	2,161	4,804	0.45	
USM	U.S. Cellular	31.52	1.77	1.85	17.81	17.04	5.62%	5.87%	10.60	9.70	2.97	3.25	33.63%	30.77%	1,666	4,411	0.38	
WOW	WideOpenWest, Inc.	21.52	(0.45)	0.50		43.04		2.32%	2.82	2.45	7.63	8.78	13.10%	11.38%	1,881	(212)	(8.85)	
Average					12.90	19.66	9.41%	6.85%			3.56	3.87	35.19%	33.47%			(2.62)	
Median					12.64	17.04	7.91%	5.87%			2.97	2.92	33.63%	34.30%			(0.98)	
Trimmed Average					12.66	15.64	8.94%	6.66%			2.72	2.82	37.81%	36.30%			(1.99)	
High					19.95	43.04	15.22%	11.95%			7.63	8.78	49.43%	47.09%			1.08	
Low						6.57	8.37	5.01%	2.32%			2.02	2.12	13.10%	11.38%			(8.85)
Selected							7.57%						36.90%				NMF	

MONTANA DEPARTMENT OF REVENUE

**Support for Direct Capitalization - Debt Capitalization Rate
Telecommunications - Medium & Small
2022 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
		<i>10-K</i>	<i>10-K</i>	<i>10-K</i>	<i>10-K</i>	<i>10-K</i>	<i>(D+F)/2</i>	<i>(C/H)</i>	<i>(F/G)</i>
ATUS	Altice USA	1,267	27,971	26,722	26,668	26,547	27,320	4.64%	1.00
GOGO	Gogo Inc.	67	933	1,169	937	804	935	7.22%	1.16
LUMN	Lumen Technologies	1,522	33,217	31,837	29,221	28,982	31,219	4.88%	1.01
TDS	Telephone & Data	232	3,657	3,429	3,152	2,934	3,405	6.81%	1.07
USM	U.S. Cellular	175	2,708	2,491	2,949	2,731	2,829	6.19%	1.08
WOW	WideOpenWest, Inc.	94	2,230	2,266	746	741	1,488	6.28%	1.01
All Companies		3,357	70,716	67,914	63,673	62,740	67,195	5.00%	1.01
Average								6.00%	1.06
Median								6.23%	1.04
Trimmed Average								6.04%	1.04
High								7.22%	1.16
Low								4.64%	1.00
Selected								6.20%	1.04

MONTANA DEPARTMENT OF REVENUE

Support of Stock Price - From YAHOO Finance

Telecommunications - Medium & Small

2022 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	35.57	33.61	32.53	36.31	36.06	34.14	30.73	27.44	20.72	16.30	15.84	16.18
GOGO	Gogo Inc.	13.40	11.85	9.66	10.42	13.62	11.38	10.37	13.45	17.30	16.26	12.82	13.53
LUMN	Lumen Technologies	12.38	12.29	13.35	12.83	13.84	13.59	12.47	12.30	12.39	11.86	12.34	12.55
TDS	Telephone & Data	18.75	17.89	22.96	22.98	25.72	22.66	22.35	20.32	19.50	18.74	17.68	20.15
USM	U.S. Cellular	31.18	29.43	36.48	34.13	37.75	36.31	36.36	31.95	31.89	30.57	29.11	31.52
WOW	WideOpenWest, Inc.	10.65	14.05	13.59	14.07	16.67	20.71	22.24	21.22	19.65	19.05	18.60	21.52

